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TETRA TECH

Data Gaps Assessment (DGA) Report

for

Installation Restoration Site 12 (Tank Farm 4) and 13 (Tank Farm 5) Category 1 Areas

Naval Station (NAVSTA) Newport, Rhode Island

Naval Facilities Engineering Command Mid-Atlantic

Contract Number N62467-04-D-0055
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DATA GAPS ASSESSMENT (DGA) REPORT

FOR

INSTALLATION RESTORATION SITE 12 (TANK FARM 4) AND 13 (TANK FARM 5) – CATEGORY 1 AREAS

NAVAL STATION (NAVSTA) NEWPORT, RHODE ISLAND

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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I Ecological Risk Characterization

ACRONYMS

ADAF	Age Dependent Adjustment Factor
ACH	Air Changes Per Hour
AET	Apparent Effects Threshold
AOCs	Areas of Concern
ATSDR	Agency for Toxic Substances and Disease Registry
BAF	Bioaccumulation Factor
bgs	Below Ground Surface
BERA	Baseline Ecological Risk Assessment
BSAF	Biota Sediment Accumulation Factors
BSW	Bottom Sediment Water
BRAC	Base Realignment and Closure
CAEPA	California Environmental Protection Agency
CCME	Canadian Council of Ministers of the Environment
CDI	Chronic Daily Intake
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Chemicals of Concern
COPC	Chemical of Potential Concern
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
CTE	Central Tendency Exposure
CTO	Contract Task Order
DAF	Dilution Attenuation Factor
DEC	Direct Exposure Criteria
DGA	Data Gaps Assessment
DGI	Data Gaps Investigation
DO	Dissolved Oxygen
DPT	Direct Push Technologies
DU	Decision Unit
EEQ	Ecological Effects Quotient
EPA	United States Environmental Protection Agency
EPC	Exposure Point Concentration
ERA	Ecological Risk Assessment
EU	Exposure Unit
ExTPH	Extractable Total Petroleum Hydrocarbons
FFA	Federal Facilities Agreement
FS	Feasibility Study
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HMW	High Molecular Weight
HQ	Hazard Quotient
HSA	Hollow Stem Auger
IAS	Initial Assessment Study
ID	Inside Diameter
IDW	Investigation Derived Waste
ILCR	Incremental Lifetime Cancer Risk
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
IUR	Inhalation Unit Risks
L/hr	Liters per Hour
LEL	Lowest Effects Level
LMW	Low Molecular Weight
LNAPL	Light Non-Aqueous Phase Liquid

LOEL	Lowest Observed Effects Levels
MCL	Maximum Contaminant Level
mg/kg	Milligrams per Kilogram
NAVFAC	Naval Facilities Engineering Command
NAVSTA	Naval Station Newport
NCEA	National Center for Environmental Assessment
NETC	Naval Education and Training Center
NOAEL	No-observed Adverse Effects Levels
NOEC	No-observed Effects Concentration
NRWQC	National Recommended Water Quality Criteria
OD	Outside Diameter
OERR	Office of Emergency and Remedial Response
OMOE	Ontario Ministry of the Environment
ORNL	Oak Ridge National Laboratory
ORP	Oxygen Reduction Potential
OSWER	Office of Solid Waste and Emergency Response
OWS	Oil-Water Separator
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PEC	Probable Effects Concentration
PEF	Particulate Emission Factor
PID	Photo Ionization Detector
PPRTV	Provisional Peer Reviewed Toxicity Value
PVC	Polyvinyl Chloride
QC	Quality Control
RAGS	Risk Assessment Guidance for Superfund
RBC	Risk-based Concentration
RDA	Recommended Daily Allowance
RDI	Recommended Daily Intake
RIDEM	Rhode Island Department of Environmental Management
RCRA	Resource Conservation Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RSLs	Regional Screening Levels
SARA	Superfund Amendments and Reauthorization Act
SAP	Sampling and Analysis Plan
SCV	Secondary Chronic Value
SDWA	Safe Drinking Water Act
SEL	Severe Effects Level
SOP	Standard Operating Procedure
SQD	Soil Quality Guidelines
SQL	Sample Quantitation Limit
SSL	Soil Screening Level
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
TEC	Threshold Effect Concentration
TEFs	Toxic Equivalency Factors
TEQs	Toxic Equivalent
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TRW	Technical Review Workgroup
TRV	Toxicity Reference Value
TtEC	Tetra Tech EC, Inc.

UCL	Upper Confidence Limit
USCS	Unified Soils Classification System
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tank
VC	Vitrified Concrete
VDEQ	Virginia Department of Environmental Quality
VF	Volatilization Factor
VOCs	Volatile Organic Compounds
WHO	World Health Organization
WS	Worksheet
µg/L	Micrograms per Liter
µg/kg	Micrograms per kilogram

EXECUTIVE SUMMARY

This Data Gasp Assessment (DGA) report describes the investigation and data evaluation activities conducted to assess contamination impacts to environmental media at Decision Units (DUs) 4-1 and 5-1, within Sites 12 and 13 (Tank Farms 4 and 5), at Naval Station (NAVSTA) Newport in Newport, Rhode Island (the Base). DUs 4-1 and 5-1 were selected based on historical data and records that indicated the presence of hazardous materials that are subject to remediation under the Newport Federal Facilities Agreement (FFA) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

This DGA was conducted to provide up-to-date, site-representative data and to use these data to aid in determining residual risks to potential human and ecological receptors, following the completed removal actions conducted at the site so that best the path forward for each area of the sites can be determined. The investigation was performed under the U.S. Department of Defense (DoD) Installation Restoration (IR) Program. The DGA Report was prepared by Tetra Tech, Inc. (Tetra Tech), under the direction of the Naval Facilities Engineering Command, and Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62467-04-D-0055, Contract Task Order (CTO) 464 and WE58.

The U.S. Environmental Protection Agency (USEPA), the Rhode Island Department of Environmental Management (RIDEM) and the Navy agreed during the September 16, 2009 Remedial Project Managers meeting that different types of contaminants within each site within NAVSTA Newport are governed by different regulatory authorities. Depending on the type of contaminants, the requirements of CERCLA, provisions of the RIDEM Underground Storage Tank (UST) program, or RIDEM regulations could be applicable to Sites 12 and 13.

In order to address these different requirements, contaminants identified at NAVSTA Newport were categorized according to the applicable regulatory authority, and DUs were created to reflect these varying categories. This process resulted in the creation of three site categories which were used to develop eight DUs.

Category 1 DUs (DUs 4-1 and 5-1) are areas of concern where CERCLA contaminants may be present. CERCLA contaminants were suspected to be present where records indicate the uncontrolled burning of tank bottom sludge. It was suspected that Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and Dioxins/Furans may be present in the vicinity of the former burn chambers and downgradient of the discharge areas.

Category 2 DUs (DU 4-2, 4-3, 4-4, 4-5, and 5-2) are associated with petroleum formerly stored and managed at the site [total petroleum hydrocarbons (TPH)] which may have been released by various mechanisms. These contaminants are governed by the RIDEM UST Section, and are not managed under CERCLA.

The Category 3 DU (DU 5-3) was established to address miscellaneous incidental contaminants present that are normally governed by the RIDEM Division of Site Remediation. These contaminants are associated with support structures such as battery storage buildings, electrical substations, and equipment buildings and storage sheds (VOCs, SVOCs, pesticides, PCBs, metals), which would be localized and specific to non-CERCLA releases from each of those structures.

Tank Farm 4 contains five separate DUs (DUs 4-1 through DU- 4-5, while Tank Farm 5 contains three separate DUs (DU 5-1, DU 5-2, and DU 5-3). Because of the different regulatory paths for the different categories of DUs, it was deemed appropriate to compile separate reports for Category 1 (the CERCLA regulated category) and the Category 2 and 3 (the RIDEM regulated categories) DUs. As such, this report describes investigation activities, findings and conclusions conducted for the Category 1 DUs (DU 4-1 and DU 5-1). The Data Gaps Report for the RIDEM regulated DUs is presented under separate cover.

E.1 SITE CONDITIONS AND BACKGROUND

Tank Farm 4 is located approximately 1.4 miles north of Tank Farm 5, bordered to the west by the Defense Highway; Norman's Brook to the south; residential property to the east; and undeveloped woodlands to the north/northeast. Norman's Brook flows east to west, and discharges to the east passage of Narragansett Bay. Tank Farm 4 comprises approximately 90 acres and contains 12 closed in place underground storage tanks (USTs) that were formerly used to store virgin heavy fuel oil (No. 6 bunker oil). The capacity of each tank was approximately 2.5 million gallons.

Tank Farm 5 occupies approximately 85 acres and is the location of 11 former USTs originally used to store virgin heavy fuel oil. Each of the 11 former USTs had an approximate storage capacity of 2.5 million gallons similar to the former USTs at Tank Farm 4. Two of the eleven USTs, Tank Nos. 53 and 56, were subsequently used to store waste oil, and were remediated under a separate series of efforts and a Record of Decision (ROD), dated September 1993.

Tank Farm 5 is similarly bordered by the Defense Highway to the west; a cemetery to the south; woodlands and residential property to the east; and Greene's Lane to the north. Gome's Brook transects the northern portion of the tank farm. The Brook flows westerly, to Narragansett Bay, and provides surface drainage for the northern portion of the facility and of the residential areas to the east. A new fire-fighting training area was constructed on the western portion of Tank Farm 5 in the late 1980s.

Vegetation consisting of dense brush, trees, grass, and woodlands is found between the tanks and the site perimeters at both tank farms. Vegetation in the vicinity of the tanks has been periodically cleared for various construction and investigation activities, but new growth is rapid when not maintained.

Tank Farms 4 and 5 were identified in the Initial Assessment Study (IAS) (IEE, 1984) for NAVSTA Newport and were included as "Sites" in the IR Program because records suggested that bottom sludge from fuel oil tanks was disposed of through uncontrolled burning in concrete chambers. These chambers were later converted to oil-water separators, and a mixture of tank bottoms, sludge, and water was disposed of through these chambers so that the oil and sludge could be separated and water could be discharged to wetland areas on site. It was speculated that the practices could have resulted in surface and groundwater contamination with lead and petroleum-based hydrocarbons. Therefore, Tank Farms 4 and 5 were identified as Sites 12 and 13 and listed on the FFA under the IR Program.

Since completion of IAS activities in 1984, extensive efforts have been undertaken to identify, characterize, and remediate releases from the former UST system to environmental media at the two sites. The USTs have been cleaned and closed in place in support of NAVSTA Newport's reduced fueling infrastructure needs. Piping has been partially dismantled and partially closed in place.

Removal actions conducted to address the former oil-water separators, discharge piping and associated discharge areas have been undertaken following Remedial Investigations (RI) at the two tank farms. However, because the removal actions conducted were not risk-based removals, and confirmation sampling was not conducted to compare to risk-based criteria, this DGA was conducted to determine the current (post removal) conditions within these specific areas, to provide data suitable for a human health and ecological risk assessment, and to present those risk assessments. By determining risk from remaining CERCLA contaminants, the document determines whether a feasibility study or possible remedial action is needed. The areas investigated are referred to as Decision Units (DUs) 4-1 (area surrounding two oil water separators and the receiving wetlands at Tank Farm 4) and 5-1 (area of the former oil water separator and receiving wetland at Tank Farm 5).

E.2 FIELD INVESTIGATIONS

Investigation activities associated with the DGA at the two tank farms were conducted between the months of March and June of 2010 and included soil sampling and analysis, sediment and surface water sampling and analysis, groundwater sampling and analysis and hydrogeologic studies as summarized below.

Surface Soil Investigation – This effort included collection of 24 surface soil samples at DU 4-1 and 11 surface soil samples at DU 5-1. Surface soil samples collected as part of this effort were analyzed for VOCs, SVOCs, pesticides/PCBs, metals, extractable total petroleum hydrocarbons (ExTPH), and dioxins.

Subsurface Soil Investigation – This effort included collection of 48 subsurface soil samples at DU 4-1, and 22 subsurface soil samples at DU 5-1 that were analyzed for VOCs, SVOCs, pesticides/PCB, metals and ExTPH. A subset of samples was analyzed for dioxins, pH and total organic carbon (TOC).

Groundwater Investigation – Seven overburden groundwater monitoring wells were installed at DU 4-1 and five overburden groundwater monitoring wells were installed at DU 5-1. Additionally, a synoptic round of groundwater level measurements was collected at each DU, to determine groundwater flow dynamics and to assess the potential presence of non-aqueous-phase liquid (NAPL).

Surface Water and Sediment Investigations - Twelve sediment samples were collected from each DU, along with 10 surface water samples from DU 4-1 and eleven surface water samples from DU 5-1. Sediment samples were analyzed for VOCs, SVOCs, pesticides/PCB, metals, dioxins and pH/TOC. Surface water samples were analyzed for VOCs, SVOCs, pesticides/PCBs and metals.

E.3 GEOLOGY AND HYDROGEOLOGY

Subsurface investigations and subsequent development of geologic cross sections at the two tank farms have identified a geologic profile of fill materials, overburden soil, and bedrock. Overburden materials at Tank Farms 4 and 5 vary between approximately 1 and 40 feet in thickness and are dominated by sandy silts and silty sand materials. Smaller pockets of gravelly materials, including sandy silt with gravel, silty sand with gravel and silt with gravel also occur. Also, a few very small areas of sand occur, but are even more limited in their occurrence. The gravelly materials are usually present deeper in the subsurface and/or directly above the bedrock surface, while the silts and sands occur more continuously and are more likely to be found at the ground surface.

The thickness of the overburden tends to increase in flat lying areas and becomes thinner on slopes. Areas surrounding the tanks have some of the thickest overburden units, because the bedrock was blasted to make room for the tanks. The fill in the re-worked areas can be hard to distinguish from the native material because fill appears to be overburden materials from another part of the site or from the blasting of the bedrock during tank installation efforts. Density of the overburden varies, generally from loose to medium dense, but is not a reliable indicator as to the nature of the overburden materials (native or fill).

Bedrock, identified as a black/gray shale, slate and/or phyllite depending on the degree of metamorphism, is encountered between approximately 1 and 40 feet below ground surface (bgs) at both Tank Farms 4 and 5. The bedrock surface is highly weathered in some areas, making it difficult at times to determine at what exact depth the bedrock/overburden contact is located. Most of the bedrock encountered can be easily broken along planes of bedding and/or foliation and is also highly fractured. The blasted bedrock is difficult to distinguish from the weathered bedrock and the weathered bedrock/overburden interface is difficult to determine due to how soft and thoroughly weathered the bedrock material can be.

Static groundwater levels across DU 4-1 range from 1.3 feet above the ground surface (artesian/wetland conditions) to 12 feet below the ground surface, with flow in a westerly direction mimicking surface topography across the site. DU 4-1 is the most downgradient section of Tank Farm 4, so that groundwater flow entering DU 4-1 is coming from the other parts of the Tank Farm located to the east, and groundwater exiting DU 4-1 flows off-site, under Defense Highway and discharges into Narragansett Bay.

Static groundwater elevations at DU 5-1 range from approximately 2 to 15 feet below the ground surface, in a generally north-westerly direction across the site following surface topography. DU 5-1 is located in the most downgradient section of Tank Farm 5 with groundwater entering the site from other parts of the Tank Farm located to the east. The horizontal hydraulic gradient of 0.03 to 0.04 ft/ft observed at the site indicates low groundwater flow conditions that ultimately discharge into Narragansett Bay. Static groundwater elevations at DU 5-1 range from approximately 2 to 15 feet below the ground surface, and gradient is in a generally north-westerly direction across the site following surface topography.

E.4 CONTAMINANTS FOUND

Site contaminants identified during the DGA were compared to the USEPA Residential Regional Screening Levels (RSLs) and the USEPA Industrial RSLs (soil and sediment) and to the USEPA RSLs for tap water and the USEPA Maximum Contaminant Levels (MCLs) (surface water and groundwater). All the sample data were validated according to established USEPA Region I Data Validation Guidelines (USEPA Region 1, February, 1989); (USEPA Region 1, December, 1996); (USEPA Region 1, February,

2004). A Tier II data validation was performed on the VOC, SVOC, pesticide, PCB, TAL metals and dioxins analyses. In general, data were acceptable for use in this DGA.

The background soil investigation study (Tetra Tech, 2006), part of the base wide background study completed by Tetra Tech in 2008, was used to perform a dataset to dataset statistical comparison between the soil data at the sites and the established background concentrations of metals at the sites.

DU 4-1

Analytical results from soil samples collected from within DU 4-1 show few contaminants at low concentrations. These analytes included mainly PAHs and metals. The distribution of PAHs around the discharge area for Ruin 1 suggests a pattern of higher concentrations of PAHs in soil around the discharge area. Increased PAHs around the terminus of the discharge pipe for Ruin 2 are also noted, however, the highest concentration of total PAHs in the Ruin 2 area is just upstream of the discharge pipe. Overall, concentrations of PAHs in subsurface soil are markedly less than concentrations of PAHs in surface soil at individual locations and as a group. Unlike PAHs, a pattern of higher concentrations of metals in soil around discharge areas was not evident.

The two metals in soil with concentrations consistently above screening criteria were arsenic and chromium. However, concentrations of chromium both in surface and subsurface soils are within site background levels and are not considered to be site related. Although present at naturally occurring levels, chromium was carried through the HHRA in accordance with USEPA guidance. Arsenic is noted to be elevated in soil on Aquidneck Island, although the site concentrations are statistically greater than background levels in similar soil types. Sediment provided similar results to soil, and overall it is believed that these metals are reflective of the background condition of soils in the area.

Surface water samples showed arsenic present above RSLs for tap water in four of the ten samples and one PAHs (benzo(a) anthracene) present above RSL for tap water in two of the ten samples.

One of the field duplicate groundwater samples collected from TF4-MW-913, a shallow well adjacent to Ruin 2, was reported to contain PCBs (Aroclor 1248 and Aroclor 1254) above the MCL and also to contain endrin aldehyde, a pesticide compound; however, analysis of the other field duplicate sample at this location did not report these contaminants present. Further research into this discrepancy revealed that there is a high probability that the Aroclors reported in this groundwater sample were a false positive detection due to laboratory handling. Although this could not be confirmed for the pesticide compound, it is also likely that it is from the same source, and the detections were therefore not further evaluated. These were the only compounds detected above MCLs in groundwater at Tank Farm 4. The metals

arsenic, cobalt and manganese were above the RSLs for tap water in between four and seven of the groundwater samples.

DU 5-1

Analytical results from soil samples collected from DU 5-1 indicated few contaminants at concentrations above the screening levels. There were a few samples with elevated levels of SVOCs, mainly PAHs such as benzo(a)pyrene. Arsenic and chromium were found across DU 5-1 in both surface and subsurface soil at concentrations above RSLs. Concentrations of chromium are within site background levels and are not considered to be site related (Appendix F). Although present at naturally occurring levels, chromium was carried through the HHRA (Section 6.0) in accordance with USEPA guidance.

Sediment samples collected from within DU 5-1 did show elevated levels of PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene) above RSLs, in most sediment samples collected. Arsenic and chromium were detected above RSLs in all samples collected.

Some aqueous samples did show elevated levels of the same SVOCs that were detected in the soil and sediment samples (benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene and naphthalene) and chloroform above the RSL for tap water in some locations. Arsenic was detected above RSLs in surface water samples.

All compounds detected in groundwater were below the MCLs; however, arsenic, cobalt and manganese were detected in groundwater samples above RSLs. In addition, benzene was detected above the RSL for tap water, but it's presence was limited to one groundwater sample downgradient of the OWS.

E.5 HUMAN HEALTH RISK

The objective of the human health risk assessment (HHRA) completed at DU's 4-1 and 5-1 was to determine whether detected concentrations of chemicals within the study areas pose a significant threat of adverse health effects to potential human receptors under current and/or future land use scenarios.

There were no identified risks to any receptors for unrestricted exposure to the surface water or sediment media at DU 4-1. The HHRA did however identify potential risks to some receptors from unrestricted exposure to surface and subsurface soil and groundwater at DU 4-1. The potential risks identified for the soil and groundwater media at DU 4-1 include:

- Construction workers could be affected by exposure to manganese in soil.
- Lifelong recreational (unrestricted) users could be affected by exposure to carcinogenic PAHs in surface soil.
- Child residents could be affected by exposure to carcinogenic PAHs and arsenic in soil, and arsenic, cobalt, iron, and manganese in groundwater.
- Child recreational (unrestricted) users could be affected by exposure to carcinogenic PAHs in surface soil.
- Adult residents could be affected by exposure to carcinogenic PAHs in soil, and arsenic and manganese in groundwater.
- Lifelong residents could be affected by exposure to carcinogenic PAHs and arsenic in soil and by exposure to arsenic in groundwater, in addition to the child and adult risks stated above.

There are no identified risks for any receptors for exposure to the surface water, surface soil or sediment media at DU 5-1. The HHRA for DU 5-1 did however indicate potential risks from unrestricted exposure to all soil and groundwater. The following potential risks were identified for exposure to the indicated COCs:

- Construction workers could be affected by exposure to manganese in soil.
- Child residents could be affected by exposure to arsenic, cobalt, iron, and manganese in groundwater.
- Adult residents could be affected by exposure to cobalt, and manganese in groundwater.
- Lifelong residents could be affected by exposure to arsenic in groundwater, in addition to the child and adult risks stated above.

E.6 ECOLOGICAL RISK

The screening level ecological risk assessment was performed to identify the potential for ecological risks to the terrestrial and aquatic receptors exposed to contaminants associated with DU 4-1 and DU 5-1. This assessment was a “screening” assessment, to determine contaminants of potential ecological concern, and to assist in determining whether a baseline ecological risk assessment (BERA) should be conducted.

While several chemicals were retained as chemicals of potential concern (COPCs) as a result of the initial screening of surface soil, these chemicals were further evaluated using toxicity information and propensity for the constituents to accumulate in tissues of higher organisms. It was found that based on the limited potential for ecological risks, the overall low concentrations of most COPCs, and the observation that most of those potential risks are due to PAHs present in a single soil sample collected

from DU 4-1, it is not considered necessary to conduct further ecological risk evaluations at these decision units.

E.7 CONCLUSIONS

Based on results of the environmental data collected at DUs 4-1 and 5-1 as part of this DGA and the historical information previously generated for these sites, it is concluded that a potential risk exists to residential, unrestricted recreational and construction worker receptors from exposure to site soils and / or groundwater with an unrestricted use of DU 4-1, and a potential risk exists to residential and construction worker receptors from exposure to site soils or groundwater with an unrestricted use of DU 5-1. It is therefore recommended that both DU 4-1 and DU 5-1 be carried forward to the Feasibility Study (FS) phase of the CERCLA process. Each FS should include a risk management evaluation to determine which COPCs are appropriate to be considered COCs (contaminants present as a result of releases at the site that need to be addressed under CERCLA). Based on the distribution and concentrations of the COCs, the FS will provide an evaluation of different remedial alternatives to address the risk from the COCs to the receptors.

1.0 INTRODUCTION

This Data Gaps Assessment (DGA) Report was completed for portions of Installation Restoration Sites 12 (Tank Farm 4) and 13 (Tank Farm 5), at the Naval Station Newport (NAVSTA) in Portsmouth and Middletown, Rhode Island respectively (Figure 1-1). These portions of the two sites are referred to as Decision Unit (DU) 4-1 (Tank Farm 4) and DU 5-1 (Tank Farm 5). This report, which summarizes results of the DGA, was prepared by Tetra Tech, Inc. (Tetra Tech) for the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62467-04-D-0055, Contract Task Order (CTO) WE58.

Environmental cleanup at these sites is being continued in accordance with the Federal Facilities Agreement (FFA) between the U.S. Navy, the U.S. Environmental Protection Agency (EPA), and Rhode Island Department of Environmental Management (RIDEM), which directs the implementation of the Installation Restoration Program (IRP) for NAVSTA. The DUs were established during planning efforts as described in the Sample Analysis Plan (SAP) for Data Gaps Assessment Sites Tank Farms 4 and 5 Newport, Rhode Island (Tetra Tech, 2008), as summarized in this report. All field activities and data evaluation/assessments conducted as part of the DGA were completed in accordance with the means and methods outlined in the SAP.

1.1 PURPOSE

The purpose of the DGA efforts at DU 4-1 and DU 5-1 were to provide up-to-date, site-representative environmental media data necessary to determine risks or potential risks to human and ecological receptors so that the best path forward for each DU within the provisions of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) could be determined at each site. Much of the previous data for DU 4-1 and DU 5-1 is limited by both the relative age of the data and the actual selected analytes evaluated by environmental media as indicated in the Technical Memorandum for the Data Summary and Plan for Risk Assessment (Tetra Tech, 2008): Groundwater, sediment, and most surface water data for the sites is now more than 10 years old and data from samples of the soil or fill material media have been altered or removed through interim remediation or construction work.

1.2 DECISION UNITS

The EPA, RIDEM, and the Navy agreed during the September 16, 2009 Remedial Project Managers meeting that different types of contaminants within each site within NAVSTA Newport are governed by different regulatory authorities. Depending on the type of contaminants, the requirements of CERCLA,

provisions of the RIDEM Underground Storage Tank (UST) program, or RIDEM regulations, could be applicable.

In order to address these different requirements contaminants identified at NAVSTA Newport were categorized according to the applicable regulatory authority, with DUs created to reflect these varying categories. This process resulted in the creation of three site Categories which were used to develop eight DUs.

Category 1 DUs (DUs 4-1 and 5-1) are areas of concern where CERCLA contaminants may be present. CERCLA contaminants were suspected to be present where records indicate the uncontrolled burning of tank bottom sludge. It was suspected that Volatile Organic Compounds (VOCs), Semivolatile Organic Compound (SVOCs), pesticides, polychlorinated biphenyls (PCBs), Metals, Dioxins/Furans may be present in the vicinity of the former burn chambers and downgradient of the discharge areas.

Category 2 DUs (DU 4-2, 4-3, 4-4, 4-5, and 5-2) are associated with petroleum formerly stored and managed at the site [total petroleum hydrocarbons (TPH)], which may have been released by various mechanisms. These contaminants are governed by the RIDEM UST Section, and are not managed under CERCLA.

The Category 3 DU (DU 5-3) was established to address miscellaneous incidental contaminants present that are normally governed by RIDEM Division of Site Remediation. These contaminants are associated with support structures such as battery storage buildings, electrical substations, equipment buildings, and storage sheds (VOCs, SVOCs, pesticides, PCBs, metals), which would be localized and specific to non-CERCLA releases from each of those structures.

Tank Farm 4 (Figure 1-2) contains five separate DUs (DUs 4-1 through DU- 4-5), while Tank Farm 5 contains three separate DUs (DU 5-1, DU 5-2, and DU 5-3). Because of the different regulatory paths for the different categories of DUs, it was deemed appropriate to compile separate reports for Category 1 (the CERCLA regulated category) and Category 2 and 3 (the RIDEM regulated categories) DUs. As such, this report describes investigation activities, findings, and conclusions conducted for the Category 1 DUs (DU 4-1 and DU 5-1). The Data Gaps Report for the RIDEM regulated DUs is presented under a separate cover.

1.3 SITE BACKGROUND INFORMATION

This section presents background information including site location, site description, and site history for both Tank Farm 4 and Tank Farm 5. A brief summary of the environmental investigations and removal actions conducted at each site is also presented.

1.3.1 Site Location and Description

NAVSTA Newport is located in the Towns of Newport, Middletown, and Portsmouth, Rhode Island, approximately 25 miles southeast of Providence. Tank Farms 4 and 5 are situated in Portsmouth and Middletown, Rhode Island, respectively (Figure 1-1). The Tank Farm sites are located approximately 500 to 1,000 feet east of Narragansett Bay.

1.3.2 Tank Farm 4 Decision Unit 4-1

Tank Farm 4 occupies approximately 90 acres; and contains 12 former USTs, which have been cleaned and demolished in place. These USTs each had a capacity of up to 2.5 million gallons and were used to store No. 6 fuel oil. Several tanks were also used to store No. 2 heating oil for several years. Support structures that were also present on Tank Farm 4 include two former oil-water separators (Ruin 1 and Ruin 2), which were previously present on the southern portion of the site. Ruin 1 had originally been constructed and used as a burning pit for the disposal of the tank bottom sludge. During later operations, Ruin 1 was used to collect oil sludge from the USTs via bottom sediment and water (BSW) piping. Ruin 2 was constructed and used as an oil-water separator and accepted groundwater from the ring drain system around one of the USTs (Tank 41) which required a separate fluid relief system.

Figure 1-2 presents a map of Tank Farm 4 that shows all tanks and DUs located at Tank Farm 4. Decision Unit 4-1 is located on the southwestern border of Tank Farm 4, and is comprised of the following: Ruin 1 (former oil water separator (OWS) and burn chamber), Ruin 1 discharge pipes, Ruin 2 (former OWS and pipe), and Ruin 2 discharge area. DU 4-1 contained no tanks, but much of the contamination from previous activities (previous burn pit, OWS and discharge piping) was removed using TPH as an indicator of contamination. Confirmation sampling conducted after this removal action was not deemed adequate by EPA to ensure that no residual risks were present, as described later in this section.

1.3.3 Tank Farm 5 Decision Unit 5-1

Tank Farm 5 occupies approximately 85 acres and contains 11 former 2.5 million gallon-capacity USTs, which were originally used to store heavy fuel oil. Two USTs (53 and 56) were later used to store waste oil. The USTs have been cleaned and demolished in place. Tank Farm 5 has also been used for the temporary storage of soil and construction materials for several years. The soil that is/was temporarily stored at Tank Farm 5 was done so under a soil management plan, and was staged in areas not located near the Category 1 DU.

Figure 1-3 presents a map of Tank Farm 5 and identifies the DUs. DU 5-1 is located in the northwestern corner of the Tank Farm 5 site. DU 5-1 includes a former OWS area, and associated discharge pipe and discharge area. Similar to the events at Tank Farm 4, the OWS was originally constructed to be a burning chamber where tank bottom sludges were burned. Later, it was converted to an oil-water separator, fed by the BSW piping through a gravity drain system. Historically contamination from previous activities (the burn pit / oil water separator structure and soil and sediment affected by waste discharged via piping) was excavated as described later in this section. TPH was primarily used to guide the excavation. Confirmation sampling was not deemed adequate by EPA to ensure that no residual risks were present. Because only limited samples are available that are suitable for risk assessment purposes, the data gaps investigation was designed and implemented for this area.

1.4 SUMMARY OF THE HISTORICAL ENVIRONMENTAL WORK CONDUCTED

The following sections summarize the environmental activities conducted to date at the Tank Farms 4 and 5 Category 1 sites that are regulated by CERCLA.

The suspected activities that prompted CERCLA investigations at Tank Farms 4 and 5, and subsequent inclusion of the sites in the IR program were the suspected disposal and burning of the tank bottom sludge on the ground surface. The investigations and other activities summarized below were directed to find these disposal areas.

1.4.1 Tank Farm 4, 1986 and 1992

Confirmation Study, 1986 (Loureiro 1986) – Follow-up to the Initial Assessment Study (IEE, 1984). Six soil samples were collected from Tank Farm 4 and composited for one analysis: results showed lead concentrations up to 3.25 milligrams per kilogram (mg/kg), and TPH reported as oil and grease at 216 mg/kg. Groundwater taken from two wells at some distance west of the tanks showed “no overall

groundwater degradation". One sample of sediment downgradient of one of the oil water separators (later defined as Ruin 2) was found to contain 478 mg/kg TPH.

Remedial Investigation Report (RI) 1992 (TRC 1992) – As part of the RI forty-six soil samples, eight groundwater samples, limited surface water and sediment samples, and soil gas samples were collected across the site. TRC reported that "significant" levels of contamination were not identified at Tank Farm 4. However, additional studies were recommended by TRC to further define the extent of total petroleum hydrocarbons in surface soils, and to determine the significance of elevated metals concentrations in the soil and groundwater (TRC, 1992).

1.4.2 Tank Farm 5, 1992

Remedial Investigation (RI) Report (1992) – A total of 32 soil samples were collected across the Tank Farm 5 site. Eight of those samples were analyzed for a full analytical suite. The RI included installation of six groundwater wells, five of which were screened in shallow bedrock. Five surface water and five sediment samples were collected and submitted for TPH analysis only. Sediment concentrations ranged from 13 to 220 mg/kg. Surface soils at Tank 50 and adjacent to the oil water separator were found to contain TPH at a maximum concentration of 60,000 mg/kg. Groundwater from one well near Tank 53 was found to contain volatile organic compounds (VOCs) (1,2-dicholoroethene detected at 630 µg/l), as well as free petroleum product. Investigative efforts were subsequently focused on this area. Apart from the Tank 53 area, significant levels of contamination were not found at the site. Disposal of tank bottom sludge onto the ground surface was not confirmed.

1.4.3 Investigation of Sludge Disposal Pits and Review Areas, 2004-2006

Between 2004 and 2006, Tetra Tech EC (TtEC) conducted a series of investigations and removal actions at Tank Farms 4 and 5 to address numerous areas, including USTs (to further investigate the possible presence of sludge disposal pits), process piping and pipe chambers and "review areas". "Review areas" were other areas identified by the RIDEM and included the investigation, evaluation and demolition of oil water separators identified as Ruin 1 and Ruin 2 at Tank Farm 4, and the Former Oil Water Separator at Tank Farm 5. Additionally, discharge piping from the oil water separators and Ruins were investigated and remediated, and the majority of the impacted soil and sediment is believed to have been excavated; however, the extent of contamination was not determined when the excavation ended. Finally, the investigation activities addressed BSW piping, the storage sheds, transformers and electrical buildings, and other areas of interest identified by the RIDEM. The Navy investigated these areas and conducted soil removal actions as needed to assure rapid reduction of contamination present. The remediation goals for this work were set at the RIDEM Residential DEC for TPH (in the UST areas) and TPH, SVOCs

and VOCs (in the process piping and “review areas”). Not all soil above the remediation goals for this work was removed. However, as indicated by a comparison between the exploratory analytical data and the post-excavation (confirmatory) analytical data, the rapid reduction of contamination was achieved.

One area that was of particular concern to the regulatory agencies was the discharge outfall area of Ruin 1 at Tank Farm 4. During the investigation of this area one soil sample was collected at the outfall location of the “straight line discharge pipe”, and submitted for laboratory analysis of TPH. The result was 33,600 ppm; this prompted additional sampling in the area. Exploratory sampling in this area indicated that “contamination in this wetland area were heterogeneous, in that patches of highly contaminated surface soils were surrounded by surface soils with lower concentrations of contaminants or contaminants which met criteria.” Based on the results of the exploratory sampling, an excavation boundary was estimated.

The delineation and excavation of soil was guided by a combination of visual and olfactory evidence, field analysis of TPH (Petroflag®), and laboratory analysis of TPH. The Final Closeout Report indicated that much of the removal area was fill. It also stated that in the southern half of the excavated area was a lens of visually contaminated soils that ranged in thickness from less than one inch to more than one foot. This lens appears to be the driving force behind the excavation in 2005. Further investigation to the south of this area conducted with a Geoprobe and hand shovel failed to identify this lens of visual contamination. There is no indication in the Final Closeout Report as to which samples (if any) were collected from this lens.

The excavation of affected soil from this area was terminated prior to achieving the concurrence from the regulatory agencies that the excavation had addressed all the impacted soil. Stoppage occurred for various reasons including: analytical results suggested that the greatest mass of contamination was successfully removed, excavation was proceeding based on field observations and analysis that resulted in excavation of a larger than anticipated area, concern that excavating such a large wetland area could impact the functionality of the wetland, and because of a lack of funds. In total, 2,293 tons of excavated soil was removed from an area of approximately 13,700 square feet to a maximum depth of 3 feet. Considering all of the factors at the time, including that the risk from the release had not been evaluated and funding issues, the Navy suspended excavation in order to re-evaluate the approach and determine the best way to address potential risk to human health and the environment from the remaining impacted soil and sediment.

The findings, including all the confirmatory sampling results, were documented in a closeout report (TtEC 2007). This information was also summarized in the Technical Memorandum for Data Summary and Plan for Risk Assessment, Tank Farms 4 and 5 (Tetra Tech, 2008), and was the basis for the data gaps

assessment work (described herein). A data usability review of data collected during the excavation is presented in Section 1.4.4 below.

Since CERCLA requires risk-based decisions be made, the data gaps assessment was designed to determine the risk (if any) from the remaining soil in the Tank Farm 4 Ruin 1 outfall area as well as other areas of Tank Farms 4 and 5.

1.4.4 Data Usability Review

Data that was collected during these previous investigations and removal actions was not used during this Data Gaps Assessment for determining the nature and extent of contamination, determining risk to human health, or for determining risk to the environment. Groundwater, surface water, and sediment data were determined to be too old to be reflective of current conditions. Soil data was screened using three steps: first, the Technical Memorandum (Tetra Tech, 2008) excluded all samples that were "not usable for risk assessment" based on data quality, analytes or representativeness of the current conditions (some samples were of soils excavated); second, during the development of this Data Gaps Investigation Report all samples that fell outside the physical boundaries of the two DUs (4-1 and 5-1) were excluded; lastly, the remaining samples were considered, and all were found to be unusable because no associated sample depth could be identified.

Soil samples that were previously collected and were not excluded until the third step described above, were analyzed for all or a combination of the following: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, poly-chlorinated biphenyls (PCBs), dioxins, total petroleum hydrocarbons (TPH) and metals. A summary of results for parameters that were detected in these soil samples is provided in Appendix A-1 for informational purposes. Overall, the data collected in 2010 was done so for the purposes of the risk assessment described in this report, and this data should take precedence over previously collected data. A detailed comparison of data previously collected (during the 2005/2006 excavation) to data collected for this Data Gaps Assessment is provided in Appendix A-2.

1.4.5 Summary of Areas of Concern (AOCs)

A summary of AOCs at Tank Farm 4 and 5 is included in Appendix A-1. Some of these AOCs have undergone removal actions as described above, and others have been sampled and found to have no contaminants present. However, confirmation sampling described in the closeout report (TtEC 2007) was not deemed adequate by EPA to ensure that no risks were present. Because evidence shows that sludge disposal / burning was actually localized to central burn chamber/oil-water separators at each of

the tank farms, it was determined that future CERCLA-based work should be constrained to the former burn chamber areas and associated downgradient discharge areas (Category 1 Decision Units).

1.5 REPORT ORGANIZATION

This report has been divided into the following eight sections:

- Section 1.0. Introduction provides background information including the location, description, and a summary of previous investigations conducted at the Site.

- Section 2.0. Study Area Investigations, provides an overview of the field investigations that were conducted to assess the contamination and physical conditions at the Site.

- Section 3.0. Physical Characteristics, provides a description of the Site physical characteristics including regional physiography, regional and site-specific geology, and regional and site-specific hydrology and hydrogeology.

- Section 4.0. Nature and Extent of Contamination, describes contaminant concentration levels and the horizontal and vertical extent of contamination in environmental media of concern at the Site, based on the results of the Data Gaps Investigation and previous investigations.

- Section 5.0. Contaminant Fate and Transport, presents an analysis of contaminant migration based on the source characteristics, extent of contamination, and Site physical characteristics.

- Section 6.0. Human Health and Ecological Risk Assessment, presents an analysis of risk to humans from exposure to environmental contaminants based on samples collected as a part of this Data Gaps Investigation.

- Section 7.0. Ecological Risk Assessment presents the analysis of risk to ecological receptors from exposure to environmental contaminants based on samples collected as a part of this Data Gaps Investigation.

- Section 8.0. Summary and Conclusions, presents the findings of this Data Gaps Investigation presented in the format of a conceptual site model (CSM).

2.0 FIELD INVESTIGATION ACTIVITIES

From March through June 2010, Tetra Tech conducted field activities in support of the Data Gap Investigation at Tank Farm 4, DU 4-1 and Tank Farm 5, DU 5-1. This field investigation was conducted to further evaluate the presence of chemical contamination in groundwater, soil, surface water, and sediment. The activities that were implemented during this investigation included:

- drilling and soil sample collection,
- monitoring well installation and development,
- collection of synoptic water level measurements,
- groundwater sampling,
- surface water and sediment sampling and
- land surveying.

All activities were conducted in accordance with the site specific SAP (Tetra Tech, 2010). Field documentation forms are presented in Appendix B and boring and monitoring well construction logs are presented in Appendix C. The field tasks associated with this monitoring program are described in the sections below.

2.1 SOIL BORING INVESTIGATION

This section and the subsections that follow discuss the geological investigation activities that were conducted as part of the Data Gaps Investigation field sampling program for Tank Farm 4, DU 4-1, and Tank Farm 5, DU 5-1. The subsurface exploration program was designed to collect samples to address the data gaps identified in the Technical Memorandum for Data Summary and Plan for Risk Assessment (Tetra Tech, 2008). Soil borings were advanced at the Site to identify any residual contaminants present after removal actions have been conducted, identify areas of potential contamination to soil and groundwater, to further characterize subsurface stratigraphy, and to install groundwater monitoring wells. Analytical data for surface and subsurface soil samples collected as part of this effort are discussed in Section 4.0.

Within DUs 4-1 and 5-1, two types of soil borings were advanced. Soil borings were advanced for the purpose of collecting soil samples for laboratory analysis, and soil borings were also advanced to install groundwater monitoring wells in order to collect groundwater samples. Borings that were advanced for the purpose of characterizing soils were laid out in a grid pattern to provide representative coverage for each of the decision units, with additional borings placed in areas of potential worst-case scenario locations (former release areas). Soil borings that were advanced for the purpose of installing

groundwater monitoring wells were located in areas of concern including the locations of former oil water separators, and former discharge areas.

A total of 24 soil borings in DU 4-1, and 11 soil borings in DU 5-1, were advanced for the purpose of characterizing the soils. A total of seven soil borings in DU 4-1, and five borings in DU 5-1 were advanced for the purpose of constructing groundwater monitoring wells. Figures 2-1 and 2-2 present locations of soil borings and monitoring wells within DUs 4-1 and 5-1.

Soil borings were advanced using four techniques; soil borings that were advanced for the purposes of soil sampling and analysis (soil characterization) were advanced using a combination of Direct Push Technologies (DPT), hand tools, and hollow stem auger (HSA) drilling techniques. Borings that were advanced for the construction of groundwater monitoring wells were advanced using drive and wash drilling techniques.

The soil boring investigation was performed in accordance with the procedures specified in the approved SAP, except for the following field modifications:

- The locations of soil borings SB-922, SB-923, SB-926, SB-927, SB-931, SB-937, SB-942 and SB-967, were inaccessible via DPT, or HSA drilling equipment. As a result these borings were advanced with hand tools.

- At regulator request, following a site walk on March 4, 2010, and a telephone conversation on April 13, 2010, soil borings SB-920, SB-921, SB-924, SB-925, SB-929, SB-930, SB-966, SB-967, SB-969 and SB-973 were relocated from upgradient (non-impacted areas) to target worst-case scenario locations. These modifications were documented in field modification records (Appendix C).

2.1.1 Overview of Soil Borings for Soil Classification and Laboratory Analysis

Between April 12 and April 23, 2010, Crawford Drilling Services, Inc. of Westminster, Massachusetts (Crawford) advanced soil borings at DU 4-1 and 5-1 for the purposes of soil sampling for laboratory analysis and soil classification. Twenty two soil borings were advanced using DPT techniques, 12 at DU 4-1 and 10 at DU 5-1.Eight borings were advanced using hand tools, seven at DU 4-1 and one at DU 5-1. Five borings were advanced using HSA drilling techniques, all within DU 4-1.

DPT drilling was conducted with a hydraulically-powered direct-push GeoProbe™ drilling rig. Surface and subsurface soil samples were collected using 2-inch diameter Macrocore® samplers with acetate liners. Soil borings that were advanced using DPT were advanced in five foot intervals to a depth of 10 feet

below ground surface (bgs) or refusal. The acetate liner and sleeve were equipped with a catch basket to ensure that material was not lost during recovery. Acetate liners were cut open using a utility knife upon delivery to the field geologist, soil was then classified and sampling was started as described below.

In several areas, the DPT drilling equipment could not access the sampling locations and borings were advanced manually (locations are listed above in Section 2.1). At these locations, 2-foot long Macrocore samplers, equipped with an acetate liner and catch basket, were driven using a sledge hammer. The sampler was advanced in 2-foot intervals until refusal. One location, SB-937, had to be advanced and sampled using a hand auger because the sampler yielded no recovery after multiple attempts.

Due to shallow refusal with the hand tools and inaccessibility with the DPT drill rig, five soil borings within DU 4-1 (SB-925, SB-929, SB-930, SB-932, and SB-933) were completed using HSA drilling techniques, Soil borings were advanced through overburden using a 4.25-inch insider diameter (ID) HSA, and a 2-foot long, 2-inch outside diameter (OD) split-barrel sampler. The split barrel sampler was advanced in 2-foot intervals. A basket was installed in each split-barrel sampler to minimize loss of sample during advancement. The resistance to penetration was obtained using the standard penetration test.

Borings were advanced through shallow and deep overburden. During boring advancement, continuous soil samples were collected. The samples that were collected from the 0-1 foot, 2-4 foot, and 8-10 foot depths were generally selected for laboratory analysis. If refusal was encountered prior to reaching the 8-10 foot depth, the soil sample from just above the point of refusal was selected for laboratory analysis. When headspace screening indicated VOC concentrations were higher at a middle interval other than 2-4 foot, the interval with the higher total VOC concentration was selected for analysis.

The physical characteristics of each soil sample were described using the Unified Soil Classification System (USCS) and recorded on boring logs (Appendix C). Other pertinent observations such as water levels, sample moisture, depth changes in lithology, fill material, staining, and visual contaminants or odors were recorded on the boring logs. General observations such as sample type and number, sample time, depth, interval and recovery, and drilling and sampling equipment and methods used were also recorded. Soil headspace samples were collected as each sampler was opened and soils were also monitored for organic vapors using a photo ionization detector (PID) and recorded on the boring logs.

Once the soil boring was retrieved from the ground and was delivered to the field geologist, either the acetate liner was cut open using a utility knife or the split barrel sampler was opened. The field geologist would then screen the soil for total VOCs using a PID. The headspace soil aliquot was collected and the soil description and other observations were recorded on the boring log. Samples were collected for laboratory analysis from the 0-1 foot and 8-10 foot (or above refusal) intervals, as well as a middle interval

determined by headspace screening. Once headspace total VOC concentrations were collected and all sample intervals were determined, a second boring was advanced at each location, adjacent to the original boring. The soil collected from this boring was used to collect the VOC sample aliquot for each depth interval selected for laboratory analysis. Additional soil for other analyses was collected, as needed, to supplement the sample volume. The VOC sample was collected as a grab sample from the most heavily contaminated portion of the 2-foot interval, based on the headspace organic vapor screening results and/or visual observations. The samples for the remaining laboratory analyses were collected as a homogenized sample of the target depth interval (intervals were uniformly mixed before the remaining samples were collected). Residual soils from each boring were contained on site in lined, covered soil containers until they could be properly disposed of off-site.

The soil samples that were collected for laboratory analysis were analyzed for all, or a subset of the following: target compound List (TCL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), target analyte list (TAL) metals, dioxins, pH, total organic carbon (TOC), and extractable total petroleum hydrocarbons (ExTPH). The analytical scheme used was consistent with that described in the SAP. A summary of soil samples collected and selected for laboratory analysis is presented in Table 2-1 along with analysis performed on each sample.

Analytical results for soil samples were validated using an EPA-equivalent Tier II protocol, with the exception of pH and TOC which were validated using EPA equivalent Tier I protocol (U.S. EPA, 1989, 2004). The results of these analyses are presented in Section 4.0 of this report.

2.1.2 Overview of Soil Borings for Groundwater Monitoring Well Construction

From April 2, 2010 through April 20, 2010, 12 soil borings were advanced at DU 4-1 and DU 5-1 for the purposes of installing groundwater monitoring wells. Monitoring well locations are shown on Figures 2-1 and 2-2. Monitoring wells were advanced using drive and wash drilling techniques, and roller-bit drilling in the bedrock. Table 2-2 presents the rationale for the selection of locations for groundwater monitoring wells at DU 4-1 and DU 5-1, as described in the SAP. Several modifications from the SAP were made in the field, based upon subsurface conditions encountered:

- Shallow bedrock (between 2 and 18 feet bgs) was encountered at all locations and often the water table was in the bedrock, therefore wells which were anticipated to be overburden wells in the SAP were installed as shallow bedrock wells or overburden/ bedrock interface wells.

- Due to high water table, and artesian conditions, in some locations wells could not be screened to intersect the water table.

During the advancement of soil borings, soil samples were collected continuously using a 2-inch diameter split-barrel sampler. The split-barrel sampler was advanced ahead of the standard drill casing and drill equipment used during drive and wash drilling. The split barrel sampler was opened and inspected by the field geologist, soil descriptions, and any field observations were recorded on boring logs. A sample aliquot was collected for headspace screening. No samples were collected for laboratory analysis.

Drilling fluids used during the advancement of borings consisted of potable water. The driller's water source was obtained from a sink located in the fire house garage and was sampled (after allowing the tap water to run for 5 minutes) as a source blank.

2.1.2.1 Groundwater Monitoring Well Construction

At DU 4-1, 7 groundwater monitoring wells (5 bedrock and 2 deep overburden/shallow bedrock) were installed. At DU 5-1, a total of 5 groundwater monitoring wells (4 bedrock and 1 shallow overburden) were installed.

Each well was constructed using 2-inch diameter, schedule 40 poly vinyl chloride (PVC) well screen flush threaded to solid riser pipe. Well screens depths and lengths were selected based on attempts to intersect the water table (where possible) or to install a deeper groundwater monitoring location, as specified in the SAP. Well screens at DU 4-1 ranged in length from 3-feet (TF4-MW-912) to 15-feet (TF4-MW-921 and TF4-MW-922). Well screens at DU 5-1 ranged from 5 feet (TF5-MW-915, TF5-MW-917, and TF5-MW-924) to 10 feet (TF5-MW-916 and TF5-MW-923).

Silica sand was placed in the annular space around the well screen to a minimum of 2 feet above the top of the well screen, followed by 2 feet of bentonite rock chips hydrated in place. Bentonite grout was used to fill the remainder of the annular space to approximately 3.5 feet below ground surface (bgs). A 6-inch sand drainage layer was placed on top of the bentonite. A (4-inch diameter by 5-ft long) protective casing was centered on the well. Concrete was used to fill the annular space above the sand drainage layer and to form a pad around the well to a radius of 1 foot. The top of the well pad was flush with ground surface.

Details pertaining to well construction for each monitoring well are documented on the monitoring well construction log sheets provided in Appendix C.

2.2 GROUNDWATER MONITORING

The Data Gap Investigation groundwater monitoring program included monitoring well development, water level measurements, and groundwater sampling. The associated field forms are presented in Appendix B.

2.2.1 Monitoring Well Development

All newly installed monitoring wells were developed no sooner than 48 hours after well construction. All existing wells that were scheduled to be sampled and had not been developed within the last three years, were also redeveloped before sampling. Monitoring wells were developed using a pump and surge method with a Waterra pump and foot valve, until the turbidity level reached 10 NTUs or 4 hours of well development had elapsed (whichever occurred first). Monitoring well installation forms are presented in Appendix C.

Well development was performed in accordance with the procedures described in the SAP (Tetra Tech, 2010). During well development, conductivity, pH, and temperature were periodically measured using a YSI multi-parameter meter, and turbidity was measured using a LaMotte turbidity meter. All water quality measurements were recorded on field log sheets. Table 2-3 presents the well development stabilization parameters.

Due to significant drawdown, two DU 5-1 monitoring wells (TF5-MW-916 and TF5-MW-923) were unable to be developed using the pump and surge technique described above. Therefore, groundwater from these wells was evacuated a minimum of three times to complete development.

2.2.2 Synoptic Water Level Measurements

As part of the 2010 Data Gaps Investigation, a comprehensive synoptic water level measurement round was conducted across all the DUs to provide data for an evaluation of overburden and bedrock groundwater flow direction and hydraulic gradients. On May 3, 2010, 15 newly installed monitoring wells and 12 existing monitoring wells were gauged prior to groundwater sample collection at Tank Farm 4, this set of 27 monitoring wells includes the 7 newly installed DU 4-1 monitoring wells. On May 12, 2010, 10 newly installed monitoring wells and three existing monitoring wells were gauged prior to groundwater sample collection at Tank Farm 5, this set of 13 wells includes the five newly installed DU 5-1 wells.

Groundwater measurements were obtained using an electronic oil-water interface probe with a weighted cord that is accurate to 0.01 feet. Water level measurements in monitoring wells were recorded from the

highest point of the top of the PVC riser. In addition, the electronic oil/water interface probe was used to identify the potential presence of light non-aqueous phase liquid (LNAPL) in each well. No LNAPL was observed in any of the Tank Farm 4 DU 4-1 or Tank Farm 5 DU 5-1 monitoring wells. Results of the groundwater flow analysis are presented in Section 3.

2.2.3 Groundwater Sampling

Between May 10 and 12, 2010, seven groundwater samples were collected from the seven Tank Farm 4 DU 4-1 monitoring wells. Between May 13 and 14, 2010 4 groundwater samples were collected from the five DU 5-1 monitoring wells (monitoring well TF4-MW-917 was not sampled due to insufficient water volume). Monitoring well locations are shown in Figure 2-1 and 2-2. Groundwater sampling was performed following the Tetra Tech SAP and EPA's guidance "Low-Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells" (U.S. EPA, 2010).

Submersible bladder pumps with dedicated Teflon bladders were used for groundwater sampling. Dedicated tubing was used for each monitoring well.

During well purging, water level drawdown, flow rates, and water quality field measurements were recorded on groundwater collection forms. A drawdown of no more than 0.3 feet was targeted during purging. Groundwater was pumped through a flow-through cell and the pH, conductivity, temperature, dissolved oxygen (DO), and oxygen-reduction potential (ORP) were measured with a multi-parameter meter. Turbidity was measured separately with a LaMotte turbidity meter. Stabilization was considered to be achieved (and sample collection initiated) when three consecutive readings, taken at 3- to 5-minute intervals, were within the following limits:

- Turbidity (± 10% if > 5 NTU);
- Dissolved oxygen (± 10% for values > 2 mg/L;
- Specific conductance (3%);
- Temperature (± 3%);
- pH (± 0.5 units);
- ORP (± 10 mill volts); and
- Drawdown (no more than 0.3 feet).

If turbidity values below 5 NTU could not be achieved, and all other parameters were stable, samples were still collected and an additional filtered metals sample was added to the analytical suite. In order to collect the filtered metals sample an inline 0.45 micron disposable filter was placed at the end of the

groundwater sample collection tubing. Groundwater was then allowed to flow through the in-line filter before being collected in the pre-preserved metals sample container.

Groundwater samples were analyzed for TAL VOCs, SVOCs, polycyclic aromatic hydrocarbons (PAHs), ExTPH, pesticides, PCBs, and metals. Table 2-4 presents a summary of the analysis conducted for each sample. Analytical results for groundwater samples were validated using an EPA-equivalent Tier II protocol (U.S. EPA, 1989, 2004).

For each monitoring well sampled, field measurements and other sample collection details were documented on the groundwater purge data sheets. These forms are included in Appendix B. Table 2-6 includes final measurements of low-flow indicator parameters for each well just prior to sample collection. Analytical results are discussed in Section 4.0.

2.3 SURFACE WATER SAMPLING

Between March 16 and March 18, 2010, 21 surface water samples were collected from wetland areas located within DU 4-1 and DU 5-1. A total of ten surface water samples (TF4-SW-901 through TF4-SW-908, TF4-SW-911, and TF4-SW-912) were collected from within DU 4-1 at Tank Farm 4; and 11 surface water samples (TF5-SW-914 through TF5-SW-924) were collected within DU 5-1 at Tank Farm 5. Surface water and sediment sample stations were adjusted during a field walk on March 4, 2010 to better represent potential contaminants originating at the oil water separator discharge points, and in accordance with regulatory requests made during that walk. Table 2-5 presents rationale for the selection of the adjusted surface water and sediment locations.

Surface water samples were collected using a standard direct dip sampling method. All unpreserved sample bottles were immersed in the water upside down as to not allow any water into the jar. Once the jar reached a depth of 60% of the total depth the jar was tipped on its side, opening facing downstream, in order to allow water to fill the jar. Any preserved sample bottles that required filling for the sample aliquot were then filled by transferring surface water from an unpreserved sample bottle into the preserved sample bottle. Samples were collected in a downstream to upstream order.

Surface water samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and total metals. Analytical results were validated following EPA Region I Tier II guidelines. Analytical results are discussed in Section 4.0.

After sampling, field parameters (temperature, specific conductivity, DO, pH) were measured by submerging the multi-meter probe in the surface water and recording the stabilized readings. Turbidity

was measured using a LaMotte turbidity meter. Table 2-7 presents the water chemistry readings for each surface water sample location. Sample log sheets are presented in Appendix B.

Surface water and sediment sample locations were surveyed using a GPS (Trimble Pro-XRS).

Surface Water Sampling Notes:

- Due to the lack of flowing water, no surface water samples were collected from locations TF4-SW-909, TF4-SW-910, and TF5-SW-913.

- Due to the limited amount of surface water available at TF5-SW-915 and TF5-SW-918, a modified sample collection approach was adopted. In order to collect a relatively undisturbed surface water sample, a shallow sided pre-cleaned amber glass jar was dipped into the surface water by hand and used to transfer water to the appropriate containers.

2.4 SEDIMENT SAMPLING

From March 16, 2010 to March 18, 2010, 24 sediment samples (and 21 co-located surface water samples) were collected from DUs 4-1 and 5-1. Twelve sediment samples (TF4-SD-901 through TF4-SD-912) were collected from the DU 4-1 and 12 sediment samples (TF5-SD-913 through TF5-SD-924) were collected from DU 5-1. Table 2-5 presents the rationale for selection of sediment and surface water sample locations in DU 4-1 and DU 5-1. Figure 2-1 presents the locations of surface water and sediment sample locations within DU 4-1. Figure 2-2 presents the locations of surface water and sediment locations within DU 5-1.

Sediment samples were collected following the collection of the co-located surface water sample (if a surface water sample was collected). Sediment samples were collected from a depth of approximately zero to 6 inches below the sediment surface, using a stainless steel auger. The aliquot for VOC and percent solids analysis was collected directly from the auger. The VOC aliquots were collected with a disposable plunger and transferred directly into the sample container. The percent solids aliquots were collected with a disposable trowel and transferred directly into the sample container. The remaining aliquots (SVOCs, pesticides, PCBs, metals, dioxins, pH, and TOC) were collected following homogenization and decanting of water, as necessary. Sediment samples were placed in laboratory supplied containers, and then shipped to the laboratories under proper chain of custody procedures.

Upon sample collection, Tetra Tech documented the physical description of the sediment sample and its location relative to other site features.

Sediment and Surface Water Sample Location Modifications

- During a site walk on March 4 2010, EPA requested that seven surface water/ sediment sample locations (SW-901, SW-902, SW-903, SW-904 and SW-906 from DU 4-1; and SW-916 and SW-918 from DU 5-1) be relocated. These locations were moved to better target areas of potential contamination. SW-901 was relocated to a depositional area about 80 feet upstream of SW-907. SW- 902 was relocated to a depositional area in the stream about 70 feet downstream of SW-907. SW-903 was relocated to the outlet stream of the 2004 excavation area. SW-904 was relocated to a depositional area about 60 feet downstream of SW-905 behind a small island. SW-906 was relocated approximately 15 feet upstream of SW-905 at what is believed to be a discharge pipe from Ruin 2. SW-916 was relocated upstream just beyond the west side of the culvert that runs beneath the access road leading to Green Lane at DU 5-1. SW-918 was relocated 20-40 feet east, next to a rusted piece of a 55 gallon drum. These final locations are presented in Table 2-5.

2.5 SITE SURVEY

On May 21, 2010 Louis Federici & Associates of Providence Rhode Island performed a location survey of site features (including 28 monitoring wells) at Tank Farm 4, and 22 site features (including 14 monitoring wells) at Tank Farm 5. The elevations of the top of PVC riser were surveyed and results are presented on Table 3-3. Groundwater elevations from the monitoring wells are used to evaluate the groundwater flow direction in the bedrock and overburden aquifers. In May 2010, the elevation of the water table in DU 4-1 bedrock wells varied from 9.93 feet (TF4-MW914) to 27.97 feet (TF4-MW-922), with a gradient of 0.3 feet per foot. The elevation of the water table in DU 5-1 bedrock monitoring wells ranged from 10.49 feet (TF5-MW-915) to 44.74 feet (TF5-50-MW-918) with an average gradient of 0.07 feet per foot. There was one DU 5-1 shallow overburden monitoring well, with a groundwater elevation of 34.43 feet (TF5-MW-917). Groundwater flow appeared to follow a west-southwest direction toward Narragansett Bay.

2.6 INVESTIGATION-DERIVED WASTE MANAGEMENT

Investigation-derived waste (IDW) from Tank Farm 4 consisted of both liquid and solid waste streams. Liquid IDW associated with monitoring well development and sampling (i.e., spent calibration solutions, decontamination fluids, and purge water) were temporarily stored in a 5,000 gallon frac tank on the Tank Farm 4 site. Solid IDW, consisting of soil cuttings, was temporarily stored in a 25 yard – capacity lined and covered steel container located on the Tank Farm 4 site. IDW from Tank Farm 5 also consisted of both liquid and solid waste streams. Liquid IDW associated with monitoring well development and sampling was temporarily stored in a 2,500 gallon frac tank on the Tank Farm 5 site. In addition to the 2,500 gallon frac tank, one 55-gallon drum, containing approximately 25 gallons of “oily water” taken from

monitoring well TF5-50-MW-106, was stored adjacent to the 2,500 gallon frac tank. Solid IDW, consisting of soil cuttings, were temporarily stored in a 25 yard container located on the Tank Farm 5 site.

On June 10, 2010 Global Remediation Services collected waste characterization samples from each of the 5 waste containers. Analytical results indicated that each of the five waste streams were non-hazardous. On June 29, 2010, Global Remediation Services, a licensed waste transporter, transported the liquid waste off site for disposal at a regulated facility. On July 21, 2010, Global Remediation Services transported the solid waste streams off site for disposal under the NAVSTA waste generator authority.

3.0 SITE CONDITIONS

This section presents a description of the physical conditions at Tank Farms 4 and 5, and of DU 4-1 and 5-1. The discussions presented in this section are supported by field documentation including boring logs, groundwater measurement data sheets and other field forms provided in Appendices B, C, D and E of this report.

3.1 BASIC SITE CONDITIONS

Naval Station Newport is located in the city of Newport, and Towns of Middletown and Portsmouth, Rhode Island. Tank Farms 4 and 5 are accessed from Defense Highway (Burma Road), which runs between Narragansett Bay and the western border of the naval complex (Figure 1-1).

3.1.1 Tank Farm 4

Tank Farm 4 topography slopes generally to the west towards Narragansett Bay, which is located approximately 1,000 feet downgradient of Tank Farm 4. The tank farm is bordered by undeveloped woodlands to the north/northeast; residential property to the south/southeast and Defense Highway to the west. The property is currently fenced on the east, south and north sides, and accessed off Defense Highway at a locked gate. Signs warning of hazards present are posted on the access gate. The tanks were located on the eastern, upland half of the property. The western, lowland half is transected by Norman's Brook and has wetlands surrounding the brook. The tank farm is heavily vegetated, except for paved access roads (Figure 1-2).

DU 4-1 comprises about 14 acres on the southwestern border of Tank Farm 4 and is comprised of Ruin 1 and Ruin 2 and the associated discharge pipes and discharge areas. Norman's Brook flows in a northwesterly direction across DU 4-1. Topography at DU 4-1 slopes down to Norman's Brook (and surrounding wetlands) from the southwest and the northeast (Figure 2-1).

3.1.2 Tank Farm 5

Tank Farm 5 topography generally slopes to the north and west towards Narragansett Bay. Tank Farm 5 is bordered by the Defense Highway to the west; a cemetery to the south; woodlands and residential property to the east; and Greene's Lane to the north. Access to Tank Farm 5 is partially restricted by fencing and signage, and is gained via Defense Highway. Fencing is present on the east, north and south portions of the site. A partial fence is present on the west side of the site, but access to the fire training area also allows access through the west boundary of the site. The area around Tank 53 has a

secured perimeter fence. The tanks were located on the southern and eastern (upland) portion of the property. Gome's Brook, and associated wetlands, transects the northern portion of Tank Farm 5 site. The tank farm is densely vegetated, except for paved access roads (Figure 1-3).

DU 5-1 occupies about 6-acres on the northwestern corner of Tank Farm 5 and is comprised of the former OWS area and associated discharge pipe and discharge area. Topography at DU 5-1 slopes in a northwesterly direction from the former OWS towards Gomes Brook. Topography also slopes to Gomes Brook from the east northeastern portion of DU 5-1. There is a north-south trending access road from Greene's Lane that was constructed across Gomes Brook and is located along the eastern border of DU 5-1. Gomes Brook is culverted at the eastern boundary of DU 5-1, as it flows under this access road. Topography is very steep on either side of the access road down towards Gomes Brook (Figure 2-2).

3.2 SURFACE HYDROLOGY

The tank farms are located within the Narragansett Bay Drainage Basin which is about 1,850 square miles of land within Massachusetts and Rhode Island. All of the surface water from the drainage basin flows into Narragansett Bay. Discharge from the Narragansett Bay is to the Atlantic Ocean to the south. Both Norman's Brook and Gome's Brook flow in a northwesterly direction, underneath Defense Highway and into Narragansett Bay. The streams on Tank Farms 4 and 5 are perennial, gaining streams, which are fed by both surface runoff and groundwater. Due to seasonal water table fluctuations, the streams and wetlands are sometimes dry. Both wetlands appear to be formed by constraints created by headwalls and culverts under Defense Highway. As a result these wetlands provide a settling basin for silts and organic matter carried to them through the draining of the local watersheds. As such the wetlands may have formed a capture zone for contaminants delivered through overland flow, former discharge piping and any groundwater discharge.

3.3 GEOLOGIC CONDITIONS

The regional and site specific geological conditions are presented in the following subsections.

3.3.1 Regional Geology

The glacial ice of the Pleistocene Epoch, starting about two million years back and extending to only 15,000 years ago shaped the topography of Rhode Island, including the Narragansett Bay area. The Narragansett Bay was an old sedimentary basin that had undergone significant stream erosion when the Wisconsin-age ice glaciers advanced into the area. The glaciers scoured off all but the hardest of the ancient rocks, and picked up sand, gravel, and boulders. As a glacier paused in its retreat, it dropped off

deposits of these materials, creating thick moraines. The area also contains glacial erratics, carried from as far away as Canada. As the glaciers melted northward, rivers deposited sand and gravel to form broad plains and deltas. Massive chunks of ice lingered behind the retreating glacier, melting slowly, and formed some of the freshwater ponds along Rhode Island's southern shores and at inland places near the present Bay.

The Rhode Island shoreline is now undergoing a slow but steady process of erosion under the carving of the ocean storms and is submerging because of the slow rise in the level of the sea relative to the land.
Till is the most extensive of the glacial deposits in Rhode Island. This glacial deposit is unstratified and widely heterogeneous in grain size distribution, typically comprised of fine (clay/silt/sand) and coarse (pebbles/cobbles/boulders) fractions (USDA, 1981). In southern New England, the late Wisconsin surface till is predominant. Published reports indicate that the surface till forms a discontinuous mantle over bedrock uplands and beneath stratified drift deposits. In general, the surface till comprises a loose sandy unit containing boulders and cobbles, and lenses of stratified sediments. However, surface tills vary in composition. The physical characteristics of surface till generally reflect local bedrock and older surficial materials from which the deposit was derived (Tetra Tech, 2001).

Regionally, the Upland till plains, the Narragansett till plains, and the Charlestown and Block Island end moraines are till deposits in Rhode Island. The site is located on the Narragansett till plain. The glacial till deposit may have been derived from a sedimentary and meta-sedimentary rock provenance (USDA 1981).

Stratified drift or outwash, composed of sorted sand, silt, and gravel deposits was laid down by glacial meltwaters as the ice sheet receded. The eroded materials carried by the glacial meltwater were deposited in irregular layers of various thicknesses. Regionally, large deposits of outwash are located in Providence and East Greenwich (USDA, 1981).

Narragansett Basin is an ancient north-south trending structural basin originating near Hanover, Massachusetts. This basin is a complex synclinal mass of Pennsylvanian-aged; non-marine sedimentary rocks, and is the most prominent geologic feature in eastern Rhode Island and adjacent Massachusetts. The basin’s approximate length is 55 miles; its width varies from 15 to 25 miles. The western margin of the basin is in the western portion of Providence, Rhode Island, and the eastern margin extends through Fall River, Massachusetts. Exposures of older rocks on Conanicut Island and in the vicinity of Newport suggest that the southern extent of the basin may be near the mouth of Narragansett Bay. NAVSTA Newport is situated at the southeastern end of the Narragansett Basin.

The Pennsylvanian aged stratified rocks within Narragansett Basin (the Narragansett Bay Group) chiefly consist of conglomerates, sandstones, shale, and anthracite. Total thickness of the strata in the basin has been estimated at 12,000 feet. Many folds and some faults occur throughout the basin, but the character and amount of the folding and faulting was not evaluated as part of this report. Refer to Hermes et al (1994) for a depiction of the faults mapped in the surrounding area.

The bedrock of the Narragansett Bay Group has been divided into six units, which are, in descending stratigraphic order: the Dighton Conglomerate, the Purgatory Conglomerate, the Rhode Island Formation, the Wamsutta Formation, the Sachuest Arkose, and the Pondville Conglomerate. The Rhode Island Formation immediately underlies the Site. Refer to Hermes et al (1994) for a detailed depiction of the bedrock geology of Rhode Island. Bedrock beneath the Site and most of the surrounding areas consists of the Rhode Island Formation.

The Rhode Island Formation is the most extensive and thickest of the Pennsylvanian formations in Rhode Island. The majority of the Narragansett Basin is underlain by this formation. In northern Rhode Island, the Rhode Island Formation is not metamorphosed and primarily consists of gray to black, fine- to coarse-grained quartz arenite, litharenite, shale, and conglomerate. However, in the southern portion of the Basin, such as in the vicinity of NAVSTA Newport, this unit has been metamorphosed. Metasedimentary rocks, including metaconglomerates and metasandstones, as well as schist, carbonaceous schist, phyllite, and graphite are present within the formation (Hermes et al, 1994).

Within the Rhode Island Formation, there are a few areas of thick, mostly very coarse, conglomerates that are often gray to greenish in color. These conglomerates are composed of gravel, cobbles and boulders, interbedded with sandstone and greywacke. The stones within the conglomerates are mostly quartzites that have been elongated due to tectonic forces. The conglomerate layers are topographically higher because they are more resistant to erosion than the surrounding bedrock.

Underlying the Pennsylvanian rocks of the Narragansett Basin are pre-Pennsylvanian igneous and metamorphic rocks such as granite, granite gneiss, porphoritic granite, slate and quartzite. These basement rocks are mostly deeply buried beneath the Pennsylvanian rocks.

3.3.2 Site Geology

During previous subsurface investigations, and during the current data gaps investigation, borings were completed in fill materials, overburden and bedrock. Boring logs from previous investigations are provided in Appendix E and boring logs from the data gaps assessment are provided in Appendix D. Geologic cross-sections were prepared using existing and new field data for DU 4-1 and DU 5-1. Figures

3-1 and 3-2 present the locations of the cross section lines at Tank Farm 4 and 5, respectively. Figures 3-3 and 3-4 present the cross sections for DU 4-1. Figure 3-5 presents the cross section for DU 5-1.

Overburden materials at Tank Farm 4 vary between approximately 1 and 40 feet in thickness. Overburden thickness at Tank Farm 5 ranges from approximately 1 to 40 feet. The thickness of the overburden tends to increase in flat lying areas and becomes thinner on slopes. Areas surrounding the tanks have some of the thickest overburden units, because the bedrock was blasted to make room for the tanks and after the tanks were installed the excavation was filled in. The overburden materials are classified as either glacial till or fill. The overburden is generally a mixture of silt, sand and gravel and also boulders and gravel sized pieces of bedrock. The fill can be hard to distinguish from the native material because fill appears to be overburden materials from another part of the site or from the blasting of the bedrock during tank installation. The blasted bedrock is difficult to distinguish from the weathered bedrock and the weathered bedrock/overburden interface is difficult to determine due to how soft and thoroughly weathered the bedrock material can be. Density of the overburden varies, generally from loose to medium dense, but is not a reliable indicator as to the nature of the overburden materials (native or fill).

The occurrence of geologic materials at Tank Farm 4 in DU 4-1 is depicted on Figure 3-3 (A-A') and Figure 3-4 (B-B'). Transect A-A' trends in the east-west direction across DU 4-1, through Ruin 2 and the wetlands. Transect B-B' trends generally north-south across DU 4-1, through Ruin 1 and the wetlands and across Norman's Brook. The surface materials are dominated by sandy silts and silty sand materials. Smaller pockets of gravelly materials, including sandy silt with gravel, silty sand with gravel and silt with gravel also occur. The gravelly materials are usually present deeper in the subsurface and/or directly above the bedrock surface, while the silts and sands occur more continuously and are more likely to be found at the ground surface.

The occurrence of geologic materials at Tank Farm 5 in DU 5-1 is depicted on Figure 3-5 (A-A'). Transect A-A' trends generally north-south across DU 5-1, through the former OWS and wetlands. The overburden is dominated by sandy silts and silty sand materials. Smaller pockets of gravelly material, including silty sand with gravel and sandy silt with gravel also occur but are generally very limited in their extent at the surface and into the subsurface. Also, a few very small areas of sand occur, but are even more limited in their occurrence.

Bedrock is encountered between approximately 1 and 40 feet below ground surface (bgs) at both Tank Farm 4 and 5 (Tables 3-1). Throughout Tank Farms 4 and 5 the bedrock has been identified as a black/gray shale, slate and/or phyllite, depending on the degree of metamorphism. The bedrock surface is highly weathered in some areas, making it difficult at times to determine at what exact depth the

bedrock/overburden contact is located. Most of the bedrock encountered can be easily broken along planes of bedding and/or foliation and is also highly fractured.

During the data gaps assessment, the bedrock within DU4-1 and DU5-1 was characterized as fine-grained foliated metamorphic rock consisting of shale and phyllite. The bedrock is soft, as evidenced by bedrock boreholes being advanced using roller-bit drilling methods. The upper surface of the bedrock is weathered. The depth to weathered bedrock observed during drilling within DU4-1 varied from 2 to 16 feet (Table 3-2). The depth to weathered bedrock observed during drilling within DU5-1 was between 1 and 9 feet (Table 3-2). In these DU's more competent/ less weathered bedrock was encountered within 1 and 8 feet below the top of weathered bedrock.

3.4 HYDROGEOLOGIC CONDITIONS

The regional and site-specific hydrogeological conditions are presented in the following subsections.

3.4.1 Regional Hydrogeology

A summary of regional groundwater hydrogeology is presented below. Much of the regional information described in the Initial Assessment Study (IAS) report (EEI, 1983) was obtained from the Groundwater Map of the Prudence Island and Newport Quadrangles, Rhode Island (1964). Information from both references was used in the following description of the regional groundwater hydrogeology.

Many areas on Aquidneck Island, on which most of NAVSTA Newport is located, obtain their water supply from wells. Areas relying on groundwater are mostly on the east side of Middletown, but there are wells throughout Aquidneck Island. Most groundwater wells are used for domestic needs, although small industries and businesses use some wells.

Groundwater on Aquidneck Island is obtained from the unconsolidated glacial deposits and from the underlying Pennsylvanian bedrock. The unconsolidated glacial deposits range in thickness from less than 1 foot near rock exposures to about 50 feet at Aquidneck Island. Throughout the area, groundwater depths range from less than one foot to about 30 feet, depending upon the topographic location, time of year, and character of subsurface deposits. The average depth to the groundwater is around 14 feet on Aquidneck Island and moves from areas of high elevations to discharge to Narragansett Bay or the Sakonnet River.

Seasonal groundwater level fluctuations are common in the area. During the early spring the water table rises due to recharge from snowmelt and rainfall. In late spring and summer, the water table usually

declines because rainfall either evaporates or is used by plants before it can reach the water table. During autumn the water table generally rises.

The yield of wells completed in the unconsolidated deposits varies, depending upon the type and thickness of the water bearing deposits penetrated. Till can only yield small supplies; yields from outwash are usually much greater. Yields range from less than one to as much as 120 gallons per minute, as reported from a public supply well on Prudence Island. The upper limits of the referenced well yield are most likely for a well completed in outwash, not till. Under normal weather conditions, till wells yield a few hundred gallons of water per day and are adequate for domestic supplies. However, these wells are subject to going dry during seasonal or unusually severe droughts.

Bedrock wells in the Newport area range in depth from 14 to 1,300 feet, with an average depth of 135 feet. Yields from bedrock wells range from less than 1 to as much as 55 gallons per minute. Most bedrock wells yield less than 10 gallons per minute. The yields in the bedrock wells vary considerably over short distances because the joints and fractures that transmit water to the wells occur randomly. Joints and fractures are most numerous and widest near the top of the bedrock and become fewer and narrower with depth. Bedrock wells seldom go dry, but yields can be extremely low if not enough fractures and joints occur in the area of the well.

Chemical characteristics of the groundwater are similar throughout the area, and the water is generally satisfactory for most ordinary uses. Most groundwater in the area is soft or only moderately hard, with groundwater from till generally containing less mineral matter and being softer than groundwater from bedrock. Wells yielding water with high iron content occur throughout the area, being most numerous around Newport and Middletown and the northern part of Portsmouth.

In scattered locations near the shoreline, over pumping has led to salt water intrusion in some wells. Bedrock wells are not as easily contaminated with salt water as wells completed in unconsolidated deposits, but the chance of contamination increases as the depth of the well below sea level increases.

The groundwater at NAVSTA Newport is very shallow, being less than 10 feet bgs in most areas. Therefore potential contaminants that may be released at the ground surface have a relatively short distance to travel before reaching the shallow groundwater table. Those pollutants that do migrate into the groundwater will migrate with groundwater flow and discharge into Narragansett Bay. Coastal sites such as NAVSTA Newport are quite close to the shoreline, and the groundwater only has to migrate a short distance before discharging into Narragansett Bay.

The soils occurring at most of NAVSTA Newport have a permeability that is moderate to moderately rapid, and do not restrict the vertical movement of water. Glacial till, the soil parent material, is generally less permeable than the overlying soils and although it will restrict groundwater movement, it may not represent a complete barrier to the vertical migration of water. However, it is presumed that groundwater will follow a path of least resistance and this pathway in this case would be directly through less dense material to the Bay waters. There are also isolated areas where the bedrock occurs at the surface. Contamination is possible in these areas through the joints and fractures that commonly occur in the bedrock.

Information obtained from the NAVSTA Newport Installation Restoration Program indicates that the depth to groundwater ranged from approximately 4 to 28 feet bgs at NAVSTA Newport sites investigated prior to 1994. Slug tests conducted on monitoring wells at these sites indicated that the hydraulic conductivity of the till unit encountered above the bedrock ranged from 0.22 to 0.44 feet per day and the upper bedrock hydraulic conductivity ranged from 0.029 to 0.21 feet per day. Bedrock test data produced hydraulic conductivity values higher than those normally attributed to shale (3.28×10^{-4} to 3.28×10^{-8} feet per day) (Driscoll, 1987).

3.4.2 Site Hydrogeology

Select monitoring wells were gauged at the Tank Farms as part of the Data Gaps Investigation. At Tank Farm 4, 27 groundwater monitoring wells were gauged on May 3, 2010. Of these wells, 14 were screened in bedrock, 7 were screened in deep overburden material, 4 were screened in shallow overburden material and 2 were screened across the overburden/bedrock interface. Fourteen of the wells gauged were new wells installed during the field work for this investigation. At Tank Farm 5, 13 groundwater monitoring wells were gauged on May 12, 2010. Of these wells, 9 were screened in bedrock, 2 were screened in deep overburden and 2 were screened in shallow overburden. Ten of the wells gauged were installed as part of the DGI. Table 3-1 shows the construction details of the monitoring wells that were gauged as part of this investigation. Table 3-2 presents the water level measurements recorded for monitoring wells included in the 2010 sampling round.

Figures 3-6 and 3-7 show the groundwater contour maps created for DU 4-1 and DU 5-1, using the May 2010 data. The overburden and bedrock aquifers appear to be primarily unconfined and communicative. Generalizations such as those depicted on the groundwater contour map do not reflect the sinuous path of groundwater through bedrock fractures; rather, they show an overall gradient through the aquifer.

Site specific hydrogeology is discussed below.

Tank Farm 4 and DU 4-1

Depth to water through Tank Farm 4 ranges from approximately 1 foot above to 30 feet below ground surface. Groundwater flow across Tank Farm 4 is in a westerly direction, as indicated by the groundwater contour depicted on Figure 3-6. Groundwater contours and elevations generally follow the ground surface topography. As part of a separate effort, horizontal hydraulic gradients were calculated across the entire Tank Farm 4 site in bedrock (MW-906 to MW-919 and MW-903 to MW-922) and overburden (MW-808 to MW-914) material using the May 2010 groundwater elevation measurements (Table 3-2). Horizontal gradients ranged from approximately 0.02 to 0.04, respectively. The horizontal hydraulic gradient indicates the change in hydraulic head (feet vertical) over distance (feet horizontal), and relates directly to the volume of flow that will pass through a given area over a given time. These measured gradients are low, and low flow can be expected.

Groundwater flow across DU 4-1 does not vary from the westerly direction of flow across the entire Tank Farm 4. DU 4-1 is the most downgradient section of Tank Farm 4, so that groundwater flow entering DU 4-1 is coming from the other parts of the Tank Farm located to the east, and groundwater exiting DU 4-1 flows off-site, under Defense Highway and discharges into Narragansett Bay. Groundwater was measured at between 1.3 feet above the ground surface to 12 feet below the ground surface at DU 4-1. Monitoring wells MW-912, MW-913 and MW-914 all have groundwater levels above the ground surface. Water levels above ground surface indicate artesian conditions exist in shallow bedrock around Ruin 2 and in the downgradient wetland.

Groundwater flow around Ruin 1 has been observed through the installation of monitoring wells MW-920, MW-921, MW-922 and further downgradient well MW-914. Downgradient from Ruin 1, in the wetland at MW-914, groundwater levels were measured above ground surface. Groundwater flow is in the westerly/southwesterly direction.

Groundwater flow around Ruin 2 has been observed through the installation of monitoring wells MW-912, MW-913 and MW-919. There are artesian conditions around Ruin 2 but the potentiometric surface is below the ground surface closer to Norman's Brook at MW-919.

Tank Farm 5 and DU 5-1

The depth to water at Tank Farm 5 ranges from approximately 2 to 15 feet below ground surface. Groundwater flow across Tank Farm 5 is in a north-westerly direction, generally following surface topography, and ultimately discharges into Narragansett Bay. As a part of a separate effort, horizontal hydraulic gradients were calculated across the Tank Farm 5 site for bedrock (MW-918 to MW-979 and

MW-911 to MW-978) and overburden (MW-108 to MW-917) material using the May 2010 groundwater elevation measurements (Table 3-2). Horizontal gradients ranged from approximately 0.03 to 0.04, respectively. The horizontal hydraulic gradient indicates the change in hydraulic head over distance, in units of feet per foot, and relates directly to the volume of flow that will pass through a given area over a given time. These measured gradients are low, and low flow can be expected at this site.

Groundwater flow across DU 5-1 does not vary from the northwesterly direction of flow across the Tank Farm 5 Site. DU 5-1 is located in the most downgradient section of Tank Farm 5, so that groundwater flow entering DU 5-1 is coming from the other parts of the Tank Farm located to the east. Groundwater exiting DU 5-1 discharges into Narragansett Bay. Groundwater was measured at DU 5-1 between 2 to 15 feet below the ground surface.

Groundwater flow around the former OWS has been observed through the installation of monitoring wells MW-917, MW-924, MW-923 and further downgradient wells MW-916 and MW-915. The former OWS is located approximately 300 feet upslope of Gomes Brook and the associated wetland. Groundwater flow from the former OWS is generally northerly towards the wetland, but influenced by the regional northwest trend. Monitoring well MW-917 was installed in the fill inside the former OWS. At the two wells that are screened across the water table, MW-917 and MW-916, the water table is located in the shallow bedrock.

4.0 NATURE AND EXTENT OF CONTAMINATION

This section summarizes the analytical results obtained from the samples collected to characterize the nature and extent of contamination in the environmental media at the Site. These investigations focused on characterization of the contaminant presence in site soil, groundwater, sediment and surface water. Details of these investigations are described in Section 2.0 of this report. The analytical results are presented in this section by sample media, and by chemical class (i.e. VOCs, SVOCs, dioxins, pesticides/PCBs and metals). The detections are compared to regulatory criteria identified in worksheet (WS) 11 of the Sampling and Analysis Plan (Tetra Tech, 2010), updated to current regulatory criteria. Screening criteria used in the data evaluations of soil, sediment, and aqueous samples are presented in Table 4-1.

The background soil investigation study for the Site (Tetra Tech, 2006) which is part of the base wide background study (Tetra Tech, 2008) was used to perform a dataset to dataset statistical comparison between the Site soil data and the Site background concentrations of metals. This comparison is provided in Appendix F. When appropriate, this comparison is referenced in the summary of nature and extent of contamination (Sections 4.3 and 4.4).

Samples that were collected were analyzed in accordance with the SAP (Tetra Tech, 2010). Chemical classes were evaluated in accordance with the following methods:

ANALYTICAL GROUP / MATRIX	ANALYTICAL METHOD
VOCs / Aqueous	SW846 8260C
VOCs / Soil Sediment	SW846 8260C
SVOCs (SIM) / Aqueous	SW846 8270D SIM
SVOCs (SIM) / Soil Sediment	SW846 8270D SIM
SVOCs (full scan) / Aqueous	SW846 8270D
SVOCs (full scan) / Soil Sediment	SW846 8270D
Pesticides / Aqueous	SW846 8081B
Pesticides / Soil Sediment	SW846 8081B
PCBs / Aqueous	SW846 8082
PCBs / Soil Sediment	SW846 8082
TOC / Soil Sediment	Walkley Black
Extractable TPH / Aqueous	SW846 8051B
Extractable TPS / Soil Sediment	SW846 8015B
pH / Soil Sediment	SW846 9045C
Metals (ICP-AES) / Aqueous	SW846 6010C
Metals (ICP-AES) / Soil Sediment	SW846 6010C
Metals (ICP-MS) / Aqueous	SW846 6020
Metals (Hg) / Aqueous	7470A
Metals (Hg) / Soil Sediment	7471B
Dioxins / Soil	SW846 8290

Tables of all the chemical analytical data collected as described in this section are provided in Appendix G of this report.

All the sample data were validated according to established U.S. EPA Region I Data Validation Guidelines (USEPA Region 1, February, 1989); (USEPA Region 1, December, 1996); (USEPA Region 1, February, 2004). A Tier II data validation was performed on the VOC, SVOC, pesticide, PCB, TAL metals and dioxins analyses. Tier II validation included evaluation of the following parameters:

- Data Completeness
- Preservation and Technical Holding Times
- GC/MS Instrument Performance Check (Tuning) (VOC, SVOC)
- ICP/MS Tuning (Select Metals)
- ICP/MS Internal Standard Performance (Select Metals)
- Initial and Continuing Calibrations/Calibration Verification
- Blanks
- Surrogate Standards (Organics)
- Internal Standards (VOC, SVOC)
- Matrix Spike/Matrix Spike Duplicates
- ICP Interference (Metals)
- ICP Serial Dilution (Metals)
- Laboratory Control Sample/Laboratory Control Sample Duplicate
- Field Duplicates
- Reporting Limits
- Tentatively Identified Compounds (SVOC)

Based on this validation process, several analytical results were qualified due to limitations inherent to sample matrix interferences or to field and or laboratory problems. Sample results qualified with a “J” are considered approximate because of limitations identified during data validation. Results for some analytes were rejected, either due to results not meeting QC limits in the matrix spike and matrix spike duplicate analysis or the laboratory control sample and laboratory control sample duplicate analysis; extremely low relative response factors in the calibration; or poor surrogate performance. Analytical results that are rejected are reported with the value reported by the laboratory, but with an “R” qualifier. Rejected values are not used for project decisions or detailed data analysis.

A Tier I validation was conducted on pH and TOC. The Tier I validation was limited to evaluation of data completeness only.

In general, data were acceptable for use in this Data Gaps Investigation. Qualifications on the reported data are documented in the data validation memoranda for each data package provided by the analytical laboratory. Data validation memoranda are presented in Appendix G.

The discussions in this section contain summaries of analytical results along with comparisons of detected contaminant levels to screening criteria. Comparison criteria were selected as described in WS 11 of the SAP, but with criteria updated from the date of publication of the SAP. Soil and sediment samples collected are compared to the EPA Residential Regional Screening Levels (RSLs) and the EPA Industrial RSLs. Groundwater and surface water samples collected are compared with the EPA RSLs for tap water and the EPA Maximum Contaminant Levels (MCLs).

Although useful, total concentrations of dioxins/furans are not the best measure of the actual toxicity of dioxins/furans because each compound has its own level of toxicity. As the initial step in the dioxin/furan nature and extent evaluation, the concentrations detected in soil and sediment were converted to values of 2,3,7,8-TCDD. To account for variations in toxicity, weighted values, or toxic equivalents (TEQs), were calculated and compared to screening values.

Updated Toxic Equivalency Factors (TEFs) presented in Van den Berg et al. (2006) were used to calculate the toxic equivalency (TEQ) values for mammals (including humans). The TEFs relate the toxicity of each dioxin/furan congener to that of 2,3,7,8-TCDD and are used to convert each dioxin/furan congener concentration to a TEQ value of 2,3,7,8-TCDD. TEQ values for the individual congeners were summed to represent the total TEQ value for each sample. Tables 4-4, 4-5, and 4-8 provide summaries of TEQ calculations for DU 4-1 samples and tables 4-12, 4-13 and 4-16 provide summaries of TEQ calculations for DU 5-1 samples. The 2,3,7,8-TCDD TEQ values were calculated in two ways: (1) using positive detections only and (2) using positive detections and one-half the sample quantitation limit (SQL) for non-detected results. Both sets of calculations are presented in the tables mentioned above. These tables also show the calculated total TEQ values, which are the sums of the dioxin/furan TEQ values.

Dioxins/furans were only analyzed in soil and sediment samples and were compared to the same criteria mentioned above for category 1 DUs.

Basic statistical analysis of chemical constituents detected is presented in summary tables in this section. Complete results, separated by matrix, for all analyzed chemicals are included in Appendix G.

4.1 NATURE AND EXTENT OF CONTAMINATION IN DU 4-1

Decision Unit 4-1 is governed by CERCLA because contaminants found within this DU are associated with the burning of tank sludge, this makes DU 4-1 a category 1 DU. The investigation of category one decision units included the collection and analysis of surface soil, subsurface soil, groundwater, sediment and surface water samples. The following sections summarize the data for each media sampled as part of the investigation of DU 4-1. Sample locations are presented on Figure 2-1.

Sample location identifiers include the site identifier (TF4), the sample matrix (SO, GW, SD or SW), the sample location (i.e.: 901), and the sample collection depth for soil and sediment samples (0006 for 0-6 in), or the date for aqueous samples (mmyy). Analytical results for field duplicate samples were averaged with the original sample results. Sample stations where this calculation was performed are identified in this report with the suffix "-AVG".

4.1.1 Nature and Extent of Contamination in Soil (DU 4-1)

During the investigation of DU 4-1 soil was collected from 24 locations. Soil borings were advanced and samples collected as described in Section 2.1 of this report. Surface soil was defined as soil collected from 0-1 foot below ground surface. Similarly, subsurface soil was defined as soil collected from 1-10 feet below ground surface or to top of bedrock, whichever is shallower. Surface and subsurface soil will be described separately in the sections that follow.

Surface and subsurface soil samples were collected for laboratory analysis of TCL VOCs, SVOCs, pesticides/PCBs, and TAL metals. In addition, dioxins were collected from the 0-1 foot and 2-4 foot intervals, and pH and TOC were collected at the 8-10 foot interval. Samples that were collected from within the wetland boundaries were also analyzed for extractable total petroleum hydrocarbons (ExTPH). A complete list of results for analytes detected in DU 4-1 surface soil samples can be found in Table 4-2. A complete list of results for all analytes that were analyzed in DU 4-1 surface soil samples can be found in Appendix G. A complete list of results for analytes detected in DU 4-1 subsurface soil samples can be found in Table 4-3. A complete list of results for all analytes sought in DU 4-1 subsurface soil samples can be found in Appendix G. Soil results are compared against EPA RSLs for residential soils and industrial soils. Figures 4-1 and 4-2 present locations of soil samples and concentrations of select metals and PAHs that exceeded screening criteria. Metals and PAHs were selected for presentation on these figures if they exceeded residential RSLs in more than 3 samples in a group.

4.1.1.1 VOCs in DU 4-1 Surface Soil Samples

The following table presents data summary statistics for VOCs detected in surface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2-BUTANONE	6/24	150	3J	35.1	TF4-SB-927-0001	28000000	0	200000000	0
ACETONE	15/24	160J	3.5J	34.8	TF4-SB-928-0001	61000000	0	630000000	0
TOLUENE	3/24	2	1.2J	1.73	TF4-SB-923-0001, TF4-SB-926-0001	5000000	0	45000000	0
TOTAL XYLENES	7/24	2.6J	0.87J	1.87	TF4-SB-931-0001	630000	0	2700000	0

As shown in the table above, a total of four VOCs were present above reporting limits in surface soil samples collected from DU 4-1. There were no VOCs detected at levels exceeding residential or industrial RSLs. Averages for each analyte were orders of magnitude lower than their screening criteria.

4.1.1.2 SVOCs in DU 4-1 Surface Soil Samples

The following table presents data summary statistics for SVOCs detected in surface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2,4-DIMETHYLPHENOL	1/24	39J	39J	39	TF4-SB-934-0001	1200000	0	12000000	0
2-CHLOROPHENOL	5/24	8	5.4	6.58	TF4-SB-939-0001	390000	0	5100000	0
2-METHYLNAPHTHALENE	4/24	47	4.7J	18.3	TF4-SB-934-0001	310000	0	4100000	0
2-METHYLPHENOL	2/24	30	4.5	17.2	TF4-SB-934-0001	3100000	0	31000000	0
4-METHYLPHENOL	3/24	81	5	47.3	TF4-SB-934-0001	310000	0	3100000	0
ACENAPHTHENE	5/24	100	6.2	25.4	TF4-SB-934-0001	3400000	0	33000000	0
ACENAPHTHYLENE	15/24	2500	4	185	TF4-SB-934-0001	3400000	0	33000000	0
ANTHRACENE	16/24	8800	4.3	573	TF4-SB-934-0001	17000000	0	170000000	0
BENZO(A)ANTHRACENE	21/24	54000	8.2	2640	TF4-SB-934-0001	150	4	2100	1
BENZO(A)PYRENE	21/24	24000	8.5	1210	TF4-SB-934-0001	15	14	210	2
BENZO(B)FLUORANTHENE	22/24	49000	4.3J	2330	TF4-SB-934-0001	150	9	2100	1

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
BENZO(G,H,I)PERYLENE	21/24	8500	6	456	TF4-SB-934-0001	1700000	0	17000000	0
BENZO(K)FLUORANTHENE	21/24	19000	7.4J	974	TF4-SB-934-0001	1500	1	21000	0
BIS(2-ETHYLHEXYL)PHTHALATE	2/24	320J	36J	126	TF4-SB-931-0001	35000	0	120000	0
CARBAZOLE	1/24	740J	740J	740	TF4-SB-934-0001				
CHRYSENE	21/24	59000	12	2890	TF4-SB-934-0001	15000	1	210000	0
DIBENZO(A,H)ANTHRACENE	14/24	3900J	3.8	300	TF4-SB-934-0001	15	10	210	1
DI-N-BUTYL PHTHALATE	1/24	78J	78J	78	TF4-SB-925-0001	6100000	0	62000000	0
FLUORANTHENE	22/24	83000	5.1	3890	TF4-SB-934-0001	2300000	0	22000000	0
FLUORENE	9/24	470	6.6	61.8	TF4-SB-934-0001	2300000	0	22000000	0
INDENO(1,2,3-CD)PYRENE	21/24	8500	5.7J	450	TF4-SB-934-0001	150	2	2100	1
NAPHTHALENE	5/24	21	4.5	8.7	TF4-SB-931-0001	3600	0	18000	0
PHENANTHRENE	21/24	440	5.6	70	TF4-SB-934-0001	1700000	0	17000000	0
PHENOL	8/24	68	7.1	34.1	TF4-SB-934-0001	18000000	0	180000000	0
PYRENE	22/24	86000	4.4	4010	TF4-SB-934-0001	1700000	0	17000000	0

There were 25 SVOCs detected above reporting limits. Of those 25 analytes, seven (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected at concentrations above screening criterion in one or more sample.

Benzo(a)anthracene was detected in 21 samples and exceeded the residential and industrial RSLs in four samples and one sample, respectively. Benzo(a)pyrene was detected in 21 samples; and exceeded the residential and industrial RSLs in 14 and two samples; respectively. Benzo(b)fluoranthene was detected in 22 surface soil samples. It exceeded the residential and industrial RSL in 9 and one samples; respectively. Benzo(k)fluoranthene was detected in 21 surface soil samples and exceeded the residential RSL one sample, but did not exceed the industrial RSL. Chrysene was detected in 21 surface soil samples. It exceeded the residential RSL in one sample and did not exceed the industrial RSL. Dibenzo(a,h)anthracene was detected in 14 surface soil samples, above the residential and industrial RSLs in ten and one samples; respectively. Indeno(1,2,3-cd)pyrene was detected in 21 surface soil samples, above the residential and industrial RSLs in two and one samples; respectively.

Maximum results for all seven analytes that exceeded criteria were detected in the surface soil sample TF4-SB-934. This sample station is located on the west end of the excavation area downgradient of Ruin 1, very close to the reported terminus of one of the former discharge pipes that led from the Ruin 1 area.

4.1.1.3 Dioxins in DU 4-1 Surface Soil Samples

The following table presents data summary statistics for dioxin TEQ values calculated using results from these surface soil samples. All concentrations are in units of ng/kg. Table 4-4 presents TEQ calculations for surface soil samples collected from DU 4-1.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES	CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES
TEQ ½ NON-DETECT	24/24	7.25	0.98	2.62	TF4-SB-933-0001	4.5	1	18	0
TEQ 0 NON-DETECT	24/24	7.18	0.84	2.51	TF4-SB-933-0001	4.5	1	18	0

Both methods of calculating the TEQ resulted in one exceedance of the residential RSL. The residential RSL is exceeded in TF4-SB-933-0001, located in the forested part of the wetland (Figure 4-1). This location is over 300 feet south of Ruin 1, and 250 feet north of Ruin 2.

4.1.1.4 Pesticides/PCBs in DU 4-1 Surface Soil Samples

The following table presents data summary statistics for pesticides and PCBs detected in these surface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
4,4'-DDD	4/24	49	6	24.1	TF4-SB-934-0001	2000	0	7200	0
4,4'-DDE	3/24	10J	5.1J	8.33	TF4-SB-921-0001	1400	0	5100	0
4,4'-DDT	1/24	10J	10J	10	TF4-SB-934-0001	1700	0	7000	0
BETA-BHC	2/24	14	6.1J	10	TF4-SB-931-0001	270	0	960	0
DELTA-BHC	1/24	3.9	3.9	3.9	TF4-SB-941-0001	77	0	270	0
ENDOSULFAN I	1/24	2.5	2.5	2.5	TF4-SB-942-0001	370000	0	3700000	0
ENDOSULFAN SULFATE	2/24	22J	4.8J	13.4	TF4-SB-934-0001	370000	0	3700000	0
ENDRIN	1/24	7.9J	7.9J	7.9	TF4-SB-934-0001	18000	0	180000	0
ENDRIN ALDEHYDE	1/24	35J	35J	35	TF4-SB-934-0001	18000	0	180000	0
ENDRIN KETONE	2/24	69	3.7J	36.4	TF4-SB-934-0001	18000	0	180000	0
GAMMA-BHC (LINDANE)	1/24	3.4J	3.4J	3.4	TF4-SB-931-0001	520	0	2100	0
TOXAPHENE	1/24	240J	240J	240	TF4-SB-928-0001	440	0	1600	0

There were twelve pesticides that were detected above reporting limits in surface soil samples collected from DU 4-1. PCBs were not detected. None of the pesticides that were detected exceeded residential or industrial RSLs.

4.1.1.5 Metals in DU 4-1 Surface Soil Samples

The following table presents data summary statistics for metals detected in surface soil samples. All concentrations are in units of mg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
ALUMINUM	24/24	15200	4850	9660	TF4-SB-927-0001	77000	0	990000	0
ARSENIC	24/24	59.5	4.2J	11.8	TF4-SB-943-0001	0.39	24	1.6	24
BARIUM	24/24	56.7	13.1	29.6	TF4-SB-927-0001	15000	0	190000	0
BERYLLIUM	24/24	0.7J	0.096J	0.361	TF4-SB-941-0001	160	0	2000	0
CADMIUM	21/24	0.48	0.027J	0.208	TF4-SB-931-0001	70	0	800	0
CALCIUM	21/24	1900J	101J	599	TF4-SB-943-0001				
CHROMIUM	24/24	20.8	8.4J	12.1	TF4-SB-927-0001	0.29	24	5.6	24
COBALT	24/24	20.5J	4.9J	11.8	TF4-SB-936-0001	23	0	300	0
COPPER	24/24	25.2	5.4	14.9	TF4-SB-923-0001	3100	0	41000	0
IRON	24/24	53200	18000	30200	TF4-SB-936-0001	55000	0	720000	0
LEAD	24/24	63.5J	6.9J	21.8	TF4-SB-923-0001	400	0	800	0
MAGNESIUM	24/24	3040	1110J	1910	TF4-SB-927-0001				
MANGANESE	24/24	818	144	391	TF4-SB-943-0001	1800	0	23000	0
MERCURY	19/24	0.14	0.031J	0.063	TF4-SB-923-0001	5.6	0	34	0
NICKEL	24/24	37.1	11.5	22.6	TF4-SB-943-0001	1500	0	20000	0
POTASSIUM	24/24	545J	187J	318	TF4-SB-935-0001				
SELENIUM	14/24	3.5	0.82J	1.39	TF4-SB-935-0001	390	0	5100	0
SILVER	1/24	0.068J	0.068J	0.068	TF4-SB-935-0001	390	0	5100	0
SODIUM	21/24	137J	21J	50.5	TF4-SB-923-0001				
THALLIUM	6/24	5.3	2.6	3.58	TF4-SB-943-0001				
VANADIUM	24/24	37.6	12.6	20.8	TF4-SB-927-0001	390	0	5200	0
ZINC	24/24	125	27.8	67.6	TF4-SB-936-0001	23000	0	310000	0

As shown in the table above, 22 metals were present at levels greater than detection limits in surface soil samples collected from DU 4-1. Of those 22 metals, two (arsenic and chromium) were detected at levels exceeding the industrial and residential RSLs in all samples.

The maximum concentration for chromium was in sample TF4-SB-927-0001, located in the forested wetland area downgradient of the Ruin 1 excavation area. The maximum concentration for arsenic was in TF4-SB-943, north of the Ruin 1 soil and sediment excavation area.

4.1.1.6 ExTPH in DU 4-1 Surface Soil Samples

Extractable petroleum hydrocarbon (TPH) analysis was performed on the 18 of the surface soil samples collected from wetland areas of DU 4-1. Thirteen samples had concentrations of TPH above reporting limits. The maximum concentration was quite low at 540 mg/kg, detected in sample TF4-SB-921-0001, adjacent to the former Ruin 1 excavation area.

4.1.1.7 VOCs in DU 4-1 Subsurface Soil Samples

The following table presents data summary statistics for VOCs detected in the subsurface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2-BUTANONE	11/42	30	3.6J	11.5	TF4-SB-922-0608	28000000	0	200000000	0
ACETONE	25/42	180J	3.5J	41.8	TF4-SB-943-0204	61000000	0	630000000	0
BENZENE	1/42	0.97J	0.97J	0.97	TF4-SB-928-0810	1100	0	5400	0
CARBON DISULFIDE	4/42	12J	0.96J	4.65	TF4-SB-922-0608	820000	0	3700000	0
METHYL TERT-BUTYL ETHER	3/42	1.2J	1J	1.1	TF4-SB-928-0810	43000	0	220000	0
TOLUENE	4/42	5.6J	1.8J	3.05	TF4-SB-922-0608	5000000	0	45000000	0
TOTAL XYLENES	5/42	3.7J	1.1J	2.36	TF4-SB-922-0608	630000	0	2700000	0

As shown in the above table, seven VOCs were detected above reporting limits in subsurface soil samples. No VOCs exceeded residential or industrial RSLs.

4.1.1.8 SVOCs in DU 4-1 Subsurface Soil Samples

The following table presents data summary statistics for SVOCs detected in subsurface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2,4-DICHLOROPHENOL	1/42	5.1J	5.1J	5.1	TF4-SB-937-0204	1200000	0	12000000	0
2-CHLOROPHENOL	6/42	7.9	3.6	4.7	TF4-SB-947-0204	390000	0	5100000	0
2-METHYLNAPHTHALENE	6/42	15J	5.7	8.74	TF4-SB-939-0204	310000	0	4100000	0
2-METHYLPHENOL	3/42	99.8J	6.4	39.4	TF4-SB-941-0810-AVG	3100000	0	31000000	0
4-METHYLPHENOL	2/4	6.1	5.52J	5.81	TF4-SB-937-0204	310000	0	3100000	0
ACENAPHTHENE	3/42	47J	4.5	18.7	TF4-SB-939-0204	3400000	0	33000000	0
ACENAPHTHYLENE	5/42	76J	12	36.4	TF4-SB-939-0204	3400000	0	33000000	0
ANTHRACENE	8/42	99J	4.55	32.8	TF4-SB-934-0204	17000000	0	170000000	0
BENZO(A)ANTHRACENE	15/42	320J	3.9	47.5	TF4-SB-934-0204	150	1	2100	0
BENZO(A)PYRENE	14/42	250J	3.3J	49.6	TF4-SB-934-0204	15	6	210	1
BENZO(B)FLUORANTHENE	15/42	610J	4.2J	90.8	TF4-SB-934-0204	150	2	2100	0
BENZO(G,H,I)PERYLENE	12/42	180J	4.2	38.2	TF4-SB-939-0204	1700000	0	17000000	0
BENZO(K)FLUORANTHENE	13/42	490	4.8	59.4	TF4-SB-934-0204	1500	0	21000	0
BIS(2-ETHYLHEXYL)PHTHALATE	9/42	131J	41J	82	TF4-SB-941-0810-AVG	35000	0	120000	0
BUTYL BENZYL PHTHALATE	3/42	170J	59J	99.3	TF4-SB-941-0810-AVG	260000	0	910000	0
CHRYSENE	15/42	440	4.3	62.1	TF4-SB-934-0204	15000	0	210000	0
DI-N-BUTYL PHTHALATE	5/42	120J	48J	74.6	TF4-SB-929-0204-AVG	6100000	0	62000000	0
DIBENZO(A,H)ANTHRACENE	6/42	46	5.6J	21.3	TF4-SB-934-0204	15	2	210	0
FLUORANTHENE	16/42	310J	3.9	58.1	TF4-SB-939-0204	2300000	0	22000000	0
FLUORENE	7/42	84J	3.35	18	TF4-SB-939-0204	2300000	0	22000000	0
INDENO(1,2,3-CD)PYRENE	11/42	140J	3.3J	38.2	TF4-SB-939-0204	150	0	2100	0
NAPHTHALENE	8/42	13J	4.3	7.12	TF4-SB-939-0204	3600	0	18000	0
PHENANTHRENE	11/42	280J	4.5	46.2	TF4-SB-939-0204	1700000	0	17000000	0
PHENOL	16/42	39	4.5J	17	TF4-SB-937-0204	18000000	0	180000000	0
PYRENE	15/42	310J	4.9J	60.6	TF4-SB-939-0204	1700000	0	17000000	0

As shown in the above table, 25 SVOCs were detected above reporting limits in subsurface soil samples collected from DU 4-1. Of the 25 SVOCs detected, four (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene) were detected at concentrations above residential RSL and one (benzo(a) pyrene) was detected above industrial RSL.

Benzo(a)anthracene was detected in 15 subsurface soil samples. It exceeded the residential RSL in one sample. Benzo(a)pyrene was detected in 14 subsurface soil samples. It exceeded the residential RSL in six samples, but exceeded the industrial criterion in one sample. Benzo(b)fluoranthene was detected in 15 subsurface soil samples collected and it exceeded the residential RSL in two samples. Dibenzo(a,h)anthracene was detected in six subsurface soil samples and it exceeded the residential RSL in two samples.

Maximum detections for each analyte that exceeded RSLs were all detected in sample TF4-SB-934-0204. This sample station is located downgradient of Ruin 1, and east and adjacent to the Ruin 1 soil and sediment removal area (Figure 4-2).

4.1.1.9 Dioxins in DU 4-1 Subsurface Soil Samples

Twenty three of the subsurface soil samples that were collected from DU 4-1 were submitted to the lab for analysis of dioxins and furans. The following table presents data summary statistics for TEQ values calculated using the results from these samples. All concentrations are in units of ng/kg. TEQ calculations for DU 4-1 subsurface soil samples can be found on Table 4-5.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES	CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES
TEQ ½ NON-DETECT	23/23	9.71	0.36	1.92	TF4-SB-923-0406	4.5	1	18	0
TEQ 0 NON-DETECT	23/23	6.60	0.22	1.82	TF4-SB-923-0406	4.5	1	18	0

Both methods of calculating the TEQ resulted in one exceedance of the residential RSL (sample TF4-SB-923-0406). This sample station is located west of Normans Brook and over 400-feet from Ruins 1 and 2.

4.1.1.10 Pesticides/PCBs in DU 4-1 Subsurface Soil Samples

The following table presents data summary statistics for pesticides and PCBs detected in these subsurface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
4,4'-DDD	2/42	8.2	4.6	6.4	TF4-SB-928-0204	2000	0	7200	0
4,4'-DDT	1/42	7.1J	7.1J	7.1	TF4-SB-942-0204	1700	0	7000	0
AROCLOR-1254	1/42	100J	100J	100	TF4-SB-942-0204	221	0	740	0
ENDOSULFAN SULFATE	1/42	7.1	7.1	7.1	TF4-SB-942-0204	370000	0	3700000	0
ENDRIN ALDEHYDE	1/42	5.7	5.7	5.7	TF4-SB-925-0608	18000	0	180000	0

There were four pesticides and one PCB congener that were detected above reporting limits in subsurface soil samples. None of the analytes that were detected exceeded residential or industrial RSLs.

4.1.1.11 Metals in DU 4-1 Subsurface Soil Samples

The following table presents data summary statistics for metals detected in the subsurface soil samples. All concentrations are in units of mg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
ALUMINUM	42/42	17200	697	7090	TF4-SB-921-0204	77000	0	990000	0
ARSENIC	42/42	42.9J	4.9J	15.2	TF4-SB-932-0607	0.39	42	1.6	42
BARIUM	42/42	103	1.8J	20.5	TF4-SB-930-0204	15000	0	190000	0
BERYLLIUM	42/42	0.78	0.16	0.357	TF4-SB-921-0204	160	0	2000	0
CADMIUM	39/42	1.15	0.042J	0.341	TF4-SB-941-0810-AVG	70	0	800	0
CALCIUM	30/42	1750J	6J	1750J	TF4-SB-925-0204				
CHROMIUM	42/42	24.1	4.3J	12.1	TF4-SB-934-0810	0.29	42	5.6	39
COBALT	42/42	41J	5.8	20.2	TF4-SB-924-0810-AVG	23	14	300	0
COPPER	42/42	31.8J	3.3	18.2	TF4-SB-941-0810-AVG	3100	0	41000	0
IRON	42/42	76900	18500	42700	TF4-SB-925-0608	55000	9	720000	0
LEAD	42/42	30.3J	3.1J	10.5	TF4-SB-938-0810	400	0	800	0
MAGNESIUM	42/42	5120	136J	1940	TF4-SB-925-0204				
MANGANESE	42/42	4480	58.3	797	TF4-SB-930-0204	1800	5	23000	0
MERCURY	18/42	0.16	0.00692J	0.0371	TF4-SB-923-0406	5.6	0	34	0
NICKEL	42/42	96.9	13.4J	38.6	TF4-SB-943-0810	1500	0	20000	0
POTASSIUM	42/42	934	89.5J	283	TF4-SB-925-0204				
SELENIUM	16/42	5.3	0.62J	2.05	TF4-SB-936-0810	390	0	5100	0
SILVER	2/42	0.21J	0.12J	0.165	TF4-SB-936-0810	390	0	5100	0
SODIUM	32/42	664J	11J	78.1	TF4-SB-922-0608				
THALLIUM	10/42	11.8	1.2	4.12	TF4-SB-943-0204				
VANADIUM	42/42	30.2	8.5	15.8	TF4-SB-921-0204	390	0	5200	0
ZINC	42/42	193	35.7	86.9	TF4-SB-943-0810	23000	0	310000	0

As shown in the table above, 22 metals were detected at concentrations above reporting limits. Five metals (arsenic, chromium, cobalt, iron and manganese) were detected at levels exceeding residential RSLs and two metals (arsenic and chromium) were at concentrations exceeding industrial RSLs.

Arsenic exceeded the residential and industrial RSL in all 42 samples. Chromium exceeded the residential RSL in all 42 samples, and it exceeded the industrial RSL in 39 samples. Cobalt exceeded the residential RSL in 14 samples, but did not exceed the industrial RSL. Iron exceeded the residential RSL in nine samples, but did not exceed the industrial RSL. Manganese exceeded the residential RSL in five samples, but did not exceed the industrial RSL.

4.1.1.12 ExTPH in DU 4-1 Subsurface Soil Samples

TPH analysis was performed on the 30 subsurface soil samples collected from wetland at DU 4-1. Nine of the 30 samples had concentrations of TPH above reporting limits. The maximum TPH concentration was quite low at 240 mg/kg, detected in sample TF4-SB-928-0204.

4.1.2 Nature and Extent of Contamination in Groundwater (DU 4-1)

During the investigation of DU 4-1 groundwater was collected from seven groundwater monitoring wells that were located in the Ruin 1 area (TF4-MW-920, 921 and 922), the Ruin 1 discharge area (TF4-MW-914), and the Ruin 2 area (TF4-MW-912, 913 and 919) (Figure 4-3). Groundwater samples collected from DU 4-1 monitoring wells were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals. These analyte groups are discussed further below. Table 4-6 provides a summary of results for all analytes present at levels above detection limits in groundwater samples collected from DU 4-1. The complete dataset is provided in Appendix G.

4.1.2.1 VOCs in DU 4-1 Groundwater Samples

There were no VOCs detected in groundwater samples that were collected from DU 4-1.

4.1.2.2 SVOCs in DU 4-1 Groundwater Samples

The following table presents data summary statistics for SVOCs detected in the groundwater samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
CAPROLACTAM	2/7	11	10.5	10.8	TF4-MW-919-0510	18000	0	--	--

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
NAPHTHALENE	1/7	0.19	0.19	0.19	TF4-MW-913-0510-AVG	0.14	1	--	--

As shown in the above table, there were two SVOCs, caprolactam and naphthalene, detected above laboratory reporting limits in groundwater samples collected from DU 4-1. Caprolactam was detected in two samples and did not exceed the RSL for tap water. Naphthalene was detected in one sample and it slightly exceeded the RSL for tap water.

4.1.2.3 Pesticides and PCBs in DU 4-1 Groundwater Samples

The following table presents data summary statistics for pesticides and PCBs detected in the groundwater samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
AROCLOR-1248	1/7	7.25J	7.25J	7.25	TF4-MW-913-0510-AVG	0.034	1	0.5	1
AROCLOR-1254	1/7	3.05J	3.05J	3.05	TF4-MW-913-0510-AVG	0.034	1	0.5	1
ENDRIN ALDEHYDE	1/7	6.52J	6.52J	6.52	TF4-MW-913-0510-AVG	11	0	--	--

One pesticide and two PCB mixtures were detected above reporting limits only in one of the aliquots from field duplicate groundwater samples that were collected at location TF4-MW913. Results from the other aliquot of the field duplicate sample collected at this location did not report similar contaminants present. The average concentration for Aroclor-1248 and Aroclor-1254 exceeded both the RSL for tap water and the MCL in TF4-MW-913-0510-AVG. Endrin aldehyde was also detected in one of the field duplicate samples, but the average concentration in TF4-MW-913-0510-AVG did not exceed the RSL for tap water.

There is high probability that the PCBs and the endrin aldehyde detected in this groundwater sample is a false positive result due to laboratory cross-contamination. Only one of the field duplicate pair samples collected at MW-913 reported positive results for Aroclor 1248 and Aroclor 1254. These Aroclors were not detected in the field duplicate sample collected at the same location. Detailed evaluation of the

laboratory report demonstrated that a sample from another unrelated site which contained a high concentration of Aroclor 1248 and Aroclor 1254 was extracted at the same time of the TF4-MW-913 sample. Furthermore, the ratio of the Aroclor 1248 to Aroclor 1254 concentration in this sample was very similar (3:1) as the concentration of this Aroclors reported for MW-913 (see Appendix G for supporting documentation) Although the source sample from the other site was not analyzed for pesticides, it is highly likely that the endrin aldehyde in the single aliquot of MW-913 is also a result of this cross contamination. This conclusion is made largely based on the evidence of cross contamination of the Aroclors, and the observation that there was no endrin aldehyde reported for the second aliquot of the duplicate pair. Therefore, these constituents in this groundwater sample are considered false positive.

4.1.2.4 Total Metals in DU 4-1 Groundwater Samples

The following table presents data summary statistics for total metals detected in groundwater samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	EPA RSL TAP WATER		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
ALUMINUM	2/7	253	60.4J	157	TF4-MW-921-0510	37000	0		
ARSENIC	4/7	6.3	1.6	4.09	TF4-MW-914-0510	0.045	4	10	0
BARIUM	7/7	40.8	7.9	21.1	TF4-MW-913-0510-AVG	7300	0	2000	0
BERYLLIUM	1/7	0.049J	0.049J	0.049	TF4-MW-921-0510	73	0	4	0
CADMIUM	1/7	0.234J	0.234J	0.234	TF4-MW-920-0510	18	0	5	0
CALCIUM	7/7	28800	11700	19400	TF4-MW-920-0510				
COBALT	7/7	12.6	1.2	9.03	TF4-MW-912-0510	11	4		
COPPER	6/7	1.1	0.428J	0.806	TF4-MW-920-0510, TF4-MW-921-0510	1500	0	1300	0
IRON	7/7	252	17100	9130	TF4-MW-919-0510	26000	0		
LEAD	1/7	0.168J	0.168J	0.168	TF4-MW-914-0510			15	0
MAGNESIUM	7/7	17000	8580	11900	TF4-MW-913-0510-AVG				
MANGANESE	7/7	5030	321	1510	TF4-MW-920-0510	880	6		
NICKEL	7/7	67.6	9.2	36.6	TF4-MW-921-0510	730	0		
POTASSIUM	7/7	3300	539J	1330	TF4-MW-920-0510				
SODIUM	7/7	29400	10300	20400	TF4-MW-920-0510				
ZINC	2/7	143	36.8J	89.9	TF4-MW-921-0510	11000	0		

As shown in the table above, 16 total metals were detected above reporting limits in DU 4-1 groundwater samples. Three were detected above the RSL for tap water. Arsenic was detected in four samples and it

exceeded the RSL for tap water in all four samples; but did not exceed the MCL. Cobalt was detected in all seven samples and it exceeded the RSL for tap water in four samples. Manganese was detected in all seven samples, and it exceeded the RSL for tap water in six samples.

Figure 4-3 shows arsenic and manganese concentrations in groundwater.

4.1.3 Nature and Extent of Contamination in Sediment (DU 4-1)

During the investigation of DU 4-1 sediment was collected from 12 locations within Normans Brook and its associated wetlands and tributaries. Samples were analyzed for VOCs, SVOCs, dioxins, pesticides/PCBs and metals. These analyte groups are discussed further below. A complete list of results for analytes detected in DU 4-1 sediment samples can be found in Table 4-7. A complete list of results for all analytes that were analyzed in DU 4-1 sediment samples can be found in Appendix G. Sediment analysis results are compared to EPA RSLs for residential soil and industrial soil. Figure 4-4 presents the locations where sediment samples were collected and shows select SVOCs, select metals and dioxins that exceeded the residential RSL. Compounds selected for figures were compounds with three or more concentrations above residential RSLs in a group.

4.1.3.1 VOCs in DU 4-1 Sediment Samples

Acetone, a common laboratory contaminant, and carbon disulfide, were the only VOCs present at concentrations above reporting limits in sediment samples. Neither exceeded the residential or industrial RSL. Acetone was detected in nine samples, and carbon disulfide was detected in two samples.

4.1.3.2 SVOCs in DU 4-1 Sediment Samples

The following table presents data summary statistics for SVOCs detected in the sediment samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2-METHYLNAPHTHALENE	4/12	10	2.68	5.38	TF4-SD-903-0006	310000	0	4100000	0
2-METHYLPHENOL	2/12	12J	10J	11	TF4-SD-912-0006	3100000	0	31000000	0
4-METHYLPHENOL	5/12	16	3.68	8.12	TF4-SD-904-0006	310000	0	3100000	0
ACENAPHTHENE	4/12	19	5.82J	10.1	TF4-SD-905-0006	3400000	0	33000000	0
ACENAPHTHYLENE	8/12	28	4.5	8.54	TF4-SD-903-0006	3400000	0	33000000	0

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
ANTHRACENE	12/12	120	6.1	25.3	TF4-SD-903-0006	17000000	0	170000000	0
BENZALDEHYDE	4/12	182J	64J	144	TF4-SD-911-0006-AVG	7800000	0	100000000	0
BENZO(A)ANTHRACENE	12/12	200J	26J	67.5	TF4-SD-903-0006	150	1	2100	0
BENZO(A)PYRENE	12/12	210	23.5J	77.5	TF4-SD-903-0006	15	12	210	0
BENZO(B)FLUORANTHENE	12/12	240J	25J	88.7	TF4-SD-903-0006	150	2	2100	0
BENZO(G,H,I)PERYLENE	12/12	150	19.5	61	TF4-SD-903-0006	1700000	0	17000000	0
BENZO(K)FLUORANTHENE	12/12	200	33J	87.6	TF4-SD-903-0006, TF4-SD-907-0006	1500	0	21000	0
BIS(2-ETHYLHEXYL)PHTHALATE	8/12	220J	35J	124	TF4-SD-907-0006	35000	0	120000	0
CHRYSENE	12/12	290J	35.5J	93.1	TF4-SD-903-0006	15000	0	210000	0
DIBENZO(A,H)ANTHRACENE	12/12	53	6.6J	19.4	TF4-SD-903-0006	15	4	210	0
FLUORANTHENE	12/12	330	49.5J	137	TF4-SD-903-0006	2300000	0	22000000	0
FLUORENE	8/12	24	3.9	8.35	TF4-SD-905-0006	2300000	0	22000000	0
INDENO(1,2,3-CD)PYRENE	12/12	120	16.5	50.9	TF4-SD-903-0006	150	0	2100	0
NAPHTHALENE	8/12	6	4.1	5.04	TF4-SD-903-0006	3600	0	18000	0
PHENANTHRENE	12/12	190	27	77.8	TF4-SD-905-0006	1700000	0	17000000	0
PHENOL	3/12	15	3.52	7.77	TF4-SD-905-0006	18000000	0	180000000	0
PYRENE	12/12	260	41.5	110	TF4-SD-903-0006	1700000	0	17000000	0

Twenty two SVOCs were present at levels above reporting limits in sediment samples. Four SVOCs (benzo(a)anthracene, benzo(b)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene) were detected in at least one sample at levels exceeding residential RSLs. Industrial RSLs were not exceeded for any parameters.

Benzo(a)anthracene was detected in all samples, and exceeded the residential RSL in one sample, TF4-SD-903-0006. Benzo(a)pyrene was detected in all samples at levels exceeding the residential RSL. Benzo(b)fluoranthene was detected in all samples, but only exceeded the residential criterion in two samples. Dibenzo(a,h)anthracene was present in every sediment sample collected from DU 4-1 at levels greater than detection limits. It exceeded the residential RSL, in four samples. Averages concentrations of benzo(a)anthracene, benzo(b)fluoranthene and dibenzo(a,h)anthracene were below the residential RSLs. The average concentration of benzo(a)pyrene exceeded the residential RSL but was below the industrial RSL.

Maximum concentrations of these four SVOCs were detected in TF4-SD-903-0006, located west of, and at the downgradient edge of the Ruin 1 discharge area excavation.

4.1.3.3 Dioxins in DU 4-1 Sediment Samples

The following table presents data summary statistics for dioxin TEQ values for the sediment samples, calculated as described in Section 4.0. All concentrations are in units of ng/kg. TEQ calculations are presented in Table 4-8.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES	CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES
TEQ (½ U)	12/12	7.06	0.62	2.92	TF4-SD-910-0006	4.5	3	18	0
TEQ (0 U)	12/12	7.06	0.54	2.88	TF4-SD-910-0006	4.5	3	18	0

The two TEQs calculated were very similar. Both methods of calculating TEQs resulted in three exceedances of the residential RSL of 4.5 ng/kg, and no exceedances of the industrial RSL. The maximum result was detected in the sample collected at sediment station TF4-SD-910, which is located in the stand of *Phragmites* southwest of Normans Brook, about 100 feet southeast of Defense Highway.

4.1.3.4 Pesticides/PCBs in DU 4-1 Sediment Samples

PCBs were not detected in sediment samples. The following table presents data summary statistics for pesticides detected in sediment samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
4,4'-DDD	1/12	3.4	3.4	3.4	TF4-SD-910-0006	2000	0	7200	0
4,4'-DDE	1/12	15J	15J	15	TF4-SD-910-0006	1400	0	5100	0
4,4'-DDT	1/12	6.7	6.7	6.7	TF4-SD-910-0006	1700	0	7000	0
ENDRIN ALDEHYDE	1/12	2.72	2.72	2.72	TF4-SD-911-0006	18000	0	180000	0
ENDRIN KETONE	1/12	20.8J	20.8J	20.8	TF4-SD-902-0006-AVG	18000	0	180000	0

As shown in the table above, five pesticides were present in sediment samples collected from DU 4-1 at levels above reporting limits. There were no exceedances of criteria, and each analyte was detected in only one sample.

4.1.3.5 Metals in DU 4-1 Sediment Samples

The following table presents data summary statistics for metals detected in sediment samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
ALUMINUM	12/12	12900	4730	8850	TF4-SD-910-0006	77000	0	990000	0
ARSENIC	12/12	46.6J	9.2	15.8	TF4-SD-906-0006	0.39	12	1.6	12
BARIUM	12/12	64.7J	16.6J	33.9	TF4-SD-906-0006	15000	0	190000	0
BERYLLIUM	12/12	0.68J	0.21J	0.445	TF4-SD-910-0006	160	0	2000	0
CADMIUM	12/12	1.2	0.13J	0.415	TF4-SD-906-0006	70	0	800	0
CALCIUM	12/12	1220J	494J	811	TF4-SD-911-0006-AVG				
CHROMIUM	12/12	29.2J	7.3J	15.4	TF4-SD-902-0006-AVG	0.29	12	5.6	12
COBALT	12/12	76.2	9.4	19.2	TF4-SD-906-0006	23	2	300	0
COPPER	12/12	24.9	9.8	16.8	TF4-SD-910-0006	3100	0	41000	0
IRON	12/12	145000	21700	42300	TF4-SD-906-0006	55000	2	720000	0
LEAD	12/12	96.2J	6.3J	39.7	TF4-SD-902-0006-AVG	400	0	800	0
MAGNESIUM	12/12	4160	1370	2440	TF4-SD-906-0006				
MANGANESE	12/12	3440	171	854	TF4-SD-903-0006	1800	2	23000	0
MERCURY	12/12	0.17	0.019J	0.0696	TF4-SD-909-0006	5.6	0	34	0
NICKEL	12/12	132	16.3	32.6	TF4-SD-906-0006	1500	0	20000	0
POTASSIUM	12/12	583	155J	290	TF4-SD-910-0006				
SILVER	1/12	0.12J	0.12J	0.12	TF4-SD-903-0006	390	0	5100	0
SODIUM	12/12	558	23.9J	142	TF4-SD-911-0006				
THALLIUM	10/12	11.5	0.45J	2.82	TF4-SD-903-0006				
VANADIUM	12/12	27.2	9.6	17.6	TF4-SD-910-0006	390	0	5200	0
ZINC	12/12	199	59	96.8	TF4-SD-906-0006	23000	0	310000	0

As shown in the above table, 21 metals were present at levels above reporting limits in sediment samples. Five of those metals (arsenic, chromium, cobalt, iron, and manganese) were detected in at least two samples at levels exceeding their residential RSL. Two metals (arsenic and chromium) exceeded their industrial RSL.

Arsenic exceeded both the residential criterion of 0.39 mg/kg and the industrial criterion of 1.6 mg/kg in all sediment samples. Chromium exceeded both the residential criterion of 0.29 mg/kg and the industrial criterion of 5.6 mg/kg in all sediment samples. Cobalt was detected in two samples at levels exceeding the residential criterion of 23 mg/kg, but it did not exceed the industrial criterion. Iron concentrations in two sediment samples exceeded the residential criterion of 55000 mg/kg, but did not exceed the industrial

criterion. Manganese was detected at levels exceeding the residential criterion of 1800 mg/kg in two samples, but did not exceed the industrial RSL.

Sediment sample TF4-SD-906-0006 had the maximum concentration for three of the five metals with exceedances. This sediment sample station is located at the end of the discharge pipe from Ruin 2.

4.1.4 Nature and Extent of Contamination in Surface Water (DU 4-1)

During the investigation of DU 4-1 surface water was collected from ten locations within Normans Brook and its associated wetlands and tributaries. These surface water samples were collocated with sediment samples, whenever surface water was present. Samples were analyzed for VOCs, SVOCs, pesticides/PCBs and metals. A complete list of results for analytes detected in DU 4-1 surface water samples can be found in Table 4-9. A complete list of results for all constituents that were analyzed in DU 4-1 surface water samples can be found in Appendix G. Sample results are compared to the EPA RSLs for tap water and the EPA MCLs. Figure 4-5 presents the locations where surface water samples were collected and shows select contaminants that exceeded criteria at each location.

4.1.4.1 VOCs in DU 4-1 Surface Water Samples

There were no VOCs present above reporting limits in surface water samples.

4.1.4.2 SVOCs in DU 4-1 Surface Water Samples

The following table presents data summary statistics for SVOCs detected in surface water. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
BENZO(A)ANTHRACENE	2/10	0.17J	0.1J	0.135	TF4-SW-903-0310	0.029	2		
CHRYSENE	1/10	0.11	0.11	0.11	TF4-SW-903-0310	2.9	0		
FLUORANTHENE	1/10	0.16	0.16	0.16	TF4-SW-903-0310	1500	0		
PHENANTHRENE	1/10	0.12	0.12	0.12	TF4-SW-903-0310	1100	0		
PHENOL	1/10	0.1	0.1	0.1	TF4-SW-902-0310-AVG	11000	0		
PYRENE	1/10	0.23	0.23	0.23	TF4-SW-903-0310	1100	0		

As the table above shows, six SVOCs were present above reporting limits in surface water samples. Only benzo(a)anthracene was detected at levels above the EPA tap water criterion of 0.029 µg/L. Benzo(a)anthracene was only detected in two samples and it exceeded tap water criterion in both. The maximum detection of benzo(a)anthracene was detected in sample TF4-SW-903-0310. This sample was collected just west of the Ruin 1 discharge area excavation (Figure 4-5).

4.1.4.3 Pesticides/PCBs in DU 4-1 Surface Water Samples

There were no pesticides or PCBs present above reporting limits in surface water samples.

4.1.4.4 Metals in DU 4-1 Surface Water Samples

The following table presents data summary statistics for metals detected in surface water samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
ARSENIC	4/10	0.473J	0.19J	0.397	TF4-SW-901-0310	0.045	4	10	0
BARIUM	10/10	10.4	5.2	9.28	TF4-SW-906-0310	7300	0	2000	0
CALCIUM	10/10	15800	10400	14200	TF4-SW-903-0310				
COBALT	10/10	0.931J	0.297J	0.453	TF4-SW-903-0310	11	0		
COPPER	10/10	3.7	0.807J	1.86	TF4-SW-901-0310	1500	0	1300	0
IRON	10/10	545	270	372	TF4-SW-905-0310	26000	0		
LEAD	8/10	0.928	0.191	0.382	TF4-SW-907-0310			15	0
MAGNESIUM	10/10	16900	3480	6760	TF4-SW-903-0310				
NICKEL	10/10	3.5	1.4	2.29	TF4-SW-907-0310	730	0		
POTASSIUM	10/10	3070	1440	2660	TF4-SW-908-0310				
SELENIUM	9/10	0.231J	0.154J	0.199	TF4-SW-901-0310	180	0	50	0
SODIUM	10/10	30600	23400	28000	TF4-SW-908-0310				

As shown in the above table, 12 metals were present above reporting limits in surface water samples. Of those metals, only arsenic was detected at levels exceeding the EPA RSL Tap Water criterion of 0.045 µg/L. It exceeded this criterion in four samples, three of which exceeded by a little more than 10 times the criterion and one just under 5 times the criterion.

The remaining metals were at concentrations far below their screening criterion.

4.2 NATURE AND EXTENT OF CONTAMINATION IN DU 5-1

The following sections summarize the data for each media sampled as part of the investigation of DU 5-1.

Sample location identifiers include the site identifier (TF5), the sample matrix (SO, GW, SD or SW), the sample location (i.e.: 913), and the sample collection depth for soil (in feet, i.e. 0204 = 2' to 4') and sediment samples (in inches i.e. 0006 = 0 to 6 inches), or the date for aqueous samples (mmyy). Analytical results for field duplicate samples were averaged with the original sample results. Sample stations where this calculation was performed are identified in this report with the suffix "-AVG".

4.2.1 Nature and Extent of Contamination in Soil (DU 5-1)

During the investigation of DU 5-1 soil was collected from eleven locations. Soil borings were advanced and samples collected as described in Section 2.1. Surface soil was defined as soil collected from 0-1 foot below ground surface. Similarly, subsurface soil was defined as soil collected from 1-10 feet below ground surface or to top of bedrock, whichever is shallower. Surface and subsurface soil is described separately in the sections that follow.

Surface and subsurface soil samples were collected for laboratory analysis of TCL VOCs, SVOCs, pesticides/PCBs, and TAL metals. In addition, dioxins were collected from the 0-1 foot and 2-4 foot intervals, and pH and TOC were collected at the 8-10 foot interval. Samples that were collected from within the wetland boundaries were analyzed for ExTPH. Results for analytes detected in DU 5-1 surface soil samples can be found in Table 4-10. Results for analytes detected in DU 5-1 subsurface soil samples are provided in Table 4-11. Results for all analytes in DU 5-1 soil samples can be found in Appendix G. Figures 4-6 and 4-7 presents the locations where surface soil and subsurface soil samples were collected and shows select SVOCs, select metals and dioxins that exceeded the residential RSLs. Compounds selected for figures were compounds with three or more concentrations above residential RSLs in a group.

4.2.1.1 VOCs in DU 5-1 Surface Soil Samples

The following table presents data summary statistics for VOCs detected in the surface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
ACETONE	7/11	65 J	6 J	33.3	TF5-SB-968-0001	61000000	0	630000000	0
ISOPROPYLBENZENE	1/11	6.2	6.2	6.2	TF5-SB-969-0001	2100000	0	11000000	0
TOLUENE	1/11	1.8 J	1.8 J	1.8	TF5-SB-968-0001	5000000	0	45000000	0

A total of three VOCs were detected above reporting limits in surface soil samples. There were no exceedances of residential or industrial RSLs.

4.2.1.2 SVOCs in DU 5-1 Surface Soil Samples

The following table presents data summary statistics for SVOCs detected in the surface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
ACENAPHTHENE	3/11	7.7	4.2	5.7	TF5-SB-967-0001	3400000	0	33000000	0
ACENAPHTHYLENE	4/11	26 J	7.6	14.4	TF5-SB-970-0001	3400000	0	33000000	0
ANTHRACENE	7/11	27	4.5	12.9	TF5-SB-967-0001	17000000	0	170000000	0
BENZALDEHYDE	1/11	73 J	73 J	73	TF5-SB-975-0001	7800000	0	100000000	0
BENZO(A)ANTHRACENE	11/11	230	5.9	46.8	TF5-SB-967-0001	150	1	2100	0
BENZO(A)PYRENE	11/11	300	6.4	55.8	TF5-SB-967-0001	15	6	210	1
BENZO(B)FLUORANTHENE	11/11	530 J	10	92.7	TF5-SB-967-0001	150	1	2100	0
BENZO(G,H,I)PERYLENE	11/11	270	4.4	48	TF5-SB-967-0001	1700000	0	17000000	0
BENZO(K)FLUORANTHENE	11/11	200 J	4.6 J	36.4	TF5-SB-967-0001	1500	0	21000	0
BIS(2-ETHYLHEXYL)PHTHALATE	1/11	58 J	58 J	58	TF5-SB-970-0001	35000	0	120000	0
CHRYSENE	11/11	300	8.4	60.3	TF5-SB-967-0001	15000	0	210000	0
DIBENZO(A,H)ANTHRACENE	7/11	57 J	4.3	17.4	TF5-SB-967-0001	15	3	210	0
FLUORANTHENE	11/11	600	13	112	TF5-SB-967-0001	2300000	0	22000000	0
FLUORENE	3/11	11	5.5	8.73	TF5-SB-967-0001	2300000	0	22000000	0
INDENO(1,2,3-CD)PYRENE	11/11	240 J	4	41.4	TF5-SB-967-0001	150	1	2100	0
PHENANTHRENE	11/11	200	4.4	44.9	TF5-SB-967-0001	1700000	0	17000000	0
PYRENE	11/11	430	11	87.4	TF5-SB-967-0001	1700000	0	17000000	0

There were 17 SVOCs that detected above reporting limits. Of those 17 analytes, five were present at levels exceeding their residential RSLs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) and one (benzo(a)pyrene) was above its industrial RSL.

Benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-CD)pyrene were detected in each of the 11 samples, but exceeded the residential RSL only in sample TF5-SB-967-0001. Benzo(a)pyrene was detected in each of the 11 samples, exceeding the residential RSL in 6 samples and the industrial RSL in 1 sample. Dibenzo(a,h)anthracene was detected in 7 samples, exceeding the residential RSL in 3 samples. With the exception of benzo(a)pyrene in surface soil sample TF5-SB-967-0001, there were no exceedances of industrial criteria.

Maximum SVOC concentrations for each of the five compounds that exceeded residential RSLs were detected in the surface soil sample collected from TF4-SS-967-0001. This sample station is located east of Gomes Brook, in a wetland area that is unlikely to have been impacted by operations at the OWS.

4.2.1.3 Dioxins in DU 5-1 Surface Soil Samples

The following table presents data summary statistics for TEQ values calculated with the results from these samples. A summary of TEQ calculations can be found on Table 4-12. All concentrations are in units of ng/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES	CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES
TEQ ½ NON-DETECT	11/11	6.04	1.18	3.24	TF5-SB-975-0001	4.5	3	18	0
TEQ 0 NON-DETECT	11/11	5.98	1.00	3.13	TF5-SB-975-0001	4.5	3	18	0

Both calculated TEQs exceeded the residential RSL in three samples (TF5-SB-970-0001, TF5-SB-974-0001, and TF5-SB-975-0001). These three samples don't show a particular distribution pattern: TF5-SB-970 is located in the vicinity of the former discharge pipe from the OWS. TF5-SB-974 is located along a mapped pipe from pump chamber A-18. TF5-SB -975 is located an upslope or side slope location in the forested area east of Gomes Brook.

4.2.1.4 Pesticides/PCBs in DU 5-1 Surface Soil Samples

The following table presents data summary statistics for pesticides and PCBs detected in surface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
4,4'-DDD	1/11	5.1	5.1	5.1	TF5-SB-967-0001	2000	0	7200	0
4,4'-DDE	2/11	6.6	5.5	6.05	TF5-SB-971-0001	1400	0	5100	0
4,4'-DDT	1/11	5.6 J	5.6 J	5.6	TF5-SB-971-0001	1700	0	7000	0
AROCLOR-1254	1/11	39	39	39	TF5-SB-973-0001	220	0	740	0

There were three pesticides and one PCB detected above reporting limits in surface soil samples collected from DU 5-1. None of the analytes that were detected exceeded the residential or industrial RSLs.

4.2.1.5 Metals in DU 5-1 Surface Soil Samples

The following table presents data summary statistics for metals detected in surface soil samples. All concentrations are in units of mg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
ALUMINUM	11/11	9740	5460	7800	TF5-SB-969-0001	77000	0	990000	0
ARSENIC	11/11	43.7	4.3 J	16.4	TF5-SB-972-0001	0.39	11	1.6	11
BARIUM	11/11	23.7	9.5 J	15.8	TF5-SB-967-0001	15000	0	190000	0
BERYLLIUM	11/11	0.55 J	0.33	0.451	TF5-SB-975-0001	160	0	2000	0
CADMIUM	10/11	0.33	0.1	0.197	TF5-SB-974-0001	70	0	800	0
CALCIUM	11/11	1710 J	166 J	783	TF5-SB-970-0001				
CHROMIUM	11/11	12.8	5.6	9.45	TF5-SB-969-0001	0.29	11	5.6	10
COBALT	11/11	13.2 J	2.2 J	8.15	TF5-SB-969-0001	23	0	300	0
COPPER	11/11	24.2	7.5	12.9	TF5-SB-967-0001	3100	0	41000	0
IRON	11/11	33700	11500	21800	TF5-SB-969-0001	55000	0	720000	0
LEAD	11/11	33.3 J	9.3 J	21.7	TF5-SB-968-0001	400	0	800	0

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
MAGNESIUM	11/11	2320 J	824 J	1600	TF5-SB-969-0001				
MANGANESE	11/11	462	95.8 J	274	TF5-SB-974-0001	1800	0	23000	0
MERCURY	2/11	0.12	0.019 J	0.0695	TF5-SB-968-0001	5.6	0	34	0
NICKEL	11/11	22.6	6.8 J	16	TF5-SB-974-0001	1500	0	20000	0
POTASSIUM	11/11	388 J	142 J	226	TF5-SB-966-0001				
SELENIUM	6/11	4.2	2.9 J	3.55	TF5-SB-974-0001	390	0	5100	0
SILVER	8/11	0.21	0.095 J	0.172	TF5-SB-968-0001, TF5-SB-972-0001, TF5-SB-974-0001	390	0	5100	0
SODIUM	6/11	53.9 J	19.3 J	35.1	TF5-SB-966-0001				
THALLIUM	11/11	2.5	0.65 J	1.72	TF5-SB-973-0001				
VANADIUM	11/11	24 J	10.9 J	15.3	TF5-SB-968-0001	390	0	5200	0
ZINC	11/11	69.5	18.4 J	42	TF5-SB-967-0001	23000	0	310000	0

Twenty two metals were detected above reporting limits. Of those 22 metals, two (arsenic and chromium) were detected above the residential and industrial RSLs. Arsenic exceeded both residential and industrial RSLs in all eleven samples. Chromium exceeded both residential and industrial RSLs in ten samples.

4.2.1.6 ExTPH in DU 5-1 Surface Soil Samples

ExTPH was detected in each of the three samples (from wetland sampling stations) in which it was analyzed. Concentrations were very low, ranging from 16 J mg/kg (TF5-SB-970-0001) to 23 J mg/kg (TF5-SB-966-0001).

4.2.1.7 VOCs in DU 5-1 Subsurface Soil Samples

The following table presents data summary statistics for VOCs detected in subsurface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
ACETONE	11/21	44 J	3.5 J	14.5	TF5-SB-970-0204	61000000	0	630000000	0
CARBON DISULFIDE	2/21	4 J	1.9 J	2.95	TF5-SB-974-0204	820000	0	3700000	0
TOLUENE	2/21	1.78 J	1 J	1.39	TF5-SB-973-0204-AVG	5000000	0	45000000	0

Three VOCs were detected above reporting limits in subsurface soil samples collected from DU 5-1. There were no VOCs detected at levels exceeding residential or industrial RSLs.

4.2.1.8 SVOCs in DU 5-1 Subsurface Soil Samples

The following table presents data summary statistics for SVOCs detected in subsurface soil samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		ISL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2-METHYLNAPHTHALENE	1/21	4.3 J	4.3 J	4.3	TF5-SB-969-0204	310000	0	4100000	0
4-METHYLPHENOL	1/21	4.9 J	4.9 J	4.9	TF5-SB-971-0204-AVG	310000	0	3100000	0
BENZO(A)ANTHRACENE	4/21	11.5	6.1	8.44	TF5-SB-971-0204-AVG	150	0	2100	0
BENZO(A)PYRENE	4/21	11	5.5	7.95	TF5-SB-971-0204-AVG	15	0	210	0
BENZO(B)FLUORANTHENE	5/21	19	5.2 J	10.6	TF5-SB-971-0204-AVG	150	0	2100	0
BENZO(G,H,I)PERYLENE	3/21	8.3	4.5	6.93	TF5-SB-967-0204	1700000	0	17000000	0
BENZO(K)FLUORANTHENE	3/21	9.9 J	4.65 J	7.35	TF5-SB-967-0204	1500	0	21000	0
BIS(2-ETHYLHEXYL)PHTHALATE	2/21	130 J	52 J	91	TF5-SB-971-0204-AVG	35000	0	120000	0
CHRYSENE	5/21	15.5 J	3.8	9.89	TF5-SB-971-0204-AVG	15000	0	210000	0
DI-N-BUTYL PHTHALATE	1/21	280 J	280 J	280	TF5-SB-971-0204-AVG	6100000	0	62000000	0
FLUORANTHENE	6/21	21.5	5.1	12.4	TF5-SB-971-0204-AVG	2300000	0	22000000	0
INDENO(1,2,3-CD)PYRENE	3/21	7.25	3.1	5.58	TF5-SB-971-0204-AVG	150	0	2100	0
NAPHTHALENE	3/21	5.9	4.7	5.17	TF5-SB-969-0204	3600	0	18000	0
PHENANTHRENE	5/21	12.5	4.2	7.19	TF5-SB-971-0204-AVG	1700000	0	17000000	0
PYRENE	8/21	18.5	3.6	9.18	TF5-SB-971-0204-AVG	1700000	0	17000000	0

As shown in the above table, there were 15 SVOCs, mostly PAHs, detected above reporting limits in subsurface soil. Concentrations of individual SVOCs ranged from 3.1 µg/kg (indeno(1,2,3-cd)pyrene) to 280 J µg/kg (di-n-butyl phthalate). The concentrations of the individual SVOCs were all below residential and industrial RSLs.

4.2.1.9 Dioxins in DU 5-1 Subsurface Soil Samples

The following table presents data summary statistics for dioxin TEQ values calculated for subsurface soil samples. A summary of TEQ calculations can be found on Table 4-13. All concentrations are in units of ng/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES	CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES
TEQ ½ NON-DETECT	11/11	7.55	0.09	3.49	TF5-SB-976-0204	4.5	4	18	0
TEQ 0 NON-DETECT	11/11	7.54	0.01	3.44	TF5-SB-976-0204	4.5	4	18	0

Both methods of calculating TEQs indicated exceedances of the residential RSL in four samples (TF5-SB-968-0204, TF5-SB-972-0204, TF5-SB-975-0204, and TF5-SB-976-0204). These locations are shown on Figure 4-7.

4.2.1.10 Pesticides/PCBs in DU 5-1 Subsurface Soil Samples

There were no pesticides or PCBs detected above reporting limits in DU 5-1 subsurface soil samples.

4.2.1.11 Metals in DU 5-1 Subsurface Soil Samples

The following table presents data summary statistics for metals detected in subsurface soil samples. All concentrations are in units of mg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
ALUMINUM	21/21	14000	876	6100	TF5-SB-971-0810	77000	0	990000	0
ARSENIC	21/21	67.2	3.5	27.2	TF5-SB-970-0810	0.39	21	1.6	21
BARIUM	21/21	20	1.4	9.56	TF5-SB-971-0204-AVG	15000	0	190000	0
BERYLLIUM	21/21	0.525	0.11	0.344	TF5-SB-973-0204-AVG	160	0	2000	0
CADMIUM	21/21	0.86	0.13	0.344	TF5-SB-970-0810	70	0	800	0
CALCIUM	17/21	2200	72.5	618	TF5-SB-974-0810-AVG				
CHROMIUM	21/21	21.7	2.3	10.2	TF5-SB-971-0810	0.29	21	5.6	18
COBALT	21/21	32.8	6.3	15.9	TF5-SB-970-0810	23	3	300	0
COPPER	21/21	35.8	4.9	16.6	TF5-SB-973-0810	3100	0	41000	0
IRON	21/21	72100	18500	38600	TF5-SB-966-0406	55000	5	720000	0
LEAD	21/21	15.3	1.1	6.61	TF5-SB-974-0204	400	0	800	0
MAGNESIUM	21/21	4870	172	1720	TF5-SB-971-0810				
MANGANESE	21/21	4220	114	597	TF5-SB-970-0810	1800	1	23000	0
MERCURY	2/21	0.0148	0.012	0.0134	TF5-SB-971-0204-AVG	5.6	0	34	0
NICKEL	21/21	72.5	13.2	29.8	TF5-SB-970-0810	1500	0	20000	0
POTASSIUM	21/21	374	43.5	165	TF5-SB-976-0810				
SELENIUM	14/21	7	2.3	3.74	TF5-SB-970-0810	390	0	5100	0
SILVER	15/21	0.65	0.081	0.22	TF5-SB-970-0810	390	0	5100	0
SODIUM	8/21	61.4	20.6	31.2	TF5-SB-970-0204				
THALLIUM	20/21	7.4	1	2.46	TF5-SB-972-0810				
VANADIUM	21/21	25	0.45	10.4	TF5-SB-971-0810	390	0	5200	0
ZINC	21/21	123	30.2	61.9	TF5-SB-970-0810	23000	0	310000	0

Twenty-two metals were detected above reporting limits in subsurface soil samples collected from DU 5-1. Five (arsenic, chromium, cobalt, iron, and manganese) were detected above residential RSLs and two (arsenic and chromium) were detected above industrial RSLs.

Arsenic and chromium concentrations exceeded the residential and industrial RSLs in all subsurface soil samples. Chromium exceeded the industrial RSL in 18 subsurface soil samples. Cobalt, iron, and manganese exceeded the residential RSL in 3, 5, and 1 sample, respectively.

4.2.1.12 ExTPH in DU 5-1 Subsurface Soil Samples

ExTPH analysis was performed on 5 of the 21 subsurface soil samples collected from DU 5-1. ExTPH was detected in one sample at a very low concentration of 35 J mg/kg.

4.2.2 Nature and Extent of Contamination in Groundwater (DU 5-1)

At DU 5-1, groundwater samples were collected in wells installed downgradient of the former OWS and along the former OWS discharge pipe. DU 5-1 monitoring well TF4-MW-917 was not sampled during the 2010 sampling event due to insufficient water volume in the monitoring well. The locations of the DU 5-1 groundwater monitoring wells are shown on Figure 2-2. Groundwater samples collected from DU 5-1 monitoring wells were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals. Groundwater sample results are compared to RSLs for tap water and EPA MCLs. Table 4-14 provides a summary of results for all analytes present at levels above detection limits in groundwater samples collected from DU 5-1. Figure 4-8 presents the locations where groundwater samples were collected within DU 5-1 and shows arsenic concentrations.

4.2.2.1 VOCs in DU 5-1 Groundwater Samples

The following table presents data summary statistics for VOCs detected in these groundwater samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
1,2,3-TRICHLOROBENZENE	1/4	1.2 J	1.2 J	1.2	TF5-MW-915-0510	29	0	--	--
BENZENE	1/4	1.2	1.2	1.2	TF5-MW-924-051810	0.41	1	5	0
CIS-1,2-DICHLOROETHENE	1/4	2	2	2	TF5-MW-924-051810	370	0	70	0

Three VOCs were detected above reporting limits in DU 5-1 groundwater. Benzene was the only VOC detected above a screening criterion. It was above the RSL for tap water); however, it was below the MCL. Benzene was detected once, in groundwater monitoring well TF5-MW-924, located in the vicinity of the former OWS. There were no exceedances of the EPA MCL regulatory standard in groundwater samples collected at DU 5-1.

4.2.2.2 SVOCs in DU 5-1 Groundwater Samples

The following table presents data summary statistics for SVOCs detected in these samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
CAPROLACTAM	4/4	160 J	1.7 J	47.9	TF5-MW-923-051810	18000	0	--	--

Only one SVOC, caprolactam, was detected at the Site. It was detected at least two orders of magnitude less than the RSL for tap water in each groundwater sample.

4.2.2.3 Pesticides and PCBs in DU 5-1 Groundwater Samples

There were no pesticides or PCBs detected in groundwater samples collected from DU 5-1.

4.2.2.4 Total Metals in DU 5-1 Groundwater Samples

The following table presents data summary statistics for total metals detected in groundwater samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	EPA RSL TAP WATER		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
ARSENIC	4/4	8.8	0.59 J	2.85	TF5-MW-915-0510	0.045	4	10	0
ALUMINUM	1/4	1480	1480	1480	TF5-MW-916-0510	37000	0		
BARIUM	4/4	69.3	6.8	25.3	TF5-MW-916-0510	7300	0	2000	0
BERYLLIUM	2/4	0.188 J	0.166	0.177	TF5-MW-916-0510	73	0	4	0
CADMIUM	2/4	0.183 J	0.074	0.128	TF5-MW-916-0510	18	0	5	0
COPPER	4/4	5.8	0.361	1.88	TF5-MW-916-0510	1500	0	1300	0
LEAD	1/4	1.7	1.7	1.7	TF5-MW-916-0510	--		15	0
POTASSIUM	4/4	2440	520	1560	TF5-MW-916-0510	--			
SELENIUM	2/4	0.667 J	0.185	0.426	TF5-MW-916-0510	180	0	50	0
SODIUM	4/4	29200	9520	19400	TF5-MW-916-0510				
VANADIUM	1/4	1.2 J	1.2	1.2	TF5-MW-916-0510	180	0		
COBALT	4/4	19	0.427	11.1	TF5-MW-923-0510	11	2		
IRON	4/4	24300	225	11100	TF5-MW-923-0510	26000	0		
MANGANESE	4/4	2510	82.4	1170	TF5-MW-923-0510	880	2		
NICKEL	4/4	57.8	14.5	35.8	TF5-MW-923-0510	730	0		

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	EPA RSL TAP WATER		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
ZINC	1/4	81.7 J	81.7	81.7	TF5-MW-923-0510	11000	0		
CALCIUM	4/4	28200	11800	18300	TF5-MW-924-0510				
MAGNESIUM	4/4	19600	7620	15100	TF5-MW-924-0510				

Eighteen total metals were detected above reporting limits. Arsenic exceeded its RSL for tap water in each groundwater sample. Manganese and cobalt exceeded RSLs for tap water in two of the groundwater samples. There were no exceedances of Federal MCLs in DU 5-1 groundwater samples.

4.2.2.5 Dissolved Metals in DU 5-1 Groundwater Samples

During the collection of Tank Farm 5 DU 5-1 groundwater samples, dissolved (or filtered) metals samples were collected when turbidity levels below 10 NTUs could not be achieved during well purging. Filtered metals samples were collected from monitoring wells TF5-MW-916 and TF5-MW-923 and were submitted to the lab for dissolved metals analysis. The following table presents data summary statistics for dissolved metals detected in these samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	EPA RSL TAP WATER		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
ALUMINUM	1/2	446	446	446	TF5-MW-916-0510	37000	0		
BARIUM	2/2	53.8	15.1	34.4	TF5-MW-916-0510	7300	0	2000	0
CADMIUM	1/2	0.084 J	0.084 J	0.084	TF5-MW-916-0510	18	0	5	0
COPPER	2/2	3.7	0.45	2.08	TF5-MW-916-0510	1500	0	1300	0
POTASSIUM	2/2	2250	1130	1690	TF5-MW-916-0510				
SELENIUM	1/2	0.573 J	0.573 J	0.573	TF5-MW-916-0510	180	0	50	0
SODIUM	2/2	26700	11400	19000	TF5-MW-916-0510				
ARSENIC	1/2	0.794 J	0.794 J	0.794	TF5-MW-923-0510	0.045	1	10	0
BERYLLIUM	2/2	0.16 J	0.107 J	0.134	TF5-MW-923-0510	73	0	4	0
CALCIUM	2/2	12900	12700	12800	TF5-MW-923-0510				
COBALT	2/2	18.3	9.3	13.8	TF5-MW-923-0510	11	1		
IRON	2/2	23500	128 J	11800	TF5-MW-923-0510	26000	0		
MAGNESIUM	2/2	16800	8720	12800	TF5-MW-923-0510				

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	EPA RSL TAP WATER		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
MANGANESE	2/2	2520	333	1430	TF5-MW-923-0510	880	1		
NICKEL	2/2	55.5	32.3	43.9	TF5-MW-923-0510	730	0		
ZINC	1/2	78.7	78.7	78.7	TF5-MW-923-0510	11000	0		

The dissolved metals, arsenic, cobalt, and manganese, were each detected at concentrations above the RSLs for tap water in monitoring well TF5-MW-923 located downgradient of the former OWS.

4.2.3 Nature and Extent of Contamination in Sediment (DU 5-1)

During the investigation of DU 5-1 sediment was collected from 12 locations within Gomes Brook and its associated wetlands and tributaries. Samples were analyzed for VOCs, SVOCs, dioxins, pesticides/PCBs and metals. Analytical results are provided as Table 4-15. A complete list of results for all parameters that were analyzed in DU 5-1 sediment samples can be found in Appendix G. Sample results are compared to EPA RSLs for residential soil and industrial soil. Figure 4-9 presents the sediment sample locations and concentrations of select PAHs, select metals and dioxins that exceeded the residential soil RSL. Compounds selected for figures were compounds with three or more concentrations above residential RSLs in a group.

4.2.3.1 VOCs in DU 5-1 Sediment Samples

The only VOCs present at levels greater than detection limits in sediment samples collected from DU 5-1 were 1,2-dichlorobenzene, acetone, and carbon disulfide. None exceeded residential RSLs. 1,2-dichlorobenzene was detected in just one sample, acetone (a common laboratory artifact) was detected in 11 samples, and carbon disulfide was detected in one sample.

4.2.3.2 SVOCs in DU 5-1 Sediment Samples

The following table presents data summary statistics for SVOCs detected in sediment samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
2,4-DIMETHYLPHENOL	1/12	1.6J	1.6J	1.6	TF5-SD-919-0006	1200000	0	12000000	0
2-METHYLNAPHTHALENE	10/12	210	3.6	32	TF5-SD-913-0006	310000	0	4100000	0
2-METHYLPHENOL	2/12	12	3.5	7.75	TF5-SD-918-0006	3100000	0	31000000	0
4-METHYLPHENOL	9/12	21	3.8	8.31	TF5-SD-921-0006	310000	0	3100000	0
ACENAPHTHENE	12/12	48	7.2	21	TF5-SD-913-0006	3400000	0	33000000	0
ACENAPHTHYLENE	12/12	110	6.6	32	TF5-SD-913-0006	3400000	0	33000000	0
ANTHRACENE	12/12	150	29	72.7	TF5-SD-922-0006	17000000	0	170000000	0
ATRAZINE	1/12	4.6J	4.6J	4.6	TF5-SD-918-0006	2100	0	7500	0
BENZO(A)ANTHRACENE	12/12	650	33J	279	TF5-SD-921-0006	150	8	2100	0
BENZO(A)PYRENE	12/12	780	42	348	TF5-SD-921-0006	15	12	210	8
BENZO(B)FLUORANTHENE	12/12	1000	72J	431	TF5-SD-924-0006	150	11	2100	0
BENZO(G,H,I)PERYLENE	12/12	630	32	286	TF5-SD-924-0006	1700000	0	17000000	0
BENZO(K)FLUORANTHENE	12/12	860	29J	334	TF5-SD-921-0006	1500	0	2100	0
BIS(2-ETHYLHEXYL)PHTHALATE	11/12	410	41J	182	TF5-SD-921-0006	35000	0	120000	0
CARBAZOLE	7/12	100	36J	65.1	TF5-SD-921-0006, TF5-SD-924-0006				
CHRYSENE	12/12	890	51	411	TF5-SD-924-0006	15000	0	210000	0
DIBENZO(A,H)ANTHRACENE	12/12	180	8.7	91.4	TF5-SD-921-0006	15	11	210	0
FLUORANTHENE	12/12	1800	100	780	TF5-SD-921-0006, TF5-SD-924-0006	2300000	0	22000000	0
FLUORENE	12/12	120	14	39.6	TF5-SD-913-0006	2300000	0	22000000	0
INDENO(1,2,3-CD)PYRENE	12/12	660	29	276	TF5-SD-924-0006	150	8	2100	0
NAPHTHALENE	11/12	130	3.92	21.7	TF5-SD-913-0006	3600	0	18000	0
PENTACHLOROPHENOL	1/12	34	34	34	TF5-SD-919-0006	3000	0	9000	0
PHENANTHRENE	12/12	690	130	344	TF5-SD-921-0006	1700000	0	17000000	0
PHENOL	6/12	8.7	2.52	6.3	TF5-SD-921-0006	18000000	0	180000000	0
PYRENE	12/12	1300	85	598	TF5-SD-921-0006, TF5-SD-924-0006	1700000	0	17000000	0

As shown in the table above, 25 SVOCs were detected in sediment samples above reporting limits. Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene) were detected above residential RSLs in at least eight samples. One compound (benzo(a) pyrene) was detected above the industrial RSL.

Benzo(a)anthracene was present in every sediment sample and exceeded residential criterion in eight samples, but it did not exceed industrial RSL. Benzo(a)pyrene exceeded the residential RSL in all 12 samples and exceeded the industrial criterion in 8 samples. Benzo(b)fluoranthene was detected in every sample, exceeded the residential RSL in all but one sample, but did not exceed the industrial RSL.

Dibenzo(a,h)anthracene exceeded the residential RSL in all but one sample, but did not exceed the industrial RSL. Indeno(1,2,3-cd)pyrene was detected in every sediment sample exceeded the residential RSL in 8 samples but did not exceed the industrial RSL.

Maximum concentrations for analytes that had exceedances were detected in either TF5-SD-921-0006 or TF5-SD-924-0006 (Figure 4-9).

4.2.3.3 Dioxins in DU 5-1 Sediment Samples

The following table presents data summary statistics for calculated dioxin TEQ values. Table 4-16 provides a summary of TEQ calculations. All concentrations are in units of ng/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES	CRITERIA (ng/kg)	NUMBER OF EXCEEDANCES
TEQ (½ U)	12/12	14.69	1.03	6.57	TF5-SD-924-0006	4.5	5	18	0
TEQ (0 U)	12/12	14.69	0.98	6.55	TF5-SD-924-0006	4.5	5	18	0

Both methods of calculating the dioxin TEQ value resulted in five exceedances of the residential RSL. The industrial RSL was not exceeded. Maximum detections were at sediment sample station TF5-SD-924 which is located immediately upstream of the Defense Highway culvert (Figure 4-9).

4.2.3.4 Pesticides/PCBs in DU 5-1 Sediment Samples

The following table presents data summary statistics for pesticides and PCBs detected in sediment samples. All concentrations are in units of µg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
4,4'-DDD	2/12	3.62J	3.4J	3.51	TF5-SD-923-0006-AVG	2000	0	7200	0
4,4'-DDE	4/12	5.4	3.9	4.7	TF5-SD-922-0006	1400	0	5100	0
4,4'-DDT	3/12	15	3.4	7.57	TF5-SD-922-0006	1700	0	7000	0
ALDRIN	1/12	2.6	2.6	2.6	TF5-SD-922-0006	29	0	100	0

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (µg/kg)	NUMBER OF EXCEEDANCES
ALPHA-BHC	1/12	2.1	2.1	2.1	TF5-SD-922-0006	77	0	270	0
AROCLOR-1260	5/12	78J	40J	58	TF5-SD-922-0006	220	0	740	0
ENDRIN ALDEHYDE	2/12	3.5	2.92J	3.21	TF5-SD-924-0006	18000	0	180000	0
ENDRIN KETONE	3/12	11	2.82	5.74	TF5-SD-922-0006	18000	0	180000	0
GAMMA-CHLORDANE	1/12	4.9J	4.9J	4.9	TF5-SD-922-0006	1600	0	6500	0

Eight pesticides and one PCB mixture were detected above reporting limits in sediment samples. There were no exceedances of residential or industrial RSLs.

4.2.3.5 Metals in DU 5-1 Sediment Samples

The following table presents data summary statistics for metals detected in sediment samples. All concentrations are in units of mg/kg.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
ALUMINUM	12/12	12600	4500	9360	TF7-SD-917-0006	77000	0	990000	0
ARSENIC	12/12	121	10.5	23.5	TF5-SD-914-0006	0.39	12	1.6	12
BARIUM	12/12	47.2J	12J	28.9	TF5-SD-924-0006	15000	0	190000	0
BERYLLIUM	12/12	1.1J	0.24J	0.509	TF5-SD-914-0006	160	0	2000	0
CADMIUM	12/12	2	0.25J	0.612	TF5-SD-914-0006	70	0	800	0
CALCIUM	11/12	3680J	813J	1940	TF5-SD-924-0006				
CHROMIUM	12/12	18.8J	6.9J	15	TF5-SD-914-0006	0.29	12	5.6	12
COBALT	12/12	95	5.55	16.4	TF5-SD-914-0006	23	1	300	0
COPPER	12/12	43	4.9	26.1	TF5-SD-918-0006	3100	0	41000	0
IRON	12/12	166000	15300	35800	TF5-SD-914-0006	55000	1	720000	0
LEAD	12/12	95.8J	11.5J	49.9	TF5-SD-918-0006	400	0	800	0
MAGNESIUM	12/12	3050	784	2290	TF5-SD-922-0006				
MANGANESE	12/12	982	112	292	TF5-SD-914-0006	1800	0	2300	0
MERCURY	12/12	0.19J	0.0145J	0.0877	TF5-SD-918-0006	5.6	0	34	0
NICKEL	12/12	127	13.4	342	TF5-SD-914-0006	1500	0	20000	0
POTASSIUM	12/12	546	193J	339	TF5-SD-924-0006				
SILVER	2/12	0.278J	0.14J	0.209	TF5-SD-923-0006-AVG	390	0	5100	0
SODIUM	12/12	252	30.2	119	TF5-SD-918-0006				

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Residential		RSL Industrial	
						CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES	CRITERIA (mg/kg)	NUMBER OF EXCEEDANCES
THALLIUM	4/12	1.7J	0.33J	0.795	TF5-SD-924-0006				
VANADIUM	12/12	27.3	6.6J	18.6	TF5-SD-918-0006	390	0	5200	0
ZINC	12/12	190	63.8	112	TF5-SD-924-0006	23000	0	310000	0

Twenty one metals were detected above reporting limits in sediment samples. Calcium was detected in all but one sample, silver was detected in two samples and thallium was detected in four samples. The remaining 19 metals were detected in every sample that was collected. Four of the detected metals were detected above residential RSLs (arsenic, chromium, cobalt and iron) and arsenic and chromium were detected above industrial RSLs in all 12 the samples collected.

Arsenic was detected in every sediment sample above both the residential and industrial RLSs. Chromium was detected in every sediment sample above both the residential and industrial RSLs. Cobalt was detected above the residential RSL in one sample but the industrial RSL was not exceeded. Iron was detected above the residential RSL in one sample but did not exceed the industrial RSL.

The highest concentrations of metals exceeding RSLs in this DU was sediment sample TF5-SD-914-0006.. This sample station is located on the southwest bank of Gomes Brook, in the vicinity of the former discharge from chamber A-18 (Figure 4-9).

4.2.4 Nature and Extent of Contamination in Surface Water (DU 5-1)

During the investigation of DU 5-1 surface water was collected from 11 locations within Gomes Brook and its associated wetlands and tributaries. Samples were analyzed for VOCs, SVOCs, pesticides, PCBs and metals. Analytical results for compounds detected in DU 5-1 surface water samples are provided as Table 4-17. Analytical results for all parameters that were analyzed in DU 5-1 surface water samples are provided as part of Appendix G. Sample results are compared to EPA RSLs for tap water and EPA MCLs. Figure 4-10 presents surface water sampling stations and shows concentrations of select PAHs and arsenic. Compounds selected for figures were compounds with three or more concentrations above residential RSLs in a group.

4.2.4.1 VOCs in DU 5-1 Surface Water Samples

Only one VOC, chloroform, was detected above reporting limits, and it was only detected in one sample, TF5-SW-918-0310. It exceeded the EPA RSL Tap Water criterion of 0.19 µg/L with a detection of 1 µg/L; but it did not exceed the EPA MCL of 80 µg/L.

4.2.4.2 SVOCs in DU 5-1 Surface Water Samples

The following table presents data summary statistics for SVOCs detected in these samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
2-METHYLNAPHTHALENE	2/11	3.3	0.25	1.78	TF5-SW-919-0310	150	0		
ACENAPHTHENE	1/11	0.36	0.36	0.36	TF5-SW-919-0310	2200	0		
ACENAPHTHYLENE	1/11	0.82	0.82	0.82	TF5-SW-919-0310	2200	0		
ANTHRACENE	1/11	0.11	0.11	0.11	TF5-SW-919-0310	11000	0		
BENZO(A)ANTHRACENE	6/11	0.2J	0.11J	0.152	TF5-SW-917-0310	0.029	6		
BENZO(A)PYRENE	2/11	0.16	0.13	0.145	TF5-SW-918-0310	0.0029	2	0.2	0
BENZO(B)FLUORANTHENE	4/11	0.25	0.11	0.158	TF5-SW-918-0310	0.029	4		
BENZO(G,H,I)PERYLENE	1/11	0.13	0.13	0.13	TF5-SW-918-0310	1100	0		
BENZO(K)FLUORANTHENE	1/11	0.15	0.15	0.15	TF5-SW-918-0310	0.29	0		
CHRYSENE	4/11	0.18	0.11	0.138	TF5-SW-918-0310	2.9	0		
FLUORANTHENE	6/11	0.36	0.12	0.24	TF5-SW-918-0310	1500	0		
FLUORENE	1/11	1.3	1.3	1.3	TF5-SW-919-0310	1500	0		
INDENO(1,2,3-CD)PYRENE	1/11	0.11	0.11	0.11	TF5-SW-918-0310	0.029	1		
NAPHTHALENE	2/11	1.5	0.59	1.04	TF5-SW-919-0310	0.14	2		
PHENANTHRENE	10/11	1.1	0.075	0.25	TF5-SW-919-0310	1100	0		
PYRENE	5/11	0.3	0.13	0.224	TF5-SW-917-0310	1100	0		

Sixteen SVOCs were detected in surface water samples above reporting limits. Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene and naphthalene) were detected in at least one sample at levels exceeding the RSL for tap water.

Benzo(a)anthracene was detected in six samples and it exceeded the RSL for tap water in all six samples. Benzo(a)pyrene was detected in two samples and it exceeded RSL for tap water in both samples, but neither sample exceeded the MCL. Benzo(b)fluoranthene was detected in four samples above the RSL for tap water. Indeno(1,2,3-cd)pyrene was detected in one sample and it exceeded the

RSL for tap water. Naphthalene was detected in two samples and it exceeded the RSL for tap water in both.

4.2.4.3 Pesticides/PCBs in DU 5-1 Surface Water Samples

There were no pesticides or PCBs detected above reporting limits in surface water samples collected from DU 5-1.

4.2.4.4 Metals in DU 5-1 Surface Water Samples

The following table presents data summary statistics for metals detected in surface water samples. All concentrations are in units of µg/L.

PARAMETER	FREQUENCY (detections)	MAX	MIN	AVG	LOCATION OF MAX.	RSL Tap Water		MCL	
						CRITERIA (µg/L)	NUMBER OF EXCEEDANCES	CRITERIA (µg/L)	NUMBER OF EXCEEDANCES
ALUMINUM	1/11	852	852	852	TF5-SW-918-0310	37000	0		
ARSENIC	5/11	0.299J	0.244J	0.28	TF5-SW-919-0310	0.045	5	10	0
BARIUM	11/11	11	7.9	9.16	TF5-SW-918-0310	7300	0	2000	0
CALCIUM	11/11	17700	11400	15000	TF5-SW-915-0310				
COBALT	11/11	0.564J	0.274J	0.364	TF5-SW-919-0310	11	0		
COPPER	11/11	3.3	0.9J	1.8	TF5-SW-915-0310	1500	0	1300	0
IRON	7/11	2930	215	725	TF5-SW-918-0310	26000	0		
LEAD	11/11	0.533J	0.193J	0.289	TF5-SW-915-0310			15	0
MAGNESIUM	11/11	8250	5250	6400	TF5-SW-915-0310				
NICKEL	11/11	5.4	1.6	3.23	TF5-SW-918-0310	730	0		
POTASSIUM	11/11	2760	1170	2050	TF5-SW-918-0310				
SELENIUM	11/11	0.256J	0.168J	0.21	TF5-SW-917-0310	180	0	50	0
SODIUM	11/11	39600	22500	30600	TF5-SW-915-0310				

Thirteen metals were detected above reporting limits in the surface water samples that were collected from DU 5-1. As was the case for DU 4-1, the only metal detected at levels above the RSL for tap water was arsenic. Arsenic was detected in five samples and exceeded the RSL for tap water in all five.

4.3 SUMMARY OF NATURE AND EXTENT OF CONTAMINATION DU 4-1

Analytical results from soil samples collected from within DU 4-1 show few contaminants at low concentrations. The analyte groups with more screening level exceedances are SVOCs (mainly PAHs)

and metals. The distribution of PAHs around the discharge area for Ruin 1 suggests a pattern of higher concentrations of PAHs in soil around the discharge area. The seven surface soil samples (Figure 4-1) that are clustered around the northern and southern edges of the former excavation area contain total PAHs that range between 91 and 976 µg/Kg. The one surface soil sample (SB-934) collected from the eastern edge of the excavation area, and about 20-feet east of the terminus of a Ruin 1 discharge pipe, contained 217,000 µg/Kg total PAHs. Surface soil samples collected uphill from Ruin 1 and Ruin 2 discharge areas range from non-detect to 193 µg/Kg. Increased PAHs around the terminus of the discharge pipe for Ruin 2 are also noted, however, the highest concentration of total PAHs in the Ruin 2 area is just upstream of the discharge pipe. Overall, concentrations of PAHs in subsurface soil are markedly less than concentrations of PAHs in surface soil at individual locations and as a group. Unlike PAHs, a pattern of higher concentrations of metals in soil around discharge areas was not evident.

The two metals in soil with concentrations consistently above screening criteria were arsenic and chromium. Arsenic has been found to be present in elevated concentrations in soils on Aquidneck Island. Concentrations of chromium, in surface and subsurface soils, are within site background levels and are not considered to be site related (Appendix F). Although present at naturally occurring levels, chromium was carried through the HHRA in accordance with USEPA guidance (Section 6.0).

The lack of TPH and PCBs identified in soil samples collected from DU 4-1 indicate that the majority of contamination observed during the 2005/2006 excavation was removed at that time. This is supported by the fact that sample locations for the DGA were clustered around the limits of the 2005/2006 excavation area, finding minimal contaminants present, and those present at relatively low concnetrations.

Sediment collected from DU 4-1 showed essentially the same results as soil. Few SVOCs were detected, and benzo(a)pyrene, which was detected at elevated levels in every sample collected, showed no clear distribution that suggests an uncontrolled source. Arsenic and chromium were found throughout the entire decision unit and at similar concentrations throughout.

Surface water samples showed arsenic present above RSLs for tap water in four of the ten samples and one PAHs (benzo(a) anthracene) present above RSL for tap water in two of the ten samples.

One of the field duplicate groundwater samples collected from TF4-MW-913, a shallow well adjacent to Ruin 2, reported PCBs (Aroclor 1248 and Aroclor 1254) above the MCL, and endrin aldehyde present; however, the other field duplicate sample at this location did not have Aroclor or endrin aldehyde reported. These Aroclors were the only compounds detected above MCLs in groundwater at Tank Farm 4. The metals arsenic, cobalt and manganese were reported above the RSLs for tap water in between four and seven of the groundwater samples.

4.4 SUMMARY OF NATURE AND EXTENT OF CONTAMINATION IN DU 5-1

Analytical results from soil samples collected from DU 5-1 indicated few contaminants at concentrations above the screening levels. There were a few samples with elevated levels of SVOCs, mainly PAHs such as benzo(a)pyrene. Arsenic and chromium were found across the entire site in both surface and subsurface soil at concentrations above RSLs. Concentrations of chromium are within site background levels and are not considered to be site related (Appendix F). Although present at naturally occurring levels, chromium was carried through the HHRA (Section 6.0) in accordance with USEPA guidance.

Sediment samples collected from within DU 5-1 did show elevated levels of PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene) above RSLs. These PAHs were detected at these levels in most sediment samples that were collected. Arsenic and chromium were detected above RSLs in all samples collected.

Some aqueous samples did show elevated levels of the same SVOCs that were detected in the soil and sediment samples. Surface water samples contained PAHs (benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene and naphthalene) and chloroform above the RSL for tap water in some locations. Arsenic was detected above RSLs in surface water samples.

Arsenic, cobalt and manganese were also detected in groundwater samples above RSLs. In addition, benzene was detected above the RSL for tap water, but below the MCL, in one groundwater sample downgradient of the OWS. No compounds were detected above MCLs in Tank Farm 5 groundwater.

5.0 CONTAMINANT FATE AND TRANSPORT

The fate and transport of contaminants in environmental media are determined by a variety of factors. The physical and chemical properties of contaminants and the environmental media (i.e., soil, groundwater, sediment, and surface water) in which the contaminants are released are all factors that determine the eventual fate of these chemicals. The combination of site-related contaminants, geologic and hydrogeologic conditions, and surface features influence how contaminants released to site have migrated into soils, sediments, surface water, and underlying groundwater, or have been transformed as the result of degradation processes.

The contaminant sources at DU 4-1 and DU 5-1 have already been identified. Prior to the implementation of the data gaps assessment work, the releases from these sources had been identified, investigated and partially remediated. This data gaps report was prepared to determine if risk from the residual contamination (post removal) exists. Therefore, since the sources of contamination have been removed from the site, the fate and transport discussion in this section is limited to a discussion of the residual constituents that remain.

Generally low levels of constituents (primarily PAHs and metals) were found to be present in soil, groundwater, surface water, and sediment at DU 4-1 and DU 5-1.Some of the metals have been shown in the background comparison study (Appendix F) to be attributable to background and not activities that occurred at DU 4-1 and DU 5-1. Furthermore, although there is no database on the background concentrations of PAHs at the Naval Station Newport, the low concentrations of PAHs present at DU 4-1 and DU 5-1 are, with few exceptions, similar to concentrations commonly found in urban fill in New England. In addition, very low concentrations of dioxins (measured as TEQ values) were measured in the soil and sediment.

The nature and extent of these constituents in DU 4-1 and DU 5-1 is discussed in detail in Section 4 of this report.

5.1 CONTAMINANT FATE AND TRANSPORT DU 4-1

Past activities including the release of waste from the former burn pit/oil water separators (Ruin 1 and Ruin 2) to the site's ground surface and/or subsurface may have resulted in the presence of PAHs, metals, and dioxins in site soils at concentrations greater than screening levels used in this data gaps report. Constituents measured during this data gaps investigation included residual constituents (either naturally present or introduced) after the removal actions that were conducted in this area. In addition,

PCBs above MCLs have been found in one groundwater well. Depending on a variety of factors, some of these chemicals may be mobilized and migrate into other environmental media.

5.1.1 PAH Fate and Transport

PAHs are non-volatile or have low volatility, and are not very soluble. PAHs are likely to remain adsorbed to soil particles and are only gradually leached by precipitation or infiltration. This is supported by the lack of PAH detections in groundwater wells at the site. For these compounds, biodegradation is possible, but is likely to be slow.

PAHs adsorbed to the soil particles present at the ground surface could be conveyed over land suspended in runoff that occurs during precipitation events or through the wind erosion of soil. Wind erosion could cause contaminants adsorbed to soil particles to be transported offsite through advective air flow. Such erosion is significantly reduced with the presence of a vegetative cover, as is the case at most portions of this site.

While PAHs were frequently detected at concentrations exceeding screening levels in site soils, the concentrations in most samples were low, and the lack of PAHs in groundwater demonstrate that these constituents are not mobilizing to groundwater. Erosion of soils may cause the transport of PAHs to sediments, and also to surface water. In addition, PAHs sporadically detected in surface water, and at low concentrations, could also be a result of entrained sediment being collected along with the surface water, and are not as likely to be present as a dissolved phase in that water.

5.1.2 Metals Fate and Transport

Metals were detected frequently in surface and subsurface soil samples collected at DU 4-1. However, only arsenic and chromium were detected above screening criteria in surface soil and only arsenic, chromium, cobalt, iron and manganese were detected above screening criteria in subsurface soil. When subjected to precipitation infiltration soluble metals can be leached from the soils and conveyed into the underlying groundwater. Soluble metals may also be leached from the soils into groundwater through the seasonal rise and fall of the water table.

Once metals are leached from the soils into groundwater, the dissolved-phase metals will continue to migrate with groundwater flow. Other natural reactions may occur that retard (i.e., sorption, reduction-oxidation reactions, etc.) the rate at which the metals migrate in the subsurface. Groundwater beneath DU 4-1 contain arsenic, cobalt and manganese above screening levels, suggesting chromium and iron are not leaching at rates that are adversely impacting groundwater.

As groundwater migrates, some of the metals will undergo transformation processes that result in their return to an insoluble state. Reduction-oxidation, precipitation, and adsorption reactions can cause the dissolved phase ions to leave the aqueous phase. However, some of these metals will continue to migrate with groundwater. As dissolved metals are discharged to the wetland areas, some of the metals will likely be adsorbed and removed from the aqueous phase because of interactions with organic materials, sulfides, or oxyhydroxides in those sediments. This is a part of a natural filtration process that is commonly seen in wetland sediments. Sediments at the site were observed to contain arsenic, chromium, iron and manganese above screening criteria, suggesting such transport and or natural filtration processes could have occurred at the site.

The metal ions introduced will adsorb to the organics-rich sediments or to the fine-grained particles in sediments. Metals bound to sediments will likely be immobile and become buried over time.

Metals were detected in surface water samples collected from DU 4-1. Metals in surface water are likely the result of discharge from groundwater or erosion (wind and overland runoff) from soil.

Once in surface water, dissolved metals will migrate overland, some of the metals will undergo transformation processes that result in their return to an insoluble state. Reduction-oxidation, precipitation, and adsorption reactions can cause the dissolved phase ions to leave the aqueous phase. Once in surface water, undissolved metals are likely be adsorbed and removed from the aqueous phase through physical interactions with organic materials, sulfides, or oxyhydroxides, bind with the sediment, and settle out of the water column.

5.1.3 Background Comparison of Metals, DU 4-1

A background comparison evaluation was conducted that used comparative statistical methods to compare soil data collected during the Tank Farms 4 and 5 2010 field sampling event to a Newport background soil data set (Appendix F). Background data sets were published through the performance of the Basewide Background Study Report (Tetra Tech, 2008a). Site soil data were classified by soil depth (surface versus subsurface) and soil type. Three possible soil types are present in DU 4-1: Merrimack mucky slit loam (MmA), Newport silt loam (Ne), and Stissing silt loam (Se).

The comparison of site data with the background data involved a graphical evaluation and a hypothesis test comparing the mean/median concentrations. The graphical evaluation consisted of visual inspection of boxplots, normal probability plots, and histograms. If there were less than four samples in the site data a formal hypothesis test was not computed and the conclusion was made based on the graphical

evaluation. Refer to Appendix F for a description of the hypothesis test used and a summary of the soil data comparisons for each class of metals in surface and subsurface soil.

In DU 4-1 surface soil samples, arsenic and chromium were the only metals detected at concentrations exceeding Residential RSLs. These exceedances were measured in each of the three soil types sampled at DU 4-1. The 2010 surface soil dataset for the metals arsenic and chromium were divided by soil type and then statistically compared to background values of the same soil type. The surface soil data comparison indicated that:

1) Arsenic concentrations measured in types Ne and Se surface soils are similar to background values, and arsenic concentrations measured in type MmA surface soils at the site are greater than background values; and
2) Chromium in all the soil types at the site is similar to background and is attributable to natural background conditions.

In DU 4-1 subsurface soil samples, arsenic, chromium, cobalt, iron, and manganese were the only metals detected at concentrations exceeding RSLs. The statistical data comparison indicated the following:

1) arsenic, chromium, and iron exceedances are either similar to, or less than background concentrations for their respective soil type;
2) cobalt exceedances are greater than background for each of the three soil types; and
3) manganese exceedances for types Ne and Se soil are similar to background, while manganese in soil type MmA is greater than background.

5.1.4 Polychlorinated Biphenyls (PCBs) Fate and Transport

PCBs were not detected in surface soil, surface water, or sediment samples collected at the site. The presence of PCBs in one groundwater sample at Ruin 2 is attributed to analytical laboratory cross-contamination, as described in Section 4. One PCB mixture, Aroclor-1254, was detected in one subsurface soil (TF4-SB-942-0204) sample at a concentration well below the screening level. The low concentration of PCBs in soil was detected near the outfall of the discharge pipe from Ruin 2. PCBs were not detected in sediment or surface water.

Since PCBs are nearly insoluble in water and sorb strongly to soil, most of the PCBs mass will likely sorb to soil and remain bound, where it is expected to remain immobile. Biodegradation of PCBs does occur, but usually the degradation rate is very low.

5.1.5 Summary of Fate and Transport at DU 4-1

Residual concentrations of PAHs remaining in soils and sediment after removal actions in this area are relatively non-volatile organic compounds and are generally insoluble in water. Similarly, PCBs are relatively non-volatile and are expected to adsorb to soil where they are likely to remain bound. Metals are likely to accumulate within the wetland areas and remain chemically and physically bound within the sediment in a reducing environment.

5.2 CONTAMINANT FATE AND TRANSPORT DU 5-1

Past activities including the release of waste from the former burn pit/oil water separator to the site's ground surface and/or subsurface may have resulted in the presence of PAHs, metals, and dioxins in site soils at concentrations greater than screening levels used in this data gaps report. Constituents measured during this data gaps investigation are those (either naturally present or introduced) that are residual after the removal actions conducted in this area. Depending on a variety of factors, some of these chemicals may be mobilized and migrate into other environmental media.

5.2.1 PAH Fate and Transport

PAHs were detected frequently in DU 5-1 surface soil samples but were not in subsurface soil samples. PAHs are typically non-volatile or have low volatility, and have low solubility. Therefore, these PAHs within soils are likely to remain adsorbed to soil particles. This is supported by the lack of PAHs in subsurface soil and groundwater wells at the site. For PAHs, biodegradation is possible, but is likely to be slow.

PAHs adsorbed to the soil particles present at the ground surface could be conveyed over land suspended in runoff that occurs during precipitation events or through the wind erosion of soil. Wind erosion could cause contaminants adsorbed to soil particles to be transported offsite through advective air flow. Such erosion is significantly reduced with the presence of a vegetative cover, as is the case at this site.

Five PAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene] were all detected at concentrations exceeding RSL residential soil criteria, with benzo(a)pyrene also exceeding RSL industrial criteria in surface soils. PAHs were also detected frequently in DU 5-1 sediment samples, with concentrations of five PAHs exceeding RSL residential criteria in sediment. These PAHs are likely to remain adsorbed to soil or sediment particles.

Concentrations of five PAHs exceeded RSL levels for residential tapwater in surface water. PAHs detected at low concentrations in surface water are likely to be a result of entrained sediment being collected along with the surface water, and are not as likely to be present as a dissolved phase in that water. Based on the similarity of contaminants present in site surface soils, surface water, and sediment, and the lack of significant levels of PAHs in subsurface soil and groundwater, there is a perceived connection between the soil PAHs and the surface water PAHs. However, this is likely from a past operational discharge from the oil water separator, and is not likely a continuing migration under a steady state condition.

5.2.2 Dioxin Fate and Transport

Dioxins tend to sorb strongly to organic matter within soils. Dioxins do not readily dissolve in surface water or groundwater. The vast majority of the dioxins that were produced by combustion of sludge at the former oil water separator/ burn chamber were likely confined to the former burn chamber, which has already been cleaned and decommissioned. Dioxins were also likely discharged directly to the wetland system via the discharge pipe. These dioxins would bind to the organic matter in the wetland and become entrained within that sediment, or transported with suspended sediment in surface water flow.

Lesser quantities of dioxins would have migrated in the smoke from the combustion of the sludge. These constituents would have dispersed and been deposited via aerial deposition. The concentrations from this deposition mechanism would be extensively diluted due to the large areas over which deposition would occur. Dioxins deposited from atmospheric fallout will tend to accumulate in surface soil, and found in undisturbed surface soil. They are subject to erosion from soil to wetland systems through mechanical transport of the organic matter, or become entrained within the vegetated soil layer. They are not volatile and are stable within soils and sediment.

Dioxins were detected frequently in DU 5-1 soil samples. The site-specific concentrations of dioxins exceed residential RSLs in soil samples collected from 0-1 feet and 2-4 feet bgs. The distribution of dioxins detected at the DU 5-1 is relatively uniform across the entire decision unit. There is no relationship evident between distance from the oil water separator/ burn chamber and dioxin concentrations. In addition, the surface soil (0 to 1 foot bgs) and subsurface soil (2 to 4 feet bgs) data sets have very similar dioxin concentrations. The range, and mean of dioxin concentrations in the surface soil and subsurface soil data sets are very similar, suggesting atmospheric deposition from the burn chamber to be a lesser contributor to the dioxin in DU 5-1 soil.

Furthermore, dioxins are ubiquitous within the environment due to regional industrial and other human activities. The concentrations of dioxins detected in all surface and subsurface soil samples collected in

DU 5-1 were below the dioxin background concentration of 8 ng/Kg that has been published by EPA (USEPA, 1994). The 8 ng/Kg value is also a background value published as part of Navy Guidance for Conducting Human Health Risk Assessments. Dioxins are therefore presumed to be both anthropogenic (associated with non-point sources) and a result of local burning of tank sludge in the former burn chamber.

5.2.3 Metals Fate and Transport

Arsenic and chromium were the only metals detected in surface soils at concentrations exceeding Residential and Industrial RSLs, while arsenic, chromium, cobalt, iron, and manganese were all detected above Residential RSLs in subsurface soil samples.

When subjected to precipitation infiltration, soluble metals can be leached from the soils and conveyed into the underlying groundwater. Soluble metals may also be leached from the soils into groundwater through the seasonal rise and fall of the water table. Arsenic, cobalt, and manganese were the only metals detected at concentrations exceeding the EPA tap water RSL. There were no exceedances of MCLs.

As groundwater migrates, some of the metals will undergo transformation processes that result in their return to an insoluble state. Reduction-oxidation, precipitation, and adsorption reactions can cause the dissolved phase ions to leave the aqueous phase. However, some of these metals will continue to migrate with groundwater. As dissolved metals are discharged to the wetlands, some of the metals will likely be adsorbed and removed from the aqueous phase because of interactions with organic materials, sulfides, or oxyhydroxides in the sediments. This is a part of a natural filtration process that is commonly seen in wetland sediments. Sediments at the site were observed to contain arsenic, chromium, cobalt, and iron), above screening criteria, suggesting such transport and or natural filtration processes could have occurred at the site.

Erosion (wind and overland runoff) are also a potential method of transport from soil to sediment, however not as likely.

Only one metal, arsenic, was detected at levels exceeding the screening criteria in surface water. Metals in surface water are likely the result of discharge from groundwater. Erosion (wind and overland runoff) are also a potential method of transport from soil to surface water.

Once in surface water, dissolved metals will migrate, some of the metals will undergo transformation processes that result in their return to an insoluble state. Reduction-oxidation, precipitation, and

adsorption reactions can cause the dissolved phase ions to leave the aqueous phase. Undissolved metals are likely be adsorbed and removed through physical interactions with organic materials, sulfides, or oxyhydroxides, bind with the sediment, and settle out of the water column.

5.2.4 Background Comparison of Metals

Comparative statistical methods were used to compare soil data from the DU 5-1 2010 field sampling event to the Newport background soil data set. A soil distribution analysis indicates that two soil types (Pm and Ne) are present at DU 5-1.

Arsenic and chromium were the only metals to exceed screening levels in surface soil, and concentrations of these metals in soil were compared to background. The data comparison for arsenic found in surface soil indicated that arsenic concentrations found in type Ne surface soils are greater than background levels, while concentrations of arsenic found in type Pm surface soils are similar to background values and attributable to natural conditions.

The data comparison for chromium in surface soil indicates that chromium in both the Ne soil type and the Pm soil type are less than background levels indicating that chromium found at DU 5-1 is attributable to background conditions.

For subsurface soil samples, the statistical data comparison indicated the following:

1) Arsenic, cobalt, and iron measured in site subsurface soil is greater than background concentrations;
2) chromium measured in site subsurface soil is either less than or similar to background concentrations; and
3) manganese measured in Ne soils are greater than background, but less than background in the Pm soil type.

5.2.5 Summary of Fate and Transport at DU 5-1

Residual concentrations of PAHs which are presumed to be remaining in soils and sediment after removal actions in this area are relatively non-volatile organic compounds and are generally insoluble in water. Presence of PAHs in surface water can be attributed to suspended sediments, and may be mobilized through heavy waterflow through the area. Metals are likely to accumulate within the wetland and remain chemically and physically bound within the sediment in a reducing environment.

Concentrations of metals in site media are mostly attributable to background conditions, with the exception of arsenic, cobalt, iron and manganese in subsurface soil, and arsenic in Ne surface soils.

6.0 HUMAN HEALTH RISK ASSESSMENT

This section presents the Human Health Risk Assessment (HHRA) for Tank Farms 4 and 5 at the Naval Station (NAVSTA) Newport. The objective of the HHRA is to determine whether detected concentrations of chemicals in the study area pose a significant threat to potential human receptors under current and/or future land use. The potential risks to human receptors are estimated based on the assumption that no actions are taken to control contaminant releases.

The following current guidance and reports published by the Department of the Navy, the United States Environmental Protection Agency (USEPA), and the State of Rhode Island were considered in the preparation of this document:

- Conducting Human Health Risk Assessments under the Environmental Restoration Program (Navy, 2008).
- Navy Policy on the Use of Background Chemical Levels (Navy, 2004).
- Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (RIDEM, 2004).
- Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part A) (USEPA, 1989).
- Soil Screening Guidance: Technical Background Document (USEPA, 1996).
- Exposure Factors Handbook (USEPA, 1997).
- Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (USEPA, 2002).
- Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) (USEPA, 2004).
- Guidance for Characterizing Background and Chemical Concentrations in Soil for CERCLA Sites (USEPA, 2002).
- Guidelines for Carcinogen Risk Assessment (USEPA, 2005).

- Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

- Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA, 2009).

The HHRA is structured and reported according to the guidelines of the Risk Assessment Guidance for Superfund (RAGS), Human Health Evaluation Manual, Part D: Standardized Planning, Reporting, and Review of Superfund Risk Assessments (RAGS Part D) (USEPA, 2001). The assessment follows the methodology presented in the approved Technical Memorandum for Data Summary and Plan for Risk Assessment (Tetra Tech, 2007) and the approved Sampling and Analysis Plan (Tetra Tech, 2010).

This HHRA consists of five components: data evaluation, exposure assessment, toxicity assessment, risk characterization, and uncertainty analysis. Sections 6.1 through 6.6 contain detailed discussions of the six components of the HHRA.

Three major aspects of chemical contamination and environmental fate and transport must be considered to evaluate potential risks: (1) contaminants with toxic characteristics must be found in environmental media and must be released by either natural processes or by human action; (2) potential exposure points must exist; and (3) human receptors must be present at the point of exposure. Risk is a function of both toxicity and exposure. If any one of these factors is absent for a site, the exposure pathway is incomplete, and no potential risks are considered to exist for human receptors.

6.1 DATA EVALUATION

Data evaluation, the first component of a baseline HHRA, is a medium-specific task involving the compilation and evaluation of analytical data. The second step (and the main objective) of the data evaluation is to develop a medium-specific list of chemicals of potential concern (COPCs) that will be used to quantitatively and/or qualitatively determine potential human health risks for site media. COPCs are selected primarily based on a toxicity screen (i.e., a comparison of site contaminant concentrations to conservative toxicity screening values) and a background screen (i.e., a comparison of site concentrations to background concentrations).

6.1.1 Data Usability

A data usability review (Section 1.4.4) was performed for the environmental samples collected prior to this data gaps assessment. The results of the review indicate that the older data are not suitable for use in the risk assessment due to age, representativeness, quality, limitation of analytes, or depth of collection. A data comparison between data collected during the 2005/2006 excavation and data collected as part of this DGA is presented in Appendix A-2 of this report.

Fixed base analytical results for the target analytes lists for the current field investigations were used in the quantitative risk evaluation. Unfiltered results for groundwater and surface water were used to assess risks associated with these media. Samples that were used in this HHRA are listed on the COPC selection tables and in Appendix H.1.

6.1.2 Selection of Chemicals of Potential Concern

The selection of COPCs is a quantitative screening process used to limit the number of chemicals and exposure routes quantitatively evaluated in the baseline HHRA to those site-related constituents that dominate overall potential risks. Screening by risk-based concentration (RBC) is used to focus the risk assessment on meaningful chemicals and exposure routes.

In general, a chemical is selected as a COPC and retained for further quantitative risk evaluation if the maximum detection in a sampled medium exceeds the lowest RBC and was present above background levels. Chemicals eliminated from further evaluation are assumed to present minimal risks to potential human receptors. Medium-specific tables summarizing the selection of COPCs are included in the risk assessment.

6.1.2.1 Derivation of Screening Criteria

The primary criteria used to identify COPCs for Tank Farms 4 and 5 are based on USEPA Regional Screening Levels (RSLs) (2010) and criteria established by the RIDEM, Office of Waste Management (2004). The RSLs were developed and are maintained through a cooperative agreement between Oak Ridge National Laboratory and USEPA's Office of Superfund and are considered to be USEPA screening criteria. The RSLs are based on exposure pathways for which generally accepted methods, models, and assumptions have been developed (i.e., ingestion, dermal contact, and inhalation) for specific land-use conditions and do not consider impact to groundwater or ecological receptors. The screening concentrations based on the RSLs correspond to a systemic hazard quotient (HQ) of 0.1 for non-carcinogens or an incremental lifetime cancer risk (ILCR) of 1×10^{-6} for carcinogens. The RSLs for non-

carcinogens are based on an HQ of 1, whereas the screening concentrations used in the selection of COPCs were based on an HQ of 0.1 to account for the potential cumulative effects of several chemicals affecting the same target organ or producing the same adverse non-carcinogenic effect. The RIDEM criteria include residential direct contact exposure criteria, leachability criteria (classification GA), and GA groundwater objectives.

The COPC screening levels used for each medium in the risk assessment are discussed below.

Screening Levels for Soil and Sediment

Screening levels based on the following criteria were used to select COPCs for surface and subsurface soil and sediment:

- RSLs for residential soil (USEPA, 2010).
- RIDEM Direct Exposure Criteria (DECs) for residential soil (2004).

Maximum chemical concentrations in soil were also compared to USEPA risk-based soil screening levels (SSLs) for groundwater protection and to RIDEM GA leachability criteria that were designed to be protective of groundwater at most sites. The USEPA SSLs are based on a dilution attenuation factor (DAF) of 1. The SSLs for migration from soil to groundwater and the RIDEM leachability criteria were not used for the selection of COPCs for direct contact exposure; however, they do allow qualitative evaluation of the potential for chemical migration from soil to groundwater. Chemicals with concentrations exceeding the SSLs/RIDEM leachability criteria may potentially migrate from the soil to groundwater in sufficient quantities to pose groundwater quality problems.

The risk-based screening levels used in the COPC selection for soil and sediment are presented in Table 6-1.

Screening Levels for Groundwater and Surface Water

Screening levels based on the following criteria were used to select COPCs for groundwater and surface water:

- RSLs for tap water (USEPA, 2010).
- RIDEM GA groundwater objectives (2004).
- USEPA maximum contaminant levels (MCLs) (2009).

- USEPA Groundwater Screening Levels for Evaluating the Vapor Intrusion into Indoor Air from Groundwater and Soils (2002).

Risk-based COPC screening levels for tap water ingestion, which are based on daily residential exposure assumptions, were used to select COPCs for groundwater and surface water. In general, the use of tap water screening levels is regarded as a highly conservative approach to COPC selection at Tank Farms 4 and 5 because groundwater and surface water at the site are not used as potable water sources.

Groundwater screening levels (GSL_{vapor}) for evaluating the vapor intrusion to indoor air are published in Table 2c of the draft USEPA guidance titled: Evaluating the Vapor Intrusion into Indoor Air (USEPA, 2002). The criteria were derived in 2002 and the toxicity criteria for a number of chemicals have changed since the criteria were originally derived. Consequently new criteria were derived using the methodology presented in Appendix D of the guidance and the residential air USEPA Regional Screening Levels (RSLs) presented in the November 2010 RSL table. Criteria were derived for those chemicals which are listed to be sufficiently volatile and sufficiently toxic in Appendix A of the DOD Vapor Intrusion Handbook (2009). The values correspond to a target cancer risk level of 1×10^{-6}, or a hazard index of 1 for carcinogens and noncarcinogens, respectively. The GSL_{vapor} were derived to identify chemical concentrations in groundwater that may adversely affect the indoor air quality of a building overlying subsurface VOC contamination. The GSL_{vapor} assume a subsurface attenuation factor of 0.001 from groundwater concentrations to indoor air concentrations. Methodology for calculating the criteria and a copy of the calculated screening criteria are included in Appendix H.2.

The risk-based screening levels and health-based standards used in the COPC selection for groundwater and surface water are presented in Table 6-2.

Essential Nutrients

Per USEPA guidance (1989) “Chemicals that are (1) essential human nutrients, (2) present at low concentrations (i.e., only slightly elevated above natural occurring levels), and (3) toxic at very high does (i.e., much higher than those that could be associated with contact at the site) need not be considered further in the quantitative risk assessment.” Examples of such chemicals are magnesium, calcium, potassium, and sodium. Based on historical information available for the site, no unusual use or disposal of these constituents occurred at the site under investigation. Soil concentrations greater than 1,000,000 mg/kg (i.e., pure mineral intake) would be required before receptor intake would exceed recommended daily allowance (RDA) and recommended daily intake (RDI) values. A review of currently available analytical data indicates that such concentrations have not been detected in soil at Tank Farms 4 and 5.

Chemicals without Toxicity Criteria

Because of the lack of toxicity criteria, risk-based COPC screening levels are not available for some chemicals [e.g., acenaphthylene, benzo(g,h,i)perylene, phenanthrene, delta-BHC, gamma-chlordane, Endosulfan I, endosulfan sulfate, endrin aldehyde, and endrin ketone]. For COPC screening, acenaphthene was used as a surrogate for acenaphthylene, pyrene was selected as a surrogate for benzo(g,h,i)perylene and phenanthrene, alpha-BHC was selected as a surrogate for delta-BHC, chlordane was selected as a surrogate for gamma-chlordane, endosulfan was selected as a surrogate for Endosulfan I and endosulfan sulfate, and endrin was selected as a surrogate for endrin aldehyde and endrin ketone.

Surrogate chemical screening values were not available for carbazole and thallium. Consequently these chemicals could not be quantitatively evaluated in this HHRA. Therefore, these chemicals were evaluated qualitatively in this HHRA. The evaluation considered the number of times the chemical was detected and the magnitudes of the observed concentrations.

Site Data-to-Background Data Comparisons

Detected concentrations of inorganics in surface soil and subsurface soil at Tank Farms 4 and 5 were compared to background data available for these media using various statistical tests. No background data was available for groundwater, surface water, or sediment, consequently a background comparison was not performed for these media. The statistical analysis of the background dataset and the comparisons of site concentrations to background concentrations were conducted in accordance with the following Navy and USEPA guidance:

- Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (USEPA, 2002).

- Guidance for Environmental Background Analysis, Volume I: Soil. Prepared by Battelle Memorial Institute, Earth Tech, Inc., and Newfields for the Naval Facilities Engineering Command, Washington D.C., April 2002.

In the COPC selection process for Tank Farms 4 and 5, if the results of the background comparison evaluation indicated that chemical concentrations detected in Tank Farms 4 and 5 soils did not exceed background concentrations, that chemical was not selected as a COPC and was not carried through the quantitative risk assessment. However, chemicals present at concentrations exceeding toxicity screening criteria but not selected as COPCs on the basis of background comparisons evaluations are further

discussed in the uncertainty analysis section. The results of the statistical background comparison analysis for surface soil and subsurface soil are presented in Appendix F.

The elimination of chemicals as site-related COPCs on the basis of background comparisons follows Navy Policy on the Use of Background Chemical Levels (DON, 2004). This document also presents the Navy's interpretation of the USEPA guidance provided in the document titled Role of Background in the CERCLA Cleanup Program (USEPA, 2002) and details the methodology to be used in evaluating background under the Navy's Environmental Restoration and Base Realignment and Closure (BRAC) programs. Navy policy applies to both the screening-level and baseline risk assessments and requires the following:

1. A clear and concise understanding of chemicals released from a site thus ensuring the Navy is focusing on remediating the release.

2. The use of background data in the screening-level risk assessment.

    a. The comparison of site chemical levels to risk-based screening criteria.
    b. The comparison of site chemical levels to background concentrations.
    c. The identification of site-related COPCs based on screening criteria comparisons AND background comparisons. Site-related COPCs are those chemicals with concentrations exceeding risk-based screening criteria AND background concentrations. To the extent possible, site-related COPCs are further evaluated quantitatively in the baseline risk assessment. (Non-site-related COPCs are further discussed in the risk characterization sections of the baseline risk assessments).

3. The consideration of background in the baseline risk assessment.

    a. The calculation of risk estimates for site-related COPCs only.
    b. The further evaluation of non-site-related COPCs in the risk characterization section only (e.g., the qualitative evaluation of chemicals detected at concentrations exceeding screening criteria but less than background concentrations). The Navy considers this evaluation to be consistent with USEPA's Role of Background in the CERCLA Cleanup Program (USEPA, 2002).

4. The selection of site cleanup remedial goals at levels not less than background levels. Additionally, cleanup levels should not be developed for chemicals not identified as chemicals of concern (COCs). As defined in the Navy guidance, COCs are site-related COPCs found to be the risk drivers in the baseline risk assessment and that may pose unacceptable human or ecological risks.

6.1.2.2 Decision Rules for Establishing COPCs

The following decision rules were used to select initial lists of COPCs for Tank Farms 4 and 5:

- A chemical detected in soil was selected as a COPC for soil if any detected chemical concentration exceeded the screening levels for soil and, for inorganics, if the background comparison indicates the site concentrations are statistically greater than the corresponding background concentrations.

- A chemical detected in groundwater was selected as a COPC for groundwater if the maximum detected concentration in any on-site and downgradient monitoring wells exceeded screening levels.

- A chemical detected in surface water or sediment was selected as a COPC for surface water or sediment if the maximum detected concentration in a potentially impacted surface water body exceeded the screening level for surface water or sediment.

Chemicals detected in any environmental medium at concentrations greater than the screening levels but eliminated as COPCs on the basis of background comparisons are further discussed in the risk characterization section.

6.1.3 COPCs Selected for the HHRA

COPCs at Tank Farms 4 and 5 were selected for surface soil, subsurface soil, groundwater, surface water, and sediment using the risk-based COPC screening levels described in Section 6.1.2. A discussion of the chemicals identified as COPCs and the rationale for COPC selection is provided in the following subsections. A discussion of nature and extent of the chemicals detected in site media is presented in Section 4 and is not repeated in this section. COPC selection information for each medium is presented in Tables 6-3 through 6-18. Chemicals retained as COPCs for Tank Farms 4 and 5 are presented in Table 6-19. RAGS Part D tables for COPC selection are included in Appendix H.3.

Only surface water samples collected from areas where the total depth of surface water was 1 foot or less were included in the surface water data set. Only sediments covered by 1 foot or less of surface water during times of low water levels were included in the sediment dataset.

6.1.3.1 Tank Farm 4 Surface Soil (0 to 1 Foot)

Four VOCs, 25 SVOCs, 12 pesticides/PCBs, 22 inorganics, 16 dioxins/furans congeners, and extractable TPH were detected in surface soil samples collected at Tank Farm 4. A comparison of maximum

detected surface soil concentrations to screening levels based on RSLs and RIDEM DECs for residential exposures is presented in Table 6-3. The following chemicals were detected at maximum concentrations exceeding direct contact risk-based COPC screening levels and were retained as COPCs for surface soil at Tank Farm 4:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, and benzo(a)pyrene equivalents].
- Dioxins/Furans (1,2,3,4,6,7,8,9-OCDD and 2,3,7,8-TCDD equivalents).
- Inorganics (arsenic, beryllium, cobalt, iron, and manganese).
- Extractable TPH.

The maximum detected concentrations of cobalt, iron, and manganese exceeded the screening toxicity levels (set at an HI of 0.1); however, they do not exceed the RSLs. Concentrations of benzo(g,h,i)perylene, fluoranthene, pyrene, and beryllium exceeded RIDEM DECs but were less than the screening criteria based on the RSLs. Concentrations of aluminum and chromium also exceeded the screening levels but were within site background levels and are not considered to be site related (Appendix F), therefore these chemicals were not retained as COPCs for direct contact with surface soil.

A comparison of maximum detected surface soil concentrations to USEPA SSLs for chemical migration from soil to groundwater and RIDEM GA leachability criteria is presented in Table 6-4. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels for migration from soil to groundwater and were retained as COPCs for surface soil at Tank Farm 4:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene].
- Pesticides/PCBs (beta-BHC, delta-BHC, gamma-BHC, and Toxaphene).
- Dioxins/furans (1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HPCDD, and 1,2,3,7,8-PECDD).
- Metals (arsenic, cobalt, iron, lead, manganese, and selenium).
- Extractable TPH.

Of these COPCs, only arsenic, cobalt, iron, lead, and manganese were detected in groundwater samples collected at Tank Farm 4. Concentrations of chromium also exceeded the screening levels but as noted above were within site background levels and are not considered to be site related (Appendix F), therefore chromium was not retained as a COPC for migration from surface soil to groundwater. Only TPH was detected at concentrations exceeding RIDEM GA leachability criteria (one sample only: TF4-SB-921-0001).

There are no COPC screening criteria available for carbazole and thallium. Carbazole was only detected in 1 of 24 surface soil samples. Thallium was detected in only 6 of 24 samples. Carbazole and thallium were not detected in groundwater samples collected at Tank Farm 4 indicating that carbazole and thallium in soil has not migrated to groundwater. Consequently, given the low frequency of detection and the absence of detection of carbazole and thallium in groundwater, the HHRA conclusions are unlikely to be affected by the lack of COPC screening levels for these chemicals.

6.1.3.2 Tank Farm 4 Subsurface Soil (1 Feet to 10 Feet)

Seven VOCs, 25 SVOCs, 5 pesticides/PCBs, 16 dioxins/furans congeners, 22 inorganics, and extractable TPH were detected in subsurface soil at Tank Farm 4. A comparison of maximum detected subsurface soil concentrations to screening levels based on the RSLs and RIDEM DECs for residential exposure is presented in Table 6-5. The following chemicals were detected at maximum concentrations exceeding direct contact risk-based COPC screening levels and were retained as COPCs for subsurface soil at Tank Farm 4:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and benzo(a)pyrene equivalents].
- Dioxins/Furans (1,2,3,4,6,7,8,9-OCDD and 2,3,7,8-TCDD equivalents).
- Inorganics (arsenic, beryllium, cobalt, iron, manganese, and thallium).

Concentrations of chrysene and beryllium exceeded RIDEM DECs but were less than screening criteria based on RSLs. Concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene exceeded screening criteria based on RSLs but were less the RIDEM DECs. Concentrations of aluminum and chromium also exceeded the screening levels but were within site background levels and are not considered to be site related (Appendix F), therefore these chemicals were not retained as COPCs for direct contact with subsurface soil.

A comparison of maximum detected subsurface soil concentrations to USEPA SSLs for chemical migration from soil to groundwater and RIDEM GA leachability criteria is presented in Table 6-6. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels for migration from soil to groundwater and were retained as COPCs for subsurface soil at Tank Farm 4:

- VOCs (benzene).
- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene].
- Pesticides/PCBs (Aroclor-1254).

- Dioxins/Furans (1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HPCDD, and 1,2,3,7,8,9-HXCDD).
- Metals (arsenic, cobalt, iron, lead, manganese, nickel, and selenium).

Of these, COPCs only naphthalene, arsenic, cobalt, iron, lead, manganese, and nickel were detected in groundwater samples collected at Tank Farm 4. Concentrations of chromium also exceeded the screening levels but were within site background levels and are not considered to be site related (Appendix F), therefore chromium was not retained as a COPC for migration from subsurface soil to groundwater. Concentrations of all chemicals were less than the RIDEM GA leachability criteria

There are no COPC screening criteria available for thallium. Thallium was detected in only 10 of 42 samples. Thallium was not detected in groundwater samples collected at Tank Farm 4 indicating that the thallium in soil has not migrated to groundwater. Consequently, given the low frequency of detection and the absence of detection of thallium in groundwater, the HHRA conclusions are unlikely to be affected by the lack of COPC screening levels for thallium.

6.1.3.3 Tank Farm 4 Groundwater

Two SVOCs, endrin aldehyde, and 16 inorganics were detected in groundwater samples collected at Tank Farm 4. A comparison of maximum detected groundwater concentrations to screening levels based on RSLs for tap water, USEPA MCLs, and RIDEM GA groundwater objectives is presented in Table 6-7. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels and were retained as COPCs for groundwater at Tank Farm 4:

- SVOCs (Naphthalene).
- Pesticides/PCBs (endrin aldehyde).
- Inorganics (aluminum, arsenic, cobalt, iron, and manganese).

Concentrations of endrin aldehyde, aluminum, and iron exceeded screening toxicity levels (set at an HI of 0.1) but did not exceed RSLs. Concentrations of all chemicals were less than the RIDEM GA groundwater objectives. Concentrations of arsenic exceeded RSLs but were less than USEPA MCLs. Consequently, RSLs should be viewed as conservative screening levels used for COPC selection, not COC determination. Naphthalene and endrin aldehyde only exceeded the screening levels in groundwater samples from monitoring well TF4-MW-913.

A comparison of maximum detected groundwater VOC concentrations to USEPA screening levels for chemical migration from groundwater through building foundations and into indoor air is presented in Table 6-8. Concentrations of all chemicals were less than the screening levels provided in Table 6-8.

6.1.3.4 Tank Farm 4 Surface Water

Five SVOCs and 12 inorganics were detected in surface water samples collected at Tank Farm 4. A comparison of maximum detected surface water concentrations to screening levels based on RSLs for tap water, USEPA MCLs, and RIDEM GA groundwater objectives is presented in Table 6-9. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels and were retained as COPCs for surface water at Tank Farm 4:

- SVOCs [benzo(a)anthracene and benzo(a)pyrene equivalents].
- Inorganics (arsenic and iron).

Concentrations of all chemicals were less than the RIDEM GA groundwater objectives. Concentrations of arsenic exceeded the RSL but were less than USEPA MCLs. Concentrations of iron only exceed the SMCL.

6.1.3.5 Tank Farm 4 Sediments

Two VOCs, 22 SVOCs, 5 pesticides/PCBs, 17 dioxins/furans, and 21 inorganics were detected in sediment samples collected at Tank Farm 4. A comparison of maximum detected concentrations to screening levels based on RSLs and RIDEM DECs for residential exposure is presented in Table 6-10. The following chemicals were detected at maximum concentrations exceeding the direct contact risk-based COPC screening levels and were retained as COPCs for sediments at Tank Farm 4:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and benzo(a)pyrene equivalents].
- Dioxins/Furans (2,3,7,8-TCDD equivalents).
- Inorganics (aluminum, arsenic, beryllium, chromium, cobalt, iron, manganese, and thallium).

The maximum detected concentrations of aluminum exceeded screening toxicity levels (set at an HI of 0.1) but did not exceed RSLs. Concentrations of beryllium exceeded RIDEM DECs but were less than screening criteria based on RSLs. Concentrations of beryllium exceeded the RIDEM DECs but were less than screening criteria based on RSLs. Only concentrations of arsenic, beryllium, manganese, and thallium exceeded the RIDEM DECs.

6.1.3.6 Tank Farm 5 Surface Soil (0 to 1 Feet)

Three VOCs, 17 SVOCs, 4 pesticides/PCBs, 17 dioxins/furans, 22 inorganics, and extractable TPH were detected in surface soil samples collected at Tank Farm 5. A comparison of maximum detected surface soil concentrations to screening levels based on RSLs and RIDEM DECs for residential exposure is presented in Table 6-11. The following chemicals were detected at maximum concentrations exceeding the direct contact risk-based COPC screening levels and were retained as COPCs for surface soil at Tank Farm 5:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene equivalents].
- Dioxins/Furans (2,3,6,7-TCDD equivalents).
- Inorganics (arsenic, beryllium, cobalt, iron, and manganese).

The maximum detected concentrations of cobalt, iron, and manganese exceeded screening toxicity levels (set at an HI of 0.1) but did not exceed RSLs. Arsenic, beryllium, and manganese were the only chemicals detected at concentrations exceeding the RIDEM DECs. Concentrations of aluminum and chromium also exceeded the screening levels, but were within site background levels and are not considered to be site related (Appendix F), therefore these chemicals were not retained as COPCs for direct contact with surface soil.

A comparison of the maximum detected surface soil concentrations to USEPA SSLs for chemical migration from soil to groundwater and RIDEM GA leachability criteria is presented in Table 6-12. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels for migration from soil to groundwater and were retained as COPCs for surface soil at Tank Farm 5:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene].
- Pesticides/PCBs (Aroclor-1254).
- Dioxins/furans (1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HPCDD, 1,2,3,4,7,8-HXCDF, 1,2,3,6,7,8-HXCDD, 1,2,3,7,8,9-HXCDD, 1,2,3,7,8-PECDD, and 2,3,4,7,8-PECDF).
- Metals (arsenic, cobalt, iron, lead, manganese, mercury, nickel, and selenium).

Of these COPCs, only arsenic, cobalt, iron, lead, manganese, nickel, and selenium were detected in groundwater samples collected at Tank Farm 5. Concentrations of all chemicals were less than the RIDEM GA leachability criteria. Concentrations of chromium also exceeded the screening criteria, but

were within site background levels and are not considered to be site related (Appendix F), therefore chromium was not retained as a COPC for migration from surface soil to groundwater.

There are no COPC screening criteria available for thallium. Thallium was not detected in groundwater samples collected at Tank Farm 5 indicating that thallium in soil has not migrated to groundwater. Consequently, given the absence of detection of thallium in groundwater, the HHRA conclusions are unlikely to be affected by the lack of COPC screening levels for thallium.

6.1.3.7 Tank Farm 5 Subsurface Soil (1 Feet to 10 Feet)

Three VOCs, 15 SVOCs, 13 dioxins/furans, 22 inorganics, and extractable TPH were detected in subsurface soil samples at Tank Farm 5. A comparison of maximum detected subsurface soil concentrations to screening levels based on RSLs and RIDEM DECs for residential exposure is presented in Table 6-13. The following chemicals were detected at maximum concentrations exceeding the direct contact risk-based COPC screening levels and were retained as COPCs for subsurface soil at Tank Farm 5:

- SVOCs [benzo(a)pyrene equivalents].
- Dioxins/Furans (1,2,3,4,6,7,8,9-OCDD and 2,3,7,8-TCDD equivalents).
- Inorganics (arsenic, cobalt, iron, manganese, and thallium).

Concentrations of aluminum, beryllium, and chromium also exceeded the screening criteria, but were within site background levels and are not considered to be site-related (Appendix F), therefore these chemicals were not retained as COPCs for direct contact with subsurface soil.

A comparison of maximum detected subsurface soil concentrations to USEPA SSLs for chemical migration from soil to groundwater and RIDEM GA leachability criteria is presented in Table 6-14. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels for migration from soil to groundwater and were retained as COPCs Tank Farm 5:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, and naphthalene].
- Dioxins/furans (1,2,3,4,6,7,8,9-OCDD and 1,2,3,4,6,7,8-HPCDD).
- Metals (arsenic, cobalt, iron, lead, manganese, mercury, nickel, and selenium).

Of these COPCs, only arsenic, cobalt, iron, lead, manganese, nickel, and selenium were detected in groundwater samples collected at Tank Farm 5. Concentrations of all chemicals were less than the RIDEM GA leachability criteria. Concentrations of chromium also exceeded the screening criteria, but

were within site background levels and are not considered to be site related (Appendix F), therefore chromium was not retained as a COPC for migration from subsurface soil to groundwater.

There are no COPC screening criteria available for thallium. Thallium was not detected in groundwater samples collected at Tank Farm 5 indicating that the thallium in soil has not migrated to groundwater. Consequently, given the absence of detection of thallium in groundwater, the HHRA conclusions are unlikely to be affected by the lack of COPC screening levels for thallium.

6.1.3.8 Tank Farm 5 Groundwater

Three VOCs, caprolactam, and 18 inorganics were detected in groundwater samples collected at Tank Farm 5. A comparison of maximum detected groundwater concentrations to screening levels based on RSLs for tap water, USEPA MCLs, and RIDEM GA groundwater objectives is presented in Table 6-15. The following chemicals were detected at maximum concentrations exceeding the COPC screening levels and were retained as COPCs for groundwater at Tank Farm 5:

- VOCs (benzene).
- Total inorganics (aluminum, arsenic, cobalt, iron, and manganese).
- Filtered inorganics (aluminum, arsenic, cobalt, iron, and manganese).

Concentrations of total and filtered iron exceeded screening toxicity levels (set at an HI of 0.1) but did not exceed RSLs. Concentrations of all chemicals were less than the RIDEM GA groundwater objectives. Only the benzene concentration in the groundwater sample from monitoring well TF5-MW-924 exceeded the RSL for tap water. Concentrations of benzene, total arsenic, and filtered arsenic exceeded RSLs but were less than USEPA MCLs. Consequently, RSLs should be viewed as conservative screening levels used for COPC selection, not COC determination.

A comparison of maximum detected groundwater VOC concentrations to USEPA screening levels for chemical migration from groundwater through building foundations and into indoor air is presented in Table 6-16. Concentrations of all chemicals were less than the screening levels provided in Table 6-16.

6.1.3.9 Tank Farm 5 Surface Water

Chloroform, 16 SVOCs, and 13 inorganics were detected in surface water samples collected at Tank Farm 5. A comparison of maximum detected surface water concentrations to screening levels based on RSLs for tap water, USEPA MCLs, and RIDEM GA groundwater objectives is presented in Table 6-17.

The following chemicals were detected at maximum concentrations exceeding the COPC screening levels and were retained as COPCs for surface water at Tank Farm 5:

- VOCs (chloroform).
- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, and benzo(a)pyrene equivalents].
- Inorganics (aluminum, arsenic, and iron).

Concentrations of iron exceeded screening toxicity levels (set at an HI of 0.1) but did not exceed RSLs. Concentrations of aluminum only exceeded the secondary MCL (SMCL). Concentrations of all chemicals were less than the RIDEM GA groundwater objectives. Concentrations of chloroform and arsenic exceeded RSLs but were less than USEPA MCLs. Consequently, RSLs should be viewed as conservative screening levels used for COPC selection, not COC determination.

6.1.3.10 Tank Farm 5 Sediments

Three VOCs, 25 SVOCs, 9 pesticides/PCBs, 17 dioxins/furans, 21 inorganics detected in sediment samples collected at Tank Farm 5. A comparison of maximum detected concentrations to screening levels based on RSLs and RIDEM DECs for residential exposure is presented in Table 6-18. The following chemicals were detected at maximum concentrations exceeding the direct contact risk-based COPC screening levels and were retained as COPCs for sediments at Tank Farm 5:

- SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene equivalents].
- Dioxins/Furans (2,3,7,8-TCDD Equivalents).
- Inorganics (aluminum, arsenic, beryllium, chromium, cobalt, iron, and manganese).

The maximum detected concentrations of aluminum and manganese exceeded screening toxicity levels (set at an HI of 0.1) but did not exceed RSLs. Concentrations of chrysene exceeded RIDEM DECs but were less than screening criteria based on RSLs. Concentrations of benzo(a)anthracene, dibenzo(ah)anthracene, indeno(1,2,3-cd)pyrene, and chromium exceeded screening criteria based on RSLs but were less than RIDEM DECs. Concentrations of benzo(a)pyrene, benzo(b)fluoranthene, chrysene, arsenic, beryllium, and manganese exceeded the RIDEM DECs.

There are no COPC screening criteria available for carbazole. Carbazole was detected in 7 of 12 sediment samples at low concentrations ranging from 36 J µg/kg to 100 J µg/kg. The detected concentrations of carbazole were co-located with the carcinogenic PAHs, which were detected at higher

concentrations and were selected as COPCs. The lack of screening criteria for carbazole does introduce some uncertainty into the results of the HHRA.

6.1.3.11 Summary

Table 6-19 summarizes the chemicals retained as COPCs for soil, groundwater, surface water, sediment, and fish tissue at the Tank Farms 4 and 5. RAGS Part D tables for COPC selection are included in Appendix H.3.

6.2 EXPOSURE ASSESSMENT

The exposure assessment portion of the risk assessment defines and evaluates, quantitatively or qualitatively, the type and magnitude of human exposure to the chemicals present at or migrating from a site. The exposure assessment is designed to depict the physical setting of the site, to identify potentially exposed populations and applicable exposure pathways, to calculate concentrations of COPCs to which receptors might be exposed, and to estimate chemical intakes under the identified exposure scenarios.

Actual or potential exposures at Tank Farms 4 and 5 were determined based on the most likely pathways of contaminant release and transport, as well as human activity patterns. A complete exposure pathway has three components: a source of chemicals that can be released to the environment, a route of contaminant transport through an environmental medium, and an exposure or contact point for a human receptor.

6.2.1 Conceptual Site Model

A conceptual site model (CSM) facilitates consistent and comprehensive evaluation of potential risks to human health by creating a framework for identifying the pathways by which human receptors may come in contact with environmental media contaminated by site activities. A CSM depicts the relationships among the following elements, which are necessary for defining complete exposure pathways:

- Site sources of contamination
- Contaminant release mechanisms and transport/migration pathways
- Exposure routes
- Potential receptors

The elements of the CSM (contaminant source, release mechanisms, transport/migration pathways, exposure routes, and potential receptors) establish the manner and degree to which a potential receptor

may be exposed to chemicals present at the site. The degree of risk incurred by a potential receptor varies according to the means of exposure, the duration of exposure, and the specific chemical to which the receptor is exposed. An exposure, however long in duration, does not necessarily result in an "unacceptable" health or environmental risk, although risks generally increase with increased frequency and/or duration of exposure.

Section 1 presents a detail discussion of the site location, site description, and site history for both Tank Farm 4 and Tank Farm 5. Section 3 presents a description of the physical conditions at Tank Farms 4 and 5. This section summarizes the information in Sections 1 and 3 as it applies to the HHRA. Sources of contamination, contaminant release mechanisms, transport and migration pathways, exposure routes, and potential receptors are defined. Table 6-20 provides a site-specific summary of the potential receptors evaluated for Tank Farms 4 and 5. A summary of the exposure routes addressed quantitatively for each human receptor is provided in Table 6-21. Figure 6-1 illustrates the CSM for Tank Farms 4 and 5.

6.2.1.1 Site Sources of Environmental Contamination

Summarizing from the site history information presented in Section 1, Tank Farm 4 occupies approximately 80 acres and contains 12 former USTs, numbered 37 through 48, which were demolished in place. The tanks reportedly each had a capacity of 2.5 million gallons and were used to store virgin heavy fuel oil (No. 6 bunker oil). Several tanks were reportedly also used to store No. 2 heating oil during the mid-1970s. Two former oil-water separators were also located on the southern portion of Tank Farm 4. One oil-water separator was used to collect oil sludge received from tank via bottom sediment and water piping. It had originally been constructed and used as a burning pit for the disposal of tank bottom sludge. The second oil-water separator accepted groundwater from the ring drain system around Tank 41.

Tank Farm 5 occupies approximately 75 to 80 acres and contains 11 former USTs, numbered 49 through 59, which were demolished in place. As at Tank Farm 4, these tanks were originally used to store virgin heavy fuel oil. Tank Nos. 53 and 56 were also used to store waste oil and were remediated under a separate series of efforts and a ROD dated September 1993. A water treatment facility was formerly present between Tanks 53 and 56. This facility was used to treat groundwater at Tank 53 and water pumper from the USTs prior to cleaning and demolition. Remediation at Tanks 53 and 56 is considered complete and these tanks are not addressed under this investigation. Tank Farm 5 has also been used for the temporary storage of soil and construction materials from NAVSTA for several years. A new fire fighting training area was constructed on the western portion of Tank Farm 5 in the later 1980s.

6.2.1.2 Potential Contaminant Release Mechanisms and Transport/Migration Pathways

Past operations at Tank Farms 4 and 5 have resulted in the release of contaminants to surface and subsurface soil, groundwater, and surface water/sediment as follows:

- Contaminants associated with the burning of sludge and from discharge of burned sludge to the wetland areas were likely released to the ground at and downgradient of the former burn chambers.

- Contaminants passing through the oil water separators would most likely have been released to the brooks and entrained within the wetland soils.

- Contaminants associated with fuels stored and managed at the site (TPH) could have been released through factures in the bottoms of tanks. Most of these releases would likely have been removed through the operation of the ring drains, however, some may have been entrained with the soil matrix near the bottom of the tanks, and with the tank sockets, and to a limited extent into the bedrock matrix surrounding the sockets. Due to the nature of the bedrock at the sites, heavy fuels and contaminants associated with them would not likely have passed very far into the bedrock materials from the release areas. PAHs and metals released to the subsurface materials would most likely remain bound within the matrix where the released occurred. Small quantities of dissolved constituents could migrate with slow moving groundwater downgradient to the brooks or westerly, which is downgradient from most of the areas at both tank farms.

6.2.1.3 Potential Current and Future Receptors of Concern and Exposure Pathways

The baseline HHRA prepared for Tank Farms 4 and 5 considered receptor exposure under residential and non-residential (e.g., industrial, recreational) land-use scenarios. Based on current and potential/hypothetical future land use, the following potential receptors may be exposed to contaminated environmental media at Tank Farms 4 and 5:

- **Construction Workers** – A plausible on-site receptor under future land use. Construction workers could be exposed to soil (0 to 10 feet bgs) (incidental ingestion; dermal contact), and airborne contaminants emanating from soil (inhalation). As discussed in Section 3.4.1, the groundwater at NAVSTA Newport is very shallow, being less than 10 feet bgs in most areas. Consequently, construction workers may be exposed to shallow groundwater (incidental ingestion; dermal contact) and airborne contaminants emanating from groundwater (inhalation).

- **Industrial Worker** – A plausible receptor under current and future land use. This receptor could be directly exposed to soil (0 to 10 feet bgs, or if shallower, to soil to the top of the water table)(incidental ingestion; dermal contact) and airborne particulates and vapors from surface or shallow subsurface soil (inhalation). If this receptor worked in a hypothetical on-site structure, it is also plausible that this receptor could be exposed to VOCs migrating from contaminated subsurface soil or groundwater to the indoor air of a building.

- **Adolescent Trespasser** – A plausible receptor under current and future land use. A trespasser may be exposed to potentially contaminated soil (0 to 1 feet bgs) (incidental ingestion; dermal contact), air (inhalation), sediment in streams and shallow areas of the pond (incidental ingestion; dermal contact), and surface water in the streams and shallow areas of the pond (dermal contact). Direct contact with groundwater or subsurface soil is not anticipated for this receptor.

- **Child and Adult Recreational Users** – A plausible receptor under current and future land use. Currently, there is restricted recreational use, restricted to bow-hunting for deer by Navy employees. Unrestricted recreational users are individuals using the site for passive recreation including walking, hiking, picnicking, or hunting. A recreational user may be exposed to potentially contaminated surface soil (0 to 1 feet bgs) (incidental ingestion; dermal contact), air (inhalation), sediment in streams and shallow areas of the pond (incidental ingestion; dermal contact), and surface water in the streams and shallow areas of the pond (dermal contact). Direct contact with groundwater or subsurface soil is not anticipated for this receptor. Receptor exposure to subsurface soil would only occur if subsurface soil was excavated and deposited on existing surface soil. Although this is an unlikely scenario, it is included in this HHRA for purposes of completeness and to assist the risk managers regarding the need for land use controls.

- **Future Child and Adult Residents** – Given the anticipated future land use for much of Tank Farms 4 and 5 (commercial/industrial), residents are a very unlikely future receptor. However, the hypothetical future residential scenario is typically evaluated in a risk assessment for decision-making purposes. For example, the need for deed restrictions at a site may be eliminated prior to site closure if minimal risks are estimated for residential receptors. It is assumed that a hypothetical resident may be exposed to soil (0 to 10 feet bgs), groundwater (ingestion; dermal contact), and air (inhalation). Also, hypothetical residents could be exposed to VOCs migrating from contaminated subsurface soil or groundwater to the indoor air of a home. Receptor exposure to subsurface soil would only occur if subsurface soil was excavated and deposited on existing surface soil. Although this is an unlikely scenario, it is included in this HHRA for purposes of completeness and to assist the risk managers regarding the need for deed restrictions.

6.2.2 Central Tendency Exposure Versus Reasonable Maximum Exposure

Traditionally, exposures evaluated in an HHRA were based on the concept of a reasonable maximum exposure (RME) only, which is defined as "the maximum exposure that is reasonably expected to occur at a site" (USEPA, 1989). However, subsequent risk assessment guidance (USEPA, 1992) indicates the need to address an average case or central tendency exposure (CTE).

To provide a full characterization of potential exposure, both RME and CTE scenarios were evaluated in the HHRA for Tank Farms 4 and 5. The available guidance (USEPA, 1993) concerning the evaluation of CTE is limited; therefore, professional judgment was exercised when defining CTE conditions for a particular receptor at the site.

6.2.3 Exposure Point Concentrations

The exposure point concentration (EPC), which is calculated for COPCs only (both site related and non-site related [i.e., naturally occurring/non-site-related anthropogenic chemicals]), is an estimate of the chemical concentration within an exposure unit (EU). The EPC is assumed to be the concentration to which the receptor is exposure and is used to estimate exposure intakes. An EU is the area over which receptor activity is expected to occur. The following paragraphs discuss the EUs evaluated in this HHRA and the guidelines for calculating EPCs.

Tank Farms 4 and 5 were evaluated as separate EUs. At each EU, EPCs were calculated for surface soil (0 – 1 feet bgs), all soil (0 – 10 feet bgs), groundwater, surface water, and sediment.

The following guidelines were used to calculate EPCs as specified in the approved Technical Memorandum for Data Summary and Plan for Risk Assessment (Tetra Tech, 2007) and the approved Sampling and Analysis Plan (Tetra Tech, 2010):

- For soil, surface water, and sediment, the 95-percent upper confidence limit (UCL) on the arithmetic mean, which was based on the distribution of the data set, was selected as the EPC. EPCs were calculated following USEPA's Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (2002) and using USEPA's ProUCL software Version 4.00.05 (2010).

- For groundwater, maximum groundwater concentrations were used as EPCs for the RME scenario and average groundwater concentrations were used as EPCs for the CTE scenario.

- Non-detected values were evaluated in accordance with the ProUCL guidance. Duplicates were averaged for purposes of calculating EPCs for COPCs in environmental media at Tank Farms 4 and 5. In calculating the averages, if one sample was detected and the other was non-detected the average was calculated using the detected value and one half the non-detected value.

Table 6-22 summarizes the EPCs used in this HHRA. Appendix H.1 lists the samples that were used in the calculation of the EPCs. ProUCL Outputs are included in Appendix H.4. RAGS Part D Tables for the EPCs are presented in Appendix H.3.

6.2.4 Chemical Intake Estimation

The methodologies and techniques used to estimate exposure intakes are presented in this section. Intakes for the identified potential receptor groups were calculated using current USEPA risk assessment guidance and are presented in the risk assessment spreadsheets. Risk assessment results are presented using USEPA RAGS Part D table format. Assumptions regarding exposure are presented in Tables 6-23 and 6-24 for the RME and CTE scenarios, respectively. The exposure assumptions presented in Tables 6-23 and 6-24 were taken from the approved Technical Memorandum for Data Summary and Plan for Risk Assessment (Tetra Tech, 2007).

Non-carcinogenic intakes were estimated using the concept of an average annual exposure. Carcinogenic intakes were calculated as incremental lifetime exposures, which assume a life expectancy of 70 years. The exposure assumptions reflect current USEPA guidance. The majority of the exposure assumptions used to estimate chemical intakes were based on default assumptions described in several USEPA guidance documents (e.g., USEPA 1989, 1991, 1993, 1997, and 2004) and RIDEM guidance (2004). The RIDEM guidance only contains exposure assumptions for industrial workers and residents exposed to soil via incidental ingestion and inhalation routes of exposure. RIDEM does not have default exposure assumptions for construction workers, trespassers, or recreational users. The following paragraphs discuss the non-default receptor-specific exposure assumptions used in the risk assessment.

6.2.4.1 Incidental Ingestion of Soil and Sediment

Direct physical contact with soil or sediment at Tank Farms 4 and 5 may result in the incidental ingestion of chemicals. Chemical intake for the incidental ingestion of soil and sediment is estimated in the following manner (USEPA, 1989):

$$\text{Intake} = \frac{(C_s)(IR)(FI)(EF)(ED)(CF)}{(BW)(AT)}$$

where:

Intake	=	intake of chemical from soil/sediment (mg/kg/day)
C_s	=	concentration of chemical in soil/sediment (mg/kg)
IR	=	ingestion rate (mg/day)
FI	=	fraction ingested from contaminated source (dimensionless)
EF	=	exposure frequency (days/yr)
ED	=	exposure duration (yr)
CF	=	conversion factor (1×10^{-6} kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days);
		for non-carcinogens, AT = ED x 365 days/yr
		for carcinogens, AT = 70 yr x 365 days/yr

Most of the exposure assumptions used to estimate chemical intakes from incidental ingestion of soil were based on default assumptions described in standard USEPA guidance and are summarized in Tables 6-23 and 6-24. The following paragraphs briefly discuss the non-default receptor-specific exposure assumptions for incidental ingestion of soil that were used in the HHRA.

The selected exposure frequency assumptions consider anticipated receptor activities at Tank Farms 4 and 5. It is assumed that construction workers assigned to future excavation projects at Tank Farms 4 and 5 are exposed to soil for 5 days a week over 6 months (130 days a year) for 1 year under the RME scenario, and 2 days a week over 6 months (52 days a year) for 1 year under the CTE scenario. It is assumed that unrestricted recreational users and adolescent trespassers are exposed to soil for 4 days per week over 12 weeks (48 days a year) and 2 days a week over 12 weeks (24 days a year) under the RME and CTE scenarios, respectively.

6.2.4.2 Dermal Contact with Soil and Sediment

Direct physical contact with soil or sediment may result in the dermal absorption of chemicals. Exposure associated with dermal contact with soil or sediment is estimated in the following manner (USEPA, 1989):

$$\text{Intake} = \frac{(C_s)(SA)(AF)(ABS)(CF)(EF)(ED)}{(BW)(AT)}$$

where:

Intake	=	amount of chemical absorbed during contact with soil/sediment (mg/kg/day)
C_s	=	concentration of chemical in soil/sediment (mg/kg)

SA	=	skin surface area available for contact (cm^2/day)
AF	=	skin adherence factor (mg/cm^2)
ABS	=	absorption factor (dimensionless)
CF	=	conversion factor (1×10^{-6} kg/mg)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (year)
BW	=	body weight (kg)
AT	=	averaging time (days);
		for non-carcinogens, AT = ED x 365 days/year
		for carcinogens, AT = 70 years x 365 days/year

Most of the exposure assumptions used to estimate chemical intakes from dermal contact with soil were based on the default assumptions described in standard USEPA guidance and are summarized in Tables 6-23 and 6-24. The following paragraphs briefly discuss non-default receptor-specific exposure assumptions for dermal contact with soil that were used in the HHRA.

The exposed skin surface areas of the body available for dermal contact with soil were determined on a receptor-specific basis because they correspond with assumed human activities and clothing worn during exposure events. With the exception of the skin surface area recommended for adult recreational users exposed to sediment and adolescent trespassers exposed to soil and sediment, all of the skin surface areas presented in Tables 6-23 and 6-24 are based on USEPA default values. Current guidance (USEPA 1997 and 2004) was used to develop the skin surface area available for contact for the adolescent trespasser as follows:

- For adult recreational users, the skin surface area available for sediment contact is 6,880 cm^2 (which assumes that the head, forearms, hands, lower legs, and feet are exposed).
- For the adolescent trespasser, the skin surface area available for soil and sediment contact is 4,050 cm^2 (which assumes that the forearms, hands, lower legs, and feet are exposed).

A summary of the receptor-specific input values used to estimate chemical intakes from dermal contact with soil are presented in Tables 6-23 and 6-24 for RME and CTE exposure scenarios, respectively. The same exposure frequencies and durations recommended for the evaluation of incidental ingestion of soil were used to estimate chemical intakes for dermal contact with soil. The soil adherence factors presented are those in Exhibits 3.3 and 3.5 of RAGS Part E. To the extent possible, chemical-specific dermal absorption factors provided in RAGS Part E were used to evaluate the COPCs for soil. However, dermal absorption factors are only available for the short list of chemicals in Exhibit 3-4 of RAGS Part E. RAGS Part E recommends a dermal absorption faction of zero for volatiles because volatile organic

compounds tend to volatilize from soil on skin and should be accounted for via the inhalation route. Also as indicated in RAGS Part E, absorption factors for metals other than arsenic and cadmium have not been developed due to insufficient data to support default values. Therefore, ABS was set equal to zero for these chemicals and risks from dermal absorption of metals other than arsenic and cadmium from soil were not quantified in this risk assessment. The uncertainty associated with the omission of these constituents is discussed in the uncertainty analysis. Dermal adsorption values used in this HHRA are presented in Table 6-25.

6.2.4.3 Inhalation of Air Containing Fugitive Dust/Volatiles Emitted from Soil

Intakes of both particulates and vapors/gases were calculated using the same equation, as follows (USEPA, 2009):

$$EC = \frac{(C_{air})(ET)(EF)(ED)}{AT \times 24\,hrs/day}$$

where:

EC	=	exposure concentration (mg/m^3)
C_{air}	=	concentration of chemical in air (mg/m^3)
ET	=	exposure time (hours/day)
EF	=	exposure frequency (days/yr)
ED	=	exposure duration (yr)
AT	=	averaging time (hours);
	=	for non-carcinogens, AT = ED x 365 days/yr
	=	for carcinogens, AT = 70 yr x 365 days/yr

Some of the exposure assumptions used to estimate chemical intakes from inhalation of fugitive dusts/volatile emissions from surface and subsurface soil were based on default assumptions described in standard USEPA guidance and are summarized in Tables 6-23 and 6-24. The same exposure frequencies and durations used to estimate incidental ingestion of soil intakes were used to estimate exposure via inhalation of fugitive dust/volatile emissions for surface and subsurface soil.

The concentrations of chemicals in air resulting from emissions from soil are developed following procedures presented in USEPA Soil Screening Guidance (2002). Chemical concentrations in air were calculated as follows:

$$C_{air} = C_{soil} \times \left[\frac{1}{PEF} + \frac{1}{VF} \right]$$

where:

C_{air}	=	chemical concentration in air (mg/m^3)
C_s	=	chemical concentration in soil (mg/kg)
PEF	=	Particulate emission factor (m^3/kg)
VF	=	volatilization factor (m^3/kg)

The particulate emissions factor (PEF) relates the concentration of the chemical in soil to the concentration of dust particles in air. A PEF value of $1.1 \times 10^{+10}$ m^3/kg was obtained from USEPA's Soil Screening Internet site at http://rais.ornl.gov/epa/ssl1.shtml. This is the default value for Hartford, Connecticut, which is the closest city to Tank Farms 4 and 5 listed on the Internet site. Because air emissions resulting from fugitive dust emissions settings will be different than dust emissions generated during construction activities, a separate PEF was used for construction activities. The PEF for construction workers ($1.4 \times 10^{+6}$ m^3/kg) was calculated using the equations presented in the supplemental SSL guidance document (USEPA, 2002). Sample calculations showing how the PEFs were calculated are presented in Appendix H.5.

Ambient air concentrations resulting from the volatilization of COPCs from soil are chemical dependent and were calculated using the following equation from USEPA's Soil Screening Guidance:

$$VF = \frac{Q/C \times (3.14 \times D_a \times T)^{0.5} \times 10^{-4} \, (m^2/cm^2)}{(2 \times \rho_b \times D_a)}$$

and

$$D_a = \frac{[(\theta_a^{10/3} \times D_i \times H' \times \theta_w^{10/3} \times D_w)/n^2}{\rho_b \times K_d + \theta_w + \theta_a \times H'}$$

where:

VF	=	volatilization factor (m^3-air/kg-soil)
Q/C	=	inverse of the mean concentration at the center of the source (gm/m^2-sec per kg/m^3)
D_a	=	apparent diffusivity, chemical specific (cm^2/sec)
T	=	exposure interval, exposure specific (sec)
ρ_b	=	dry bulk soil particle density (g/cm^3)
θ_a	=	air-filled soil porosity (L_{air}/L_{soil})
D_i	=	diffusivity in air, chemical specific (cm^2/sec)
H'	=	dimensionless Henry's law constant, chemical specific
θ_w	=	water-filled soil porosity (L_{air}/L_{soil})
D_w	=	diffusivity in water, chemical specific (cm^2/sec)

n = total soil porosity (L_{pore}/L_{soil})

K_d = soil-water partition coefficient, chemical specific

Chemical properties were obtained from the current USEPA RSL table are presented in Table 6-26. Input assumptions for the calculation of volatilization factors are presented in Table 6-27.

6.2.4.4 Ingestion of Groundwater

Ingestion of groundwater at Tank Farms 4 and 5 is expected to be limited to exposure that would occur under a future construction and residential scenario. Intakes associated with ingestion of groundwater were evaluated using the following equation (USEPA, 1989):

$$\text{Intake} = \frac{(C_w)(IR_w)(EF)(ED)}{(BW)(AT)}$$

where:

Intake = intake of chemical from groundwater (mg/kg/day)

C_w = concentration of chemical in groundwater (mg/L)

IR_w = ingestion rate for groundwater (L/day)

EF = exposure frequency (days/yr)

ED = exposure duration (yr)

BW = body weight (kg)

AT = averaging time (days);
for non-carcinogens, AT = ED x 365 days/yr
for carcinogens, AT = 70 yrs x 365 days/yr

USEPA standard default exposure assumptions were used to evaluate residential exposures to groundwater. The following paragraphs briefly discuss non-default receptor-specific exposure assumptions for incidental ingestion of surface water that were used in the HHRA.

No receptor or activity-specific information was available to estimate incidental ingestion rates for construction workers exposed to groundwater. Therefore, incidental ingestion rates of 0.05 liter per hour (L/hr) and 0.025 L/hr were assumed for the RME and CTE scenarios, respectively.

A summary of the receptor-specific input values used to estimate chemical intakes from ingestion of groundwater are presented in Tables 6-23 and 6-24 for RME and CTE exposure scenarios, respectively.

6.2.4.5 Dermal Contact with Groundwater and Surface Water

The same equation was used to estimate intakes for dermal contact with groundwater and surface water. Hypothetical future residential receptors were assumed to use groundwater for domestic purposes (i.e., bathing, showering, and dish washing) that can result in dermal exposure. Short-term dermal exposure was assumed to occur for the construction worker during excavation activities. Recreational users and adolescent trespassers may have dermal contact with surface water while wading in the streams or shallow areas of the pond at Tank Farms 4 and 5. The following equation was used to assess exposures resulting from dermal contact with groundwater and surface water (USEPA, 2004):

$$DAD = \frac{(DA_{event})(EV)(ED)(EF)(SA)}{(BW)(AT)}$$

where:

DAD	=	dermally absorbed dose of chemical from water (mg/kg/day)
DA_{event}	=	dermally absorbed dose per event (mg/cm^2-event)
EV	=	event frequency (events/day)
ED	=	exposure duration (yr)
EF	=	exposure frequency (days/yr)
SA	=	skin surface area available for contact (cm^2)
BW	=	body weight (kg)
AT	=	averaging time (days);
		for non-carcinogens, AT = ED x 365 days/yr
		for carcinogens, AT = 70 yrs x 365 days/yr

Most of the exposure assumptions used to estimate chemical intakes from dermal contact with groundwater were based on default assumptions described in standard USEPA guidance and are summarized in Tables 6-23 and 6-24.

Dermal intakes for residents assumed total body exposure on a daily basis. For construction workers, recreational users, and adolescent trespassers, the exposed surface area of the body available for contact was based on assumed activities and was similar to the assumptions outlined for dermal contact with soil and sediment.

The absorbed dose per event (DA_{event}) was estimated using a non-steady-state approach for organic compounds and a traditional steady-state approach for inorganics. For organics, the following equations apply:

$$\text{If } t_{event} < t^*, \text{ then: } DA_{event} = (2)(K_p)(FA)(C_w)(CF)\left(\sqrt{\frac{6\,\tau\, t_{event}}{\pi}}\right)$$

$$\text{If } t_{event} > t^*, \text{ then: } DA_{event} = (K_p)(FA)(C_w)(CF)\left(\frac{t_{event}}{1+B} + 2\tau\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right)$$

where:

t_{event}	=	duration of event (hour/event)
t^*	=	time to reach steady-state conditions (hour)
K_p	=	permeability coefficient from water through skin (cm/hour)
FA	=	chemical-specific fraction absorbed (dimensionless)
C_w	=	concentration of chemical in water (mg/L)
τ	=	lag time (hour)
π	=	Pi (dimensionless; equal to 3.1416)
CF	=	conversion factor (0.001 L/cm^3)
B	=	Dimensionless ratio of the permeability of the stratum corneum relative to the permeability across the viable epidermis

Values for the chemical-specific parameters (t^*, K_p, FA, τ, and B) were obtained from the current dermal guidance (USEPA, 2004, Exhibit B-3) and are presented in Table 6-25. If published values were not available for a particular compound, they were calculated using equations provided in the USEPA dermal guidance. While the dermal guidance provides chemical specific values for PAHs the guidance also recommends that dermal absorption of PAHs and also PCBs in groundwater and surface water not be evaluated quantitatively in a HHRA because such evaluations are outside of the effective predictive domain of the model. Therefore, no chemical-specific parameters are included in Table 6-25 for PAHs and PCBs and dermal exposures to PAHs and PCBs in water were not evaluated in this HHRA.
The following steady-state equation was used to estimate DA_{event} for inorganics:

$$DA_{event} = (K_p)(C_W)(t_{event})$$

The dermal permeability coefficient (K_p) values recommended in the USEPA dermal guidance (USEPA, July 2004) were used to calculate DA_{event} for inorganic COPCs.

6.2.4.6 Inhalation of Volatiles in Groundwater

Groundwater exposure may also result in chemical intake through inhalation if the water resource is used as a domestic water supply or is exposed during construction activities and VOCs are present in the groundwater. This exposure route is plausible for residential receptors who may be exposed while

showering, bathing, washing dishes, etc. and for construction workers contacting shallow groundwater during excavation activities. Exposures for residents exposed to chemicals that have volatilized from groundwater were evaluated in this HHRA by assuming the risk resulting from a showering exposure was equivalent to the risk from ingestion of 2 liters of water, which was the USEPA Region I recommended methodology (1999) at the time the draft HHRA was prepared. USEPA Region I now recommends using Andelman equation in RAGS Part B (USEPA, 1991a) to evaluate residential inhalation exposures from groundwater. The effects of the changes in the methodology on the estimated risks are discussed in the Uncertainty Analysis in Section 6.5.2. Inhalation exposures for the construction worker were estimated using an air intake estimation model.

For construction workers, chemical intakes from inhalation exposure due to the volatilization of COPCs in groundwater were estimated in the following manner (USEPA, 2009):

$$EC = \frac{(C_{air})(ET)(EF)(ED)}{AT \times 24\,\text{hrs/day}}$$

where:

EC	=	exposure concentration (mg/m^3)
C_{air}	=	concentration of chemical in air (mg/m^3)
ET	=	exposure time (hours/day)
EF	=	exposure frequency (days/yr)
ED	=	exposure duration (yr)
AT	=	averaging time (days)
	=	for non-carcinogens, AT = ED x 365 days/yr
	=	for carcinogens, AT = 70 yr x 365 days/yr

Construction workers may be exposed to COPCs that have volatilized from groundwater when excavation exposes the shallow water table. The same exposure frequency and exposure time used to estimate intake from dermal contact with groundwater were used to evaluate intake from inhalation of VOCs from groundwater during construction activities.

There are no well-established models available for estimating migration of volatiles from groundwater into a construction/utility trench. To estimate EPCs for air in a construction trench, the HHRA used an approach suggested by the Virginia Department of Environmental Quality (VDEQ, 2008) that is based on a combination of a vadose zone model (to estimate volatilization of gases from contaminated groundwater into a trench) and a box model (to estimate dispersion of the contaminants from the air

inside the trench into the above-ground atmosphere). The VDEQ methodology is described in the following paragraphs.

The airborne concentration of a contaminant in a trench can be estimated using the following equation:

$$C_{air} = C_{GW} \times VF$$

where:

C_{air} = air concentration of contaminant in the trench (µg/m^3)
C_{GW} = concentration of contaminant in groundwater (µg/L)
VF = volatilization factor (L/m^3)

It was assumed that a construction project at the Site could result in an excavation of 15 feet bgs or less. If the depth to groundwater at a site is less than 15 feet, the VDEQ model assumes that a worker would encounter groundwater when digging an excavation or a trench. The worker would then have direct exposure to the groundwater. The worker would also be exposed to contaminants in the air inside the trench that would result from volatilization from the groundwater pooling at the bottom of the trench.

The following equation was used to calculate the volatilization factor (VF) for a trench less than 15 feet deep:

$$VF = (Ki \times A \times F \times 10^{-3} \times 10^{4} \times 3{,}600) / (ACH \times V)$$

where:

Ki	=	overall mass transfer coefficient of contaminant (cm/s)
A	=	area of the trench (m^2)
F	=	fraction of floor through which contaminant can enter (unitless)
ACH	=	air changes per hour (h^{-1}) = 360 h^{-1}
V	=	volume of trench (m^3)
10^{-3}	=	conversion factor (L/cm^3)
10^{4}	=	conversion factor (cm^2/m^2)
3,600	=	conversion factor (seconds/hour)

Studies of urban canyons suggest that if the ratio of trench width, relative to wind direction, relative to trench depth is less than or equal to 1, a circulation cell or cells will be set up within the trench that limits the degree of gas exchange with the atmosphere and, based on measured ventilation rates of buildings, the air changes per hour (ACH) is assumed to be two. Based on the ratio of trench depth to average

wind speed, if the ratio of trench width to trench depth is greater than 1, the air exchange between the trench and above-ground atmosphere is not restricted, and the ACH is assumed to be 360. The exposure assessment performed for this HHRA assumed that the width-to-trench depth ratio was greater than 1; therefore, the ACH was set at 360.

K_i was calculated using the following equation:

$$K_i = 1 / \{(1/k_iL) + [(RT) / (H_i\ k_iG)]\}$$

where:

K_i	=	overall mass transfer coefficient of containment (cm/s)
k_iL	=	liquid-phase mass transfer coefficient of i (cm/s)
R	=	ideal gas constant (atm-m^3/mole-°K) = 8.2×10^{-5}
T	=	average system absolute temperature (°K) (Default = 298°K)
H_i	=	Henry's Law constant of i (atm-m^3/mole)
k_iG	=	gas-phase mass transfer coefficient of i (cm/s)

The formulas for calculating k_iL and k_iG are as follows:

$$k_iL = (MWO_2/MW_i)^{0.5} \times (T/298) \times kL,O_2$$

where:

k_iL	=	liquid-phase mass transfer coefficient of component i (cm/s)
MWO_2	=	molecular weight of oxygen (g/mole)
MW_i	=	molecular weight of component i (g/mole)
kL,O_2	=	liquid-phase mass transfer coefficient of oxygen at 25°C (cm/s) = 0002 cm/s

$$k_iG = (MWH_2O/MW_i)^{0.335} \times (T/298)^{1.005} \times kG,H_2O$$

where:

k_iG	=	gas-phase mass transfer coefficient of component i (cm/s)
MWH_2O	=	molecular weight of water (g/mole)
kG,H_2O	=	gas-phase mass transfer coefficient of water vapor at 25°C (cm/s)= 0.833 cm/s (USEPA, 1988).

Chemical properties were obtained from the Supplemental Guidance for Developing Soil Screening Levels (SSL) for Superfund Sites (USEPA, 2002) and are presented in Table 6-26.

6.2.4.7 Assessing Cancer Risks from Early Life Exposures

USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005) recommends making adjustments to the toxicity of carcinogenic chemicals that act via the mutagenic mode of action when evaluating early-life exposures. The guidance recommends using age-dependent adjustment factors (ADAFs) combined with age-specific exposure estimates when assessing cancer risks. In the absence of chemical-specific data, the supplement guidance recommends the following default adjustments, which reflect the fact that cancer risks are generally higher from early-life exposures than from similar exposures later in life:

- For exposures before 2 years of age (i.e., spanning a 2-year interval from the first day of birth until a child's second birthday), a 10-fold adjustment.
- For exposures between 2 and 16 years of age (i.e., spanning a 14-year time interval from a child's second birthday until their sixteenth birthday), a three-fold adjustment.
- For exposures after turning 16 years of age, no adjustment.

The adjustments were applied using the same method as that used by Oak Ridge National Laboratory (ORNL) in the development of RSLs. Children were evaluated as two age groups, ages 0 to 2 years and ages 2 to 6 years, and adults were evaluated as two age groups, ages 6 to 16, and ages greater than 16 years old. Using this approach, the intakes for child and adult recreational users and hypothetical residents were calculated as follows:

$$\text{Intake}_{\text{Child}} = \text{Intake}_{(\text{ages } 0 - 2 \text{ years})} \times 10 + \text{Intake}_{(\text{ages } 2 - 6 \text{ years})} \times 3$$

$$\text{Intake}_{\text{Adult}} = \text{Intake}_{(\text{ages } 6 - 16 \text{ years})} \times 3 + \text{Intake}_{(\text{ages} > 16 \text{ years})}$$

And the intakes for adolescent trespassers were calculated as follows:

$$\text{Intake}_{\text{Adolescent}} = \text{Intake}_{(\text{age } 6 - 16 \text{ years})} \times 3$$

The above approach was used only for those chemicals that are identified as mutagenic in the ORNL screening table (e.g., carcinogenic PAHs, hexavalent chromium). Sample calculations showing how this approach was applied are included in Appendix H.5.

6.2.4.8 Summary of Exposure Parameters

A summary of exposure input parameters for all exposure pathways is presented in Tables 6-23 and 6-24 for the identified potential receptor groups at Tank Farms 4 and 5. In general, standard default parameters (e.g., USEPA, 1989, 1991, 1997, and 2004; RIDEM, 2004), which combine mid-range and upper-end exposure factors, were used to assess RME conditions. CTE conditions were assessed primarily by the use of mid-range exposure factors presented in current risk assessment guidance (USEPA, 1989 and 1993).

6.3 TOXICITY ASSESSMENT

The toxicity assessment seeks to identify potential adverse health effects in exposed populations. Quantitative estimates of the relationship between the magnitude and type of exposures and the severity or probability of human health effects are defined for the identified constituents of concern. Quantitative toxicity values determined during this component of the risk assessment are integrated with exposure assessment outputs to characterize the potential occurrence of adverse health effects for each receptor group.

The reference dose (RfD) is the toxicity value used to evaluate noncarcinogenic health effects for ingestion and dermal exposures. The reference concentration (RfC) is used to evaluate noncarcinogenic health effects for inhalation exposures. The RfD and RfC estimate a daily exposure level for a human population that is unlikely to pose an appreciable risk during a portion or for all of a human lifetime. It is based on a review of animal and/or human toxicity data, with adjustments for various data uncertainties. Carcinogenic effects are quantified using the cancer slope factor (CSF) for ingestion and dermal exposures, and using inhalation unit risks (IUR) for inhalation exposure that are plausible upper-bound estimates of the probability of the development of cancer per unit intake of the chemical over a lifetime. These are typically based on dose-response data from human and/or animal studies.

6.3.1 Toxicity Criteria for Oral and Inhalation Exposures

Oral RfDs and CSFs and inhalation RfCs and IURs used in the Tank Farms 4 and 5 risk assessment were obtained from the following primary USEPA literature sources (2003):

- Integrated Risk Information System (IRIS).

- USEPA Provisional Peer Reviewed Toxicity Values (PPRTVs) – The Office of Research and Development/National Center for Environmental Assessment (NCEA) Superfund Health Risk

Technical Support Center develops PPRTVs on a chemical-specific basis when requested by USEPA's Superfund program.

- Other Toxicity Values – These sources include but are not limited to California Environmental Protection Agency (Cal EPA) toxicity values, Agency for Toxic Substances and Disease Registry (ATSDR) values, and the Annual Health Effects Assessment Summary Tables (HEAST) (USEPA, 1997).

Although toxicity criteria can be found in several toxicological sources, USEPA's IRIS online database is the preferred source of toxicity values. This database is continuously updated, and the presented values have been verified by USEPA. This table is updated several times a year and reflects recent changes in IRIS. The toxicity criteria for the constituents selected as COPCs for Tank Farms 4 and 5 are presented in Tables 6-28 through 6-31.

6.3.2 Toxicity Criteria for Dermal Exposure

RfDs and CSFs in the scientific literature are typically expressed as "administered" (i.e., not absorbed) doses. Therefore, these values are considered inappropriate for estimating risks associated with dermal exposures. Oral dose response parameters based on administered doses must be adjusted to absorbed doses before they can be compared to estimated dermal exposure intakes.

When oral absorption is essentially complete (i.e., 100%), an absorbed dose is equivalent to the administered dose, and therefore no toxicity adjustment is necessary. Conversely, when the gastrointestinal absorption of a chemical is poor (e.g., 1%), the absorbed dose is smaller than the administered dose; thus, toxicity factors based on absorbed dose should be adjusted to account for the difference in the absorbed dose relative to the administered dose. USEPA (2004) recommends a 50% absorption cut-off to reflect the intrinsic variability in analyzing absorption studies. Therefore, the adjustment from administered to absorbed dose was only performed when the chemical specific gastrointestinal absorption efficiency was less than 50%. The adjustment from administered to absorbed dose was made using chemical specific gastrointestinal absorption efficiencies published in numerous sources of guidance (e.g., USEPA 2004 [the primary reference], IRIS, ATSDR toxicological profiles, etc.), using the following equations:

$$RfD_{dermal} = (RfD_{oral})\ (ABS_{GI})$$
$$CSF_{dermal} = (CSF_{oral})\ /\ (ABS_{GI})$$

where: ABS_{GI} = absorption efficiency in the gastrointestinal tract

RfD_{dermal}	=	RfD for the dermal route of exposure
RfD_{oral}	=	RfD for the oral route of exposure
CSF_{dermal}	=	CSF for the dermal route of exposure
CSF_{oral}	=	CSF of the oral route of exposure

As noted above, the preceding adjustment of the oral toxicity criteria (i.e., RfDs, CSFs) was necessary to allow quantitative evaluation of the dermal route of exposure in the baseline risk assessment. An explanation of this procedure and the need for this procedure are presented in Appendix A of USEPA RAGS Part A.

6.3.3 Toxicity of Chromium

Toxicity criteria are available for different forms of chromium, which is considered to be more toxic in the hexavalent state. Because there is no evidence to support the conclusion that hexavalent chromium is present at the site, speciation analyses were not completed for Tank Farms 4 and 5. However, risks associated with this chemical were assessed by conservatively assuming that 100 percent of the reported total chromium result is attributable to hexavalent chromium.

6.3.4 Toxicity of PCBs

The HHRA of PCBs was conducted per the following USEPA guidance document: PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures (USEPA, 1996).

This guidance presents a tiered approach to the risk assessment of PCBs. A range of CSFs for PCBs is presented for use in HHRA according to criteria that consider the environmental media investigated, type of exposure, and anticipated persistence, bioaccumulation potential, and toxicity of the PCB homologues/congeners detected in the samples.

6.3.5 Toxicity Criteria for the Carcinogenic Effect of PAHs

Limited toxicity values are available to evaluate the carcinogenic effects from exposure to PAHs. The most extensively studied PAH is benzo(a)pyrene, which is classified by USEPA as a probable human carcinogen. Although CSFs are available for benzo(a)pyrene, insufficient data are available to calculate CSFs for other carcinogenic PAHs. The equivalent oral CSF for a carcinogenic PAH other than benzo(a)pyrene is derived by multiplying the CSF for benzo(a)pyrene by TEF recommended for that PAH.

6.3.6 Toxicity Criteria for Carcinogenic Effects of Dioxins/Furans

Chlorinated dibenzo-p-dioxins (CDDs) and chlorinated-dibenzofurans (CDFs) were evaluated using toxicity equivalence factors (TEFs) that relate to the toxicity of various congeners to the toxicity of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) (USEPA, March 1989). USEPA developed TEFs based on a variety of approaches including structure-activity relationships and available toxicological information. The World Health Organization (WHO) TEF values published in "The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds", (July 7, 2006) were used in this risk assessment. The TEFs are applied to the individual dioxin/furan congeners to calculate an equivalent 2,3,7,8-TCDD concentration.

6.3.7 Mutagenic Chemicals

USEPA's Guidelines for Carcinogen Risk Assessment (2005) and Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005) specify the use of ADAFs for carcinogens that act via a mutagenic mode of action. Carcinogenic PAHs and hexavalent chromium are included in the group of chemicals that have been determined to act via the mutagenic mode of action. No chemical-specific ADAFs have been derived for carcinogenic PAHs and hexavalent chromium; therefore, the following defaults ADAFs were used: 10 for ages 0 to 2, 3 for ages 2 to 16, and 1 (no adjustment) for ages 16 to 70. The ADAFs were used in evaluating exposures to carcinogenic PAHs and hexavalent chromium for adolescent trespassers, recreational users, and hypothetical residents using the approach presented in Section 6.2.4.7.

6.4 RISK CHARACTERIZATION

This section provides a characterization of potential human health risks associated with potential exposures to COPCs at Tank Farms 4 and 5. Potential risks (non-carcinogenic and carcinogenic) for human receptors resulting from exposures outlined in the exposure assessment were quantitatively determined and are discussed in this section. Both RME and CTE estimates were generated. Sections 6.4.1 and 6.4.2 outline the methods used to quantitatively estimate the type and magnitude of potential risks for human receptors. Summaries of the risk characterization for Tank Farms 4 and 5 are provided in Section 6.4.3.

6.4.1 Quantitative Analysis of Chemicals

Quantitative estimates of risk for chemicals were calculated according to risk assessment methods outlined in USEPA guidance (USEPA, 1989). Lifetime cancer risks are expressed in the form of

dimensionless probabilities, referred to as ILCRs, based on CSFs and IURs. Non-carcinogenic risk estimates are presented in the form of HQs that are determined through a comparison of intakes with published RfDs and RfCs.

ILCR estimates for ingestion and dermal exposures were generated for each COPC using estimated exposure intakes and published CSFs, as follows:

$$\text{ILCR} = (\text{Estimated Exposure Intake})(\text{CSF})$$

If the above equation resulted in an ILCR greater than 0.01, the following one-hit equation was used:

$$\text{ILCR} = 1\text{-}[\exp(\text{-Estimated Exposure Intake})(\text{CSF})]$$

This is consistent with the linear low-dose model.

ILCRs estimates for inhalation exposures were generated for each COPC using estimated exposure concentrations and published IURs, as follows:

$$\text{ILCR} = (\text{IUR})(\text{Exposure Concentration})(1000\ \mu\text{g/mg})$$

An ILCR of 1×10^{-6} indicates that the exposed receptor has an one-in-one-million chance of developing cancer under the defined exposure scenario. Alternatively, such a risk may be interpreted as representing one additional case of cancer in an exposed population of one million people.

Non-carcinogenic risks were assessed using the concept of HQs and Hazard Indices (HIs). The HQ for a COPC is the ratio of the estimated intake to the RfD and is calculated for ingestion and dermal exposures as follows:

$$\text{HQ} = (\text{Estimated Exposure Intake})/(\text{RfD})$$

For inhalation exposures, HQ is calculated as follows:

$$\text{HQ} = (\text{Exposure Concentration})/(\text{RfC})$$

An HI was generated by summing the individual HQs for all COPCs. The HI is not a mathematical prediction of the severity of toxic effects and therefore is not a true "risk"; it is simply a numerical indicator of the possibility of the occurrence of noncarcinogenic (threshold) effects.

6.4.2 Interpretation of Risk Assessment Results

To interpret the quantitative risk estimates and to aid risk managers in determining the need for remediation, quantitative risk estimates were compared to typical USEPA risk benchmarks. Calculated ILCRs were interpreted using USEPA's target cancer risk range (1×10^{-4} to 1×10^{-6}). HIs were evaluated against a benchmark value of 1.0.

USEPA defines the range of 1×10^{-4} to 1×10^{-6} as the ILCR target range for hazardous waste facilities addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA. Individual or cumulative ILCRs greater than 1×10^{-4} are generally considered "unacceptable" by USEPA. Risk management decisions are necessary when the ILCR is within 1×10^{-4} to 1×10^{-6}. USEPA typically does not require remediation when the cumulative ILCR is less than 1×10^{-6}. The RIDEM acceptable risk range, under State Regulations, is 1×10^{-6} for individual contaminants and 1×10^{-5} for cumulative exposure.

An HI exceeding unity (1.0) indicates that there may be non-carcinogenic health risks associated with exposure. If an HI exceeds unity, target organ effects associated with exposure to COPCs are considered. Only those HQs for chemicals that affect the same target organ(s) or exhibit similar critical effect(s) are regarded as truly additive. Consequently, it may be possible for the cumulative HI to exceed 1.0, but no adverse health effects are anticipated if the COPCs do not affect the same target organ or exhibit the same critical effect (i.e., target-organ/critical effect-specific HIs do not exceed 1).

6.4.3 Results of the Risk Characterization

This section contains a summary of the results of the risk characterization for Tank Farms 4 and 5. Quantitative risk estimates for potential human receptors were developed for those chemicals identified as COPCs. The methodology used to calculate the risks presented in this section was discussed in Sections 6.2 and 6.3. Potential risks from direct contact exposures to soil, groundwater, surface water, and sediment are discussed in Sections 6.4.3.1 through 6.4.3.4, respectively. The effects of background concentrations on the potential risks associated are discussed in Section 6.4.3.5. Uncertainties associated with the risk estimates are discussed in Section 6.5.

Potential cancer risks and hazard indices were calculated for current/future construction workers, industrial workers, adolescent trespassers, child and adult unrestricted recreational users, and hypothetical future child and adult residents under the RME and CTE scenarios and are summarized in Tables 6-32 through 6-35 and Figures 6-2 through 6-9. It is noted that RIDEM considers the unrestricted recreational use of property equivalent to the residential exposure scenario. Sample calculations are

presented in Appendix H.5, and the results of the risk assessment in RAGS Part D format are included in Appendix H.3.

6.4.3.1 Non-Carcinogenic Risks - Tank Farm 4

Reasonable Maximum Exposures

Table 6-32 and Figure 6-2 presents the HIs for Tank Farm 4. Cumulative HIs for industrial workers exposed to soil; and adolescent trespassers, child recreational users, and adult recreational users exposed to soil, surface water, and sediment were less than or equal to unity (1). Cumulative HIs for construction workers, hypothetical child residents, and hypothetical adult residents exposed to soil and groundwater exceeded unity.

The HI of 0.8 for construction workers exposed to groundwater was less than unity. The HI for construction workers exposed to surface soil was equal to 1.

The HI for construction workers exposed to all soil was 3. Manganese was the major contributor to the HI developed for the construction worker exposed to all soil. HIs developed for the inhalation-of-particulates pathway exceeded 1 (HIs for other pathways were less than 1).

HIs for hypothetical child residents exposed to surface soil and all soil were 2 and 3 respectively, although as show below, the HIs for the individual target organs were all less than 1.

Hypothetical Child Residents		
Target Organ	**Hazard Quotient**	
	Surface Soil	**All Soil**
Blood	0.6	0.8
Central Nervous System	0.04	0.1
Cardiovascular System	0.7	0.9
Developmental	0.04	0.04
Gastrointestinal	0.6	0.8
Immune	0	0.09
Kidney	0.03	0.006
Liver	0.02	0.004
Lungs	0.0002	0.0003
Skin	0.7	0.9
Respiratory	0.00000001	0.00000001

HIs for hypothetical child residents (HI = 31) and hypothetical adult residents (HI = 10) exposed to groundwater exceeded unity (1). Endrin aldehyde (HI = 2), arsenic (HI = 2), cobalt (HI = 4), iron (HI = 2), and manganese (HI = 21) were the major contributors to the HI for hypothetical child residents. Manganese (HI = 6) was the major contributor to the HI for hypothetical adult residents exposed to groundwater at Tank Farm 4.

Central Tendency Exposures

Table 6-33 and Figure 6-3 presents the HIs for Tank Farm 4. Cumulative HIs for all receptors were less than or equal to unity (1) with the exception of hypothetical child and adult residents. HIs for hypothetical child and adult residents exposed to surface soil and all soil were less than 1. HIs for hypothetical child residents (HI = 6) exposed to groundwater exceeded unity (1). Aroclor-1254 (HI = 7) and manganese (HI = 4) were the major contributors to the HI for hypothetical child residents exposed to groundwater at Tank Farm 4. The HI for hypothetical adult residents exposed to groundwater was 3, although as show below, the HIs for the individual target organs were all less than or equal to 1.

Hypothetical Adult Residents	
Target Organ	**Hazard Index**
Blood	0.5
Body Weight	0.0003
Central Nervous System	1
Cardiovascular System	0.1
Gastrointestinal	0.2
Liver	0.5
Nasal	0.0002
Skin	0.1

6.4.3.2 Carcinogenic Risks - Tank Farm 4

Reasonable Maximum Exposures

Table 6-32 and Figure 6-4 presents the ILCRs for Tank Farm 4. Cumulative ILCRs for construction workers exposed to soil and groundwater, adolescent trespassers exposed to soil, surface water, and sediment, and adult recreational users exposed to soil, surface water, and sediment were within the USEPA's target risk range of 10^{-4} to 10^{-6}. The ILCR of 1×10^{-4} for industrial workers exposed to surface soil was equal to the upper bound of USEPA's target risk range while the ILCR for industrial workers exposed to all soil was within USEPA's target risk range. The cumulative ILCR of 2×10^{-4} for child

recreational users exposed to surface soil, surface water, and sediment exceeds USEPA's target risk range, although the media specific ILCRs for exposure to surface water and sediment were within the target risk range. The ILCR of 1 x 10^{-4} for child recreational users exposed to surface soil was equal to the upper bound of USEPA's target risk range.

The cumulative ILCRs for lifelong recreational users exposed to surface soil, surface water and sediment; hypothetical child, adult, and lifelong residents exposed to soil; and lifelong residents exposed to groundwater exceeded USEPA's target risk range. Carcinogenic PAHs in surface soil were the major contributors to the ILCR for the lifelong recreational users. Carcinogenic PAHs and arsenic were the major contributors to the ILCRs for hypothetical child, adult, and lifelong residents exposed to soil. Arsenic was the major contributor to the ILCRs for hypothetical lifelong residents exposed to groundwater.

Central Tendency Exposures

Table 6-33 and Figure 6-5 presents the ILCRs for Tank Farm 4. Cumulative ILCRs for all receptors were within USEPA's target risk range with the exception of the hypothetical child and adult residents. The cumulative ILCR of 2 x 10^{-4} for hypothetical child residents and 2 x 10^{-4} for hypothetical lifelong residents exposed to surface soil, and groundwater exceeds USEPA's target risk range, although the ILCRs for the individual media were within the target risk range.

6.4.3.3 Non-Carcinogenic Risks - Tank Farm 5

Reasonable Maximum Exposures

Table 6-34 and Figure 6-6 presents the HIs for Tank Farm 5. Cumulative HIs for industrial workers, adolescent trespassers, child recreational users, and adult recreational users were less than or equal to unity (1).

The HI for construction workers exposed to all soil was 3; manganese was the major contributor to this HI. HIs developed for the inhalation-of-particulates pathway exceeded 1 (HIs for other pathways were less than 1). (The risk was due to manganese concentrations at location TF5-SB970).

HIs for hypothetical child residents exposed to surface soil and all soil were 2 and 3 respectively, although as show below, the HIs for the individual target organs were all less than or equal to 1.

Hypothetical Child Residents		
Target Organ	**Hazard Quotient**	
	Surface Soil	**All Soil**
Blood	0.4	0.7
Central Nervous System	0.1	0.1
Cardiovascular System	1	1
Developmental	0.06	0.06
Gastrointestinal	0.5	0.7
Immune	0.03	0.03
Liver	0.00000001	0.00000001
Lungs	0.0002	0.0002
Skin	1	1
Respiratory	0.00000001	0.00000001

HIs for hypothetical child residents (HI = 22), and hypothetical adult residents (HI = 7) exposed to groundwater exceeded unity (1). Arsenic (HI = 3), cobalt (HI = 6), iron (HI = 3), and manganese (HI = 10) were the major contributors to the HI for hypothetical child residents. Cobalt (HI = 2) and manganese (HI = 3) were the major contributors to the HI for hypothetical adult residents exposed to groundwater at Tank Farm 5.

Central Tendency Exposures

Table 6-35 and Figure 6-7 presents the HIs for Tank Farm 5. Cumulative HIs for all receptors were less than or equal to unity (1) with the exception of hypothetical child and adult residents. HIs for hypothetical child and adult residents exposed to surface soil and all soil were less than 1. However, the HI for hypothetical child residents exposed to groundwater was 6; cobalt (HI = 2) and manganese (HI = 3) were the major contributors to the HI. The HI for hypothetical adult residents exposed to groundwater was two, although as show below, the HIs for the individual target organs were all less than or equal to 1.

Hypothetical Adult Residents	
Target Organ	**Hazard Quotient**
Blood	0.7
Central Nervous System	1
Cardiovascular System	0.2
Gastrointestinal	0.3
Skin	0.2

6.4.3.4 Carcinogenic Risks - Tank Farm 5

Reasonable Maximum Exposures

Table 6-34 and Figure 6-8 presents the ILCRs for Tank Farm 5. Cumulative ILCRs for construction workers exposed to soil and groundwater; industrial workers exposed to soil; adolescent trespassers exposed to soil, surface water, and sediment; and child and adult recreational users exposed to soil, surface water, and sediment were within USEPA's target risk range of 10^{-4} to 10^{-6}.

The cumulative ILCRs for hypothetical child, adult, and lifelong residents exposed to soil and groundwater exceeded USEPA's target risk range. However, the ILCRs for hypothetical child, adult, and lifelong residents exposed to surface soil or all soil were within USEPA's target risk range. The ILCR for hypothetical child and adult residents exposed to groundwater is equal to the upper bound of USEPA's target risk range. The ILCR of 2×10^{-4} for hypothetical lifelong residents exposed to groundwater exceeds USEPA's target risk range. Arsenic was the major contributors to the ILCRs for hypothetical child, adult, and lifelong residents exposed to groundwater.

Central Tendency Exposures

Table 6-35 and Figure 6-9 presents the ILCRs for Tank Farm 5. Cumulative ILCRs for all receptors were within USEPA's target risk range.

6.4.3.5 Effects of Background on Risk Estimates

As discussed in Section 6.1.2.1, chemicals detected at maximum concentrations exceeding COPC screening levels but within background concentrations were not retained as COPCs and not evaluated in the risk assessment presented in Sections 6.4.3.1 through 6.4.3.4. At Tank Farm 4 aluminum and chromium were within background levels in surface soil and subsurface soil. At Tank Farm 5, aluminum and chromium were within background levels in surface soil, and aluminum, beryllium, and chromium were identified as being within background levels in subsurface soil. Tables 6-36 and 6-37 present the cancer risks and hazard indices associated with these chemicals for Tank Farms 4 and 5, respectively. RAGS Part D tables for these chemicals are presented in Appendix H.6. Also included in Tables 6-36 and 6-37 is a comparison of the cancer risks and HIs for exposures to surface soil and subsurface soil based on site-related COPCs.

ILCRs all receptors exposed to chemicals present at background concentrations were equal to or less than 1×10^{-5}, which is within the USEPA target risk range. HIs were all less than unity. ILCRs and HIs

for exposures to chemicals present at background concentrations were significantly less than the ILCRs and HIs for exposures to site-related COPCs. The combined ILCRs and HIs for exposures to site-related COPCs and chemicals present at background concentrations is essentially the same as the risks for exposures to site-related COPCs alone.

6.4.3.6 Chemicals Exceeding RIDEM Criteria

Tables 6-3 through 6-18 also include a comparison of chemical concentrations to criteria established by the RIDEM, Office of Waste Management (2004). Table 6-19 shows the chemicals detected at concentrations exceeding the RIDEM criteria at Tank Farms 4 and 5. Concentrations of PAHs, arsenic, beryllium, manganese, thallium, extractable petroleum hydrocarbons in surface soil at Tank Farm 4 exceed the RIDEM residential direct exposure criteria.. Concentrations of chrysene, arsenic, beryllium, manganese, and thallium in subsurface soil at Tank Farm 4 exceeded the RIDEM residential direct exposure criteria. At Tank Farm 5, concentrations of arsenic, beryllium, and manganese in surface soil and arsenic, beryllium, manganese, and thallium in subsurface soil exceeded the RIDEM direct contact exposure criteria. Extractable petroleum hydrocarbons in one surface soil from location TF4-SB921 (Tank Farm 4) was the only chemical detected at concentrations exceeding the RIDEM GA leachability criteria.

At both Tank Farms 4 and 5 concentrations of all chemicals detected in groundwater and surface water were less than the RIDEM GA groundwater objectives. Concentrations of benzo(a)pyrene, benzo(b)fluoranthene, chrysene, arsenic, beryllium, and thallium in sediment at Tank farm 4 exceeded the RIDEM residential direct contact criteria. At Tank Farm 5, concentrations of arsenic, beryllium, manganese, and thallium in sediment exceeded the RIDEM residential direct contact criteria.

6.5 UNCERTAINTY ANALYSIS

This section presents a summary of uncertainties inherent in the risk assessment and includes a discussion of how they may affect the quantitative risk estimates and conclusions of the risk analysis. The baseline HHRA for Tank Farms 4 and 5 was performed in accordance with current USEPA guidance; however, there are varying degrees of uncertainty associated with the baseline HHRA. The following sections discuss general uncertainties in risk assessment and uncertainties specific to the risk assessment for Tank Farms 4 and 5.

Uncertainty in the selection of COPCs was related to the current status of the predictive databases; the grouping of samples; the numbers, types, and distributions of samples; data quality; and the procedures used to include or exclude constituents as COPCs. Uncertainty associated with the exposure

assessment included the values used as input variables for a given intake route or scenario, the assumptions made to determine EPCs, and the predictions regarding future land use and population characteristics. Uncertainty in the toxicity assessment included the quality of the existing toxicity data needed to support dose-response relationships and the weight of evidence used to determine the carcinogenicity of COPCs. Uncertainty in risk characterization is associated with exposure to multiple chemicals and the cumulative uncertainty from combining conservative assumptions made in earlier steps of the risk assessment process.

Whereas there were various sources of random uncertainty and bias, the magnitude of bias and uncertainty and the direction of bias are influenced by the assumptions made throughout the risk assessment including selection of COPCs and selection of values for dose-response relationships. Throughout the entire risk assessment, assumptions that consider safety factors were made so that the final calculated risks were overestimated.

Generally, risk assessments include two types of uncertainty, measurement and informational uncertainty. Measurement uncertainty refers to the usual variance that accompanies scientific measurements. For example, this type of uncertainty is associated with analytical data collected for the site. The risk assessment reflects the accumulated variances of the individual values used.

Informational uncertainty stems from inadequate availability of information needed to complete the toxicity and exposure assessments. Often, this gap is significant, such as the absence of information on the effects of human exposure to low doses of a chemical, the biological mechanism of action of a chemical, or the behavior of a chemical in soil.

After the risk assessment is complete, the results must be reviewed and evaluated to identify the type and magnitude of uncertainty involved. Reliance on results from a risk assessment without consideration of uncertainties, limitations, and assumptions inherent in the process can be misleading. For example, to account for uncertainties in the development of exposure assumptions, conservative estimates were made to ensure that the particular assumptions were protective of sensitive subpopulations or the maximum exposed individuals. If a number of conservative assumptions are combined in an exposure model, the resulting calculations can propagate the uncertainties associated with those assumptions, thereby producing a much larger uncertainty for the final results. This uncertainty is biased toward over predicting both carcinogenic and non-carcinogenic risks. Thus, both the results of the risk assessment and the uncertainties associated with those results must be considered when making risk-management decisions.

This interpretation of uncertainty is especially relevant when the risks exceed the point of departure for defining "acceptable" risk. For example, when risks calculated using a high degree of uncertainty are less than an acceptable risk level (i.e., 10^{-6}), the interpretation of no significant risk is typically straightforward. However, when risks calculated using a high degree of uncertainty exceed an acceptable risk level (i.e., 10^{-4}), a conclusion can be difficult unless uncertainty is considered.

6.5.1 Uncertainty in Selection of COPCs

The most significant issues related to uncertainty in COPC selection at Tank Farms 4 and 5 are the usability of existing databases (only validated data were used in the risk assessment), the COPC screening levels used, and the absence of screening levels for a few chemicals detected in site media. A brief discussion of each of these issues is provided in this section.

Usability and Completeness of Existing Databases

As discussed in Section 6.1.1, data from samples collected during the RI were used to assess risks to potential human receptors. The data were validated according to USEPA data validation guidelines. Fixed-base analytical results only for the target analyte lists for the field investigations were used in the quantitative risk evaluation. The historical data was not used in this HHRA because it was approximately 20 years old or the samples that were collected represent soils that have been disturbed or no longer exist because of the various excavation activities that have been conducted to close out the tank farms; therefore, the data are not reflective of current conditions. The current data was collected specifically for the purposes of characterizing the sites and for use in a human health or ecological risk assessment. Therefore, it is unlikely that risks have been underestimated by not including the historical data in this HHRA.

COPC Screening Levels

The use of risk-based screening values based on conservative land-use scenarios (i.e., residential land use for soil and ingestion of tap water for groundwater) corresponding to ILCRs of 10^{-6} and HIs of 0.1 ensured that all the significant contributors to risk from the site were evaluated. The elimination of chemicals present at concentrations that correspond to ILCRs less than 10^{-6} and HIs less than 0.1 should not have affected the final conclusions of the risk assessment because those chemicals were not expected to cause a potential health concern at the detected concentrations.

Chemicals without Established Screening Levels

Risk-based screening levels are currently not available for some constituents detected at Tank Farms 4 and 5 [e.g., acenaphthylene, benzo(g,h,i)perylene, phenanthrene, alpha- and gamma-chlordane, endosulfan II, endosulfan sulfate, and endrin aldehyde]. In the COPC screening, acenaphthene was used as a surrogate for acenaphthylene, pyrene was used as a surrogate for benzo(g,h,i)perylene and phenanthrene, chlordane was used as a surrogate for alpha- and gamma-chlordane, endosulfan was used as a surrogate for endosulfan II and endosulfan sulfate, and endrin was used as a surrogate for endrin aldehyde. Applying toxicity values for one compound to another compound increases the uncertainty in the risk assessment both in regard to the selection of COPCs and the calculated risks. The direction of the uncertainty is not known.

6.5.2 Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arose because of the methods used to calculate EPCs, the determination of land-use conditions, the selection of receptors and scenarios, the selection of exposure parameters, and the methodology used to evaluated residential exposures to chemicals that have volatilized from groundwater. Each of these is discussed below.

Exposure Point Concentrations

Uncertainty is associated with the use of 95-percent upper concentration limit (UCLs) on the mean concentration as EPCs. As a result of using 95-percent UCLs, the estimations of potential risk for the RME scenario were most likely overstated because UCLs represent the upper limit that potential receptors would be exposed to over the entire exposure period. In some cases (because the UCL was greater than the maximum concentration), the maximum concentration was used as the EPC. Use of the maximum concentration tends to overestimate potential risks because receptors are assumed to be exposed continuously to the maximum concentration for the entire exposure period.

EPCs for construction workers hypothetically exposed to VOCs migrating from shallow groundwater to air were estimated using a VDEQ model for exposure of construction workers to vapors accumulating in an excavation trench. Site-specific parameters such as groundwater concentrations were used in the model. However, it was necessary to use model default values for most of the other input parameters. The use of model default values tended to increase the uncertainty in the calculated risks. The direction of the uncertainty was not known, although the model default values are generally conservative and tend to overestimate air concentrations.

Land Use

The current land-use patterns at NAVSTA Newport are well established, thereby limiting the uncertainty associated with land-use assumptions. Land use at Tank Farms 4 and 5 is currently limited and is expected to be limited in the future, as long as the NAVSTA Newport remains active (industrial workers and potential and infrequent trespassers are the only current and likely future receptors). To be conservative, risks to potential and future construction workers, recreational (unrestricted) users, and hypothetical residents were estimated for the site.

Exposure Routes and Receptor Identification

The determination of various receptor groups and exposure routes of potential concern was based on current land use at the site and anticipated future land use. Therefore, the uncertainty associated with the selection of exposure routes and potential receptors was minimal because they were considered to be well defined. Although residential use of groundwater was evaluated as an exposure scenario at Tank Farms 4 and 5, groundwater is not currently used at the site, nor is it expected to be used in the future. Therefore, the evaluation of direct exposure to groundwater performed in this baseline HHRA was included primarily to aid in risk-management decision making.

Exposure Parameters

Each exposure factor (for RME and CTE scenarios) selected for use in the risk assessment had some associated uncertainty. Generally, exposure factors were based on surveys of physiological and lifestyle profiles across the United States. The attributes and activities studied in these surveys generally had a broad distribution. To avoid underestimation of exposure, in most cases, USEPA guidelines on the RME receptor were used, which generally specify the use of the 95th percentile value for most parameters. Therefore, the selected values for the RME receptor represented an upper bound of the observed or expected habits of the majority of the population.

Generally, the uncertainty can be assessed quantitatively for many assumptions made in determining factors for calculating exposures and intakes. Many of these parameters were determined from statistical analyses on human population characteristics. Often, the database used to summarize a particular exposure parameter (i.e., body weight) is quite large. Consequently, the values chosen for such variables in the RME scenario have low uncertainty.

Many of the exposure parameters used to calculate exposures and risks in this report were selected from a distribution of possible values including USEPA guidance (USEPA, 1989, 1991, 1993, 1997, and 2004).

For the RME scenario, the value representing the 95th percentile was generally selected for each parameter to ensure that the assessment bounded the majority of actual risks from a postulated exposure. This risk number is used in risk management decisions but does not indicate what a more average or typical exposure might be or what risk range might be expected for individuals in the exposed population. To address these issues, USEPA (USEPA, 1992) suggested the use of the CTE receptor, whose intake variables are often set at approximately the 50th percentile of the distribution. The risks for this receptor seek to incorporate the range of uncertainty associated with various intake assumptions. Some of the parameters presented in this risk assessment were estimated using professional judgment, although USEPA does provide limited guidance for the CTE evaluation (USEPA, 1993).

Residential Exposures to Chemicals Volatizing from Groundwater

Risk for residents exposed to chemicals that have volatilized from groundwater were evaluated by assuming the risk resulting from a showering exposure was equivalent to the risk from ingestion of 2 liters of water, which was the USEPA Region I recommended methodology (1999) at the time the draft HHRA was prepared. USEPA Region I now recommends using Andelman equation in RAGS Part B (USEPA, 1991) to evaluate residential inhalation exposures from groundwater. The estimated risks using the Andelman's equation could be higher or lower than those estimated in this HHRA. The ILCRs and HIs estimated in this HHRA for residents exposed to groundwater through ingestion and dermal contact exceed acceptable levels, consequently using the Andelman equation to evaluate inhalation exposures would not change the conclusions of this HHRA.

6.5.3 Uncertainty in the Toxicological Evaluation

Uncertainties associated with the toxicity assessment (determination of RfDs and CSFs and use of available criteria) are discussed in this section.

Derivation of Toxicity Criteria

Uncertainty associated with the toxicity assessment was associated with hazard assessment and dose-response evaluations for the COPCs. The hazard assessment characterized the nature and strength of the evidence of causation or the likelihood that a chemical that induces adverse effects in animals will also induce adverse effects in humans. Hazard assessment of carcinogenicity was evaluated as a weight-of-evidence determination using USEPA methods. Positive animal cancer test data may suggest that humans contain tissue(s) that may manifest a carcinogenic response; however, the animal data cannot necessarily be used to predict the target tissue in humans. In the hazard assessment of non-

cancer effects, however, positive animal data often suggest the nature of the effects (i.e., the target tissues and type of effects) anticipated in humans.

Uncertainty in hazard assessment arose from the nature and quality of the animal and human data. Uncertainty was reduced when similar effects were observed across species, strain, sex, and exposure route; when the magnitude of the response was clearly dose-related; when pharmacokinetic data indicated a similar fate in humans and animals; when postulated mechanisms of toxicity were similar for humans and animals; and when the COPC was structurally similar to other chemicals for which the toxicity is more completely characterized.

Uncertainty in the dose-response evaluation included the determination of a CSF for the carcinogenic assessment and derivation of an RfD for the non-carcinogenic assessment. Uncertainty was introduced from interspecies (animal to human) extrapolation, which, in the absence of quantitative pharmacokinetic or mechanistic data, is usually based on consideration of interspecies differences in basal metabolic rate. Uncertainty also resulted from intraspecies variation. Most toxicity experiments are performed with animals that are very similar in age and genotype, so intragroup biological variation is minimal, but the human population of concern may reflect a great deal of heterogeneity, including unusual sensitivity or tolerance to the COPC. Even toxicity data from human occupational exposure reflect a bias because only those individuals sufficiently healthy to attend work regularly (the "healthy worker effect") and those not unusually sensitive to the chemical are likely to be occupationally exposed. Finally, uncertainty arises from the quality of the key study from which the quantitative estimate was derived and the database used. For cancer effects, the uncertainty associated with dose-response factors was mitigated by assuming the 95-percent upper bound for the slope factor. Another source of uncertainty in carcinogenic assessment is the method by which data from high doses in animal studies are extrapolated to the dose range expected for environmentally exposed humans. The linearized multistage model, which is used in nearly all quantitative estimations of human risk from animal data, is based on a nonthreshold assumption of carcinogenesis. Evidence suggests, however, that epigenetic carcinogens, as well as many genotoxic carcinogens, have a threshold below which they are non-carcinogenic. Therefore, the use of the linearized multistage model was conservative for chemicals that exhibited a threshold for carcinogenicity.

For non-cancer effects, additional uncertainty factors may have been applied in the derivation of the RfD to mitigate poor quality of the key study or gaps in the database. Additional uncertainty for non-cancer effects arose from the use of an effect level in the estimation of an RfD, because this estimation was predicated on the assumption of a threshold less than which adverse effects were not expected. Therefore, an uncertainty factor is usually applied to estimate a no-effect level. Additional uncertainty arose in estimation of an RfD for chronic exposure from subchronic data. Unless empirical data indicated that effects did not worsen with increasing duration of exposure, an additional uncertainty factor was

applied to the no-effect level in the subchronic study. Uncertainty in the derivation of RfDs was mitigated by the use of uncertainty and modifying factors that normally ranged between 3 and 10. The resulting combination of uncertainty and modifying factors may have reached 1,000 or more.

The derivation of dermal RfDs and CSFs from oral values may have caused uncertainty. This was particularly the case when no gastrointestinal absorption rates were available in the literature or when only qualitative statements regarding absorption were available.

Uncertainty in the Toxicity Criteria for Chromium

Toxicity criteria are available for different forms of chromium, which is considered to be more toxic in the hexavalent state. Although there is no evidence to support the conclusion that hexavalent chromium is present at Tank Farms 4 and 5, risks associated with this chemical were assessed by conservatively assuming that 100 percent of the reported chromium result is attributable to hexavalent chromium. Therefore, the risks calculated for chromium in soil and sediment at Tank Farms 4 and 5 are likely overestimated.

6.5.4 Uncertainty in the Risk Characterization

Uncertainty in risk characterization resulted from assumptions made regarding additivity of effects from exposure to multiple COPCs from various exposure routes. High uncertainty exists when summing non-cancer risks for several substances across different exposure pathways. This assumes that each substance has a similar effect and/or mode of action. Even when chemicals affect the same target organs, they may have different mechanisms of action or differ in their fate in the body, so additivity may not be an appropriate assumption in all cases. However, the assumption of additivity was considered because in most cases it represented a conservative estimate of risk.

Risks to any individual may also have been overestimated by summing multiple assumed exposure pathway risks for any single receptor. Although every effort was made to develop reasonable scenarios, not all individual receptors may be exposed via all pathways considered.

Finally, the risk characterization did not consider antagonistic or synergistic effects. Little or no information was available to determine the potential for antagonism or synergism for the COPCs. Because chemical-specific interactions could not be predicted, the likelihood for risks to be over predicted or under predicted could not be defined, but the methodology used was based on current USEPA guidance.

6.6 SUMMARY

The baseline HHRA for Tank Farms 4 and 5 was conducted to characterize the potential risks to likely human receptors under current and potential future land use. Potential receptors under current land use are industrial workers, adolescent trespassers, and recreational users. Potential receptors evaluated in the HHRA for future land use are construction workers and hypothetical child and adult residents. Although future land use is likely to be the same as current land use, potential future receptors were evaluated in the baseline HHRA, primarily for decision-making purposes.

Tank Farms 4 and 5 were treated as separate areas for the purpose of selecting COPCs. Chemicals retained as COPCs are summarized in Table 6-19. At Tank Farm 4 PAHs, dioxins/furans, and metals were identified as COPCs in soil. Naphthalene and metals were identified as COPCs in groundwater. PAHs and metals were identified as COPCs in surface water and PAHs, dioxins/furans, and metals were identified as COPCs in sediment. At Tank Farm 5, PAHs, Aroclor-1254, dioxins/furans, and metals were identified as COPCs in soil. Benzene and metals were identified as COPCs in groundwater. Chloroform, PAHs, and metals were identified as COPCs in surface water and PAHs, dioxins/furans, and metals were identified as COPCs in sediment.

Quantitative estimates of non-carcinogenic and carcinogenic risks (HIs and ILCRs, respectively) were developed for potential human receptors. All receptors were evaluated for exposures to surface soil (0 to 1 foot bgs) and all soil (0 to 10 feet bgs). Construction workers and hypothetical residents were also evaluated for exposures to groundwater. Adolescent trespassers and recreational users were also evaluated for exposures to surface water and sediment. The groundwater, surface water, and sediment were evaluated as single EUs. The results of the HHRA are summarized below. Chemicals retained as COCs are summarized in Tables 6-38 and 6-39 for Tank Farms 4 and 5, respectively.

<u>Soil Risks</u>

HIs for all receptors exposed to site-related COPCs in surface and subsurface soil under the RME scenario were less than or equal to unity (1), with the exception of construction workers exposed to all soil at Tank Farms 4 and 5. At Tank Farm 4, manganese in soil samples collected near Ruin 1 was the major contributor to the HI for construction workers. At Tank Farm 5, manganese in soil samples collected at location TF5-SB970 was the major contributor to the HI for construction workers.

ILCRs for the following receptors exceed USEPA's target risk range of 10^{-4} to 10^{-6}.

Area	Medium	ILCR Exceeds USEPA's Target Risk Range of 10^{-4} to 10^{-6}	ILCR Exceeds RIDEM's Target Cumulative Risk Level of 10^{-5}
Tank Farm 4	Surface Soil	Hypothetical Child Residents Hypothetical Adult Residents Hypothetical Lifelong Residents Lifelong Recreational Users	Industrial Workers Adolescent Trespassers Child Recreational Users Adult Recreational Users Lifelong Recreational Users Hypothetical Child Residents Hypothetical Adult Residents Hypothetical Lifelong Residents
	All Soil	Hypothetical Child Residents Hypothetical Lifelong Residents	Industrial Workers Child Recreational Users Lifelong Recreational Users Hypothetical Child Residents Hypothetical Adult Residents Hypothetical Lifelong Residents
Tank Farm 5	Surface Soil	ILCRs within Target Risk Range	Industrial Workers Hypothetical Child Residents Hypothetical Adult Residents Hypothetical Lifelong Residents
	All Soil	ILCRs within Target Risk Range	Industrial Workers Hypothetical Child Residents Hypothetical Adult Residents Hypothetical Lifelong Residents

Carcinogenic PAHs and arsenic were the major contributors to the ILCRs for receptor exposure to COPCs in the surface soil and all soil datasets at Tank Farm 4.

Groundwater Risks

HIs for lifelong residents hypothetically using the groundwater at Tank Farms 4 or 5 for domestic purposes exceeded unity (1). At Tank Farm 4, endrin aldehyde, arsenic, cobalt, iron, and manganese were the major contributors to the HI. At Tank Farm 5, arsenic, cobalt, iron, and manganese were the major contributors to the HI.

The ILCRs for child residents, adult residents, and lifelong residents hypothetically using the groundwater at Tank Farms 4 or 5 for domestic purposes exceed the USEPA target risk range. Arsenic was the major contributor to the ILCR at Tank Farms 4 or 5.

Surface Water Risks

HIs for adolescent trespassers and recreational users exposed to surface water at Tank Farms 4 and 5 were less than unity (1). ILCRs for adolescent trespassers and recreational users exposed to surface water at Tank farm 4 were less than USEPA's target risk range. At Tank Farm 5, ILCRs for adolescent

trespassers and recreational users exposed to surface water were less than or equal to the lower bound of USEPA's target risk range.

Sediment Risks

HIs for adolescent trespassers and recreational users exposed to sediments were less than unity (1). ILCRs for adolescent trespassers and recreational users exposed to sediment at both Tank Farms 4 and 5 were within USEPA's target risk range.

7.0 ECOLOGICAL RISK ASSESSMENT

7.1 INTRODUCTION

This section of the RI presents the general methodology used to conduct the Ecological Risk Assessment (ERA) for surface soils, sediment, and surface water at Tank Farm 4 Decision Unit (DU) 4-1 and Tank Farm 5 Decision Unit (DU) 5-1 at Naval Station Newport. The goal of this ERA was to evaluate the potential for adverse ecological impacts of site-related contamination and to determine the need for further investigation and/or remedial action at the site. This ERA contains information to enable scientists and managers to conclude either that ecological risks at the Site are most likely negligible or that further information is necessary to evaluate potential ecological risks at the Site.

The ERA methodology is in accordance with the UFP-SAP for Tank Farms 4 and 5 (Tetra Tech, 2010) and the following guidance documents:

- Navy Policy for Conducting Ecological Risk Assessment (Navy, 1999).
- Final Guidelines for Ecological Risk Assessment (U.S. EPA, 1998).
- Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (U.S. EPA, 1997).

This ERA consists of Steps 1, 2, and 3a of the eight steps required by the above guidance documents. The first two steps are the ERA. Step 3a is the first step of the baseline ecological risk assessment (BERA) and consists of refining the conservative exposure assumptions to ultimately refine the list of chemicals of potential concern (COPCs) that are initially selected during Step 2. Steps 3b through 7 consist of additional site-specific investigations/biological studies. Steps 3b through 7 are conducted if additional evaluations or investigations are necessary. Aspects of Step 8, risk management, are addressed throughout the ERA process, in cooperation with Region 1 regulators.

7.2 STEP 1: SCREENING-LEVEL PROBLEM FORMULATION AND ECOLOGICAL EFFECTS EVALUATION

Problem formulation is the first step of an ERA. The problem formulation process enables the risk assessor to identify the ecological resources to be protected (known as assessment endpoints); the measurements that were used to evaluate risks to those resources (known as measures of effects); and the chemicals, geographic areas, and environmental media relevant to the risk assessment.

7.2.1 Environmental Setting

NETC-Newport is located in the Towns of Newport, Middletown, and Portsmouth, Rhode Island, approximately 25 miles southeast of Providence. Tank Farms 4 and 5 are situated at the northern and central portions of NETC-Newport, in Portsmouth and Middletown, respectively (Figure 1-1). Tank Farm 4 is located approximately 1.4 miles north of Tank Farm 5. Topographic maps (1975) indicate that the farms are located approximately 500 to 1,000 feet east of Narragansett Bay.

Tank Farm 4 is bordered by the Defense Highway to the west; Norman's Brook to the south; residential property to the east; and undeveloped woodlands to the north/northeast (see base map, Figure 1-2). Norman's Brook flows east to west, and discharges to the east passage of Narragansett Bay. Tank Farm 4 occupies approximately 80 to 90 acres and contains 12 former underground storage tanks (USTs), numbered 37 through 48, which were demolished in place. The central portion of the site is vegetated with tall grass, dense brush, and trees. Brush and trees have been periodically cleared from some areas to allow remedial and investigation work to be conducted; however, vegetation returns quickly to areas that are not regularly cut. The western portions of Tank Farm 4 contain wetlands and wetland vegetation, hydric soils, and wetland hydrology.

Tank Farm 5 is similarly bordered by the Defense Highway to the west, a cemetery to the south, woodlands and residential property to the east, and Greene's Lane to the north (see base map, Figure 1-3). Tank Farm 5 occupies approximately 75 to 85 acres and contains 11 former underground storage tanks (USTs), numbered 49 through 59, which were demolished in place. Tank Farm 5 has also been used for the temporary storage of soil and construction materials from NAVSTA for several years. Gome's Brook transects the northern portion of the tank farm. The Brook flows westerly, to Narragansett Bay, and provides surface drainage for the northern portion of the facility and for the residential areas to the east. Vegetation, consisting of grass, dense brush, trees, and woodlands is found between the tanks and on the farm perimeter. Vegetation in the vicinity of the tanks has been periodically cleared for construction, but new growth is rapid if it is not mowed.

7.2.2 Potential Sources of Contamination

Tank Farms 4 and 5 have been divided into decision units in accordance with the UFP SAP and as described in Section 1 of this report. This ERA considers those decision units governed by CERCLA (Category 1). Contaminants sought include those associated with the burning and possible disposal of tank sludge (VOCs, SVOCs, pesticides, PCBs, Metals, Dioxins/Furans), which may have been or may be present in the vicinity of the former burn chambers and downgradient of the discharge areas in the soil

and sediment. These Category 1 areas are designated as DU 4-1 and DU 5-1. The sizes of these areas are approximately 15 acres and 6 acres, respectively.

7.2.3 Potential Exposure Pathways

In general, chemicals released from the burning or disposal of tank sludge can initially contaminate surface soils. Natural precipitation can then cause the chemical contaminants to leach downward into subsurface soils and groundwater or erode and be transported to downgradient soils and sediment. Discharge of the groundwater can also result in the contamination of surface water and sediment inhabited by aquatic receptors.

Surface Soil

Terrestrial ecological receptors such as plants, soil invertebrates, mammals, birds, and reptiles can be exposed to contaminated surface soil through direct contact as they search for food and burrow into the soil. Mammals, birds, and reptiles can also ingest contaminated surface soil and food items in which contaminants have accumulated. Some terrestrial receptors such as burrowing mammals or deep-rooted trees could be exposed to shallow layers of contaminated subsurface soils and/or to shallow groundwater. Most terrestrial receptors are not substantially exposed to subsurface soils or to groundwater that has not discharged to surface water, so these pathways were not evaluated in this ERA. For this project the surface soil depth interval was established to be 0 to 1 foot in depth below the ground surface.

Sediment

Aquatic ecological receptors, such as fish, sediment invertebrates, reptiles, and amphibians, can be exposed to sediment contamination through direct contact and incidental sediment ingestion. There are very few if any fish present in the streams, however, due to their small size and intermittent nature in some areas. Terrestrial wildlife may also be exposed to the sediment, although to a lesser degree, through direct contact and incidental sediment ingestion. Terrestrial vertebrates, such as piscivorous wildlife, may be exposed to contaminated sediment through ingestion of aquatic prey. For this project, the sediment depth interval evaluated is 0 to 6 inches in depth below the ground surface.

Surface Water

Aquatic ecological receptors, such as insects and other invertebrates, reptiles, and amphibians, can be exposed to surface water contamination through direct contact and surface water ingestion. Birds and

mammals may also be exposed to the surface water through direct contact and surface water ingestion. This exposure pathway is complete and was evaluated in the ERA.

7.2.4 Endpoints

Assessment and Measurement Endpoints

Assessment endpoints are explicit expressions of the environmental value that is to be protected (U.S. EPA, 1997). Measurement endpoints are estimates of biological impacts (e.g., survival, growth, reproduction) that are used to evaluate the assessment endpoints. Based on the habitat description at the Site, the following are the assessment and measurement endpoints that were selected for this ERA.

Assessment Endpoint 1: Protection of soil invertebrates from adverse effects on their survival, reproduction, and growth.

- Measurement Endpoint 1: Survival, growth, and reproduction of soil invertebrates were evaluated by comparing chemical concentrations in surface soil to screening values designed to be protective of these ecological receptors.

Assessment Endpoint 2: Protection of plants from adverse effects on their survival, reproduction, and growth.

- Measurement Endpoint 2: Survival, growth, and reproduction of plants were evaluated by comparing chemical concentrations in surface soil to screening values designed to be protective of these ecological receptors.

Assessment Endpoint 3: Protection of herbivorous birds and mammals from adverse effects on their survival, reproduction, and/or developmental effects.

- Measurement Endpoint 3: Survival, reproduction, and/or developmental effects to herbivorous birds and mammals were evaluated by comparing estimated ingested doses of chemicals in surface soil, surface water, and plants to the no observed adverse effects levels (NOAELs) and lowest observed adverse effects levels (LOAELs) for representative wildlife species.

Assessment Endpoint 4: Protection of invertivorous birds and mammals from adverse effects on their survival, reproduction, and/or developmental effects.

- Measurement Endpoint 4: Survival, reproduction, and/or developmental effects to invertivorous birds and mammals were evaluated by comparing estimated ingested doses of chemicals in surface soil, surface water, and invertebrates to the NOAELs and LOAELs for representative wildlife species.

Assessment Endpoint 5: Protection of piscivorous birds and mammals from adverse effects on their survival, reproduction, and/or developmental effects.

- Measurement Endpoint 5: Survival, reproduction, and/or developmental effects to piscivorous birds and mammals were evaluated by comparing estimated ingested doses of chemicals in sediment, surface water, and aquatic organisms to the NOAELs and LOAELs for representative wildlife species.

Assessment Endpoint 6: Protection of sediment invertebrates from adverse effects on their survival, reproduction, and growth.

- Measurement Endpoint 6: Survival and other adverse effects (e.g., those on growth, feeding rates, and behavior) of sediment invertebrates were evaluated by comparing chemical concentrations in sediment to screening values designed to be protective of these ecological receptors.

Assessment Endpoint 7: Protection of aquatic organisms from adverse effects on their survival, reproduction, and growth.

- Measurement Endpoint 7: Survival and other adverse effects (e.g., those on growth, feeding rates, and behavior) of aquatic organisms were evaluated by comparing chemical concentrations in surface water to screening values designed to be protective of these ecological receptors.

The following paragraphs discuss why the assessment endpoints listed above were selected for the ERA.

Soil Invertebrates – Soil invertebrates include earthworms, the juvenile stages of many insects, and other small organisms that directly inhabit the surface soil. These organisms are expected to be present in the soil in terrestrial habitats at the site. Soil invertebrates promote plant growth by aiding in the formation of soil and through redistribution and decomposition of organic matter. Soil invertebrates also serve as a food source for many mammals and birds. Chemicals can bioaccumulate from the soil into the tissues of soil invertebrates consumed by mammals and birds.

Terrestrial Plants – Terrestrial plants at the site consists of herbs (grasses, rushes, ferns, and other non-woody plants), shrubs, woody vines, and trees. These plants serve as a source of food and shelter for many organisms and help prevent soil erosion and excessive surface runoff. Plants can also bioaccumulate some chemicals from the soil that can then be transferred to organisms that feed on the plants.

Herbivorous Birds and Mammals – Herbivorous birds and mammals (animals that consume only plant tissue) forage at the site. Their role in the community is essential because, without them, higher trophic-level animals could not exist. They may be exposed to and accumulate chemicals that are present in the plants they consume.

Invertivorous Birds and Mammals - Invertivorous birds and mammals that consume primarily invertebrates are considered first-level carnivores. They serve as a food source for higher trophic level carnivores and may be exposed to and accumulate chemicals present in the food items they consume.

Piscivorous Birds and Mammals - Although very few, if any fish are present in the wetland streams, the term "piscivorous" is used here in a broad sense to describe birds and mammals that prey on aquatic organisms, including a variety of aquatic and sediment dwelling organisms (e.g., sediment invertebrates, crayfish, frogs). Piscivorous birds and mammals can be exposed to and accumulate site-related contaminants that have accumulated in prey items obtained from the site.

Sediment Invertebrates - Sediment invertebrates serve as a food source for higher trophic-level organisms (i.e., fish, amphibians, birds, mammals). They can also accumulate contaminants, which can be transferred to higher trophic-level organisms that consume invertebrates.

Aquatic Organisms – Aquatic organisms such as amphibians, insects, and other invertebrates serve as a food source for higher trophic-level organisms (i.e., birds, mammals). They can also accumulate contaminants, which can be transferred to higher trophic-level organisms that consume them.

U.S. EPA guidance (U.S. EPA, 1997) states that "it is not practical or possible to directly evaluate risks to all of the individual components of the ecosystem at a site. Instead, assessment endpoints focus the risk assessment on particular components of the ecosystem that could be adversely affected by chemicals from the site." Therefore, the ERA focused on the endpoints tending to yield the highest risks, which should account for endpoints that have lower risks.

Large carnivorous birds and mammals were not selected as assessment endpoints, because their home range (hundreds of acres) is much larger than either of the decision units under evaluation (15 acres and

6 acres, respectively) so they would only consume a small portion of food from the site. Also, there are large wooded areas much greater than the sites immediately adjacent to Tank Farm 4 and Tank Farm 5; therefore, large animals would not spend an unequal proportion of foraging time on the sites in spite of the size of the area (see Figures 1 and 2 in Appendix I). Therefore, risks would be greater to small mammals and birds that may obtain all of their food from the site. Although amphibians and reptiles are likely to be present in the wetland areas, they were not selected as assessment endpoints (except as they fit into the category of aquatic organisms) because of the general lack of toxicity information and the lack of methods to evaluate their exposure to chemicals.

7.2.5 Conceptual Site Model

A conceptual site model (CSM) in ERA problem formulation is a written description of predicted relationships between ecological entities and the stressors to which they may be exposed (U.S. EPA, 1998). The CSM consists of two primary components: predicted relationships among stressor, exposure, and assessment endpoint response, and a diagram that illustrates the relationships (U.S. EPA, 1998). Figure 7-1 provides an ecological CSM for DU 4-1 and DU 5-1. Sources of the chemicals occurring in DU 4-1 and DU 5-1 include those associated with the burning and possible disposal of tank sludge (VOCs, SVOCs, pesticides, PCBs, Metals, Dioxins/Furans), which may be present in the vicinity of the former burn chambers and downgradient of the discharge areas in the soil and sediment. Therefore, the immediate exposure medium is the surface soil where the activities took place. Terrestrial plants, invertebrates, mammals, and birds are exposed to the surface soil by direct contact and/or ingestion of soil and other food items. Chemicals can also infiltrate into the groundwater, which is then released to the surface water where it also contaminates the sediment. Metals and PAHs detected in soils have been detected in surface waters and sediments in these areas. Sediment invertebrates and other aquatic organisms, mammals, and birds are exposed to the surface water and sediment by direct contact and/or ingestion of sediment and surface water and other food items. Birds and mammals may be exposed to chemicals found in the air via inhalation. Although this pathway is possible, it is not a significant pathway and was not evaluated in this ERA.

7.3 STEP 2: SCREENING-LEVEL EXPOSURE ESTIMATE AND RISK QUOTIENTS

7.3.1 Ecological Effects Evaluation

The preliminary ecological effects evaluation is an investigation of the relationship between the exposure to a chemical and the potential for adverse effects resulting from exposure. In this step, conservative screening levels for evaluating the toxicity to ecological receptors from the detected levels of chemicals at the Site are compiled.

Risks to terrestrial plants, soil invertebrates, birds, and mammals resulting from direct or indirect exposure via the food chain to chemicals in surface soil were evaluated by first comparing the chemical concentrations in the surface soil to screening levels. Appendix I presents the surface soil screening levels along with the sources used to compile the values. Risks to sediment invertebrates and aquatic organisms were evaluated by first comparing the chemical concentrations in the sediment or surface water to screening levels. Sediment and surface water screening levels and sources are provided in the COPC selection tables, because only one receptor class is evaluated in these COPC tables. These toxicity values are expressed in units of concentration. Site-related chemicals for which appropriate screening benchmarks could not be identified were discussed qualitatively in the ecological assessment.

The following lists the hierarchy of sources that were used to compile the surface soil screening levels:

1. EPA Ecological Soil Screening Levels (Eco SSL) (U.S. EPA, 2003, 2005, 2006, 2007, 2008).
2. Canadian Council and Ministers of the Environment (CCME) Soil Quality Guidelines (SQGs) (EC, 1999, 2004a, 2004b).
3. National Oceanographic and Atmospheric Administration surface soil benchmarks (Buchman, 2008), which includes a compilation of values including the Oak Ridge National Laboratory (ORNL) plant and invertebrate benchmarks (Efroymson, et al., 1997a, 1997b), Region 5 EPA Ecological Screening Levels (U.S. EPA, 2003) and the Dutch Target Values (MHSPE, 2000).

The following lists the hierarchy of sources that were used to compile the sediment screening levels:

1. Consensus-Based Threshold Effect Concentrations (TECs) (MacDonald et al., 2000).
2. Lowest Effects Level from the Ontario Ministry of the Environment (OMOE) (Persaud, et al., 1993).
3. National Oceanographic and Atmospheric Administration sediment benchmarks (Buchman, 2008).
4. Sediment screening values derived using equilibrium partitioning theory such as the Secondary Chronic Values (SCVs) (Table 3 in Jones et al., 1997) (used first) and the Ecotox Thresholds (U.S. EPA, 1996) (used second).

The following lists the hierarchy of sources that were used to compile the surface water screening levels:

1. Freshwater CCC (chronic) value from U.S. EPA National Recommended Water Quality Criteria (NRWQC) (U.S. EPA, 2009).
2. Freshwater chronic value from Rhode Island Department of Environmental Management (RIDEM, 2006).

3. SCVs from Table 1 in Suter and Tsao (1996).
4. Freshwater chronic criteria (Buchman, 2008). The values in this document are typically lowest observed effects levels (LOELs).

Risks to wildlife receptors for exposures to chemicals selected as COPCs in the surface soil, sediment, and surface water were determined by estimating the Chronic Daily Intake (CDI) and comparing the CDI to toxicity reference values (TRVs) representing acceptable daily doses in mg/kg-day. The TRVs, including NOAELs and LOAELs, were obtained from wildlife studies presented in EPA Eco SSL documents (U.S. EPA, 2005, 2006, 2007, 2008) and in ORNL Toxicological Benchmarks for Wildlife: 1996 Revision (Sample et al., 1996), and were supplemented with other toxicity information when necessary. Appendix I presents the TRVs and the sources of the TRVs used in this ERA.

If a subchronic NOAEL or LOAEL was the basis of the TRV, the value was multiplied by a factor of 0.1 to account for uncertainty between subchronic and chronic effects. A LOAEL was multiplied by a factor of 0.1 to estimate a NOAEL TRV if only a LOAEL was available for that chemical. The chemical-specific Eco SSL documents (U.S. EPA, 2005, 2006, 2007, 2008) provide NOAELs and LOAELs from many studies, but TRVs were calculated only for NOAELs in those documents, because the Eco SSLs are meant to be conservative screening levels. The geometric mean of growth and reproduction LOAELs from the chemical-specific Eco SSL documents were used to calculate LOAEL TRVs in this ERA to present risks based on NOAELs and LOAELs.

7.3.2 Exposure Characterization

In order to conclude whether a chemical has the potential to impact an ecological receptor, a chemical concentration or dose must first be determined. That concentration/dose is then compared to the ecological effects data presented above. The following paragraphs describe the concentrations/doses used for each set of ecological receptors. Information to be considered for the ERA included analytical data for surface soil (depth range: 0-1 foot), sediment (depth range: 0-0.5 feet), and surface water. However, based on regulator concerns that some of the receptors could be exposed to chemicals in the deeper soil, a comparison of the analytical results in the soil samples collected from 0-1 foot and 2-4 feet is presented in Section 7.5.2 in the Uncertainty Analysis to determine whether the concentrations were greater in the deeper soil.

7.3.2.1 Terrestrial Soil Invertebrates and Plants

Terrestrial soil invertebrates and plants are exposed to chemicals in the surface soil through direct contact and/or ingestion. The screening values developed for these receptors are in units of chemical

concentration in the soil. The maximum chemical concentrations in the surface soils were used in the screening step to select the COPCs.

7.3.2.2 Sediment Invertebrates

Sediment invertebrates are exposed to chemicals in the sediment through direct contact and/or ingestion. The screening values developed for these receptors are in units of chemical concentration in the sediment. The maximum chemical concentrations in the sediment were used in the screening step to select the COPCs.

7.3.2.3 Aquatic Organisms

Aquatic organisms are exposed to chemicals in the surface water through direct contact and/or ingestion. The screening values developed for these receptors are in units of chemical concentration in the surface water. The maximum chemical concentrations in the surface water were used in the screening step to select the COPCs.

7.3.2.4 Bird and Mammals

For vertebrate receptors, selection of a particular species is required, so that intake, through eating and drinking, can be estimated. The selected receptors are either present at the site or are similar to receptors present at the site. The availability of exposure parameters such as body mass, feeding rate, and drinking rate are also important factors in selecting surrogate species. The following surrogate species were used for the food chain modeling:

- Herbivorous mammal: Meadow Vole
- Herbivorous bird: Bobwhite Quail
- Invertivorous mammal: Short-Tailed Shrew
- Invertivorous bird: American Robin
- Piscivorous mammal: Mink
- Piscivorous bird: Green Heron

The doses, in mg/kg-day, were estimated for mammals and birds using exposure dose equations. Per U. S. EPA request, doses were calculated for all detected chemicals (except calcium, magnesium, potassium, and sodium), even if they are not identified by U.S. EPA as bioaccumulative (U.S. EPA, 2000). Note that the food chain models were conducted on a dry weight basis to be consistent with the soil/sediment concentrations, which are reported on a dry weight basis. Therefore, the concentrations in

the food items were estimated on a dry weight basis. The following generic equation was used to calculate the exposure point concentrations (EPCs) for mammals and birds from exposure to chemicals in soil/sediment/surface water and associated food items such as plants and soil/sediment invertebrates:

$$CDI = \frac{[(Cf * If) + (Cs * Is) + (Cw * Iw)] * H}{BW}$$

Where:

CDI	=	Chronic daily intake [milligrams per kilogram (mg/kg)-day]
Cf	=	Chemical concentration in food – (see discussion below)
Cs	=	Chemical concentration in surface soil or sediment (mg/kg)
Cw	=	Chemical concentration in surface water [milligrams per liter (mg/L)]
If	=	Food ingestion rate [kilograms per day (kg/day)]
Is	=	Incidental surface soil or sediment ingestion rate (kg/day)
Iw	=	Water ingestion rate [liters per day (L/day)]
H	=	Portion of food intake from the contaminated area (unitless)
BW	=	Body weight (kg)

The exposure factors used for the food chain model, their derivation, and the receptor profiles for the surrogate species are presented in Appendix I. The exposure assumptions (i.e., ingestion rate, body weight) were obtained primarily from the Wildlife Exposure Factors Handbook (U.S. EPA, 1993) and U. S. EPA Eco SSL Guidance Attachment 4-1 (2007) with other sources used as necessary. Food ingestion rates are on a dry weight basis as discussed above.

Chemical concentrations in food items for soil invertivorous and herbivorous receptors were calculated using soil-to-invertebrate or soil-to-plant bioaccumulation factors (BAFs) and regression equations from the EPA Eco SSL Guidance Document (2007); or BAFs from published sources. The following equation was used to calculate chemical concentrations in plants or invertebrates when BAFs were used:

$$Cf = Cs * BAF$$

Where:

Cf	=	Contaminant concentration in food (mg/kg)
Cs	=	Contaminant concentration in surface soil (mg/kg)
BAF	=	Biota-soil bioaccumulation factor (unitless)

The following sources of plants/earthworm BAFs were used to calculate the chemical concentrations in plants and earthworms:

- Plant and invertebrate BAFs: Guidance for Developing Ecological Soil Screening Level, Attachment 4-1, Exposure Factors and Bioaccumulation Models for Derivation of Wildlife Eco-SSLs (U.S. EPA, April 2007).
- Plant BAFs (Organics): Toxicity and Chemical-Specific Factors Database (ORNL, 2009).
- Plant BAFs (Inorganics): Empirical Model for the Uptake of Inorganic Chemicals from Soil by Plants (ORNL, 1998).
- Soil Invertebrate BAFs: Development and Validation of Bioaccumulation Models for Earthworms (Sample et al., 1998).

The actual BAFs and sources selected are presented in Appendix I. A default value of 1.0 was used for the BAF if chemical-specific data were not available.

Chemical concentrations in food items for piscivorous receptors were calculated using sediment-to-fish BSAFs from the Incidence and Severity of Sediment Contamination in Surface Waters of the United States, Volume 1:National Sediment Quality Survey: Second Edition (U.S. EPA, 2004) and sediment-to-invertebrate BSAFs from the Biota Sediment Accumulation Factors for Invertebrates: Review and recommendations for the Oak Ridge Reservation (ORNL, 1998). Contaminant concentrations in food items for piscivorous mammals and birds were calculated as follows:

$$\text{Cf (for metals)} = \text{Csd} * \text{BSAF}$$

Where:

Cf	=	Contaminant concentration in food (mg/kg)
Csd	=	Contaminant concentration in sediment (mg/kg)
BSAF	=	Biota-sediment bioaccumulation factor (unitless)

$$\text{Cf (for organics)} = \text{Csd} * \left(\text{BSAF} * \frac{\%\text{L}}{\%\text{TOC}} \right)$$

Where:

Cf	=	Contaminant concentration in food (mg/kg)
Csd	=	Contaminant concentration in sediment (mg/kg)
BSAF	=	Biota-sediment bioaccumulation factor (for organics) (unitless)
%L	=	Percent lipids [14.4% (dry weight)]
%TOC	=	Percent total organic carbon (TOC) (average TOC for the site)

The food chain model scenarios were calculated using various exposure assumptions to present a range of potential risks. For selecting chemicals as COPCs, the following conservative exposure assumptions were used:

- Maximum soil/sediment and surface water concentrations.
- 90th percentile BAFs or BSAFs (or maximum value if a 90th percentile value is not available) or BAF regression equations.
- Conservative receptor body weight and ingestion rates.
- Receptors spend 100% of their time at the Site.

7.3.3 Risk Characterization

The risk characterization is the final phase of an ERA that compares exposure to ecological effects. It is at this phase that the likelihood of adverse effects occurring as a result of exposure to a stressor is evaluated. An ecological effects quotient (EEQ) approach was used to characterize the potential risk to ecological receptors by comparing exposure concentrations and doses to effects data. When EEQ values exceed 1.0, it is an indication that ecological receptors are potentially at risk; additional evaluation or data may be necessary to confirm with greater certainty whether ecological receptors are actually at risk, especially since most benchmarks are developed using conservative exposure assumptions and/or studies. The EEQ value should not be construed as being probabilistic; rather, it is a numerical indicator of the extent to which an EPC exceeds or is less than a benchmark.

The EEQs for surface soil receptors were calculated as follows:

$$EEQ = \frac{Css}{SSSL}$$

where:

EEQ	=	Ecological Effects Quotient (unitless)
Css	=	Chemical concentration in surface soil [micrograms per kilogram (µg/kg) or mg/kg]
SSSL	=	Surface soil screening level (µg/kg or mg/kg)

The EEQs for sediment invertebrates were calculated as follows:

$$EEQ = \frac{Csd}{SdSL}$$

where:

EEQ	=	Ecological Effects Quotient (unitless)
Csd	=	Chemical concentration in sediment (µg/kg or mg/kg)

SdSL = Sediment screening level (µg/kg or mg/kg)

The EEQs for aquatic receptors were calculated as follows:

$$EEQ = \frac{Csw}{SwSL}$$

where:

EEQ = Ecological Effects Quotient (unitless)

Csw = Chemical concentration in surface water (µg/L)

SwSL = Surface water screening level (µg/L)

The EEQs for mammals and birds were calculated as follows:

$$EEQ = \frac{CDI}{TRV}$$

where:

EEQ = Ecological effects quotient (unitless)

CDI = Chronic daily intake dose (mg/kg-day)

TRV = Toxicity reference value (NOAEL or LOAEL) (mg/kg-day)

7.3.4 Selection of Chemicals of Potential Concern

The final part of the screening evaluation includes the initial selection of ecological COPCs. Chemicals not initially selected as COPCs are assumed to only cause negligible risk to ecological receptors and were not evaluated further in the ERA. Chemicals initially selected as COPCs were further evaluated in Step 3a to determine if they should be retained as final COPCs. The initial ecological COPCs were selected using the following procedures:

- Chemicals with EEQs greater than 1.0 (using screening values) were initially selected as COPCs because they have a potential to cause risk to ecological receptors.

- Chemicals with EEQs greater than 1.0 based on the food chain model using NOAELs were initially selected as COPCs, because they have the potential to cause risks to mammals and birds.

- Chemicals without screening levels were initially selected as COPCs, but were evaluated only qualitatively.

- Calcium, magnesium, potassium, and sodium were not selected as COPCs because they are essential nutrients that can be tolerated by living systems even at high concentrations. There is no evidence to support that these chemicals are related to Site operations and these four parameters are not considered hazardous chemicals.

The screening-level risk calculation is a conservative estimate to ensure that potential ecological threats are not overlooked. At the end of this step, one of the following conclusions is made:

1) There is adequate information to conclude that ecological risks are negligible, and therefore no quantifiable ecological risk exists; or
2) There may be quantifiable ecological risk, and additional evaluations are required.

7.3.4.1 Soil Invertebrates

7.3.4.1.1 DU 4-1

Table 7-1 presents the occurrence, distribution, and selection of ecological COPCs in the surface soil at DU 4-1. The following summarizes the results of the COPCs selection for soil invertebrates:

- Two VOCs were initially selected as COPCs because they did not have screening levels.

- Eleven SVOCs were initially selected as COPCs. Two were initially selected as COPCs because a screening level was not available, and nine were initially selected as COPCs because the maximum detected concentration exceeded the screening level. Total PAHs was not selected as a COPC because the Eco SSL documents evaluate individual PAHs based on whether they are high molecular weight (HMW) or low molecular weight (LMW).

- Eight pesticides were initially selected as COPCs. One was initially selected as a COPC because a screening level was not available, and seven were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Seven inorganics were initially selected as COPCs. Four were initially selected as COPCs because a screening level was not available. Three were initially selected because the maximum detected concentration exceeded the screening level.

- Dioxin toxic equivalents (TEQs) are not available for soil invertebrates, but dioxins were initially selected as COPCs because screening levels were not available.

7.3.4.1.2 DU 5-1

Table 7-2 presents the occurrence, distribution, and selection of ecological COPCs in the surface soil at DU 5-1. The following summarizes the results of the COPCs selection for soil invertebrates:

- Two VOCs were initially selected as COPCs because they did not have screening levels.

- One SVOC was initially selected as a COPC because a screening level was not available. Total PAHs was not selected as a COPC because the Eco SSL documents evaluate individual PAHs based on whether they are HMW or LMW.

- Seven inorganics were initially selected as COPCs. Four were initially selected as COPCs because a screening level was not available. Three were initially selected because the maximum detected concentration exceeded the screening level.

- Dioxin TEQs are not available for soil invertebrates, but dioxins were initially selected as COPCs because screening levels were not available.

7.3.4.2 Plants

7.3.4.2.1 DU 4-1

Table 7-1 presents the occurrence, distribution, and selection of ecological COPCs in the surface soil at DU 4-1. The following summarizes the results of the COPCs selection for terrestrial plants:

- Two VOCs were initially selected as COPCs because they did not have screening levels.

- Twenty SVOCs were initially selected as COPCs. Seventeen were initially selected as COPCs because a screening level was not available, and three were initially selected as COPCs because the maximum detected concentration exceeded the screening level. Total PAHs was not selected as a COPC because the Eco SSL documents evaluate individual PAHs based on whether they are HMW or LMW.

- Seven pesticides were initially selected as COPCs. One was initially selected as a COPC because a screening level was not available, and six were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Six inorganics were initially selected as COPCs because the maximum detected concentration exceeded the screening level. For aluminum, the surface soil pH is 5.1, so aluminum may be bioavailable.

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- Dioxin TEQs are not available for plants, but dioxins were initially selected as COPCs because screening levels were not available.

7.3.4.2.2 DU 5-1

Table 7-2 presents the occurrence, distribution, and selection of ecological COPCs in the surface soil at DU 5-1. The following summarizes the results of the COPCs selection for terrestrial plants:

- Two VOCs were initially selected as COPCs because they did not have screening levels.

- Seventeen SVOCs were initially selected as COPCs because they did not have screening levels. Total PAHs was not selected as a COPC because the Eco SSL documents evaluate individual PAHs based on whether they are HMW or LMW.

- Seven inorganics were initially selected as COPCs because the maximum detected concentration exceeded the screening level. Aluminum and iron were initially selected as COPCs because the pH at DU 5-1 was not available.

- Dioxin TEQs are not available for plants, but dioxins were initially selected as COPCs because screening levels were not available.

7.3.4.3 Sediment Invertebrates

7.3.4.3.1 DU 4-1

Table 7-3 presents the occurrence, distribution, and selection of ecological COPCs in the sediment at DU 4-1. The following summarizes the results of the COPCs selection for sediment invertebrates:

- Two VOCs were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Nine SVOCs, including total PAHs, were initially selected as COPCs. Two were initially selected as COPCs because a screening level was not available, and seven were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Five pesticides were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Eleven inorganics were initially selected as COPCs. Two were initially selected as COPCs because a screening level was not available, and nine were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Dioxins were converted to TEQs for fish (Van den Berg, et al., 2006), as TEQ-fish, and was initially selected as a COPC because a screening level was not available.

7.3.4.3.2 DU 5-1

Table 7-4 presents the occurrence, distribution, and selection of ecological COPCs in the sediment at DU 5-1. The following summarizes the results of the COPCs selection for sediment invertebrates:

- Two VOCs were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Eighteen SVOCs were initially selected as COPCs. Three were initially selected as COPCs because a screening level was not available, and fifteen were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Ten pesticides/PCBs were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Twelve inorganics were initially selected as COPCs. Two were initially selected as COPCs because a screening level was not available, and ten were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- TEQ-fish was initially selected as a COPC because a screening level was not available.

7.3.4.4 Aquatic Organisms

7.3.4.4.1 DU 4-1

Table 7-5 presents the occurrence, distribution, and selection of ecological COPCs in the surface water at DU 4-1. The following summarizes the results of the COPC selection for aquatic organisms:

- Two SVOCs were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- One inorganic was initially selected as a COPC because the maximum detected concentration exceeded the screening level.

7.3.4.4.2 DU 5-1

Table 7-6 presents the occurrence, distribution, and selection of ecological COPCs in the surface water at DU 5-1. The following summarizes the results of the COPC selection for aquatic organisms:

- Three SVOCs were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

- Three inorganics were initially selected as COPCs because the maximum detected concentration exceeded the screening level.

7.3.4.5 Mammals and Birds

Tables 7-7 through 7-10 present the summary of the EEQs for the conservative food chain model for herbivorous, invertivorous, and piscivorous mammals and birds at DU 4-1 and DU 5-1. Appendix I contains EEQ calculations for each of the receptors. Chemicals were initially selected as COPCs if their calculated NOAEL EEQs were greater than 1.0.

7.3.4.5.1 DU 4-1

The following summarizes the results of the mammal and bird COPC selection for DU 4-1 from Tables 7-7 and 7-9:

- Two SVOCs and five inorganics were initially selected as COPCs for the vole.

- Three SVOCs and four inorganics were initially selected as COPCs for the quail.
- Nine SVOCs, dioxins as TEQ-mammals, and six inorganics were initially selected as COPCs for further evaluation for the shrew.
- Eleven SVOCs, two pesticides, and nine inorganics were initially selected as COPCs for further evaluation for the robin.
- Twelve inorganics were initially selected as COPCs for the mink.
- One pesticide and twelve inorganics were initially selected as COPCs for the heron.

7.3.4.5.2 DU 5-1

The following summarizes the results of the mammal and bird COPC selection for DU 5-1 from Tables 7-8 and 7-10:

- Five inorganics were initially selected as COPCs for the vole.
- Five inorganics were initially selected as COPCs for the quail.
- Dioxins as TEQ-mammals, and six inorganics were initially selected as COPCs for further evaluation for the shrew.
- Dioxins as TEQ-birds and six inorganics were initially selected as COPCs for further evaluation for the robin.
- Twelve inorganics were initially selected as COPCs for the mink.
- One pesticide and eleven inorganics were initially selected as COPCs for the heron.

7.4 STEP 3A: COPC REFINEMENT

Step 3a consists of refining the conservative exposure assumptions/concentrations used to evaluate potential risks to ecological receptors (i.e., plants, soil invertebrates, sediment invertebrates, aquatic organisms, mammals and birds) and re-evaluating the analytical data using benchmarks more appropriate for the assessment endpoints. The objective of the Step 3a refinement was to better determine which chemicals contribute to potentially unacceptable levels of ecological risk, and to identify and eliminate from further consideration those COPCs initially selected because of the use of very conservative exposure scenarios. An additional objective of the Step 3a evaluation was to compare concentrations of chemicals initially selected as COPCs to background/reference chemical concentrations to determine whether the concentrations are similar to those found in areas not impacted by site-activities. The Step 3a evaluation is designed to eliminate chemicals from further evaluation for certain groups of receptors. For example, a chemical might not be retained as a COPC in soil based on low risks to soil invertebrates but might be retained for evaluating risks to plants, mammals, and/or birds. Chemicals are evaluated during Step 3a in order of soil invertebrates (Section 7.4.1), terrestrial plants

(Section 7.4.2), sediment invertebrates (Section 7.4.3), aquatic organisms (Section 7.4.4), and mammals and birds (Section 7.4.5).

For chemicals evaluated further in Step 3a, the following factors were considered as appropriate to determine if risks are great enough to warrant additional evaluations (i.e., proceed to a BERA). Note that all of these factors may not be discussed for each chemical and/or receptor group.

- Spatial distribution and frequency of chemical detection: The spatial distribution of a chemical was evaluated to determine the areal extent of contamination. A large area of high-level contamination has a greater potential to adversely impact ecological receptors versus a smaller area. In addition, a chemical detected at a low frequency typically is of less concern than a chemical detected at higher frequency, if toxicity and concentrations of the chemicals are similar.

- Chemical Bioavailability: Many chemicals (especially metals) are present in the environment in forms that are typically not bioavailable; thus, the bioavailability of a chemical was considered when evaluating potential impacts to ecological receptors.

- Habitat: Although exceedances of criteria may occur, potential risks to ecological receptors may be minimal if there is little habitat for those receptors. Therefore, the extent of habitat was considered (qualitatively) when the exceedances of screening criteria were evaluated.

- Food Chain Modeling: Exposure via the food chain is a major pathway of concern for chemicals known to significantly bioaccumulate and/or biomagnify. Thus, potential risk to upper level receptors was evaluated using food chain models. The conservative exposure doses calculated for mammals and birds were re-calculated using less conservative exposure assumptions and chemical concentrations.

- Magnitude of Criterion Exceedance: Although risks may not relate directly to the magnitude of a criterion exceedance, the magnitude of the exceedance is one item used in a lines-of-evidence approach to determine the need for further site evaluation.

- More Appropriate Benchmarks: Chemicals initially selected as COPCs were re-evaluated using more appropriate benchmarks to determine if the chemicals warranted retention as final COPCs. These alternative benchmarks are used to further evaluate risks to specific groups of ecological receptors (e.g., plants, invertebrates) because, although ESLs are useful for initial screening, they are conservative values. Use of these alternate benchmarks was case specific. When toxicity data for a

chemical was not available in the previously listed documents, additional sources from the literature were used to evaluate potential risks to receptors.

- Background: Concentrations of inorganics in surface soil were compared to background concentration data (see Section 4 and Appendices). If the concentrations of a detected inorganic were not statistically greater than the background concentrations, the chemical was considered similar to background, not site related, and eliminated as a COPC for further evaluation. For this reason, aluminum is eliminated as a COPC in surface soil at DU 4-1 and DU 5-1. No data were available for background concentrations of organic chemicals in soil. Also, no background or upgradient sediment or surface water data were available for the site.

7.4.1 Soil Invertebrates

Potential risks to soil invertebrates from exposure to chemicals initially selected as COPCs were further evaluated as discussed above. The following subsections discuss whether COPCs are retained for further evaluation for soil invertebrates at DU 4-1 and DU 5-1.

7.4.1.1 DU 4-1

Two VOCs, 12 SVOCs, 8 pesticides, 7 inorganics, and two dioxin TEQs were initially selected as COPCs for soil invertebrates in the surface soil of DU 4-1.

7.4.1.1.1 VOCs

Acetone and 2-butanone were initially selected as COPCs for soil invertebrates in surface soil because screening levels are not currently available for these chemicals. VOCs are typically not very toxic to invertebrates via direct contact. This is supported by the relatively high screening levels for other VOCs (i.e., >30,000 µg/kg) (see Appendix I - Soil Ecological Screening Levels table for other VOC screening levels) compared to the maximum detected concentrations at the site (160 µg/kg). These VOCs are also common or possible, laboratory contaminants. For these reasons, VOCs are not retained as chemicals of ecological concern for soil invertebrates and does not warrant further evaluation at DU 4-1 for this receptor.

7.4.1.1.2 SVOCs

Toxicity data for soil invertebrates are not available for carbazole and 2,4-dimethylphenol, so their effects could not be evaluated quantitatively. Carbazole is structurally similar to PAHs such as fluorene. The

maximum detected concentration of carbazole (740 µg/kg) is much lower than the screening level for fluorene (29,000 µg/kg) so risks from to soil invertebrates from carbazole are not expected. Although there is not a screening level for 2,4-dimethylphenol, it was only detected in 1 of 24 samples at a relatively low concentration (39 µg/kg). Therefore, carbazole and 2,4-dimethylphenol are not expected to adversely affect soil invertebrates at this site and do not warrant further evaluation.

4-Methylphenol was initially selected as a COPC for soil invertebrates because the maximum detected concentration (81 µg/kg) exceeded the screening level. The screening level (50 µg/kg) from Buchman (2008) is based on the Dutch target value (TV) (MHSPE, 2000). The TV is a highly conservative screening value at which adverse effects are not expected. Although the Dutch intervention value (IV) (13,000 µg/kg) is not a screening level, because it is the level at which 50 percent of the species actually (or potentially) occurring may undergo adverse effects (MHSPE, 2009), it is still useful for evaluating the data to determine whether a chemical is likely to impact soil invertebrates. That is because concentrations much lower (i.e. orders of magnitude) than the IV, are not likely to impact soil invertebrates at the site. The maximum detected concentration of 4-methylphenol only slightly exceeded the screening level, but is much lower than the intervention value. Additionally, 4-methylphenol was only detected in 3 of 24 samples and the 95% UCL (18 µg/kg) is less than the screening level. Therefore, risks to soil invertebrates are expected to be minimal, and 4-methyphenol is not retained as a COPC for this receptor.

Bis (2-ethyhexyl) phthalate was initially selected as a COPC because the maximum concentration (320 µg/kg) exceeded the screening level (100 µg/kg) which is based on the Dutch TV. The Dutch IV for bis (2-ethyhexyl) phthalate is 60,000 µg/kg (MHSPE, 2009). The maximum concentration of bis (2-ethyhexyl) phthalate is not much greater than the screening level but is much lower than the Dutch IV. Also, the ORNL soil invertebrate toxicological benchmark (Efroymson et al., 1997a) for a similar phthalate, dimethylphthalate, is 200,000 µg/kg. The maximum detected concentration for bis (2-ethyhexyl) phthalate is 320 µg/kg (detected in six of 24 samples). Therefore, bis (2-ethyhexyl) phthalate is not expected to be toxic to soil invertebrates at the detected concentrations and is not retained as a COPC for this receptor.

Several PAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene] were initially selected as COPCs for soil invertebrates because the maximum detected concentrations exceed screening levels. All of these maximum concentrations occurred at sampling location TF4-SB-934-0001. No other samples exceed the soil invertebrate Eco SSL. This sample is bound within 150 ft. to the north, northwest, east, and south by samples with concentrations of PAHs less than the Eco SSL. Therefore, risks to soil invertebrates from these PAHs are possible in a limited area, and the aforementioned PAHs are retained as COPCs for this receptor.

7.4.1.1.3 Pesticides

Beta-BHC and gamma-BHC were initially selected as COPCs because the maximum detected concentration exceeded the screening level. The screening levels from Buchman (2008) for these pesticides are 9 µg/kg and 0.05 µg/kg, respectively, which are based on the Dutch TV. The Dutch IV is 1,600 µg/kg for beta-BHC and 1,200 µg/kg for gamma-BHC (MHSPE, 2009). The maximum concentrations of these pesticides (14 µg/kg and 3.4 µg/kg for beta-BHC and gamma-BHC, respectively) are not much greater than the screening levels and are much lower than the Dutch IV. Additionally, beta-BHC and gamma-BHC were only detected in two of 24 and one of 24 samples, respectively. Therefore, beta-BHC and gamma-BHC are not expected to be toxic to soil invertebrates at the detected concentrations and are not retained as COPCs for this receptor.

Endosulfan I and endosulfan sulfate were initially selected as COPCs because the maximum detected concentration exceeded the screening level. The screening level from Buchman (2008) for these pesticides is 0.01 µg/kg, which is based on the Dutch TV. The Dutch IV for endosulfan is 4,000 µg/kg (MHSPE, 2009). The maximum concentrations of these three pesticides (2.5 µg/kg, and 22 µg/kg for endosulfan I and endosulfan sulfate, respectively) are much lower than the Dutch IV. Additionally, endosulfan I and endosulfan sulfate were only detected in one of 24 and two of 24 samples, respectively. Therefore, endosulfan I and endosulfan sulfate are not expected to be toxic to soil invertebrates at the detected concentrations and are not retained as COPCs for this receptor.

Endrin, endrin aldehyde, and endrin ketone were initially selected as COPCs because the maximum detected concentration exceeded the screening level. The screening level from Buchman (2008) for all three of these pesticides is 0.04 µg/kg, which is based on the Dutch MHSPE TV. A Dutch IV for endrin is not available, but the Dutch IV for all the sum of the “drins” or aldrin, dieldrin, endrin is 4,000 µg/kg (MHSPE, 2009). The maximum concentrations of these three pesticides (7.9 µg/kg, 35 µg/kg, and 69 µg/kg for endrin, endrin aldehyde, and endrin ketone, respectively) are much lower than the Dutch IV. Additionally, endrin, endrin aldehyde, and endrin ketone were only detected in one of 24, one of 24, and two of 24 samples, respectively. Therefore, endrin, endrin aldehyde, and endrin ketone are not expected to be toxic to soil invertebrates at the detected concentrations and are not retained as COPCs for this receptor.

Toxaphene was initially selected as a COPC for soil invertebrates because a screening level was not available. No alternate benchmarks were available, so impacts could not be evaluated quantitatively. However, toxaphene was only detected in one of 24 samples at a maximum concentration of 240 µg/kg, and therefore, impacts are likely minimal, and toxaphene is not retained as a COPC for this receptor.

In summary, potential risks to soil invertebrates from pesticides do not warrant retaining any pesticides as COPCs for further evaluation. Although the Dutch IVs are not screening levels, because they are levels at which 50 percent of the species actually (or potentially) occurring may undergo adverse effects (MHSPE, 2009), they are still useful for evaluating the data to determine whether a chemical is likely to impact soil invertebrates. In all cases, the concentrations of pesticides at the site are not much greater than the screening level, but are orders of magnitude lower that than the IV. This indicates that potential impacts to invertebrates are not likely. Also, these pesticides were infrequently detected in 4 to 8 percent of collected samples and at relatively low concentrations indicative of typical applications, not a site-release. For these reasons, pesticides are not expected to be site-related or toxic to soil invertebrates; therefore, pesticides are not retained as COPCs for soil invertebrates.

7.4.1.1.4 Dioxins

Dioxins and TEQ dioxins were initially selected as COPCs for soil invertebrates because screening levels were not available. Therefore, alternate toxicological data were used to further evaluate risks to soil invertebrates.

One study reported in the literature demonstrated that two species of earthworms showed no adverse effects when exposed for 85 days to soil containing levels of 5,000 µg/kg of 2,3,7,8-TCDD, but both species died at 10,000 µg/kg (Eisler, 1986). The reason dioxins are not harmful to invertebrates at dioxin levels considered “high”, is that many, if not all, invertebrates lack the aryl hydrocarbon (Ah) receptor, or a comparably sensitive receptor for dioxins. For example, in U.S. EPA (1993), it is noted that the Ah receptor has not been detected in plants or nine species of invertebrates representing eight classes of four phyla. The document further notes that aquatic invertebrates are much less sensitive to TCDD than fish, perhaps due to the absence of the Ah receptor or a comparably sensitive receptor for dioxins U. S. EPA (1993). The Ah receptor is important because dioxins need to bind to the receptor to cause toxicity. Also, Van den Berg et al. (1998) states that, “At this time, development of TEFs for invertebrates is not recommended because there is limited evidence for ligand activation of Ah receptor or for TCDD-like toxicity in invertebrates.” For this reason, the potential for risks to invertebrates from dioxins in the soil are unlikely. Because the maximum concentration of all dioxins and TEQs are less than 5,000 µg/kg, risks to soil invertebrates are acceptable, and dioxins are not retained as COPCs.

7.4.1.1.5 Inorganics

Cobalt

Cobalt was initially selected as a COPC for soil invertebrates because a screening level was not available. Alternate benchmarks for soil invertebrates were not available; however, the ORNL (Efroymson, et al., 1997b) screening level for microorganisms is 1,000 mg/kg. The maximum concentration (20.5 mg/kg) is much less than this benchmark. Therefore, impacts are expected to be minimal, and cobalt is eliminated as a COPC for soil invertebrates.

Iron

Iron was initially selected as a COPC for soil invertebrates because a screening level was not available. Toxicity data for soil invertebrates were not available for iron, but iron is typically not considered to be bioavailable. Although iron concentrations in the site samples were above background (see Table 1 in Appendix F), the 95% UCL for iron in the site samples (33,452 mg/kg) is lower than the 95% UCL background concentration in the eastern U.S. (>40,000 µg/kg) as reported in the U.S. EPA Eco SSL document (U.S. EPA, July 2007). Also, the maximum iron background concentration (53,900 mg/kg) was greater than the maximum site concentration (53,200 mg/kg), although they were in different soil types. The background iron concentration is based on a combined data set of the two soil types found at DU 5-1. Overal, impacts are expected to be minimal, and iron is eliminated as a COPC for soil invertebrates.

Manganese

Manganese was initially selected as a COPC because the maximum concentration (818 mg/kg) exceeded the Eco SSL for soil invertebrates (450 mg/kg). Although several concentrations exceeded the Eco SSL, the 95% UCL for manganese (453.3 mg/kg) at DU 4-1 is just slightly greater than the Eco SSL. Therefore, impacts to soil invertebrates are expected to be minimal, and manganese is eliminated as a COPC for soil invertebrates.

Silver

Silver was initially selected as a COPC for soil invertebrates because a screening level was not available. Alternate benchmarks for silver for soil invertebrates were not available, however, the ORNL (Efroymson, et al., 1997b) screening level for microorganisms is 50 mg/kg. Additionally, silver was only detected in one of 24 samples at a concentration of 0.068 mg/kg. Therefore, impacts to soil invertebrates are expected to be minimal, and silver is eliminated as a COPC for soil invertebrates.

Thallium

The maximum detected concentration of thallium (5.3 mg/kg) is greater than the Canadian SQG (1.4 mg/kg). The Canadian SQG was developed based on risks to plants. Appendix III of the Thallium SQG document lists NOECs of 27 mg/kg and 12 mg/kg for earthworms. The maximum and the 95% UCL (3.3 mg/kg) are less than these NOECs. Therefore, risks to soil invertebrates would be expected to be minimal, and thallium is not retained as a COPC for risks to this receptor.

Zinc

Only the maximum detected concentration (125 mg/kg) was slightly greater than the soil invertebrate Eco SSL (120 mg/kg). No other concentrations exceeded the screening level. Furthermore, the 95% UCL concentration (78 mg/kg) is much less than the Eco SSL. Therefore, risks to soil invertebrates from zinc are acceptable and zinc is not retained as a COPC for risks to this receptor.

In summary, potential risks to soil invertebrates from metals do not warrant retaining any metals as COPCs for further evaluation. Although the metals initially selected as COPCs for soil invertebrates were greater than background concentrations; the maximum site concentration of iron was less than the maximum background concentration. Also, the 95% UCL for iron was less than eastern U.S. background values (U.S. EPA, July 2007). Cobalt and silver did not have screening levels; however, they were less than alternate benchmarks based on microorganisms. Thallium concentrations were less than NOECs based on earthworms. The 95% UCLs for manganese and zinc were less than or close to Eco SSLs. For these reasons, impacts to soil invertebrates from inorganics is expected to be minimal and these inorganics are not retained as COPCs.

7.4.1.2 DU 5-1

Two VOCs, 1 SVOCs, 7 inorganics, and two dioxin TEQs were initially selected as COPCs for soil invertebrates in the surface soil of DU 5-1.

The following chemicals were eliminated as COPCs for soil invertebrates in DU 5-1 surface soil for similar reasons as those discussed previously for DU 4-1 surface soil: acetone and dioxins.

7.4.1.2.1 VOCs

Isopropyl benzene was initially selected as a COPC for soil invertebrates in surface soil because a screening level is not currently available. VOCs are typically not very toxic to plants or invertebrates via

direct contact. This is supported by the relatively high screening levels for other VOCs (i.e., >30,000 µg/kg) (see Appendix I - Soil Ecological Screening Levels for other VOC screening levels) compared to the maximum detected concentrations at the site (65 µg/kg). VOCs are also common or possible laboratory contaminants. For these reasons, VOCs are not retained as chemicals of ecological concern for soil invertebrates and does not warrant further evaluation at DU 5-1 for this receptor.

7.4.1.2.2 SVOCs

Toxicity data for soil invertebrates is not available for benzaldehyde, so impacts could not be evaluated quantitatively. However, the maximum detected concentration of benzoaldehyde (73 µg/kg) is much lower than the screening levels for PAHs (≥18,000 µg/kg) and other SVOCs (Appendix I - Soil Ecological Screening Levels for other SVOC screening levels) so risks from to soil invertebrates from benzoaldehyde are not expected. Also, this SVOC was only detected in one of 11 samples at a concentration of 73 µg/kg in DU 5-1 surface soil. Therefore, benzoaldehyde is not expected to adversely affect soil invertebrates at this site and does not warrant further evaluation.

7.4.1.2.3 Inorganics

Cobalt

Cobalt was initially selected as a COPC for soil invertebrates because a screening level was not available. Alternate benchmarks for soil invertebrates were not available; however, the ORNL (Efroymson, et al., 1997b) screening level for microorganisms is 1,000 mg/kg. The maximum concentration (13.2 mg/kg) is much less than this benchmark. Therefore, impacts are expected to be minimal, and cobalt is eliminated as a COPC for soil invertebrates.

Iron

Iron was initially selected as a COPC for soil invertebrates because a screening level was not available. Toxicity data for soil invertebrates were not available for iron, but iron is typically not considered to be bioavailable. Although iron concentration in the site samples were above background (see Table 1 in Appendix F), the maximum concentration for iron in the site samples (33,700 mg/kg) is lower than the 95% UCL background concentration in the eastern U. S. (>40,000 µg/kg) as reported in the U.S. EPA Eco SSL document (U.S. EPA, July 2007). Also, the maximum iron background (43,300 mg/kg) was greater than the maximum site concentration, although these maximum values were reported for different soil types. The background iron concentration is based on a combined data set of the two soil types found

at DU 5-1. Overall, impacts are expected to be minimal, and iron is eliminated as a COPC for soil invertebrates.

Manganese

Manganese was initially selected as a COPC because the maximum concentration (462 mg/kg) exceeded the Eco SSL for soil invertebrates (450 mg/kg). Only the maximum exceeded the Eco SSL. The 95% UCL for manganese (342 mg/kg) at DU 5-1 is less than the Eco SSL. Therefore, impacts to soil invertebrates are expected to be minimal, and manganese is eliminated as a COPC for soil invertebrates.

Selenium

Selenium was initially selected as a COPC because the maximum concentration (4.2 mg/kg) slightly exceeded the Eco SSL for soil invertebrates (4.1 mg/kg). No concentrations other than the maximum exceed the soil invertebrate Eco SSL. The 95% UCL for selenium (3.6 mg/kg) at DU 5-1 is less than the Eco SSL. Therefore, risks to soil invertebrates are expected to be minimal, and selenium is not retained as a COPC for risks to this receptor.

Silver

Silver was initially selected as a COPC for soil invertebrates because a screening level was not available. Alternate benchmarks for silver for soil invertebrates were not available, however, the ORNL (Efroymson, et al., 1997b) screening level for microorganisms is 50 mg/kg. Although silver was detected in eight of 11 samples, the maximum concentration was only 0.21 mg/kg. Therefore, impacts to soil invertebrates are expected to be minimal, and silver is eliminated as a COPC for soil invertebrates.

Thallium

Thallium was initially selected as a COPC because the maximum detected concentration (2.5 mg/kg) is greater than the Canadian SQG (1.4 mg/kg). As discussed previously, the Canadian SQG was developed based on risks to plants. Appendix III of the Thallium SQG document lists NOECs of 27 mg/kg and 12 mg/kg for earthworms. The maximum concentration and the 95% UCL (2.1 mg/kg) are less than these NOECs. Therefore, risks to soil invertebrates would be expected to be minimal, and thallium is not retained as a COPC for risks to this receptor.

In summary, potential risks to soil invertebrates from metals do not warrant retaining any metals as COPCs for further evaluation. Although the metals initially selected as COPCs for soil invertebrates were

greater than background concentrations; the maximum site concentration of iron was less than the maximum background concentration. Also, the maximum concentration for iron was less than eastern U.S. background values (U.S. EPA, July 2007). Cobalt and silver did not have screening levels; however, they were less than alternate benchmarks based on microorganisms. Thallium concentrations were less than NOECs based on earthworms. The 95% UCLs for manganese and selenium were less than Eco SSLs. For these reasons, impacts to soil invertebrates from inorganics is expected to be minimal and these inorganics are not retained as COPCs.

7.4.2 Terrestrial Plants

Potential risks to terrestrial plants from exposure to chemicals initially selected as COPCs were further evaluated as discussed above. The following subsections discuss whether COPCs are retained for further evaluation for terrestrial vegetation at DU 4-1 and DU 5-1.

7.4.2.1 DU 4-1

Two VOCs, 21 SVOCs, 7 pesticides, 6 inorganics, and two dioxin TEQs were initially selected as COPCs for terrestrial plants in the surface soil of DU 4-1.

The following chemicals were eliminated as COPCs for plants in DU 4-1 surface soil for similar reasons as those discussed previously for soil invertebrates in DU 4-1 surface soil: acetone, 2-butanone, 4-methylphenol, bis (2-ethylhexyl) phthalate, carbazole, beta-BHC, endosulfan I, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene.

7.4.2.1.1 SVOCs

2,4-Dimethylphenol was initially selected as a COPC because the maximum detected concentration is greater than the NOAA screening level (10 µg/kg). This SVOC was only detected in one of 24 samples at a concentration of 39 µg/kg in DU 4-1 surface soil. Based on the low frequency of detection (detected in 4 percent of samples), impacts are expected to be minimal, and 2,4-dimethylphenol is eliminated as a COPC for plants.

Several PAHs (2-methylnaphthalene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene) were initially selected as COPCs for plants because a screening level is not available. An Eco SSL is not available for plants; however, data presented on Table 3.1 in the Eco SSL document for PAHs shows that PAHs are

typically not toxic to plants except at high soil concentrations with the lowest listed EC_{50} of 30,000 µg/kg for anthracene from Mitchell et al. (1988). Some of the PAH concentrations in one sample (TF4-SB-934-0001) were greater than the value of 30,000 µg/kg for anthracene. All of the other toxicity values for anthracene cited in the Eco SSL document were much greater than 30,000 µg/kg. The Eco SSL document also lists a lowest observed effects concentration (LOEC) of 100,000 µg/kg for a PAH mixture. Total PAHs exceeded this LOEC at TF4-SB-934 (407,000 µg/kg). Excluding TF4-SB-934 (407,000 µg/kg), all other locations had total PAH concentrations (≤2,790 µg/kg) well below the LOEC. Maximum concentrations of anthracene (8,800 µg/kg), benzo(a)pyrene (24,000 µg/kg), and fluoranthene (83,000 µg/kg) exceeded the available Canadian SQGs of 2,500 µg/kg, 20,000 µg/kg, and 50,000 µg/kg, respectively. However, the SQGs were developed for the protection of both plants and invertebrates and the Canadian SQG document for PAHs (CCME, 2010) notes that soil invertebrates are more likely to be sensitive to PAHs than plants. For example, the Canadian SQG for anthracene was based on the reproductive EC_{10} of 5,000 µg/kg for a plant species divided by an uncertainty factor of 2. Adequate ecotoxicity data exist only for one soil invertebrate and two plant species. The reproductive EC10 (5,000 µg/kg) is an order of magnitude lower than the LC_{50} (67,000 µg/kg) for the same exposure. Although impacts are possible from a limited area near TF4-SB-934-0001, PAHs are not likely to impact plants. Therefore, risks to plants are acceptable, and the above listed PAHs are not retained as COPCs for risks to this receptor.

7.4.2.1.2 Dioxins

Dioxins and TEQ dioxins were initially selected as COPCs for plants because screening levels were not available. Therefore, alternate toxicological data were used to further evaluate risks to plants. As described previously, the mode of toxic action for dioxins is via the Ah receptor. Because the Ah receptor has not been detected in plants, it is not likely plants at the site were impacted by the detected levels of dioxins in soil, so dioxins are not retained as COPCs.

7.4.2.1.3 Inorganics

Arsenic

Although arsenic was initially selected as a COPC because the maximum detected concentration (59.5 mg/kg) was greater than the plant Eco SSL (18 mg/kg), no other samples had detected concentrations greater than the plant benchmark for arsenic. Additionally, the 95% UCL arsenic concentration (15.8 mg/kg) is less than this benchmark. Even though arsenic concentrations exceeded the screening benchmark, it is not likely that arsenic is significantly impacting the plant community at the site. Arsenic is an anion and one factor that tends to increase arsenic availability is high pH (alkaline conditions) (U.S. EPA, March

2005). The pH was measured in one surface soil sample at Tank Farm 4, which had a value of 5.1. Also, most of the pH values in the subsurface soil samples at Tank Farm 4 were less than 6.1. Therefore, because soil is not alkaline, the bioavailability of arsenic is expected to be low. As such, plants are not expected to be impacted. Therefore, significant impacts to plants are not expected so arsenic is eliminated as a COPC for plants.

Cobalt

The maximum detected cobalt concentration (20.5 mg/kg) is greater than the plant Eco SSL (13 mg/kg), and nine other samples also exceed this screening level. However, the 95% UCL cobalt concentration (13.3 mg/kg) is only slightly greater than this benchmark. Therefore, site-related risks to terrestrial plants are not expected, and cobalt is eliminated as a COPC for plants and invertebrates.

Manganese

The maximum detected manganese concentration (818 mg/kg) is greater than the plant Eco SSL (220 mg/kg), and most other samples also exceed this screening level. The 95% UCL (453 mg/kg) also exceeds the screening level. The manganese screening level is conservative in that the value is less than the 50th percentile for eastern U.S. soils (~400 mg/kg) (U.S. EPA, April 2007) and the maximum background concentration (373 mg/kg) at Naval Station Newport. Even though the plant screening level is exceeded in most samples, the screening level is conservative (as are most screening levels) because they are based on tests conducted using highly bioavailable forms of the metals and/or highly bioavailable matrices. Therefore, the elevated manganese concentrations are not likely to be significantly impacting plants at the site. For that reason, manganese is not retained as a COPC for risks to this receptor.

Selenium

All eleven of the detected concentrations of selenium were greater than the plant Eco SSL (0.52 mg/kg). The 95% UCL (1.5 mg/kg) also exceeds the screening level. Many factors influence the bioavailability of selenium in soil including pH and amount of organic material. Similar to what was discussed above for arsenic, selenium is an anion so the higher the soil pH the higher the bioavailability. Therefore, because most of the pH values in the soil samples at Tank Farm 4 were less than 6.1, selenium is not expected to be bioavailable. For these reasons, selenium is not retained as a COPC for risks to plants.

Thallium

The maximum detected concentration of thallium (5.3 mg/kg) is greater than the Canadian SQG (1.4 mg/kg). All six detected concentrations including the maximum were greater than the SQG, as is the 95% UCL (3.3 mg/kg). Although thallium was not detected in the background samples, it is unclear whether thallium is actually related to site activities. The only observed pattern was that the three samples with the greatest thallium detections corresponded with three samples with the greatest iron concentrations. Because iron is not related to site activities, there is uncertainty in whether thallium is as well. For these reasons, thallium is not retained as a COPC for risks to plants.

In summary, potential risks to plants from chemicals in the soil do not warrant retaining any of the chemicals for several reasons. Concentrations of some PAHs at one sample location (TF4-SB-934) were greater than levels where impacts to plants have been reported. This sample was located at the north-east corner of the area that was previously excavated so it is not likely that area remaining with elevated PAH concentrations is very large. Also, although bioavailability is influenced by several factors, a pH of 5.1 supports the likelihood that arsenic and selenium are not bioavailable. In most cases, the concentrations of metals were not much greater than the screening levels, and the 95% UCL was lower than the screening levels. This indicates that the exceedances were not widespread across the site. Finally, although a quantitative plant community study was not conducted, the site is heavily vegetated and, as discussed in Section 7.2.1, vegetation returns quickly to areas that are not regularly cut. In fact, as shown on the aerial photograph in Appendix I, the vegetation at the site is really indistinguishable from the vegetation in the surrounding area. Therefore, based on all these lines of evidence, it does not appear that plants are being impacted at the site and no chemicals are retained as COPCs for further evaluation based on impacts to plants.

7.4.2.2 DU 5-1

Two VOCs, 17 SVOCs, 7 inorganics, and two dioxin TEQs were initially selected as COPCs for terrestrial plants in the surface soil of DU 5-1.

The following chemicals were eliminated as COPCs for plants in DU 5-1 surface soil for similar reasons as those discussed previously for soil invertebrates and/or plants in DU 4-1 surface soil or for soil invertebrates in DU 5-1 surface soil: acetone, isopropyl benzene, dioxins, benzaldehyde, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene.

7.4.2.2.1 Inorganics

Arsenic

Arsenic was initially selected as a COPC because the maximum detected concentration (43.7 mg/kg) was greater than the plant Eco SSL (18 mg/kg). Two other samples had detected concentrations greater than the plant benchmark for arsenic, but eight of the 11 detected concentrations were less than the maximum background concentration (21.3 mg/kg). Although pH was not measured in the surface soil at Tank Farm 5, the pH in the subsurface soil samples from Tank Farm 5 and the surface samples from Tank Farm 4 were less than 6.1, which reduce the bioavailability of arsenic. Therefore, the elevated arsenic concentrations do not appear to be significantly impacting plants at the site and most site concentrations are less than the background concentration. For those reasons, arsenic is not retained as a COPC for risks to plants.

Cobalt

The maximum detected cobalt concentration (13.2 mg/kg) is slightly greater than the plant Eco SSL (13 mg/kg). No other samples also exceed this screening level. Additionally, the 95% UCL cobalt concentration (10.3 mg/kg) is less than this benchmark. Therefore, site-related risks are not expected, and cobalt is eliminated as a COPC for plants.

Iron

Iron was initially selected as a COPC for plants because a pH value in surface soil was not available. The reported pH for Tank Farm DU 4-1 is 5.1. As presented in the Eco SSL document for iron, in well-aerated soils between pH 5 and 8, the iron demand of plants is higher than the amount available and under these soil conditions, iron is not expected to be toxic to plants. Assuming similar conditions at DU 5-1, iron should not be bioavailable to plants. Therefore, iron is not retained as a COPC for risks to this receptor.

Manganese

The maximum detected manganese concentration (462 mg/kg) is greater than the plant Eco SSL (220 mg/kg), and most other samples also exceed this screening level. The 95% UCL (343 mg/kg) also exceeds the screening level. Although the maximum detected concentration is less than the maximum background concentration (477 mg/kg) for its soil type, the second greatest detection (415 mg/kg) exceeds the maximum background concentration (290 mg/kg) for its soil type. However, the detected concentrations only slightly

exceed these background concentrations. Therefore, it is not likely that plants are being impacted at the site. For these reasons, manganese is not retained as a COPC for risks to plants.

Selenium

All six of the detected concentrations of selenium were greater than the plant Eco SSL (0.52 mg/kg). The 95% UCL (3.64 mg/kg) also exceeds the screening level. As discussed for Tank Farm 4, many factors influence the bioavailability of selenium in soil including pH and amount of organic material. Although pH was not measured in the surface soil at Tank Farm 5, the pH in the subsurface soil samples from Tank Farm 5 and the surface samples from Tank Farm 4 were less than 6.1. Therefore, at soil pH values less than 6.0, selenium is expected to be less bioavailable. This, combined with the fact that it does not appear that plants are being impacted at the site, supports not retaining selenium as a COPC for risks to plants.

Thallium

Thallium was initially selected as a COPC because the maximum detected concentration (2.5 mg/kg) is greater than the Canadian SQG (1.4 mg/kg). Seven of the 11 detections including the maximum were greater than the SQG, as well as the 95% UCL (2.1 mg/kg). Thallium was not detected in the background samples. The concentrations of thallium in the soil samples were within a tight range of 0.65 mg/kg to 2.5 mg/kg. Based on the distribution of the data across the site, it does not appear that thallium is related to site activities (i.e., no hot spots were identified). Therefore, thallium was not retained as a COPC for risks to plants.

In summary, potential risks to plants from chemicals in the soil do not warrant retaining any of the chemicals for several reasons. Similar to what was discussed for Tank Farm 4, the bioavailability of arsenic and selenium are expected to be low. In most cases, the concentrations of metals were not much greater than the screening levels, and the 95% UCL was lower than the screening levels. This indicates that the exceedances were not widespread across the site. Finally, although a quantitative plant community study was not conducted, the site is heavily vegetated and, as discussed in Section 7.2.1, vegetation returns quickly to areas that are not regularly cut. In fact, as shown on the aerial photograph in Appendix I, the vegetation at the site is really indistinguishable from the vegetation in the surrounding area. Therefore, based on all these lines of evidence, it does not appear that plants are being impacted at the site and no chemicals are retained as COPCs for further evaluation based on impacts to plants.

7.4.3 Sediment Invertebrates

Potential risks to sediment invertebrates from exposure to chemicals initially selected as COPCs were further evaluated as discussed above. The following subsections discuss whether COPCs are retained for further evaluation for sediment invertebrates at DU 4-1 and DU 5-1.

7.4.3.1 DU 4-1

Two VOCs, nine SVOCs, five pesticides, one dioxin TEQ, and eleven inorganics were initially selected as COPCs for sediment invertebrates in the DU 4-1 sediment.

7.4.3.1.1 VOCs

Acetone and carbon disulfide were initially selected as COPCs because the maximum detected concentration (240 µg/kg and 15 µg/kg, respectively) exceeded their screening levels (8.7 µg/kg and 0.85 µg/kg, respectively). All detected concentrations of acetone exceed the screening level, which is based on the SCV from Jones et al. (1997). However, as noted in Jones et al. (1997), the acetone SCV is based on equilibrium partitioning and is likely a very conservative value. Also, the lowest chronic value for carbon disulfide in Jones et al. (1997) is 230 µg/kg, which is much greater than its maximum detected concentration. Acetone is also a common laboratory contaminant and is not related to site activities and carbon disulfide was only detected in two of 12 samples. For these reasons, VOCs are not retained as chemicals of ecological concern for sediment invertebrates and does not warrant further evaluation at these sites.

7.4.3.1.2 SVOCs

4-methylphenol and benzaldehyde were initially selected as COPCs because screening levels were not available. No alternate benchmarks were available for these SVOCs. Therefore, these chemicals are discussed qualitatively and are not evaluated quantitatively. 4-Methylphenol was detected at a maximum concentration of 16 µg/kg with detections in five of 12 samples. The SCV for 2-methylphenol is 12 µg/kg. Using this as a surrogate value for 4-methylphenol, only the maximum concentration of 4-methylphenol (16 µg/kg) exceeds this surrogate screening level. Benzaldehyde was detected at a maximum concentration of 182 µg/kg with detections in four of 12 samples. Because of the relatively low concentrations and frequency of detections and comparison to a surrogate screening level for 4-methylphenol, adverse effects to sediment invertebrates from 4-methylphenol and benzaldehyde are not expected.The toxicity of PAHs is typically assumed to be additive, so evaluating PAH toxicity in sediment by examining total PAH concentrations is especially useful when, as at DU 4-1, several PAHs were

detected. Total PAH concentrations are presented in Table 7-3. The maximum total PAH concentration is 2,400 µg/kg at location TF4-SD-903-00065. The screening level (1,600 µg/kg) is the threshold effects concentration (TEC) from MacDonald et al. (2000), which is the concentration below which effects to sediment invertebrates are not expected. The probable effects concentration (PEC) from MacDonald et al. (2000), which is the concentration above which effects to sediment invertebrates are expected, is 22,800 µg/kg. The maximum detected concentration is only slightly greater than the TEC and much less than the PEC. Also, for the individual PAHs, the 95% UCL concentrations were less than the screening levels. Therefore, effects to sediment invertebrates are expected to be minimal, and PAHs are not retained as COPCs for this receptor.

7.4.3.1.3 Pesticides

4,4'-DDE, 4,4'-DDT, and total DDT were initially selected as COPCs because the maximum detected concentrations, 15 µg/kg for 4,4'-DDE, 6.7 µg/kg for 4,4'-DDT, and 25.1 µg/kg for total DDT, were greater than the screening levels. These values are the TECs from MacDonald et al. (2000). The PEC is 31.3 µg/kg for 4,4'-DDE, 62.9 µg/kg for 4,4'-DDT, and 576 µg/kg for total DDT (MacDonald et al., 2000). Maximum concentrations of these pesticides are much less than these higher effects levels. Also, these pesticides were only detected in one of 12 samples. Therefore, risks from these pesticides are expected to be minimal, and 4,4'-DDE, 4,4'-DDT, and total DDT are not retained as COPCs for sediment invertebrates.

Endrin aldehyde and endrin ketone were initially selected as COPCs because the maximum detected concentration exceeded the screening level (2.22 µg/kg). This value is the TEC from MacDonald et al. (2000). The PEC from MacDonald et al. (2000) is 207 µg/kg for endrins. The maximum detected concentrations for endrin aldehyde and endrin ketone are 2.72 µg/kg and 20.8 µg/kg, respectively. These concentrations are greater than the TEC, but much less than the PEC. Also, these pesticides were only detected in one of 12 samples each. Therefore, risks from these pesticides are expected to be minimal, and endrin aldehyde and endrin ketone are not retained as COPCs for sediment invertebrates.

7.4.3.1.4 Dioxins

TEQ-fish was initially selected as a COPC because a screening level was not available. As discussed previously for soil invertebrates, in U.S. EPA (1993), it is noted that the Ah receptor has not been detected in plants or nine species of invertebrates representing eight classes of four phyla. The document further notes that aquatic invertebrates are much less sensitive to TCDD than fish, perhaps due to the absence of the Ah receptor or a comparably sensitive receptor for dioxins U.S. EPA (1993). The Ah receptor is important because dioxins need to bind to the receptor to cause toxicity. Also, Van

den Berg et al. (1998) states that, “At this time, development of TEFs for invertebrates is not recommended because there is limited evidence for ligand activation of Ah receptor or for TCDD-like toxicity in invertebrates.” Therefore, TEQ-fish is not retained as a COPC for sediment invertebrates.

7.4.3.1.5 Inorganics

Arsenic was initially selected as a COPC because the maximum detected concentration (46.6 mg/kg) exceeded the screening level (9.79 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 33 mg/kg. All but one concentration exceeds the TEC, but only the maximum detected concentration is greater than the PEC. All other concentrations, as well as the 95% UCL, are much less than the PEC. Additionally, the maximum surface soil background concentration at Tank Farm DU 4-1 (71.7 mg/kg) is greater than the site maximum surface soil concentration (46.6 mg/kg), so arsenic in sediment does not appear to be site-related. Therefore, effects to sediment invertebrates are expected to be minimal, and arsenic is not retained as a COPC for this receptor class.

Barium was initially selected as a COPC because the maximum detected concentration (64.7 mg/kg) exceeded the screening level (48 mg/kg), which is based on the NOAA Apparent Effects Threshold (AET) (Buchman, 2008) for marine sediment. Barium is not generally considered toxic, and only one concentration other than the maximum exceeds this benchmark. Also, the 95% UCL concentration is 42.7, which is less than the screening level. Therefore, risks are expected to be minimal, and barium is retained not as a COPC for this receptor class.

Beryllium was initially selected as a COPC because a screening level was not available. An alternate benchmark was not available for beryllium. All samples had detections of beryllium with a maximum detected concentration of 0.68 mg/kg and a 95% UCL concentration of 0.52 mg/kg. Therefore, impacts from beryllium cannot be quantified.

Cadmium was initially selected as a COPC because the maximum concentration (1.2 mg/kg) exceeded the screening level (0.99 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 4.98 mg/kg. Only the maximum detected concentration is greater than the TEC and is much less than the PEC. Also, the 95% UCL is less than the TEC. Therefore, effects to sediment invertebrates are expected to be minimal, and cadmium is not retained as a COPC for this receptor class.

Cobalt was initially selected as a COPC because the maximum concentration (76.2 mg/kg) exceeded the screening level (50 mg/kg). Only the maximum detected concentration is greater than the screening level. Also, the 95% UCL (43.3 mg/kg) is less than the screening level. Therefore, effects to sediment invertebrates are expected to be minimal, and cobalt is not retained as a COPC for this receptor class.

Iron was initially selected as a COPC because the maximum concentration (145,000 mg/kg) exceeded the screening level of 20,000 mg/kg. This screening level is the OMOE (Persaud, et al., 1993) lowest effects level (LEL). The OMOE (Persaud, et al., 1993) Severe Effects Level (SEL) is 40,000 mg/kg. All concentrations were greater than the LEL. Three concentrations including the maximum exceeded the SEL; however, iron is not expected to be site-related because the maximum background surface soil concentration (53,900 mg/kg) at DU 4-1 is greater than the maximum surface soil concentration (53,200 mg/kg). Therefore, iron is not retained as a COPC for sediment invertebrates.

Lead was initially selected as a COPC because the maximum detected concentration (96.2 mg/kg) exceeded the screening level (35.8 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 128 mg/kg. Six concentrations including the maximum are greater than the TEC; however, none exceed and all are much less than the PEC. Therefore, effects to sediment invertebrates are expected to be minimal, and lead is not retained as a COPC for this receptor class.

Manganese was initially selected as a COPC because the maximum detected concentration (3,440 mg/kg) exceeded the screening level (460 mg/kg). This screening level is the OMOE (Persaud, et al., 1993) LEL. Four concentrations were greater than this screening level. The OMOE (Persaud, et al., 1993) SEL for manganese is 1,100 mg/kg. The maximum and one other concentration exceeded the SEL. The two detections are bounded to within about 50 feet in the downstream direction, though, so the potentially impacted area appears to be small. The upstream boundary is a discharge pipe for one location and the previously excavated area for the other location. However, because the detected concentrations are more than twice the SEL, effects to sediment invertebrates are possible, and manganese is retained as a COPC for this receptor class.

Nickel was initially selected as a COPC because the maximum detected concentration (132 mg/kg) exceeded the screening level (22.7 mg/kg), which was the TEC (MacDonald, et al., 2000). The PEC is 48.6 mg/kg. One concentration other than the maximum is slightly greater than the PEC (50.4 mg/kg). All other concentrations of nickel are less than the TEC. Therefore, effects to sediment invertebrates are expected to be minimal, and nickel is not retained as a COPC for this receptor class.

Thallium was initially selected as a COPC because a screening level was not available. An alternate benchmark was not available for thallium. Ten of 12 samples had detections of thallium with a maximum detected concentration of 11.5 mg/kg and a 95% UCL concentration of 6.7 mg/kg. Therefore, impacts from thallium cannot be quantified.

Zinc was initially selected as a COPC because the maximum detected concentration (199 mg/kg) exceeded the screening level (121 mg/kg), which was the TEC (MacDonald, et al., 2000). The PEC is

459 mg/kg. One concentration other than the maximum is slightly greater than the TEC (101 mg/kg). No concentrations of zinc are greater than the PEC. Therefore, effects to sediment invertebrates are expected to be minimal, and zinc is not retained as a COPC for this receptor class.

In summary, it does not appear that most of the chemicals were detected in the sediment at concentrations that would impact sediment invertebrates and warrant retaining them as COPCs for several reasons. For PAHs, the 95% UCLs were less than the screening levels, and the total PAH concentration was just slightly greater than the screening level and much lower than the PEC. The pesticide concentrations were lower than their respective higher effects levels such as PECs, and they were only detected in 1 of 12 samples. Also, the relatively low concentrations of the pesticides are indicative of typical spraying application activities and not a release for the site. Regarding the metals, manganese is the only one that may be impacting sediment invertebrates, although even in this case the impacts are probably limited to small areas. Although the other metals were detected at concentrations in one or more samples that exceeded their screening levels, most of the concentrations, including the 95% UCLs, were much lower than the PECs.

7.4.3.2 DU 5-1

Two VOCs, eighteen SVOCs, ten pesticides, one dioxin TEQ, and twelve inorganics were initially selected as COPCs for sediment invertebrates in the DU 5-1 sediment.

7.4.3.2.1 VOCs

Acetone and carbon disulfide were initially selected as COPCs because the maximum detected concentration (200 µg/kg and 3.9 µg/kg, respectively) exceeded their screening levels (8.7 µg/kg and 0.85 µg/kg, respectively). All detected concentrations of acetone exceed the screening level, which is based on the SCV from Jones et al. (1997). However, as noted in Jones et al. (1997), the acetone SCV is based on equilibrium partitioning and is likely a very conservative value. Acetone is also a common laboratory contaminant. Carbon disulfide was only detected in one of 12 samples. VOCs are typically not very toxic to invertebrates. For these reasons, VOCs are not retained as chemicals of ecological concern for sediment invertebrates and does not warrant further evaluation at this site.

7.4.3.2.2 SVOCs

4-methylphenol, atrazine, and carbazole were initially selected as COPCs because screening levels were not available. No alternate benchmarks were available for these SVOCs. Therefore, these chemicals are discussed qualitatively and are not evaluated quantitatively. 4-Methylphenol was detected at a maximum

concentration of 21 µg/kg with detections in nine of 12 samples. The SCV for 2-methylphenol is 12 µg/kg. Using this as a surrogate value for 4-methylphenol, only the maximum concentration of 4-methylphenol (16 µg/kg) exceeds this surrogate screening level. Atrazine was only detected in one of 12 samples at a concentration of 4.6 µg/kg. Carbazole was detected in seven of 12 samples with a relatively low maximum concentration (100 µg/kg). Carbazole is similar in structure to fluorene, which has a screening level of 77.4 µg/kg. The maximum carbazole detection just slightly exceeds this value, but it is much lower than the PEC of 536 µg/kg. Because of the relatively low concentrations of 4-methylphenol and atrazine and comparison to a surrogate screening level for 4-methylphenol, adverse effects to sediment invertebrates from these chemicals are not expected.

The toxicity of PAHs is typically assumed to be additive, so evaluating PAH toxicity in sediment by examining total PAH concentrations is especially useful when, as at DU 5-1, several PAHs were detected. Total PAH concentrations are presented in Table 7-4. The maximum total PAH concentration is 9,290 µg/kg at location TF5-SD-921-0006. The screening level is the TEC from MacDonald et al. (2000). The PEC from MacDonald et al. (2000) is 22,800 µg/kg. The maximum detected concentration is greater than the TEC, but much less than the PEC, as is the 95% UCL of 5,916 µg/kg. Therefore, effects to sediment invertebrates are expected to be minimal, and PAHs are not retained as COPCs for this receptor.

7.4.3.2.3 Pesticides/PCBs

4,4'-DDE, 4,4'-DDT, and total DDT were initially selected as COPCs because the maximum detected concentrations, 5.4 µg/kg for 4,4'-DDE, 15 µg/kg for 4,4'-DDT, and 20.4 µg/kg for total DDT, were greater than the screening levels. These values are the TECs from MacDonald et al. (2000). The PEC is 31.3 µg/kg for 4,4'-DDE, 62.9 µg/kg for 4,4'-DDT, and 576 µg/kg for total DDT (MacDonald et al., 2000). Maximum concentrations of these pesticides are much less than these higher effects levels. Therefore, risks from these pesticides are expected to be minimal, and 4,4'-DDE, 4,4'-DDT, and total DDT are not retained as COPCs for sediment invertebrates.

Aldrin was initially selected as a COPC because the maximum concentration (2.6 µg/kg) exceeded the screening level of 2 µg/kg. This screening level is the OMOE (Persaud, et al., 1993) LEL. The OMOE (Persaud, et al., 1993) SEL is 80 µg/kg (adjusted for 1 percent TOC). Although the detected concentration was slightly greater than the LEL, it was much less than the SEL. Therefore, aldrin is not retained as a COPC for sediment invertebrates.

Endrin aldehyde and endrin ketone were initially selected as COPCs because the maximum detected concentration exceeded the screening level (2.22 µg/kg). This value is the TEC from MacDonald et al. (2000). The PEC from MacDonald et al. (2000) is 207 µg/kg for endrins. The maximum detected

concentrations for endrin aldehyde and endrin ketone are 3.5 µg/kg and 11 µg/kg, respectively. These concentrations are greater than the TEC, but much less than the PEC. Also, these pesticides were only detected in two of 12 and three of 12 samples, respectively. Therefore, risks from these pesticides are expected to be minimal, and endrin aldehyde and endrin ketone are not retained as COPCs for sediment invertebrates.

Gamma-chlordane was initially selected as a COPC because the maximum detected concentration exceeded the screening level (3.24 µg/kg). This value is the TEC from MacDonald et al. (2000). The PEC from MacDonald et al. (2000) is 17.6 µg/kg. The maximum detected concentration for gamma-chlordane is 4.9 µg/kg. This concentration is greater than the TEC, but much less than the PEC. Also, this pesticide was only detected in one of 12 samples. Therefore, risks are expected to be minimal, and gamma-chlordane is not retained as a COPC for sediment invertebrates.

Aroclor-1260 was initially selected as a COPC because the maximum detected concentration (78 µg/kg) exceeded the screening level of 59.8 µg/kg. This value is the TEC from MacDonald et al. (2000) as described above. The PEC from MacDonald et al. (2000) is 676 µg/kg for Aroclor-1260. Only one other concentration exceeded the TEC. None of the concentrations exceeded the PEC. For these reasons, effects are expected to be minimal, and Aroclor-1260 is not retained as a COPC for sediment invertebrates.

7.4.3.2.4 Dioxins

TEQ-fish was initially selected as a COPC because a screening level was not available. As discussed previously, invertebrates lack the receptor for dioxins toxic mode of action, the Ah receptor. Therefore, TEQ-fish is not retained as a COPC for sediment invertebrates.

7.4.3.2.5 Inorganics

Arsenic was initially selected as a COPC because the maximum detected concentration (121 mg/kg) exceeded the screening level (9.79 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 33 mg/kg. All concentrations exceed the TEC, but only the maximum detected concentration in sample TF5-SD-914-0006 is greater than the PEC. All other concentrations are much less than less than the PEC. The sample 20 feet downstream from the maximum (TF5-SD-913-0006) had an arsenic concentration of only 10.5 mg/kg. The sample 100 ft. upstream (TF5-SD-917-0006) had an arsenic concentration of 14.1 mg/kg. This sample is bound upstream and downstream by concentrations much less than the maximum concentration. Therefore, effects to sediment invertebrates are expected to be minimal, and arsenic is not retained as a COPC for this receptor class.

Beryllium was initially selected as a COPC because a screening level was not available. An alternate benchmark was not available for beryllium. All samples had detections of beryllium with a maximum detected concentration of 1.1 mg/kg and a 95% UCL concentration of 0.63 mg/kg. Therefore, impacts from beryllium cannot be quantified.

Cadmium was initially selected as a COPC because the maximum concentration (2 mg/kg) exceeded the screening level (0.99 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 4.98 mg/kg. Only the maximum detected concentration is greater than the TEC and is much less than the PEC. The 95% UCL (0.87 mg/kg) was also less than the TEC. Therefore, effects to sediment invertebrates are expected to be minimal, and cadmium is not retained as a COPC for this receptor class.

Cobalt was initially selected as a COPC because the maximum concentration (95 mg/kg) exceeded the screening level (50 mg/kg). Only the maximum detected concentration is greater than the screening level. Also, the 95% UCL (47.8 mg/kg) is less than the screening level. Therefore, effects to sediment invertebrates are expected to be minimal, and cobalt is not retained as a COPC for this receptor class.

Copper was initially selected as a COPC because the maximum detected concentration (43 mg/kg) exceeded the screening level (31.6 mg/kg). This value is the TEC from MacDonald et al. (2000). The PEC from MacDonald et al. (2000) is 149 mg/kg. The maximum concentration is much less than the PEC. Two other concentrations only slightly exceed the TEC and did the 95% UCL (32.4 mg/kg). Therefore, risks are expected to be minimal, and copper is not retained as a COPC for sediment invertebrates.

Iron was initially selected as a COPC because the maximum concentration (166,000 mg/kg) exceeded the screening level of 20,000 mg/kg. This screening level is the OMOE (Persaud, et al., 1993) lowest effects level (LEL). The OMOE (Persaud, et al., 1993) Severe Effects Level (SEL) is 40,000 mg/kg. Eight other concentrations were greater than the LEL. The reason for the elevated detection of iron is not known, but is it just downstream of a discharge pipe. All other detections were less than 34,000 mg/kg, including samples just upstream of this detection and one about 100 feet downstream. Therefore, the extent of the elevated detection is limited to a small area so potential impacts to sediment invertebrates are not expected to be significant. For these reasons, iron is not retained as a COPC for sediment invertebrates.

Lead was initially selected as a COPC because the maximum detected concentration (95.8 mg/kg) exceeded the screening level (35.8 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 128 mg/kg. Nine concentrations including the maximum are greater than the TEC; however, none exceed

and all are much less than the PEC. Therefore, effects to sediment invertebrates are expected to be minimal, and lead is not retained as a COPC for this receptor class.

Manganese was initially selected as a COPC because the maximum detected concentration (982 mg/kg) exceeded the screening level (460 mg/kg). This screening level is the OMOE (Persaud, et al., 1993) LEL. Only one concentration other than the maximum was greater than this screening level. The OMOE (Persaud, et al., 1993) SEL for manganese is 1,100 mg/kg. None of the concentrations exceed the SEL. Also, the 95% UCL (437 mg/kg) was less than the LEL. Therefore, effects to sediment invertebrates are expected to be minimal, and manganese is not retained as a COPC for this receptor class.

Mercury was initially selected as a COPC because the maximum detected concentration (0.19 mg/kg) exceeded the screening level (0.18 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 1.06 mg/kg. Only the maximum slightly exceeds the TEC, but is much less than the PEC. Therefore, effects to sediment invertebrates are expected to be minimal, and mercury is not retained as a COPC for this receptor class.

Nickel was initially selected as a COPC because the maximum detected concentration (127 mg/kg) exceeded the screening level (22.7 mg/kg), which is the TEC (MacDonald, et al., 2000). The PEC is 48.6 mg/kg. Seven concentrations other than the maximum exceed the TEC, but concentrations were much less than the PEC. Only the maximum concentration is greater than the PEC but like arsenic, the sample with the exceedances was bounded upstream and downstream by concentrations much less than the maximum concentration. Therefore, effects to sediment invertebrates are expected to be minimal, and nickel is not retained as a COPC for this receptor class.

Thallium was initially selected as a COPC because a screening level was not available. An alternate benchmark was not available for thallium. Four of 12 samples had detections of thallium with a maximum concentration of 1.7 mg/kg and a 95% UCL concentration of 0.89 mg/kg. Therefore, impacts from thallium cannot be quantified.

Zinc was initially selected as a COPC because the maximum detected concentration (190 mg/kg) exceeded the screening level (121 mg/kg), which was the TEC (MacDonald, et al., 2000). The PEC is 459 mg/kg. Three concentrations other than the maximum are slightly greater than the TEC. No concentrations of zinc are greater than the PEC. Therefore, effects to sediment invertebrates are expected to be minimal, and zinc is not retained as a COPC for this receptor class.

In summary, it does not appear that the chemicals were detected in the sediment at concentrations that would impact sediment invertebrates and warrant retaining them as COPCs for several reasons. For

PAHs, although the maximum detected total PAH concentration was greater than its screening level, it was much lower than the PEC, as was the 95% UCL. The pesticide concentrations were lower than their respective higher effects levels such as the PECs, and they most were detected relatively infrequently. Also, the relatively low concentrations of the pesticides are indicative of typical spraying application activities and not a release for the site. Regarding the metals, although there were several exceedances of screening levels, there were few exceedances of the higher effects levels such as the PEC. Any exceedances of the PECs were limited to small areas, because the surrounding samples had much lower concentrations of the metals.

7.4.4 Aquatic Organisms

Potential risks to aquatic organisms from exposure to chemicals initially selected as COPCs were further evaluated as discussed above. The following subsections discuss whether COPCs are retained for further evaluation for aquatic at DU 4-1 and DU 5-1. COPCs based on risk to upper-level receptors via the food chain are discussed in Section 7.4.5.

7.4.4.1 DU 4-1

Two SVOCs and one inorganics were initially selected as COPCs for aquatic organisms in the DU 4-1 surface water.

7.4.4.1.1 SVOCs

Benzo(a)anthracene and pyrene were initially selected as COPCs because their maximum detected concentrations (0.17 µg/L and 0.23 µg/L, respectively) exceeded the screening levels (0.027 µg/L and 0.025 µg/L). The final chronic values (FCVs) from U.S. EPA (2003), which are intended to be the concentration of a chemical in water that is protective of the presence of aquatic life, are 2.27 µg/L and 10.11 µg/L for benzo(a)anthracene and pyrene, respectively. Both maximum concentrations are less than their respective FCVs. These PAHs were detected infrequently (two of 12 and one of twelve, respectively). Additionally, the maximum total PAH concentration (0.79 µg/L) is much less than the screening level (30 µg/L). Therefore, impacts to aquatic organisms are expected to be minimal and benzo(a)anthracene and pyrene are not retained as COPCs for aquatic organisms.

7.4.4.1.2 Inorganics

Barium was initially selected as a COPC because the maximum detected concentration (10.4 µg/L) exceeded the screening level (4 µg/L). This screening value is based on the SCV from Suter and Tsao

(1996). The SCV was developed based on the EC16 from only one study using *Daphnia magna* reproduction as an endpoint. The barium concentration is a total value. Dissolved metals are typically considered to be the bioavailable fraction to aquatic organisms, so the total concentration reported may not be bioavailable. Also, the concentrations detected in the surface soil of DU 4-1 are similar to background concentrations, so barium is not expected to be site-related. Therefore, effects to aquatic organisms are expected to be minimal, and barium is not retained as a COPC for this receptor class.

7.4.4.2 DU 5-1

Three SVOCs and three inorganics were initially selected as COPCs for aquatic organisms in the DU 5-1 surface water.

7.4.4.2.1 SVOCs

Benzo(a)anthracene, benzo(a)pyrene, and pyrene were initially selected as COPCs. These PAHs were detected at relatively low maximum concentrations (0.2 µg/L, 0.16 µg/L, and 0.3 µg/L); however, all of the detected concentration of these PAHs exceeded the respective screening levels. The FCVs from U.S. EPA (2003), are 2.27 µg/L, 0.9573 µg/L, and 10.11 µg/L for benzo(a)anthracene, benzo(a)pyrene, and pyrene, respectively. All of the maximum concentrations are less than their respective FCVs. The maximum total PAH concentration (9.26 µg/L) is much less than the screening level (30 µg/kg). Therefore, impacts to aquatic organisms are expected to be minimal and benzo(a)anthracene, benzo(a)pyrene, and pyrene are not retained as COPCs for aquatic organisms.

7.4.4.2.2 Inorganics

Aluminum was initially selected as a COPC because the maximum detected concentration (852 µg/L) exceeded the screening level (87 µg/L). Aluminum was only detected in one sample. The aluminum concentration is a total value. Dissolved metals are typically considered to be the bioavailable fraction to aquatic organisms, so the total concentration reported may not be bioavailable. The concentrations detected in the surface soil of DU 5-1 are similar to background concentrations, so aluminum is not expected to be site-related. Therefore, effects to aquatic organisms are expected to be minimal, and aluminum is not retained as a COPC for this receptor class.

Barium was initially selected as a COPC because the maximum detected concentration (11 µg/L) exceeded the screening level (4 µg/L). As discussed previously, this screening value is based on the SCV from Suter and Tsao (1996). The barium concentration is a total value. Dissolved metals are typically considered to be the bioavailable fraction to aquatic organisms, so the total concentration

reported may not be bioavailable. The concentrations detected in the surface soil of DU 5-1 are similar to background concentrations, so barium is not expected to be site-related. Therefore, effects to aquatic organisms are expected to be minimal, and barium is not retained as a COPC for this receptor class.

Iron was initially selected as a COPC because the maximum detected concentration (2,930 µg/L) exceeded the screening level (1,000 µg/L). Only the maximum concentration exceeded this screening level. The iron concentration is a total value. Dissolved metals are typically considered to be the bioavailable fraction to aquatic organisms, so the total concentration reported may not be bioavailable. Also, the average iron concentration (725 µg/L) is less than the screening level. Therefore, effects to aquatic organisms are expected to be minimal, and iron is not retained as a COPC for this receptor class.

7.4.5 Wildlife

As presented in Section 7.3.4.4 the EEQs from the terrestrial food chain modeling were greater than 1.0 for several chemicals using maximum chemical concentrations and conservative exposure assumptions. Therefore, as part of the Step 3a refinement, risks were recalculated using average chemical concentrations and the Step 3a exposure parameters as presented in Appendix I. These parameters are summarized on the exposure factors table in Appendix I. The food chain model calculation sheets are also provided in Appendix I.

Decisions made based on the results of the food-chain model are as follows:

- If the EEQ is less than 1.0 using average contaminant concentrations and exposure factors and the NOAEL as the TRV, it was concluded that the chemical is not causing an unacceptable risk to wildlife and the chemical was not evaluated further in Step 3a.
- If the EEQ is greater than 1.0 using average contaminant concentrations and exposure factors and the NOAEL as the TRV, the chemical was further evaluated in Step 3a to determine if the risks are great enough to warrant additional evaluations.

As part of the Step 3a refinement, the food-chain model was reevaluated using less conservative exposure assumptions and 95% UCL chemical concentrations, when available, for those chemicals with a NOAEL EEQ greater than 1.0 in the conservative scenario. For refining the list of COPCs in Step 3a, the following less conservative exposure assumptions were used:

- 95% UCL or if a 95% UCL was not able to be calculated average surface soil and sediment concentrations were used.
- Average BAFs or BSAFs or BAF regression equations

- Average receptor body weights and ingestion rates
- Average surface water concentrations
- Receptors spend 100% of their time at the Site

7.4.5.1 DU 4-1

Tables 7-11 and 7-13 present the summary of the EEQs for the conservative food chain model for surface soil and sediment at DU 4-1. Only chemicals with a NOAEL EEQ greater than 1.0 are discussed below.

7.4.5.1.1 Herbivorous and Invertivorous Mammals and Birds

For the vole, the NOAEL EEQ for pyrene was greater than 1.0. For the quail, the NOAEL EEQs for pyrene and iron were greater than 1.0.

Although the less conservative EEQ for iron for the quail (1.7) is greater than 1.0, iron is not expected to be toxic to wildlife. The bioavailability of iron is directly related to soil pH with pH ranges from 5 to 8 considered non-bioavailable. The site pH is 5.1. Iron is eliminated as a COPC for avian and mammalian herbivorous receptors.

The NOAEL EEQ for pyrene for the vole (2.3) and quail (1.2) are relatively low in magnitude compared to 1.0 and the LOAEL EEQs are much less than 1.0. Therefore, risks are expected to be minimal, and pyrene is not retained as a COPC for avian and mammalian herbivorous receptors.

For the shrew, NOAEL EEQs were greater than 1.0 for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, pyrene, dioxins as TEQ-mammals, iron, mercury, nickel, and thallium. For the robin, the NOAEL EEQ was greater than 1.0 for acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, pyrene, iron, lead, mercury, nickel, and vanadium.
Although the less conservative EEQ for iron for both the shrew and robin are greater than 1.0, iron is not expected to be toxic to wildlife as discussed above. Therefore, iron is eliminated as a COPC for avian and mammalian invertivorous receptors.

Although less conservative NOAEL EEQs for mercury were greater than 1.0, 1.2 for the shrew and 10 for the robin, site related risks to avian and mammalian insectivorous receptors are not expected from mercury because site concentrations were statistically within the range of background concentrations (see Appendix F for statistical comparisons). Therefore, mercury is not retained as a COPC for these receptors in DU 4-1 surface soils.

Food chain model NOAEL EEQs for acenaphthylene for the robin (1.3), benzo(a)anthracene (3.0), benzo(a)pyrene for the robin (1.1) and shrew (2.1), benzo(g,h,i)perylene for the shrew (1.7), benzo(k)fluoranthene for the robin (1.7) and shrew (3.3), indeno(1,2,3-cd)pyrene for the shrew (1.6), endrin aldehyde for the robin (1.9), endrin ketone for the robin (2.4), dioxins as TEQ mammals for the shrew (2.9), lead for the robin (1.2), nickel for the shrew (1.4), and vanadium for robin (1.0) were low in magnitude compared to 1.0. Furthermore, none of the LOAEL EEQs were greater than 1.0. Therefore, food chain related effects from acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, endrin aldehyde, endrin ketone, dioxins as TEQ mammals, lead, nickel, and vanadium to insectivorous receptors are expected to be minimal and these chemicals are not retained as COPCs for further evaluation to wildlife in DU 4-1 surface soils.

The NOAEL EEQ for thallium (26.6) for the shrew is much higher than 1.0. However, thallium is not considered bioaccumulative and earthworm BAFs were not available. Therefore, a default value of 1.0 was used to estimate chemical concentrations in earthworms for the invertivorous receptor food-chain models. This likely leads to an over estimation of the dose ingested in food items for the shrew because the actual accumulation of thallium in earthworms is likely to be much lower. Therefore, food-chain related effects to this receptor class are expected to be low; and thallium is not retained for further evaluation.

Food chain model NOAEL EEQs for benzo(a)anthracene for the shrew (5.7), benzo(b)fluoranthene for the shrew (8.5) and robin (4.4), chrysene for the shrew (9) and robin (4.7), fluoranthene for the robin (8.7), and pyrene for the shrew (10) and robin (5.3) were all much greater in magnitude than 1.0. However, none of the LOAEL EEQs for these chemicals and receptors were greater than 1.0. The maximum detected concentration for these PAHs occurs in sample TF4-SB-934-0001, which is much greater than the samples within 150 to 200 ft. to the north, northwest, east, and south. Risks would be expected in this area; therefore, risks are possible to insectivorous receptors in this limited area, and benzo(a)anthracene, benzo(b)fluoranthene, chrysene, fluoranthene, and pyrene are retained as COPCs in DU 4-1 surface soils.

7.4.5.1.2 Piscivorous Birds and Mammals

For the mink, NOAEL EEQs were greater than 1.0 for aluminum, iron, manganese, nickel, and thallium. For the heron, NOAEL EEQs were greater than 1.0 for endrin ketone, aluminum, copper, iron, manganese, mercury, and vanadium. LOAEL EEQs for aluminum, iron, and thallium were greater than 1.0 for the mink and LOAEL EEQs for aluminum, iron, and vanadium were greater than 1.0 for the heron.

Food chain model NOAEL EEQs for endrin ketone for the heron (2.5), copper for the heron (1.1), manganese for the mink (1.9) and heron (1.8), mercury for the heron (2.4), and nickel for the mink (1.0) were low in magnitude compared to 1.0. Furthermore, none of the LOAEL EEQs for these constituents were greater than 1.0. Therefore, food chain related effects from endrin ketone, copper, manganese, and nickel to piscivorous birds and mammals are expected to be minimal and these metals are not retained as COPCs for further evaluation to wildlife in DU 4-1 sediment.

Food chain model NOAEL EEQs for aluminum for the mink (240) and heron (14) and iron for the mink (76) and heron (130) were much greater than 1.0. However, as discussed previously, these metals are not expected to be bioavailable or site-related. Also, only soluble aluminum may result in the toxicity to ecological receptors (U.S. EPA, 2003a). Usually a large fraction of the soluble aluminum is found in the form of organic and fluoride complexes and these complexes of aluminum are much less toxic than soluble Al3+ or Al-hydroxy cations (U.S. EPA, 2003a). Also, the laboratory toxicity tests on which TRVs are based are conducted using highly bioavailable forms of the metals. Therefore, aluminum and iron are not retained as COPCs for further evaluation to wildlife in DU 4-1 sediment.

The NOAEL EEQ for thallium for the mink (40) and for vanadium for the heron (8.9) were much greater than 1.0. However, as previously noted, thallium is not considered bioaccumulative, nor is vanadium, and the fish/sediment invertebrate BAFs are the default value of 1.0, which likely leads to an over estimation of risk to piscivorous wildlife. Additionally, surface soil concentrations of vanadium were similar to background, so vanadium is not expected to be site-related. Therefore, thallium and vanadium are not retained as COPCs for further evaluation to piscivorous wildlife in DU 4-1 sediment.

7.4.5.2 DU 5-1

Tables 7-12 and 7-14 present the summary of the EEQs for the conservative food chain model for surface soil and sediment at DU 5-1. Only chemicals with a NOAEL EEQ greater than 1.0 are discussed below.

7.4.5.2.1 Herbivorous and Invertivorous Mammals and Birds

For the vole, no NOAEL EEQs were greater than 1.0. For the quail, the NOAEL EEQs for iron and mercury were greater than 1.0.

The NOAEL EEQ for iron for the quail (1.3) and mercury for the quail (1.0) are relatively low in magnitude compared to 1.0 and the LOAEL EEQs are much less than 1.0. Therefore, risks are expected to be minimal, and iron and mercury are not retained as COPCs for avian and mammalian herbivorous receptors.

For the shrew, NOAEL EEQs were greater than 1.0 for dioxins as TEQ-mammals, iron, mercury, nickel, selenium, and thallium. For the robin, the NOAEL EEQ was greater than 1.0 for aluminum, iron, lead, mercury, and selenium.

Although the less conservative EEQ for iron for the shrew and robin are greater than 1.0, iron is not expected to be toxic to wildlife as discussed previously. The bioavailability of iron is directly related to soil pH with pH ranges from 5 to 8 considered non-bioavailable. Therefore, iron is eliminated as a COPC for avian and mammalian invertivorous receptors.

Although less conservative NOAEL EEQs for mercury were greater than 1.0, 1.2 for the shrew and 10 for the robin, site related risks to avian and mammalian insectivorous receptors are not expected from mercury because site concentrations were statistically within the range of background concentrations (see Appendix F for statistical comparisons). Therefore, mercury is not retained as a COPC for these receptors in DU 5-1 surface soils.

Food chain model NOAEL EEQs for dioxins as TEQ mammals for the shrew (4.0), lead for the robin (1.2), nickel for the shrew (1.1), and selenium for the shrew (1.5) and for the robin (1.3) were low in magnitude compared to 1.0. Furthermore, none of the LOAEL EEQs were greater than 1.0. Therefore, food chain related effects from dioxins as TEQ mammals, lead, nickel, and selenium to insectivorous receptors are expected to be minimal and these chemicals are not retained as COPCs for further evaluation to wildlife in DU 5-1 surface soils.

The NOAEL EEQ for thallium (26.6) for the shrew is much higher than 1.0. However, thallium is not considered bioaccumulative and earthworm BAFs were not available, as discussed previously. Therefore, a default value of 1.0 was used to estimate chemical concentrations in earthworms for the invertivorous receptor food-chain models. This likely leads to an over estimation of the dose ingested in food items for the shrew because the actual accumulation of thallium in earthworms is likely to be much lower. Therefore, food-chain related effects to this receptor class are expected to be low; and thallium is not retained for further evaluation.

7.4.5.2.2 Piscivorous Birds and Mammals

For the mink, NOAEL EEQs were greater than 1.0 for aluminum, iron, nickel, and thallium. For the heron, NOAEL EEQs were greater than 1.0 for endrin ketone, aluminum, copper, iron, mercury, and vanadium.

Food chain model NOAEL EEQs for endrin ketone for the heron (1.0), copper for the heron (1.8), mercury for the heron (3.0), and nickel for the mink (1.0) were low in magnitude compared to 1.0. Furthermore,

none of the LOAEL EEQs were greater than 1.0. Therefore, food chain related effects from endrin ketone, copper, mercury, and nickel to piscivorous birds and mammals are expected to be minimal and these metals are not retained as COPCs for further evaluation to wildlife in DU 5-1 sediment.

Food chain model NOAEL EEQs for aluminum for the mink (250) and heron (14) and iron for the mink (78) and heron (130) were much greater than 1.0. However, as discussed previously, these metals are not expected to be bioavailable or site-related. Also, only soluble aluminum may result in the toxicity to ecological receptors (U.S. EPA, 2003a). Usually a large fraction of the soluble aluminum is found in the form of organic and fluoride complexes and these complexed forms of aluminum are much less toxic than soluble Al3+ or Al-hydroxy cations (U.S. EPA, 2003a). Also, the laboratory toxicity tests on which TRVs are based are conducted using highly bioavailable forms of the metals. Therefore, aluminum and iron are not retained as COPCs for further evaluation to wildlife in DU 5-1 sediment.

The NOAEL EEQ for thallium for the mink (5.4) and for vanadium for the heron (9.5) were much greater than 1.0. However, as previously noted, thallium is not considered bioaccumulative, nor is vanadium, and the fish/sediment invertebrate BAFs are the default value of 1.0, which likely leads to an over estimation of risk to piscivorous wildlife. Additionally, surface soil concentrations of vanadium were similar to background, so vanadium is not expected to be site-related. Therefore, thallium and vanadium are not retained as COPCs for further evaluation to piscivorous wildlife in DU 5-1 sediment.

7.5 ECOLOGICAL RISK UNCERTAINTY ANALYSIS

This section discusses some of the uncertainties associated with the DU 4-1 and DU 5-1 ERA.

7.5.1 Measurement and Assessment Endpoints

Measures of effects were used to evaluate the assessment endpoints selected for the ERA. For the ERA, the measures of effects were not the same as the assessment endpoints. Measures were used to predict effects to the assessment endpoints by selecting surrogate species to be evaluated. For example, a decrease in reproduction of a shrew was used to assess a decrease in reproduction of the small mammal population. However, predicting a decrease in reproduction of a shrew may either under protect or overprotect the small mammal population based on differences in ingestion rates, toxicity, food preferences, home ranges, etc. between different species.

Risks to reptiles were not quantitatively evaluated because exposure factors are not established for most species and toxicity data are very limited. Potential risks to reptiles cannot be evaluated in this ERA because of a lack of toxicity and exposure data.

Risks to carnivorous reptiles were not specifically calculated; however, risks are accounted for by using invertivorous birds and mammals as surrogates.

7.5.2 Exposure Characterization

The contaminant dose for terrestrial wildlife is calculated using an equation that incorporates ingestion rates, body weights, BAFs, and other exposure factors. The default value of 1.0 for VOC BAFs was used in the uptake equations for a few plants and all earthworm calculations. Although VOCs are not considered bioaccumulative and the default value is likely overly conservative, there is some uncertainty which may over or under estimate exposure. The earthworm BAF used for bis(2-ethylhexyl)phthalate was the default value of 1.0. Although the default BAF is likely conservative, it may over or under estimate exposure. The earthworm BAF used for thallium was the default value of 1.0. For these metals this is likely an overly conservative value, but this value may over or under estimate the true BAF. For sediment, metal BAFs also used the default value of 1.0. Also, if a fish BAF was not available the sediment invertebrate BAF was used. Therefore, there is uncertainty in using these values.

Bioaccumulation of contaminants into various biological media (e.g., plants, invertebrates, small mammals) depends on characteristics of the media, such as pH, organic carbon, etc. Therefore, actual BAFs at the sites may be different than those used in the ERA and obtained from the literature. Also, the bioavailability of contaminants reported in toxicity studies is typically greater than the contaminants in environmental media. Typically, highly bioavailable forms of the chemicals are used when conducting toxicity tests and/or conducting dosing studies for wildlife.

There is uncertainty in the chemical data collected at the site. Measured levels of chemicals are only estimates of true site chemical concentrations. Samples were deliberately biased toward known or suspected high concentrations, so predicted doses are probably higher than actual doses. Whereas this is a conservative approach in predicting exposure concentrations, actual exposure of ecological receptors to chemical concentrations is likely overestimated. In particular, wildlife that typically roams over multiple sample locations is unlikely to obtain all of their food from within the most contaminated areas at DU 4-1 and DU 5-1.

Chemical concentrations in surface soil from 0 to 1 foot were evaluated in this ERA. Although most terrestrial receptors are not substantially exposed to subsurface soils (2 to 4 feet), chemical concentrations in surface soil were compared to deeper soil concentrations based on regulator concerns that some receptors could be exposed to subsurface soil. Chemical concentrations in surface soil and subsurface soil were generally similar (see Appendix I – Comparison of Analytical Results for Surface Soil and Shallow Subsurface Soil Samples). Only two chemicals (nickel and Aroclor-1254) detected in

subsurface soil at Tank Farm 4 DU 4-1 were not evaluated because they were not detected or did not exceed a screening level in surface soil. Only one chemical (di-n-butyl phthalate) detected in subsurface soil at Tank Farm 5 DU 5-1 was not evaluated because it was not detected in surface soil. Nickel exceeded a screening level for plants in subsurface soil. Evaluation of other metals indicates that risk to plants from metals is expected to be minimal. Aroclor-1254 and di-n-butyl phthalate were infrequently detected in one of 46 and one of 21 surface plus shallow subsurface samples, respectively. For these reasons, including shallow subsurface soil would not likely change the conclusions of the ERA.

7.5.3 Ecological Effects Data

Several alternative benchmark values were used to gain a better understanding of the relationship between maximum concentrations of the selected COPCs to the overall ecological assessment of the site. There is some uncertainty involved when using these alternative benchmarks; however, attempts have been made to lessen the uncertainties by providing the toxicological basis of the alternate benchmarks when they were used. TRVs were not available for birds for 2-butanone, chloroform, isopropyl benzene, 2,4-dimethylphenol, 2-chlorophenol, 2-methylphenol, 4-methylphenol, phenol, toxaphene, beryllium, and thallium. Therefore, food chain model risks to this receptor could not be evaluated. Additionally, PAH TRVs for birds were based on 7,12-dimethylbenz(a)anthracene. There is uncertainty with using this TRV for all PAH calculations for birds. These exposure factors are obtained from literature studies or predicted using various equations. Ingestion rates and body weights vary among species, especially among species inhabiting different areas.

7.5.4 Risk Characterization

Risks are possible if an EEQ is greater than or equal to 1.0 regardless of the magnitude of the EEQ. However, the magnitude of effects to ecological receptors cannot be inferred based on the magnitude of the EEQ. Rather, an EEQ greater than 1.0 simply indicates that the dose used to derive the toxicity reference value was exceeded.

Finally, there is uncertainty in how the predicted risks to a species at a site translate into risk to the population in the area as a whole.

7.6 ECOLOGICAL RISK SUMMARY AND CONCLUSIONS

A screening level ERA was performed for the portions of Tank Farms 4 and 5 described in this report as DU 4-1 and DU 5-1. Several chemicals were initially selected as COPCs as a result of the initial screening of surface soil. These chemicals were further evaluated as a part of the Step 3a refinement,

the first step of the BERA. After a review of alternate toxicity information for the initial COPCs was conducted, COPC concentrations were compared to the alternate toxicity information. Table 7-15 presents the chemicals that were retained as COPCs after the Step 3a refinement. The text below further discusses these COPCs.

The following PAHs were retained as COPCs for soil invertebrates at DU 4-1 because the maximum detected concentrations exceed screening levels: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene. It is important to note that all of these maximum concentrations occurred at a single sampling location - TF4-SB-934-0001. This sample was located just east of the area that was previously remediated. The closest samples to the north, east, and south are about 150 to 200 feet away, but it is not known how far the elevated concentrations extend to these samples.

Several metals were initially selected as COPCs because their concentrations exceeded conservative plant screening levels. All metals were subsequently eliminated as COPCs for least one or more of the following reasons: 1) based on the soil pH, the metals were unlikely to be bioavailable, 2) although the metals were detected at concentrations that exceeded background concentrations, they do not appear to be related to site activities based on their concentrations and distribution across the site, 3) the 95% UCL was lower than their respective screening levels, and 4) the site is heavily vegetated so significant impacts to plants are not likely to be occurring. Therefore, it was determined that potential risks did not merit further evaluation of metals for risks to plants.

Manganese was retained as a COPC for sediment invertebrates at DU 4-1. Concentrations in two samples exceeded the SEL, indicating that impacts to sediment invertebrates are possible. Although these potential impacts are limited to small areas because the samples are bounded in the downstream direction to within 50 feet or less, manganese was retained as a COPC because the concentrations in those two samples were more than twice the SEL. This indicates that potential impacts to sediment invertebrates are possible.

No chemicals were retained as COPCs for aquatic organisms.

The chemicals initially selected as COPCs for risks to mammals and birds were also further evaluated in Step 3a using conservative and less conservative exposure assumptions. Note that even the less conservative assumptions are conservative because it is still assumed that the organisms will obtain all of their food from the site, and that the chemicals are in the same bioavailable forms as they were in the test used to develop the TRVs. Risks are possible to insectivorous receptors from benzo(a)anthracene, benzo(b)fluoranthene, chrysene, fluoranthene, and pyrene and are retained as COPCs in DU 4-1 surface

soils. Risks are due to the elevated detection at the sampling location listed above (TF4-SB-934-0001). This highly elevated detection biased the 95% UCL so the EEQs based on the NOAEL were greater than 1.0. None of the LOAEL EEQs for these chemicals and receptors were greater than 1.0 indicating that there is greater uncertainty in whether mammals and birds are being impacted because doses above a no-effects level do not necessarily indicate that impacts will occur. Although doses greater than lowest-effects levels also do not necessarily indicate that impacts will occur, there is a greater likelihood that they will occur than if only a no-effects level was exceeded.

No chemicals were retained as COPCs for herbivorous mammals and birds or piscivorous mammals or birds at DU 4-1 or DU 5-1, or insectivorous mammals or birds at DU 5-1.

8.0 SUMMARY AND CONCLUSIONS

This section provides a summary of the findings of the Data Gaps Investigations conducted at the DU 4-1 and DU 5-1 portions of Tank Farms 4 and 5.

These two decision units are areas of concern where CERCLA contaminants may be present based upon records indicating the uncontrolled burning of tank bottom sludge. It was suspected that VOCs, SVOCs, Pesticides, PCBs, Metals, Dioxins/Furans may be present in the vicinity or and downgradient of the former burn chambers and their discharge areas.

8.1 OBJECTIVES

Prior to this data gaps investigation, available groundwater, sediment, and most surface water data from DU 4-1 and DU 5-1 are more than 10 years old. In addition, soil or fill material had been altered or removed through remediation or construction work to remove the former burn chambers/oil water separators, associated piping and discharge areas. As result, the previous data set did not reflect the post-construction/ remediation site conditions. Therefore, the purpose of this DGA report is to provide up-to-date, site-representative data and to use these data to aid in determining risks to potential human and ecological receptors, so that the best path forward for each DU can be determined.

8.2 SITE DESCRIPTION AND HISTORY

DU 4-1 is located on the southwestern border of Tank Farm 4 and is comprised of two former OWSs (Ruins 1 and 2) and their associated piping, which have been decommissioned. Ruin 1 had been constructed and used for a portion of its operational history as a burning pit for tank bottom sludge. Ruin 2 was constructed and used as an oil-water separator which accepted water from the ring drain system around Tank 41.

DU 5-1 is located in the northwestern corner of Tank Farm 5. It includes a former OWS area, discharge pipe and discharge area. During part of its operational history the OWS was used as a burning chamber where tank bottom sludges were burned.

DU 4-1 and DU 5-1 contained no USTs, but contamination from previous sources was removed using TPH as an indicator of contamination. Because TPH was used to guide removal actions, confirmation sampling conducted after the removals and decommissioning of site structures was not deemed adequate by EPA to ensure that no residual risks were present. Therefore, this post-remediation data

gaps assessment was conducted and risks posed by the residual contamination remaining at DU 4-1 and DU 5-1 were evaluated.

8.3 FIELD INVESTIGATION

The Data Gaps Investigations field activities conducted included:

- drilling and soil sample collection,
- monitoring well installation and development,
- collection of synoptic water level measurements,
- groundwater sampling,
- surface water and sediment sampling, and
- land surveying.

Twenty four soil borings were advanced at DU 4-1 and eleven were advanced at DU 5-1 for the purpose of collecting soil samples for laboratory analysis. A total of 66 soil samples were collected for laboratory analysis at DU 4-1 and 32 at DU 5-1. Seven borings in DU 4-1 and five borings in DU 5-1 were advanced for the construction of monitoring wells.

8.4 GEOLOGY AND HYDROGEOLOGY

Overburden materials at Tank Farm 4 vary between approximately 2 and 40 feet in thickness. Overburden thickness at Tank Farm 5 ranges from approximately 5 to 40 feet. The thickness of the overburden tends to increase in flat lying areas and becomes thinner on slopes.

The overburden materials are classified as either glacial till or fill. The overburden is generally a mixture of silt, sand and gravel and also boulders, and gravel sized pieces of bedrock. The fill is difficult to distinguish from the till because fill is generally overburden materials from another part of the site or from the blasting of the bedrock during tank installation.

During the data gaps assessment, the bedrock within DU 4-1 and DU 5-1 was characterized as fine-grained foliated metamorphic rock consisting of shale and phyllite. The bedrock is soft and the upper surface of the bedrock is weathered. The depth to weathered bedrock within DU 4-1 varied from 2 to 16 feet in DU 4-1 and between 1 and 9 feet in DU5-1.

Groundwater flow across Tank Farm 4 is generally westerly. DU 4-1 is located in the most downgradient section of Tank Farm 4, so that groundwater flow entering DU 4-1 is coming from the other parts of Tank

Farm 4. The water table is at between approximately 1.3 feet above the ground surface to 12 feet below the ground surface. Artesian conditions were observed around Ruin 2 and in the wetland.

Groundwater flow across Tank Farm 5 is generally northwesterly towards Narragansett Bay. Depth to groundwater ranged from approximately 5 to 15 feet. Groundwater flow across the site is in a north-westerly direction, generally following topography.

8.5 NATURE AND EXTENT OF CONTAMINATION

Section 4 of this report presents in detail the findings of extent of contamination in soil, groundwater, sediment and surface water, as summarized below.

8.5.1 DU 4-1

Analytical results from soil samples collected from within DU 4-1 show few contaminants at low concentrations. The analyte groups with more screening level exceedances are SVOCs (mainly PAHs) and metals. However, sample stations located around the Ruin 1 excavation area do show elevated levels of benzo(a)pyrene and benzo(b)fluoranthene but there are also other sample locations which are not in the vicinity of the excavation area that have similar concentrations. The one exception is location SB934, located on the east (upgradient) edge of the excavation area. This location appears to be close to the reported terminus of one of the pipes that discharged from the Ruin 1 area. The surface soil sample from SB934 has concentrations of PAHs orders of magnitude greater than were found in other soil samples.

The two metals in soil with concentrations consistently above screening criteria were arsenic and chromium. Nevertheless, concentrations of chromium, both in surface and subsurface soils, are within site background levels and are not considered to be site related. Arsenic is noted to be elevated in soil on Aquidneck Island, although the site concentrations are statistically greater than background levels in similar soil types.

Sediment collected from DU 4-1 showed essentially the same results as soil. Few SVOCs were detected, and benzo(a)pyrene, which was detected at elevated levels in every sample collected, showed no clear distribution that suggests an uncontrolled source. Arsenic and chromium were found throughout the entire decision unit and at similar concentrations throughout.

Surface water samples showed arsenic present above RSLs for tap water in four of the ten samples and one PAHs (benzo(a) anthracene) present above RSL for tap water in two of the ten samples.

Groundwater samples showed the metals arsenic, cobalt and manganese above the RSLs for tap water in between four and seven of the samples. PCBs and endrin aldehyde, both reported to be present in one aliquot of a field duplicate pair was attributed to cross contamination during the sample preparation step at the analytical laboratory.

8.5.2 DU 5-1

Analytical results from soil samples collected from DU 5-1 indicated few contaminants at concentrations above the screening levels. There were a few samples with elevated levels of PAHs such as benzo(a)pyrene. Arsenic and chromium were found across the entire site in both surface and subsurface soil at concentrations above RSLs. Concentrations of chromium are within site background levels and are not considered to be site related. Arsenic is noted to be elevated in soil on Aquidneck Island, although the site concentrations are statistically greater than background levels in similar soil types.

Sediment samples collected from within DU 5-1 did show elevated levels of PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene) above RSLs. These PAHs were detected at in most sediment samples that were collected. Arsenic and chromium were detected above RSLs in all samples collected.

Some aqueous samples did show elevated levels of the same PAHs that were detected in the soil and sediment samples. Surface water samples contained PAHs (benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene and naphthalene) and chloroform above the RSL for tap water in some locations. Arsenic was detected above RSLs in surface water samples.

Arsenic, cobalt and manganese were also detected in groundwater samples above RSLs. In addition, benzene was detected above the RSL for tap water, but below the MCL, in one groundwater sample downgradient of the OWS. No compounds were detected above MCLs in DU 5-1 groundwater.

8.6 FATE AND TRANSPORT

Section 5 of this report presents in detail the fate and transport processes that are likely to affect contaminants found at the site.

8.6.1 DU 4-1

Residual concentrations of PAHs remaining in soils and sediment after removal actions in this area are relatively non-volatile organic compounds and are generally insoluble in water. Similarly, PCBs are

relatively non-volatile and are expected to adsorb to soil where they are likely to remain bound. Metals are likely to accumulate within the wetland areas and remain chemically and physically bound within the sediment in a reducing environment.

Concentrations of metals in soil and sediment are mostly attributable to background conditions, with the exception of arsenic in surface soil and manganese in subsurface soil in the MmA soil type, and cobalt in all of the soil types. Metals in groundwater may be present as a result of reducing conditions.

8.6.2 DU 5-1

Residual concentrations of PAHs which are presumed to be remaining in soils and sediment after removal actions in this area are relatively non-volatile organic compounds and are generally insoluble in water. Presence of PAHs in surface water can be attributed to suspended sediments, and may be mobilized through heavy surface water flow through the area. Metals are likely to accumulate within the wetland and remain chemically and physically bound within the sediment in a reducing environment.

Concentrations of metals in site media are mostly attributable to background conditions, with the exception of arsenic, cobalt, iron and manganese in subsurface soil, and arsenic in Ne surface soils. Metals in groundwater may be present as a result of reducing conditions.

8.7 HUMAN HEALTH RISK ASSESSMENT

The HHRA provided in Section 6 evaluated receptor exposure under residential and non-residential (industrial and recreational) land use scenarios.

At DU 4-1, PAHs, dioxins/furans, and metals were identified as COPCs in soil. Naphthalene and metals were identified as COPCs in groundwater. PAHs and metals were identified as COPCs in surface water and PAHs, dioxins/furans, and metals were identified as COPCs in sediment. At DU 5-1, PAHs, Aroclor-1254, dioxins/furans, and metals were identified as COPCs in soil. Benzene and metals were identified as COPCs in groundwater. Chloroform, PAHs, and metals were identified as COPCs in surface water and PAHs, dioxins/furans, and metals were identified as COPCs in sediment.

The following receptors were included:

- Future construction workers;
- Current and future industrial workers;
- Current and future adolescent trespasser;

- Current and future child and adult recreational (unrestricted) users; and
- Future child and adult residents.

All receptors were evaluated for exposures to surface soil and all soil (soil from ground surface to a total depth of 10 feet). Construction workers and hypothetical residents were also evaluated for exposures to groundwater. Adolescent trespassers and recreational users were also evaluated for exposures to surface water and sediment.

8.7.1 DU 4-1 HHRA Results

The HHRA for DU 4-1 indicates there are potential risks to some receptors from exposure to surface soil, all soil and groundwater. There are no risks to any receptors for exposure to surface water or sediment. The following potential risks were identified, based upon the indicated COCs, as detailed in Table 6-32:

- Construction workers could be affected by exposure to manganese in all soil.
- Lifelong recreational (unrestricted) users could be affected by exposure to carcinogenic PAHs in surface soil
- Child residents could be affected by exposure to carcinogenic PAHs and arsenic in soil, and arsenic, cobalt, iron, and manganese in groundwater.
- Child recreational (unrestricted) users could be affected by exposure to carcinogenic PAHs in surface soil.
- Adult residents could be affected by exposure to carcinogenic PAHs in soil, and arsenic and manganese in groundwater.
- Lifelong residents could be affected by exposure to carcinogenic PAHs and arsenic in soil and by exposure to arsenic in groundwater, in addition to the child and adult resident risks stated above.

8.7.2 DU 5-1 HHRA Results

The HHRA for DU 5-1 indicates that there are potential risks for some receptors from exposure to all soil and groundwater. There are no risks for any receptors for exposure to surface soil, surface water or sediment. The following potential risks were identified for exposure to the indicated COCs as detailed in Table 6-34:

- Construction workers could be affected by exposure to manganese in soil.
- Child residents could be affected by exposure to arsenic, cobalt, iron, and manganese in groundwater.
- Adult residents could be affected by exposure to cobalt, and manganese in groundwater.
- Lifelong residents could be affected by exposure to arsenic in groundwater, in addition to the child and adult resident risks stated above.

8.8 ECOLOGICAL RISK ASSESSMENT

The screening level ecological risk assessment was performed to identify the potential for ecological risks to the terrestrial and aquatic receptors exposed to contaminants associated with DU 4-1 and DU 5-1. This assessment was a “screening” assessment, to determine contaminants of potential ecological concern, and to assist in determining whether a baseline ecological risk assessment (BERA) should be conducted.

Several chemicals were retained as COPCs as a result of the initial screening of surface soil. These chemicals were further evaluated as a part of the Step 3a refinement, the first step of the BERA. After a review of alternate toxicity information for the initial COPCs was conducted, COPC concentrations were compared to the alternate toxicity information.

The following PAHs were retained as COPCs for soil invertebrates at DU 4-1: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene were retained because the maximum detected concentrations exceed screening levels. All of these maximum concentrations occurred at a single sampling location - TF4-SB-934-0001. This location is bounded on the west by the soil excavation area. Manganese was retained as a COPC for sediment invertebrates at DU 4-1. No chemicals were retained as COPCs for aquatic organisms. The chemicals initially selected as COPCs for risks to wildlife were also further evaluated in Step 3a using conservative and less conservative exposure assumptions. Using this scenario, risks are still possible to insectivorous mammals and birds from benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and pyrene and are retained as COPCs in DU 4-1. This possible risk from these four COPCs is possible due to the concentrations in the one sample TF4-SB-934-0001. No chemicals were retained as COPCs for wildlife in Tanks Farm 4-1 sediment or Tanks Farm 5-1 surface soil or sediment.

Based upon the limited potential ecological risks, the overall low concentrations of most COPCs, and the observation that most of those potential risks are due to PAHs present in a single soil sampling location at DU 4-1, it is concluded that it is not considered necessary to conduct a BERA.

8.9 RECOMMENDATIONS

The objectives of this data gaps assessment were to estimate the risk (if any) that remains to human health and ecological receptors from residual contaminants associated with CERCLA releases that may be present after removal actions conducted to address former burn chambers, associated piping and discharge areas, and to provide a baseline of data to establish a path forward for DU 4-1 and DU 5-1.

Based on the risks estimated to the residential, recreational and construction worker receptors, it is recommended that both sites be carried forward to a Feasibility Study (FS) step. It is recommended that the FS include a risk management evaluation to determine which COPCs are appropriate to be considered COCs, (contaminants present as a result of releases at the site that need to be addressed under CERCLA). Based on the distribution and concentrations of the COCs, the FS will provide an evaluation of different remedial alternatives to address the risk from the COCs to the receptors.

TABLES

TABLE 2-1
SOIL SAMPLE ANALYSIS SUMMARY
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

LOCATION	INTERVAL	SAMPLE ID	DATE COLLECTED	HEADSPACE SCREENING (ppm)	ANALYSIS							
					VOCs	SVOCs	Pesticides	PCBs	Metals	ExTPH	Dioxins	pH, TOC
TF4-SB920	0-2	TF4-SB920-0001	4/22/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB920-0204	4/22/2010	0.0	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB920-0810	4/22/2010	0.0	X	X	X	X	X	X		X
TF4-SB921	0-2	TF4-SB921-0001	4/22/2010	0.7	X	X	X	X	X	X	X	
	2-4	TF4-SB921-0204	4/22/2010	0.6	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB921-0810	4/22/2010	0.0	X	X	X	X	X	X		X
TF4-SB922	0-2	TF4-SB922-0001	4/19/2010	0.1	X	X	X	X	X	X	X	
	2-4	TF4-SB922-0204	4/19/2010	0.3	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8	TF4-SB922-0608	4/19/2010	0.0	X	X	X	X	X	X		X
TF4-SB923	0-2	TF4-SB923-0001	4/19/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB923-0204	4/19/2010	0.1	X	X	X	X	X	X	X	
	4-6	TF4-SB923-0406	4/19/2010	0.2	X	X	X	X	X	X		X
TF4-SB924	0-2	TF4-SB924-0001	4/20/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB924-0204	4/20/2010	0.0	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB924-0810	4/20/2010	0.0	X	X	X	X	X	X		X
TF4-SB925	0-2	TF4-SB925-0001	4/23/2010	2.3	X	X	X	X	X	X	X	
	2-4	TF4-SB925-0204	4/23/2010	4.0	X	X	X	X	X	X	X	
	4-6			0.2								
	6-8	TF4-SB925-0608	4/23/2010	0.2	X	X	X	X	X	X		X
TF4-SB926	0-2	TF4-SB926-0001	4/19/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB926-0204	4/19/2010	0.2	X	X	X	X	X	X	X	
	4-6	TF4-SB926-0406	4/19/2010	0.0	X	X	X	X	X	X		X
TF4-SB927	0-2	TF4-SB927-0001	4/19/2010	0.0	X	X	X	X	X	X	X	

TABLE 2-1
SOIL SAMPLE ANALYSIS SUMMARY
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

LOCATION	INTERVAL	SAMPLE ID	DATE COLLECTED	HEADSPACE SCREENING (ppm)	ANALYSIS							
					VOCs	SVOCs	Pesticides	PCBs	Metals	ExTPH	Dioxins	pH, TOC
TF4-SB928	0-2	TF4-SB928-0001	4/15/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB928-0204	4/15/2010	0.2	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB928-0810	4/15/2010	0.2	X	X	X	X	X	X		X
TF4-SB929	0-2	TF4-SB929-0001	4/23/2010	0.3	X	X	X	X	X	X	X	
	2-4	TF4-SB929-0204	4/23/2010	0.1	X	X	X	X	X	X	X	
	4-6			0.1								
	6-8	TF4-SB929-0608	4/23/2010	0.0	X	X	X	X	X	X		X
TF4-SB930	0-2	TF4-SB930-0001	4/23/2010	1.0	X	X	X	X	X	X	X	
	2-4	TF4-SB930-0204	4/23/2010	0.2	X	X	X	X	X	X	X	
	4-6			0.2								
	6-8	TF4-SB930-0608	4/23/2010	0.3	X	X	X	X	X	X		X
	8-10			0.2								
TF4-SB931	0-2	TF4-SB931-0001	4/20/2010	0.0	X	X	X	X	X	X	X	
TF4-SB932	0-2	TF4-SB932-0001	4/20/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB932-0204	4/23/2010	0.0	X	X	X	X	X	X	X	
	4-6			0.0								
	6-7	TF4-SB932-0607	4/23/2010	0.0	X	X	X	X	X	X		X
TF4-SB933	0-2	TF4-SB933-0001	4/20/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB933-0204	4/23/2010	0.1	X	X	X	X	X	X	X	
	4-6			0.2								
	6-8	TF4-SB933-0608	4/23/2010	0.1	X	X	X	X	X	X		X
TF4-SB934	0-2	TF4-SB934-0001	4/15/2010	0.2	X	X	X	X	X		X	X
	2-4	TF4-SB934-0204	4/15/2010	0.2	X	X	X	X	X		X	
	4-6			0.2								
	6-8			0.1								
	8-10	TF4-SB934-0810	4/15/2010	0.1	X	X	X	X	X			X

TABLE 2-1
SOIL SAMPLE ANALYSIS SUMMARY
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

LOCATION	INTERVAL	SAMPLE ID	DATE COLLECTED	HEADSPACE SCREENING (ppm)	ANALYSIS							
					VOCs	SVOCs	Pesticides	PCBs	Metals	ExTPH	Dioxins	pH, TOC
TF4-SB935	0-2	TF4-SB935-0001	4/14/2010	0.0	X	X	X	X	X		X	
	2-4	TF4-SB935-0204	4/14/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB935-0810	4/14/2010	0.0	X	X	X	X	X			X
TF4-SB936	0-2	TF4-SB936-0001	4/14/2010	0.0	X	X	X	X	X		X	
	2-4	TF4-SB936-0204	4/14/2010	0.0	X	X	X	X	X		X	
	4-6											
	6-8											
	8-10	TF4-SB936-0810	4/14/2010	0.0	X	X	X	X	X			X
TF4-SB937	0-2	TF4-SB937-0001	4/22/2010		X	X	X	X	X	X	X	
	2-3.5	TF4-SB937-0204	4/22/2010		X	X	X	X	X	X	X	
TF4-SB938	0-2	TF4-SB938-0001	4/22/2010	0.5	X	X	X	X	X	X	X	
	2-4	TF4-SB938-0204	4/22/2010	0.0	X	X	X	X	X	X		
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB938-0810	4/22/2010	0.1	X	X	X	X	X	X		X
TF4-SB939	0-2	TF4-SB939-0001	4/22/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB939-0204	4/22/2010	0.0	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB939-0810	4/22/2010	0.0	X	X	X	X	X	X		X
TF4-SB940	0-2	TF4-SB940-0001	4/22/2010	3.5	X	X	X	X	X		X	
	2-4	TF4-SB940-0204	4/22/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB940-0810	4/22/2010	0.0	X	X	X	X	X			X
TF4-SB941	0-2	TF4-SB941-0001	4/15/2010	0.8	X	X	X	X	X		X	
	2-4	TF4-SB941-0204	4/15/2010	0.2	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB941-0810	4/15/2010	0.0	X	X	X	X	X			X
TF4-SB942	0-2	TF4-SB942-0001	4/20/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF4-SB942-0204	4/20/2010	0.0	X	X	X	X	X	X	X	

TABLE 2-1
SOIL SAMPLE ANALYSIS SUMMARY
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

LOCATION	INTERVAL	SAMPLE ID	DATE COLLECTED	HEADSPACE SCREENING (ppm)	ANALYSIS							
					VOCs	SVOCs	Pesticides	PCBs	Metals	ExTPH	Dioxins	pH, TOC
TF4-SB943	0-2	TF4-SB943-0001	4/15/2010	11.6	X	X	X	X	X		X	
	2-4	TF4-SB943-0204	4/15/2010	0.1	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF4-SB943-0810	4/15/2010	0.0	X	X	X	X	X			X
TF5-SB966	0-2	TF5-SB966-0001	4/14/2010	0.0	X	X	X	X	X	X	X	
	2-4			0.0								
	4-6	TF5-SB966-0406	4/14/2010	3.3	X	X	X	X	X	X	X	
	6-8	TF5-SB966-0608	4/14/2010	14.9	X	X	X	X	X	X		X
TF5-SB967	0-2	TF5-SB967-0001	4/14/2010	0.0	X	X	X	X	X	X	X	
	2-4	TF5-SB967-0204	4/14/2010	0.0	X	X	X	X	X	X	X	
TF5-SB968	0-2	TF5-SB968-0001	4/12/2010	0.0	X	X	X	X	X		X	
	2-4	TF5-SB968-0204	4/12/2010	0.0	X	X	X	X	X		X	
	4-6			0.5								
	6-8			0.6								
	8-10	TF5-SB968-0810	4/12/2010	0.2	X	X	X	X	X			
TF5-SB969	0-2	TF5-SB969-0001	4/12/2010	9.3	X	X	X	X	X		X	
	2-4	TF5-SB969-0204	4/12/2010	0.3	X	X	X	X	X		X	
	4-6			0.7								
	6-8			0.0								
	8-10	TF5-SB969-0810	4/12/2010	0.0	X	X	X	X	X			
TF5-SB970	0-2	TF5-SB970-0001	4/13/2010	0.0	X	X	X	X	X		X	
	2-4	TF5-SB970-0204	4/13/2010	0.0	X	X	X	X	X	X	X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF5-SB970-0810	4/13/2010	0.0	X	X	X	X	X	X		

TABLE 2-1
SOIL SAMPLE ANALYSIS SUMMARY
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

LOCATION	INTERVAL	SAMPLE ID	DATE COLLECTED	HEADSPACE SCREENING (ppm)	ANALYSIS							
					VOCs	SVOCs	Pesticides	PCBs	Metals	ExTPH	Dioxins	pH, TOC
TF5-SB971	0-2	TF5-SB971-0001	4/13/2010	5.4	X	X	X	X	X		X	
	2-4	TF5-SB971-0204	4/13/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF5-SB971-0810	4/13/2010	0.0	X	X	X	X	X			
TF5-SB972	0-2	TF5-SB972-0001	4/12/2010	0.0	X	X	X	X	X		X	
	2-4	TF5-SB972-0204	4/12/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF5-SB972-0810	4/12/2010	0.0	X	X	X	X	X			
TF5-SB973	0-2	TF5-SB973-0001	4/12/2010	0.0	X	X	X	X	X		X	
	2-4	TF5-SB973-0204	4/12/2010	0.0	X	X	X	X	X		X	
	4-6			0.2								
	6-8			0.0								
	8-10	TF5-SB973-0810	4/12/2010	0.0	X	X	X	X	X			
TF5-SB974	0-2	TF5-SB974-0001	4/13/2010	0.0	X	X	X	X	X		X	
	2-4	TF5-SB974-0204	4/13/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF5-SB974-0810	4/13/2010	0.0	X	X	X	X	X			
TF5-SB975	0-2	TF5-SB975-0001	4/14/2010	0.0	X	X	X	X	X		X	
	2-4	TF5-SB975-0204	4/14/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF5-SB975-0810	4/14/2010	0.0	X	X	X	X	X			X
TF5-SB976	0-2	TF5-SB976-0001	4/13/2010	15.2	X	X	X	X	X		X	
	2-4	TF5-SB976-0204	4/13/2010	0.0	X	X	X	X	X		X	
	4-6			0.0								
	6-8			0.0								
	8-10	TF5-SB976-0810	4/13/2010	0.0	X	X	X	X	X			

VOCs = volatile organic compounds
SVOCs= semivolatile organic compounds
PCBs = polychlorinated biphenyls
ExTPH = extractable total petroleum hydrocarbons (C9 - C36)

TABLE 2-2
MONITORING WELL LOCATION AND RATIONALE SUMMARY
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT

Category	Location (Decision Unit)	Monitoring Well	Well Screen Interval (ft bgs)	Location
Tank Farm 4 Category 1 Decision Unit	DU 4-1	TF4-MW-921	13 - 28	Overburden/ bedrock interface well about 100 feet downgradient of former burn chamber and oil water separator (Ruin 1), and near former discharge pipe.
		TF4-MW-922	13 - 28	Bedrock well installed just downgradient of former burn chamber and oil water separator (Ruin 1).
		TF4-MW-920	30 - 40	Bedrock well installed just downgradient of the former burn chamber and oil water separator (Ruin 1).
		TF4-MW-914	6 - 16	Overburden/bedrock interface well installed at the northwest end of the wetland complex where discharge water from the oil water separators accumulated. Well to be screened across the water table.
		TF4-MW-912	3 - 6	Bedrock well installed at former oil water separator (Ruin 2).
		TF4-MW-913	5 - 10	Bedrock well installed at former oil water separator (Ruin 2).
		TF4-MW-919	10 - 20	Bedrock well installed downgradient of the former oil water separator known as Ruin 2.
Tank Farm 5 Category 1 Decision Unit	DU 5-1	TF5-MW-915	11 - 16	Bedrock well installed adjacent to the former pipeline of the former burn chamber/ oil water separator.
		TF5-MW-916	10 - 20	Bedrock well installed along the former pipeline from the former burn chamber/ oil water separator.
		TF5-MW-917	5 - 10	Well installed in the former burn chamber/ oil water separator.
		TF5-MW-924	11 - 16	Bedrock well installed at the former burn chamber/ oil water separator.
		TF5-MW-923	20 - 30	Bedrock well installed downgradient of the former burn chamber/oil water separator.

TABLE 2-3
WELL DEVELOPMENT STABILIZATION PARAMETERS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

	Well ID	Development Method	Time	Purge Rate mL/min	Volume Purged (gal)	Water Level (ft below TOR)	Temperature (C°)	pH	Conductivity (mS/cm)	Turbidity
TF4	MW912	pump and surge, Waterra	1112	1100	26	1.88	9.42	5.79	0.390	10
	MW913	pump and surge, Waterra	1300	1000	47.5	3.01	10.35	5.79	0.399	45.7
	MW914	pump and surge, Waterra	1618	1200	77.5	0.85	9.13	5.87	0.237	33
	MW919	pump and surge, Waterra	1740	1000	50	6.20	9.77	5.73	0.311	27.8
	MW920	pump and surge, Waterra	1125	250	8	18.10	11.45	6.32	0.443	50
	MW921	pump and surge, Waterra	1420	600	40	16.10	11.63	5.30	0.255	400
	MW922	pump and surge, Waterra	1230	300	5.5	11.44	9.78	5.71	0.288	340
TF5	MW915	pump and surge, Waterra	1550	800	32	4.39	10.04	5.96	0.336	21.4
	MW916	pump and surge, Waterra	0822	2000	3	16.80	9.85	4.22	0.277	314
	MW917	dry well								
	MW923	pump and surge, Waterra	0803	2000	26.5	dry	11.74	5.29	0.324	off scale
	MW924	pump and surge, Waterra	1110	150	20	13.14	11.46	6.06	0.429	38.4

mL/min milliliters per minute
gal = gallons
mS/cm = millisemens per centimeter
C° = degrees celcius
TOR = top of riser

TABLE 2-4
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

	SAMPLE ID	DATE COLLECTED	ANALYSIS							
			VOCs	SVOCs	Pesticides	PCBs	Metals (total)	Metals (dissolved)	ExTPH	PAHs
DU 4-1	TF4-MW-922-0510	5/10/2010	X	X	X	X	X			
	TF4-MW-921-0510	5/10/2010	X	X	X	X	X			
	TF4-MW-914-0510	5/11/2010	X	X	X	X	X			
	TF4-MW-920-0510	5/11/2010	X	X	X	X	X			
	TF4-MW-912-0510	5/12/2010	X	X	X	X	X			
	TF4-MW-913-0510	5/12/2010	X	X	X	X	X			
	TF4-MW-919-0510	5/12/2010	X	X	X	X	X			
DU 5-1	TF5-MW-923-0510	5/13/2010					X	X	X	X
	TF5-MW-924-0510	5/14/2010		X	X	X	X			
	TF5-MW-915-0510	5/17/2010	X	X	X	X	X			
	TF5-MW-916-0510	5/17/2010	X	X	X	X	X	X		
	TF5-MW-924-051810	5/18/2010	X							
	TF5-MW-923-051810	5/18/2010	X	X	X	X				

VOCs = volatile organic carbons
SVOCs = semivolatile organic carbons
PCBs = polychlorinated biphenyls
ExTPH = extractable total petroleum hydrocarbons
PAHs = polycyclic aromatic hydrocarbons

TABLE 2-5
SURFACE WATER AND SEDIMENT SAMPLE LOCATION RATIONALE
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

STATION	RATIONALE
TF4-SW/SD-901	Relocated from original location shown on Fig 12 of the SAP because original location was too far upstream and would have been irrelevant. New location is located downstream of the Ruin 2 area in a depositional area on the west bank of the stream
TF4-SW/SD-902	Relocated from original location shown on Fig 12 of the SAP because original location was too far upstream and would have been irrelevant. New location is located downstream of the Ruin 2 area in a depositional area on the west bank of the stream
TF4-SW/SD-903	Relocated from original location shown on Fig 12 of the SAP because original location was too far upstream and would have been irrelevant. New location is located at area where water from the wetland excavation area discharges into the stream.
TF4-SW/SD-904	Relocated from original location shown on Fig 12 of the SAP because original location was up the hill on the south side of the stream. New location is located on north side of stream island downstream of Ruin 2 area.
TF4-SW/SD-905	Collected in depositional area on east bank of stream, about 20ft downstream from concrete structure thought to be the Ruin 2 outfall
TF4-SW/SD-906	Relocated from original location shown on Fig 12 of the SAP because original location was located in an upland area. New location is located at the end of concrete structure thought to be the discharge pipe from Ruin 2
TF4-SW/SD-907	Located on west bank of stream in still water depositional area, downstream from Ruin 2 area
TF4-SW/SD-908	Located on east bank of stream in depositional area downstream from Ruin 2 area
TF4-SW/SD-909	Located in wetland northeast of stream, downgradient of Ruin 2
TF4-SW/SD-910	Located in large stand of common reed in low lying area that has potential for flooding during storm events, possible settlement of contaminants
TF4-SW/SD-911	Located down stream of the Ruin 2 area, in a depositional spot on the west bank of the stream
TF4-SW/SD-912	Located down stream of both the Ruin 1 and Ruin 2 areas at a depositional area where a discharge pipe from Ruin1 may have formerly been

TABLE 2-5
SURFACE WATER AND SEDIMENT SAMPLE LOCATION RATIONALE
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

STATION	RATIONALE
TF5-SW/SD-913	Located in small wetland area downgradient of former drainage pipe from the A-18 chamber and upgradient from the stream
TF5-SW/SD-914	Located on the south bank of the stream in depositional area downstream from the culvert that runs beneath the dirt access road
TF5-SW/SD-915	Located in mudflat/wetland area downgradient of dirt access road
TF5-SW/SD-916	Located furthest upstream about 15 feet downstream of culvert that runs beneath dirt access road, also area where potential runoff from OWS area could have discharged into stream
TF5-SW/SD-917	Located on top of west bank of stream in small discharge stream that drains water from the wetland/mudflat area NE of the stream into the main stream
TF5-SW/SD-918	Located in mudflat area next to a piece of a 55 gallon drum
TF5-SW/SD-919	Located downstream of wetland/mudflat area in depositional area
TF5-SW/SD-920	Located in very slow moving depositional area where sheen was observed on surface water during location selection site walk
TF5-SW/SD-921	located on north bank of stream in depositional area and downgradient from the corrugated shed
TF5-SW/SD-922	Located on the south bank of the stream in the area of the end of the OWS discharge pipe
TF5-SW/SD-923	Located in the center of the stream in the area of the end of the OWS discharge pipe
TF5-SW/SD-924	Located on the north bank of the stream in the area of the end of the OWS discharge pipe as well as down gradient from the corrugated shed

TABLE 2-6
SUMMARY OF FINAL STABILIZATION PARAMETERS FOR GROUNDWATER SAMPLES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

Well ID	Sample ID	Sample Date	Depth Sampled	Pump Type Bladder/Perislatic	Time Of Reading	Water Depth Below MP (ft)	Purge Rate (mL/min)	Cum. Volume Purged (gal)	Temp (^{o}C)	Spec. Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Comments
TF4-MW-912	TF4-MW-912-0510	5/12/2010	6.35	Bladder	0940	1.50	200	3.3	10.3	0.39	6.15	-42.8	0.12	0.58	
TF4-MW-913	TF4-MW-913-0510	5/12/2010	9.5	Bladder	0857	2.96	200	2.5	11.1	423.00	5.97	14	0.69	3.10	
TF4-MW-914	TF4-MW-914-0510	5/11/2010	13	Bladder	1050	1.21	150	4.0	10.5	0.29	6.11	86	0.29	8.60	clear, colorless
TF4-MW-919	TF4-MW-919-0510	5/12/2010	16	Bladder	1245	5.61	160	6.0	10.6	303.00	5.88	27	0.26	7.90	
TF4-MW-920	TF4-MW-920-0510	5/11/2010	37	Bladder	1200	14.90	75	2.8	12.6	0.43	6.18	42	0.45	5.31	clear, no odor or sheen
TF4-MW-921	TF4-MW-921-0510	5/10/2010	23	Bladder	1550	15.87	130	4.5	12.1	0.26	5.56	167	0.85	9.66	clear, colorless
TF4-MW-922	TF4-MW-922-0510	5/10/2010	25	Bladder	1540	12.85	100	4.0	12.0	0.30	6.13	67.9	0.31	3.48	
TF5-MW-915	TF5-MW-915-0510	5/14/2010	11	Bladder	1500	4.55	200	2.5	11.9	0.33	5.93	10	0.33	5.00	collected PAH, ExTPH, metals
	TF5-MW-915-0510	5/17/2010	13.9	Bladder	1200	4.48	200	2.0	11.9	0.30	6.39	-42.1	0.19	1.20	collected, VOC, SVOC, Pesticide/PCB, Metals Mercury, Metals
TF5-MW-916	TF5-MW-916-051710	Notes 1 and 2													
TF5-MW-923	TF5-MW-923-0510	5/13/2010	27.63	Bladder	1530	15.31	100	0	13.46	0.341	5.73	31.2	0.4	NM	collected PAH, ExTPH, Metals/Mercury, Metals, Dissolved Metals/Mercury, Dissolved Metals
	TF5-MW-923-051810	5/18/2010	25	Bladder	1040	13.45	70	0	12.98	0.344	5.7	62.3	4.69	20.2	collected VOC, SVOC, Pesticide/PCB
TF5-MW-924	TF5-MW-924-0510	5/14/2010	16.3	Bladder	1005	13.2	100	0	11.62	0.449	5.79	149	3.74	46.6	collected PAH, ExTPH, metals
	TF5-MW-924-051810	5/18/2010	13.5	Bladder	0845	13.2	100	0	12.27	0.425	6.31	180.5	7.14	13.8	collected VOCs

Notes:

1. On May 14, 2010 an attempt to sample well TF5-MW-916 with a bladder pump was made. Due to continual loss of water in the well, even at a very low pumping rate, the well was purged dry and returned to the following business day, May 17, 2010, and was sampled using a perastaltic pump. Most bottleware was filled on May 17 and the rest was filled on May 18. There was not enough water in the well to obtain parameters at the time of sampling.

2. NM = Not Measured

TABLE 2-7
SURFACE WATER FIELD PARAMETERS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

Location ID	Sample ID	Sample Date	Depth Sampled (inches)	Sample Method	Color	pH	Spec. Cond. (µS/cm)	Temp (°C)	Turbidity (NTU)	DO (mg/L)	Salinity (%)	ORP (mV)
SW-901	TF4-SW-901-0310	3/18/2010	4	Direct Dip Grab	Colorless	6.52	284	9.08	0.97	11.96	0.14	71.7
SW-902	TF4-SW-902-0310	3/18/2010	NA	Direct Dip Grab	Colorless	6.66	287	10.42	2.1	10.94	0.14	42.8
SW-903	TF4-SW-903-0310	3/18/2010	3	Direct Dip Grab	Colorless	7.57	347	14.9	0.0	10.72	0.17	-44.6
SW-904	TF4-SW-904-0310	3/18/2010	6	Direct Dip Grab	Colorless	6.28	290	5.77	1.3	12.01	0.14	61.7
SW-905	TF4-SW-905-0310	3/18/2010	6	Direct Dip Grab	Colorless	6.29	285	6.16	1.6	11.92	0.14	68.7
SW-906	TF4-SW-906-0310	3/18/2010	8	Direct Dip Grab	Colorless	6.02	291	6.78	1.5	11.57	0.14	54.5
SW-907	TF4-SW-907-0310	3/17/2010	8	Direct Dip Grab	Clear	6.16	232	6.36	NA	11.48	0.11	124.9
SW-908	TF4-SW-908-0310	3/17/2010	4	Direct Dip Grab	Clear	6.59	276	9.62	1.5	10.99	0.13	66.2
SW-911	TF4-SW-911-0310	3/17/2010	4	Direct Dip Grab	Clear	7.01	281	7.73	NA	11.93	0.13	57
SW-912	TF4-SW-912-0310	3/17/2010	9	Direct Dip Grab	Colorless	7.01	297	7.50	3.2	13.28	0.11	NA
SW-914	TF5-SW-914-0310	3/16/2010	6	Direct Dip Grab	Clear	6.55	294	9.45	0.85	11.11	0.14	110.4
SW-915	TF5-SW-915-0310	3/16/2010	1	Bottle Transfer	Light Brown	5.98	347	8.77	45	9.93	0.17	187.7
SW-916	TF5-SW-916-0310	3/16/2010	6	Direct Dip Grab	Clear	6.51	295	9.14	10	11.01	0.14	125.7
SW-917	TF5-SW-917-0310	3/16/2010	2	Direct Dip Grab	Clear	6.15	304	11.25	5.3	11.43	0.15	201.5
SW-918	TF5-SW-918-0310	3/16/2010	2	Bottle Transfer	Light Brown	5.79	295	12.97	50.7	2.42	0.14	131
SW-919	TF5-SW-919-0310	3/16/2010	4	Direct Dip Grab	Clear	5.95	227	8.50	2.35	10.01	0.11	103.9
SW-920	TF5-SW-920-0310	3/16/2010	4	Direct Dip Grab	Clear	6.35	295	8.05	1.72	11.34	0.14	114.2
SW-921	TF5-SW-921-0006	3/16/2010	8-10	Direct Dip Grab	Clear	6.42	293	7.87	1.5	11.65	0.14	145.9
SW-922	TF5-SW-922-0006	3/16/2010	4	Direct Dip Grab	Clear	6.82	287	6.36	0.75	12.26	0.14	40
SW-923	TF5-SW-923-0006	3/16/2010	8	Direct Dip Grab	Clear	6.57	291	6.56	2.28	12.28	0.14	127.1
SW-924	TF5-SW-924-0006	3/16/2010	6	Direct Dip Grab	Clear	6.31	293	6.92	0.97	11.03	0.14	63.8

Notes:
NA = not available
µS/cm = microseimens per centimeter
°C = degrees celcius
NTU = nephelometric turbidity unit
mg/L = milligrams per liter
mV = millivolts

TABLE 3-1
MONITORING WELL CONSTRUCTION DETAILS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

Decision Unit	Well Identification	Aquifer Screened	Well Inside Diameter (in)	Casing Elevation (ft)	Riser Elevation (ft)	Ground Elevation (ft)	Depth to Weathered Bedrock (ft - BGS)	Depth to Competent Bedrock or Refusal (ft-BGS)	Depth to Top of Well screen (ft-BGS)	Depth to Bottom of Well Screen (ft-BGS)	Elevation of Weathered Bedrock (ft)	Elevation of Competent Bedrock (ft)	Elevation of Top of Well Screen (ft)	Elevation of Bottom of Well Screen (ft)
4-1	TF4-MW-912	weathered bedrock	2	18.25	17.80	15.30	2	NA	3	6	13.3	NA	12.3	9.30
	TF4-MW-913	bedrock	2	17.96	17.81	15.00	4	5	5	10	11.0	10.0	10.0	5.00
	TF4-MW-914	overburden/ weathered bedrock	2	11.12	10.87	8.60	8	16	6	16	0.6	-7.4	2.6	-7.40
	TF4-MW-919	bedrock	2	17.23	16.91	14.20	4	7.5	10	20	10.2	6.7	4.2	-5.80
	TF4-MW-920	bedrock	2	33.43	33.26	30.80	8	10	30	40	22.8	20.8	0.8	-9.20
	TF4-MW-921	overburden/bedrock	2	29.99	29.89	27.40	16	19	13	28	11.4	8.4	14.4	-0.60
	TF4-MW-922	bedrock	2	33.75	33.67	31.20	8	12	13	28	23.2	19.2	18.2	3.20
4-2 and 4-3	TF4-45-MW-05D	bedrock	2	118.72	118.18	115.30	NA	27	27.0	42.0	NA	88.3	88.3	73.30
	TF4-45-MW-122	deep overburden	4	114.04	113.87	112.70	NA	NA	34.0	39.0	NA	NA	78.7	73.70
	TF4-45-MW-330	deepoverburden	2	112.91	112.83	110.70	39	NA	28.0	38.0	71.7	NA	82.7	72.70
	TF4-48-MW-408	deep overburden	2	69.82	69.76	67.00	43	NA	37.0	42.0	24.0	NA	30.0	25.00
	TF4-48-MW-409	deep overburden	2	63.66	63.29	61.10	NA	NA	17.0	22.0	NA	NA	44.1	39.10
	TF4-38-MW-418	deep overburden	2	72.38	72.24	69.90	42	NA	37.0	42.0	27.9	NA	32.9	27.90
	TF4-48-MW-422	deep overburden	2	68.12	67.98	65.90	26	NA	19.0	24.0	39.9	NA	46.9	41.90
	TF4-38-MW-605	shallow overburden	2	66.52	65.80	64.40	16	NA	6.0	16.0	48.4	NA	58.4	48.40
	TF4-42-MW-801	deep overburden	2	91.97	91.25	90.00	39	NA	29.0	39.0	51.0	NA	61.0	51.00
	TF4-45-MW-802	shallow overburden	2	113.15	112.83	111.20	NA	NA	14.5	39.5	NA	NA	96.7	71.70
	TF4-48-MW-805	shallow overburden	2	66.14	65.69	64.30	NA	NA	9.0	39.0	NA	NA	55.3	25.30
	TF4-45-MW-808	shallow overburden	2	110.84	110.50	108.90	20	NA	10.5	20.5	88.9	NA	98.4	88.40
	TF4-38-MW-903	bedrock	2	63.87	63.64	60.90	10	22	30.0	40.0	50.9	38.9	30.9	20.90
	TF4-38-MW-904	weathered bedrock	2	70.25	69.75	67.20	10	NA	29.0	39.0	57.2	NA	38.2	28.20
	TF4-38-MW-905	bedrock	2	75.83	75.13	73.60	7	15	39.0	49.0	66.6	58.6	34.6	24.60
	TF4-42-MW-906	bedrock	2	88.65	87.89	85.40	1	25	25.0	40.0	84.4	60.4	60.4	45.40
	TF4-42-MW-907	weathered bedrock	2	94.43	93.24	90.70	1	14	22.0	32.0	89.7	NA	68.7	58.70
	TF4-42-MW-908	weathered bedrock/ bedrock	2	93.7	93.54	91.30	20	34	32.0	42.0	71.3	57.3	59.3	49.30
	TF4-42-MW-909	bedrock	2	104.16	103.74	101.20	10	15	20.0	30.0	91.2	86.2	81.2	71.20
	TF4-48-MW-910	bedrock	2	72.47	71.86	69.30	8	10	35.0	45.0	61.3	59.3	34.3	24.30

TABLE 3-1
MONITORING WELL CONSTRUCTION DETAILS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

Decision Unit	Well Identification	Aquifer Screened	Well Inside Diameter (in)	Casing Elevation (ft)	Riser Elevation (ft)	Ground Elevation (ft)	Depth to Weathered Bedrock (ft - BGS)	Depth to Competent Bedrock or Refusal (ft-BGS)	Depth to Top of Well screen (ft-BGS)	Depth to Bottom of Well Screen (ft-BGS)	Elevation of Weathered Bedrock (ft)	Elevation of Competent Bedrock (ft)	Elevation of Top of Well Screen (ft)	Elevation of Bottom of Well Screen (ft)
5-1	TF5-MW-915	bedrock	2	15.13	14.91	12.40	2	6	11	16	10.4	6.4	1.4	-3.60
	TF5-MW-916	bedrock	2	37.6	37.53	35.10	2	9	10	20	33.1	26.1	25.1	15.10
	TF5-MW-917	shallow overburden	2	46.8	46.32	43.70	9	NA	5	10	34.7	NA	38.7	33.70
	TF5-MW-923	bedrock	2	44.87	44.78	42.40	3	8	20	30	39.4	34.4	22.4	12.40
	TF5-MW-924	bedrock	2	46	45.88	43.20	1	5	11	16	42.2	38.2	32.2	27.20
5-2 and 5-3	TF-5-MW-106	overburden	4	59.45	59.11	57.50	NA	23.5	12.0	22.0	NA	34.0	45.5	35.50
	TF5-MW-108	shallow overburden	4	61.29	60.77	59.20	NA	NA	7.0	17.0	NA	NA	52.2	42.20
	TF5-MW-200	deep overburden	4	55.53	55.12	53.10	20	21	16.0	21.0	33.1	32.1	37.1	32.10
	TF5-MW-207B	deep overburden	2	59.64	59.25	57.30	17	30	24.0	43.0	40.3	27.3	33.3	14.30
	TF5-MW-911	bedrock	2	64.77	64.66	61.80	3	18	18.0	21.0	58.8	43.8	43.8	40.80
	TF5-MW-918	bedrock	2	54.48	54.35	51.50	8	19	30.0	40.0	43.5	32.5	21.5	11.50
	TF5-MW-977	weathered bedrock/ bedrock	2	25.97	25.70	23.50	6	12	10.0	20.0	17.5	11.5	13.5	3.50
	TF5-MW-978	weathered bedrock/ bedrock	2	26.38	26.08	24.10	1	11.5	10.0	20.0	23.1	12.6	14.1	4.10
	TF5-MW-979	bedrock	2	26.39	26.12	23.60	2	12	25.0	35.0	21.60	11.60	-1.40	-11.40

Notes:
NA = Not Available
BGS = Below Ground Surface
The vertical datum for elevations is local mean low water.

TABLE 3-2
SYNOPTIC WATER LEVEL ROUND SUMMARY AND GROUNDWATER ELEVATIONS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Decision Unit	Well Number	Date	Time	Reference Point	Top of Casing Elevation	Top of PVC Elevation	Ground Elevation	Depth to Water	Groundwater Elevation
4-1	TF4-MW-912	5/3/10	1013	TPVC	18.25	17.8	15.30	1.19	16.61
	TF4-MW-913	5/3/10	1010	TPVC	17.96	17.81	15.00	2.48	15.33
	TF4-MW-914	5/3/10	0950	TPVC	11.12	10.87	8.60	0.92	9.95
	TF4-MW-919	5/3/10	1015	TPVC	17.23	16.91	14.20	5.36	11.55
	TF4-MW-920	5/3/10	1000	TPVC	33.43	33.26	30.80	9.5	23.76
	TF4-MW-921	5/3/10	0955	TPVC	29.99	29.89	27.40	15.24	14.65
	TF4-MW-922	5/3/10	0957	TPVC	33.75	33.67	31.20	5.7	27.97
4-2 and 4-3	TF4-45-MW-05D	5/3/10	1200	TPVC	118.72	118.18	115.30	26.12	92.06
	TF4-45-MW-122	5/3/10	1146	TPVC	114.04	113.87	112.70	15.93	97.94
	TF4-45-MW-330	5/3/10	1155	TPVC	112.91	112.83	110.70	21	91.83
	TF4-48-MW-408	5/3/10	1135	TPVC	69.82	69.76	67.00	20.34	49.42
	TF4-48-MW-409	5/3/10	1127	TPVC	63.66	63.29	61.10	14.39	48.90
	TF4-38-MW-418	5/3/10	1221	TPVC	72.38	72.24	69.90	16.35	55.89
	TF4-48-MW-422	5/3/10	1125	TPVC	68.12	67.98	65.90	18.45	49.53
	TF4-38-MW-605	5/3/10	1230	TPVC	66.52	65.8	64.40	11.1	54.70
	TF4-42-MW-801	5/3/10	1216	TPVC	91.97	91.25	90.00	20.04	71.21
	TF4-45-MW-802	5/3/10	1152	TPVC	113.15	112.83	111.20	21	91.83
	TF4-48-MW-805	5/3/10	1132	TPVC	66.14	65.69	64.30	16.3	49.39
	TF4-45-MW-808	5/3/10	1144	TPVC	110.84	110.5	108.90	21.51	88.99
	TF4-38-MW-903	5/3/10	1233	TPVC	63.87	63.64	60.90	10.62	53.02
	TF4-38-MW-904	5/3/10	1227	TPVC	70.25	69.75	67.20	13.89	55.86
	TF4-38-MW-905	5/3/10	1224	TPVC	75.83	75.13	73.60	19.03	56.10
	TF4-42-MW-906	5/3/10	1213	TPVC	88.65	87.89	85.40	30.45	57.44
	TF4-42-MW-907	5/3/10	1210	TPVC	94.43	93.24	90.70	30.03	63.21
	TF4-42-MW-908	5/3/10	1208	TPVC	93.7	93.54	91.30	30.3	63.24
	TF4-42-MW-909	5/3/10	1205	TPVC	104.16	103.74	101.20	24.83	78.91
	TF4-48-MW-910	5/3/10	1138	TPVC	72.47	71.86	69.30	21.88	49.98
5-1	TF5-MW-915	5/12/10	1558	TPVC	15.13	14.91	12.40	4.42	10.49
	TF5-MW-916	5/12/10	1601	TPVC	37.6	37.53	35.10	18.06	19.47
	TF5-MW-917	5/12/10	1605	TPVC	46.8	46.32	43.70	11.89	34.43
	TF5-MW-923	5/12/10	1603	TPVC	44.87	44.78	42.40	13.06	31.72
	TF5-MW-924	5/12/10	1607	TPVC	46	45.88	43.20	12.74	33.14
5-2 and 5-3	TF5-MW-106	NM	NM	NM	59.45	59.11	57.50	NM	NM
	TF5-MW-108	5/12/10	1617	TPVC	61.29	60.77	59.20	9.45	51.32
	TF5-MW-200	5/12/10	1619	TPVC	55.53	55.12	53.10	8.33	46.79
	TF5-MW-207B	5/12/10	1624	TPVC	59.64	59.25	57.30	12.45	46.80
	TF5-MW-911	5/12/10	1614	TPVC	64.77	64.66	61.80	12.14	52.52
	TF5-MW-918	5/12/10	1622	TPVC	54.48	54.35	51.50	9.61	44.74
	TF5-MW-977	5/12/10	1550	TPVC	25.97	25.7	23.50	14.36	11.34
	TF5-MW-978	5/12/10	1554	TPVC	26.38	26.08	24.10	14.87	11.21
	TF5-MW-979	5/12/10	1552	TPVC	26.39	26.12	23.60	14.3	11.82

Notes:

1. TPVC = Top of PVC riser pipe
   NM = Not Measured
2. Elevation data provided by Louis Federici & Associates of Providence, Rhode Island, who performed the survey in May 2010.
   Vertical datum is Local Mean Low Water.

TABLE 4-1
SCREENING CRITERIA FOR SOIL, SEDIMENT AND AQUEOUS SAMPLES
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	EPA RSL for Residential Use (soil/sed.)	EPA RSL for Industrial Use (soil/sed.)	EPA RSL Tap Water (aqueous)	EPA MCL (aqueous)
VOLATILES (UG/KG soil UG/L aqueous)				
1,2-DICHLOROBENZENE	1900000	9800000	NA	NA
ACETONE	61000000	630000000	NA	NA
CARBON DISULFIDE	820000	3700000	NA	NA
CHLOROFORM	NA	NA	0.19	80
TOTAL CHLORINATED VOCS	NA	NA	NA	NA
SEMIVOLATILES (UG/KG soil UG/L aqueous)				
2,4-DIMETHYLPHENOL	1200000	12000000	NA	NA
2-METHYLNAPHTHALENE	310000	4100000	150	NA
2-METHYLPHENOL	3100000	31000000	NA	NA
4-METHYLPHENOL	310000	3100000	NA	NA
ACENAPHTHENE	3400000	33000000	2200	NA
ACENAPHTHYLENE	3400000	33000000	2200	NA
ANTHRACENE	17000000	170000000	11000	NA
ATRAZINE	2100	7500	NA	NA
BENZO(A)ANTHRACENE	150	2100	0.029	NA
BENZO(A)PYRENE	15	210	0.003	0.2
BENZO(B)FLUORANTHENE	150	2100	0.029	NA
BENZO(G,H,I)PERYLENE	1700000	17000000	1100	NA
BENZO(K)FLUORANTHENE	1500	21000	0.29	NA
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	NA	NA
CARBAZOLE	NA	NA	NA	NA
CHRYSENE	15000	210000	2.9	NA
DIBENZO(A,H)ANTHRACENE	15	210	NA	NA
FLUORANTHENE	2300000	22000000	1500	NA
FLUORENE	2300000	22000000	1500	NA
HIGH MOLECULAR WEIGHT PAHS	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	150	2100	0.029	NA
LOW MOLECULAR WEIGHT PAHS	NA	NA	NA	NA
NAPHTHALENE	3600	18000	0.14	NA
PENTACHLOROPHENOL	3000	9000	NA	NA
PHENANTHRENE	1700000	17000000	1100	NA
PHENOL	18000000	180000000	NA	NA
PYRENE	1700000	17000000	1100	NA
TOTAL CARCINOGENIC PAHS-HALFND	15	210	0.003	NA
TOTAL CARCINOGENIC PAHS-POS	15	210	0.003	NA
TOTAL PAHS	NA	NA	NA	NA

TABLE 4-1
SCREENING CRITERIA FOR SOIL, SEDIMENT AND AQUEOUS SAMPLES
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	EPA RSL for Residential Use (soil/sed.)	EPA RSL for Industrial Use (soil/sed.)	EPA RSL Tap Water (aqueous)	EPA MCL (aqueous)
PESTICIDES/PCBS (UG/KG soil UG/L aqueous)				
4,4'-DDD	2000	7200	NA	NA
4,4'-DDE	1400	5100	NA	NA
4,4'-DDT	1700	7000	NA	NA
ALDRIN	29	100	NA	NA
ALPHA-BHC	77	270	NA	NA
AROCLOR-1260	220	740	NA	NA
ENDRIN ALDEHYDE	18000	180000	NA	NA
ENDRIN KETONE	18000	180000	NA	NA
GAMMA-CHLORDANE	1600	6500	NA	NA
TOTAL AROCLOR	220	740	NA	NA
TOTAL CHLORDANE	NA	NA	NA	NA
TOTAL DDD/DDE/DDT	NA	NA	NA	NA
METALS (MG/KG soil UG/L aqueous)				
ALUMINUM	77000	990000	37000	NA
ARSENIC	0.39	1.6	0.045	10
BARIUM	15000	190000	7300	2000
BERYLLIUM	160	2000	NA	NA
CADMIUM	70	800	NA	NA
CALCIUM	NA	NA	NA	NA
CHROMIUM	0.29	5.6	NA	NA
COBALT	23	300	11	NA
COPPER*	3100	41000	1500	1300
IRON	55000	720000	26000	NA
LEAD*	400	800	NA	15
MAGNESIUM	NA	NA	NA	NA
MANGANESE	1800	23000	NA	NA
MERCURY	5.6	34	NA	NA
NICKEL	1500	20000	730	NA
POTASSIUM	NA	NA	NA	NA
SELENIUM	NA	NA	180	50
SILVER	390	5100	NA	NA
SODIUM	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA
VANADIUM	390	5200	NA	NA
ZINC	23000	310000	NA	NA

Note: NA indicates either no criterion exisits, or there were no detections of that analyte for the specific media

* Copper and Lead have action levels, not MCLs

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928
SAMPLE DATE			4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/20/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
2-BUTANONE	28000000	200000000	5 U	5.7 UJ	4.9 U	5.6 U	3 J	5.6 U	9.6	150	5.3 U
ACETONE	61000000	630000000	8.4 J	5.7 UJ	4.9 UJ	6.2 J	20 J	5.6 UJ	31 J	56 J	160 J
BTEX			2 J	5.7 U	1.2 J	2 J	5.2 U	5.6 U	2 J	7.7 U	5.3 U
M+P-XYLENES			2 J	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U
TOLUENE	5000000	45000000	5 U	5.7 U	1.2 J	2 J	5.2 U	5.6 U	2 J	7.7 U	5.3 U
TOTAL XYLENES	630000	2700000	2 J	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U
SEMIVOLATILES (UG/KG)											
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	330 UJ	420 UJ	500 UJ	4.7 UJ	4.8 UJ	500 UJ	490 UJ	450 UJ
2-CHLOROPHENOL	390000	5100000	5.4	3.3 U	4.3 U	5.1 U	4.7 U	6.6	5.1 U	5 U	4.5 U
2-METHYLNAPHTHALENE	310000	4100000	5.4 J	3.3 UJ	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.7 J
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.3 UJ	420 U	500 U	4.7 U	4.8 U	500 U	490 U	450 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.3 UJ	4.3 UJ	5.1 UJ	4.7 U	4.8 U	5.1 UJ	5 UJ	4.5 UJ
ACENAPHTHENE	3400000	33000000	6.2	6.8	4.3 U	5.1 U	6.4	4.8 U	5.1 U	5 U	4.5 U
ACENAPHTHYLENE	3400000	33000000	24	35	6.5	34	19	4.8 U	31	14	31
ANTHRACENE	17000000	170000000	48	37	6.1	25	38	4.8 U	28	21	69
BENZO(A)ANTHRACENE	150	2100	160	150	29	94	130	17	110	48	160
BENZO(A)PYRENE	15	210	130	130	34 J	130 J	120 J	15 J	150 J	40 J	130
BENZO(B)FLUORANTHENE	150	2100	210	170	60 J	170 J	190 J	27 J	220 J	67 J	230 J
BENZO(G,H,I)PERYLENE	1700000	17000000	72	98	28	110	84	13	120	47	86
BENZO(K)FLUORANTHENE	1500	21000	210	180	21	130	83	17	130	30	170 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928
SAMPLE DATE			4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/20/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	330 U	420 U	130 J	470 U	480 U	77 J	490 U	450 U
CARBAZOLE			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U
CHRYSENE	15000	210000	160	140	32	150	130	19	150	53	180
DIBENZO(A,H)ANTHRACENE	15	210	34	47	7.1 J	25 J	24 J	4.8 U	29 J	16 J	24 J
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	420 U	500 U	470 U	78 J	500 U	490 U	450 U
FLUORANTHENE	2300000	22000000	160	210	57	220	230	33	240	68	290
FLUORENE	2300000	22000000	11	11	4.3 U	8.4	12	4.8 U	10	5 U	12
HIGH MOLECULAR WEIGHT PAHS			1360	1420	341 J	1310 J	1260 J	181 J	1460 J	461 J	1580 J
INDENO(1,2,3-CD)PYRENE	150	2100	72	87	25 J	90 J	74 J	11 J	110 J	33 J	75 J
LOW MOLECULAR WEIGHT PAHS			195 J	194 J	34.6	149	195	14	169	65	222 J
NAPHTHALENE	3600	18000	6.2	4.5	4.3 U	5.8 U	4.7 U	4.8 U	5.1 U	5 U	5
PHENANTHRENE	1700000	17000000	94	100	22	82	120	14	100	30	100
PHENOL	18000000	180000000	31	26	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.5 U
PYRENE	1700000	17000000	150	210	48	190	200	29	200	59	240
TOTAL CARCINOGENIC PAHS-HALFND	15	210	976	904	208 J	789 J	751 J	108 J	899 J	287 J	969 J
TOTAL CARCINOGENIC PAHS-POS	15	210	976	904	208 J	789 J	751 J	106 J	899 J	287 J	969 J
TOTAL PAHS			1550 J	1620 J	376 J	1460 J	1460 J	195 J	1630 J	526 J	1810 J
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	3.3 U	6.4 J	4.3 U	5.1 U	6	4.8 U	5 U	5 U	35
4,4'-DDE	1400	5100	3.3 U	10 J	4.3 U	9.9	4.8 U	4.8 U	5.1 J	5 U	4.6 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 UJ
BETA-BHC	270	960	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928
SAMPLE DATE			4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/20/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
DELTA-BHC	77	270	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U
ENDRIN	18000	180000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U
ENDRIN KETONE	18000	180000	3.3 U	3.7 J	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U
TOTAL DDD/DDE/DDT			3.3 U	16.4 J	4.3 U	9.9	6	4.8 U	5.1 J	5 U	35 J
TOXAPHENE	440	1600	170 U	170 U	220 U	260 U	240 U	250 U	260 U	260 U	240 J
METALS (MG/KG)											
ALUMINUM	77000	990000	9860	13200	8920	13000	11700	11800 J	11800	15200	8870
ARSENIC	0.39	1.6	8.4 J	10.2 J	6.7 J	13.7 J	8.2 J	6.7 J	15.4	13.3 J	9.2 J
BARIUM	15000	190000	33	42.6	24.1	43.6	40.1	30.1	37.4	56.7	27.1
BERYLLIUM	160	2000	0.47	0.41	0.14 J	0.21 J	0.21 J	0.3	0.096 J	0.48 J	0.67 J
CADMIUM	70	800	0.29	0.4	0.048 J	0.26 J	0.027 J	0.12 J	0.058 J	0.013 U	0.23 J
CALCIUM			608 J	606 J	5.6 UJ	459 J	294 J	171 J	393 J	168 J	845 J
CHROMIUM	0.29	5.6	12.1 J	13.7 J	9.3	14.8	13.7	11	12	20.8	13.8
COBALT	23	300	15.1 J	16.1 J	10.2	14.4	13.4	4.9 J	8.4	13.1	13.7 J
COPPER	3100	41000	19.2 J	21.4 J	15	25.2	20.3	8.6	14.5	8	18.1 J
IRON	55000	720000	37800	37900	22800	33600	34400	21100	20600	33300	35100
LEAD	400	800	25.8 J	24.5 J	24.8 J	63.5 J	21.8 J	26.2 J	33.4 J	19.3 J	24.4
MAGNESIUM			1720	2660	2040	2810	2620	1830	2120	3040	1790 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928
SAMPLE DATE			4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/20/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
MANGANESE	1800	23000	558 J	293 J	439	583	501	144	255	209	368
MERCURY	5.6	34	0.07	0.084	0.039 J	0.14	0.041 J	0.07	0.1	0.086	0.034 UJ
NICKEL	1500	20000	27.3	32.3	13.5 J	24.4 J	27.3 J	13.6 J	18.5 J	36.7 J	27.9
POTASSIUM			325 J	418 J	433 J	454 J	440 J	240	293 J	364 J	235 J
SELENIUM	390	5100	1.1 J	1.4 J	0.82 J	1.1 U	0.98 U	1.8	1.2 U	0.77 U	4.4 UJ
SILVER	390	5100	0.072 U	0.082 U	0.067 U	0.11 U	0.1 U	0.093 UJ	0.12 U	0.078 U	0.093 UJ
SODIUM			49.1	61.6	46.6 J	137 J	68 J	43 J	45.5 J	77.2 J	45 J
THALLIUM			0.22 U	0.25 U	0.21 U	0.33 U	0.3 U	0.28 U	0.36 U	0.24 U	2.6
VANADIUM	390	5200	20.4	23.6	19.4	28.7	23.7	26.2	21.3	37.6	21.8
ZINC	23000	310000	90.5	98.7	41 J	99.6 J	78.2 J	36.7 J	64.7 J	58.9 J	115
MISCELLANEOUS PARAMETERS (S.U.)											
PH			NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			3600 J	3920 J	3870 J	3190 J	5880 J	3840 J	4250 J	5270 J	5710 J
1,2,3,4,6,7,8,9-OCDF			3.47 J	1.75 J	2.72 J	16.1	3.63 J	2.09 J	14.1	3.19 J	4.91 J
1,2,3,4,6,7,8-HPCDD			41	38.5	27	65.1	45.4	39.9	79.7	64.3	53.5
1,2,3,4,6,7,8-HPCDF			1.23 J	1.77 J	1.25 J	7.2	2.72 J	1.23 J	6.55	1.79 J	2.38 U
1,2,3,4,7,8,9-HPCDF			0.103 J	0.0875 U	0.0992 J	0.689 J	0.0687 U	0.182 J	0.419 J	0.151 J	0.249 J
1,2,3,4,7,8-HXCDD			0.395 J	0.364 J	0.129 J	0.89 J	0.34 J	0.358 J	1.15 J	0.602 J	0.597 J
1,2,3,4,7,8-HXCDF			0.283 J	0.386 J	0.266 J	1.09 J	0.327 J	0.432 J	0.759 J	0.554 J	0.671 J
1,2,3,6,7,8-HXCDD			0.569 J	0.59 J	0.305 J	1.8 J	0.721 J	0.577 J	2.24 J	1.02 J	0.864 J
1,2,3,6,7,8-HXCDF			0.15 J	0.23 J	0.151 J	0.727 J	0.19 J	0.198 J	0.565 J	0.28 J	0.333 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928
SAMPLE DATE			4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/20/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,7,8,9-HXCDD			0.592 J	0.844 J	0.247 J	2.09 J	0.817 J	0.644 J	2.34 J	1.36 J	1.07 J
1,2,3,7,8-PECDD			0.22 J	0.0822 U	0.0960 U	0.537 J	0.167 J	0.136 J	0.562 J	0.251 J	0.336 J
1,2,3,7,8-PECDF			0.163 J	0.0894 U	0.103 U	0.391 J	0.0553 U	0.0385 U	0.191 J	0.134 J	0.213 J
2,3,4,6,7,8-HXCDF			0.169 J	0.221 J	0.142 J	0.832 J	0.168 J	0.157 J	0.845 J	0.431 J	0.303 J
2,3,4,7,8-PECDF			0.142 J	0.205 J	0.102 U	0.435 J	0.0546 U	0.0799 J	0.396 J	0.261 J	0.28 J
2,3,7,8-TCDD	4.5	18	0.0547 U	0.0939 U	0.0863 U	0.128 U	0.0621 U	0.0635 U	0.0543 U	0.0569 U	0.0517 U
2,3,7,8-TCDF			0.258 J	0.158 U	0.140 U	0.617 J	0.331 J	0.377 J	0.676 J	0.561 J	0.606 J
TOTAL HPCDD			128	38.5	56.7	133	112	105	177	150	134
TOTAL HPCDF			2.62 J	1.54 J	2.9	18.6	5.09	2.43 J	15.7	3.57	5.29
TOTAL HXCDD			9.49	4.39	1.87 J	16.6	11	8.21	22.3	15	11.7 U
TOTAL HXCDF			1.95 J	3.55 J	2.52 J	16.2	3.29 J	1.7 J	14.8	4.19	4.42
TOTAL PECDD			0.142 J	0.0822 U	0.960 U	2.31 J	1.73 J	0.799 J	2.92 J	0.493 J	2.04 J
TOTAL PECDF			1.71 J	3.06 J	1.91 J	17.5	3.3 J	2.45 J	19.9	7.71	5.3
TOTAL TCDD			0.161 J	0.0939 U	0.0863 U	0.774 J	0.139 J	0.233 J	0.446 J	0.33 J	0.676 J
TOTAL TCDF			0.98 J	2.57	0.224 J	7.92	0.742 J	2.73	11.9	6.57	6.58 J
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			49 J	540	15 U	18 U	140	39 J	41	240	280

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-929-0001	TF4-SB-930-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001
LOCATION ID			TF4-SB929	TF4-SB930	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937
SAMPLE DATE			4/23/2010	4/23/2010	4/20/2010	4/20/2010	4/20/2010	4/15/2010	4/14/2010	4/14/2010	4/22/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
2-BUTANONE	28000000	200000000	4.9 U	4.3 U	13 J	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	22 J
ACETONE	61000000	630000000	5.9 J	4 J	67 J	3.5 UJ	18 J	7.7 J	3.6 UJ	5.5 UJ	65 J
BTEX			4.9 U	4.3 U	2.6 J	1.3 J	0.87 J	5.4 U	3.6 U	5.5 U	5.9 U
M+P-XYLENES			4.9 U	4.3 U	8.3 U	1.3 J	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U
TOLUENE	5000000	45000000	4.9 U	4.3 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U
TOTAL XYLENES	630000	2700000	4.9 U	4.3 U	2.6 J	1.3 J	0.87 J	5.4 U	3.6 U	5.5 U	5.9 U
SEMIVOLATILES (UG/KG)											
2,4-DIMETHYLPHENOL	1200000	12000000	4.3 UJ	4.3 UJ	6 UJ	3.9 UJ	4.2 UJ	39 J	3.7 UJ	4.1 UJ	6.4 UJ
2-CHLOROPHENOL	390000	5100000	4.3 U	4.3 U	6 U	3.9 U	4.2 U	23 U	3.7 U	4.1 U	6.4 U
2-METHYLNAPHTHALENE	310000	4100000	4.3 U	4.3 UJ	16 J	3.9 U	4.2 U	47	3.7 U	4.1 UJ	6.4 U
2-METHYLPHENOL	3100000	31000000	4.3 U	4.3 UJ	6 U	3.9 U	4.2 U	30	3.7 UJ	4.5	6.4 U
4-METHYLPHENOL	310000	3100000	4.3 U	4.3 U	6 U	3.9 U	4.2 U	81	3.7 UJ	5	56
ACENAPHTHENE	3400000	33000000	4.3 U	4.3 U	7.6	3.9 U	4.2 U	100	3.7 U	4.1 U	6.4 U
ACENAPHTHYLENE	3400000	33000000	9.1	4.3 U	38	3.9 U	4.2 U	2500	4	7.6	6.6
ANTHRACENE	17000000	170000000	12	4.3 U	36	3.9 U	4.2 U	8800	4.5	8	6.4 U
BENZO(A)ANTHRACENE	150	2100	28	13	180	3.9 U	4.2 U	54000	14	29	19
BENZO(A)PYRENE	15	210	31 J	13 J	230 J	3.9 U	4.2 U	24000	13	31	25 J
BENZO(B)FLUORANTHENE	150	2100	79 J	19 J	320 J	4.3 J	4.2 U	49000	24 J	53 J	41 J
BENZO(G,H,I)PERYLENE	1700000	17000000	17	11	190	3.9 U	4.2 U	8500	8.2	24	22
BENZO(K)FLUORANTHENE	1500	21000	48	18	260	3.9 U	4.2 U	19000	11	20 J	19

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-929-0001	TF4-SB-930-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001
LOCATION ID			TF4-SB929	TF4-SB930	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937
SAMPLE DATE			4/23/2010	4/23/2010	4/20/2010	4/20/2010	4/20/2010	4/15/2010	4/14/2010	4/14/2010	4/22/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	430 U	430 U	320 J	390 U	420 U	2300 U	370 U	410 U	74 J
CARBAZOLE			430 U	430 U	600 U	390 U	420 U	740 J	370 U	410 U	640 U
CHRYSENE	15000	210000	57	16	270	3.9 U	4.2 U	59000	21	33	29
DIBENZO(A,H)ANTHRACENE	15	210	6	4.3 U	48 J	3.9 UJ	4.2 UJ	3900 J	3.7 U	6.4 J	6.4 U
DI-N-BUTYL PHTHALATE	6100000	62000000	430 U	430 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U
FLUORANTHENE	2300000	22000000	52	26	470	5.1	4.2 U	83000	31	57	33
FLUORENE	2300000	22000000	4.3 U	4.3 U	15	3.9 U	4.2 U	470	3.7 U	4.1 U	6.4 U
HIGH MOLECULAR WEIGHT PAHS			383 J	148 J	2500 J	13.8 J	4.2 UJ	395000 J	157 J	322 J	240 J
INDENO(1,2,3-CD)PYRENE	150	2100	18 J	10 J	180 J	3.9 UJ	4.2 UJ	8500	7.4	21 J	20 J
LOW MOLECULAR WEIGHT PAHS			35.1	12 J	294 J	3.9 U	4.2 U	12400	16	43.4 J	18.6
NAPHTHALENE	3600	18000	4.3 U	4.3 UJ	21	3.9 U	4.2 U	23 U	3.7 U	6.8	6.4 U
PHENANTHRENE	1700000	17000000	14	12	160	3.9 U	4.2 U	440	7.5	21	12
PHENOL	18000000	180000000	4.3 U	4.3 U	6 U	3.9 U	4.2 U	68	3.7 U	7.1	65
PYRENE	1700000	17000000	47	22	350	4.4	4.2 U	86000	27	48	32
TOTAL CARCINOGENIC PAHS-HALFND	15	210	267 J	91.2 J	1490 J	16 J	4.2 UJ	217000 J	92.2 J	193 J	156 J
TOTAL CARCINOGENIC PAHS-POS	15	210	267 J	89 J	1490 J	4.3 J	4.2 UJ	217000 J	90.4 J	193 J	153 J
TOTAL PAHS			418 J	160 J	2790 J	13.8 J	4.2 UJ	407000 J	173 J	366 J	259 J
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	4.3 U	4.3 U	6 U	3.9 U	4.1 U	49	3.6 U	4.2 U	6.4 U
4,4'-DDE	1400	5100	4.3 U	4.3 U	6 U	3.9 U	4.1 U	4.5 U	3.6 U	4.2 U	6.4 U
4,4'-DDT	1700	7000	4.3 U	4.3 U	6 U	3.9 U	4.1 U	10 J	3.6 U	4.2 U	6.4 U
BETA-BHC	270	960	2.2 U	2.2 U	14	2 U	2.1 U	2.3 UJ	1.9 U	2.1 U	3.3 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-929-0001	TF4-SB-930-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001
LOCATION ID			TF4-SB929	TF4-SB930	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937
SAMPLE DATE			4/23/2010	4/23/2010	4/20/2010	4/20/2010	4/20/2010	4/15/2010	4/14/2010	4/14/2010	4/22/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
DELTA-BHC	77	270	2.2 U	2.2 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U
ENDOSULFAN I	370000	3700000	2.2 U	2.2 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U
ENDOSULFAN SULFATE	370000	3700000	4.3 U	4.3 U	6 U	3.9 U	4.1 U	22 J	3.6 U	4.2 U	6.4 U
ENDRIN	18000	180000	4.3 U	4.3 U	6 U	3.9 U	4.1 U	7.9 J	3.6 U	4.2 UJ	6.4 U
ENDRIN ALDEHYDE	18000	180000	4.3 U	4.3 U	6 U	3.9 U	4.1 U	35 J	3.6 U	4.2 U	6.4 U
ENDRIN KETONE	18000	180000	4.3 U	4.3 U	6 U	3.9 U	4.1 U	69	3.6 U	4.2 U	6.4 U
GAMMA-BHC (LINDANE)	520	2100	2.2 U	2.2 U	3.4 J	2 U	2.1 U	2.3 UJ	1.9 U	2.1 U	3.3 U
TOTAL DDD/DDE/DDT			4.3 U	4.3 U	6 U	3.9 U	4.1 U	59 J	3.6 U	4.2 U	6.4 U
TOXAPHENE	440	1600	220 U	220 U	310 U	200 U	210 U	230 U	190 U	210 U	330 U
METALS (MG/KG)											
ALUMINUM	77000	990000	8940 J	9740 J	10400	10000	10800	7570	5770 J	4850	8500 J
ARSENIC	0.39	1.6	8.5 J	8.6 J	14.6 J	4.2 J	11.3 J	9.3 J	6.9	9.3 J	8.2 J
BARIUM	15000	190000	24.1 J	24.3	31.1	26.1	21.9 J	22.8	24.3	13.1	27.2
BERYLLIUM	160	2000	0.37	0.3	0.38	0.12 J	0.27 J	0.61 J	0.49 J	0.43 J	0.28 J
CADMIUM	70	800	0.27	0.17 J	0.48	0.013 U	0.013 U	0.15 J	0.32	0.29	0.2 J
CALCIUM			286 J	101 J	454 J	6.5 UJ	6.6 UJ	380 J	547 J	363 J	1830 J
CHROMIUM	0.29	5.6	11.9	10	16.3 J	9.4	14.9	10.8	9.9 J	13.8	11.5
COBALT	23	300	9.4	6.8	12.3 J	5.2	8.2 J	12 J	11.7	20.5 J	16.1
COPPER	3100	41000	18.6	11.3	22.4 J	5.4	7.5	14.9 J	14.3	22.1 J	14.5
IRON	55000	720000	28900	24400	34000	18100	34100	41000	31000 J	53200	19200
LEAD	400	800	19 J	20.1 J	31.4 J	10.3 J	9.4 J	19.1	7.8 J	14.8	17.6 J
MAGNESIUM			1550	1470	2860	1470	1700	1110 J	1700 J	1400 J	2320

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-929-0001	TF4-SB-930-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001
LOCATION ID			TF4-SB929	TF4-SB930	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937
SAMPLE DATE			4/23/2010	4/23/2010	4/20/2010	4/20/2010	4/20/2010	4/15/2010	4/14/2010	4/14/2010	4/22/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
MANGANESE	1800	23000	354	237	249 J	149	238	453	467	762	227
MERCURY	5.6	34	0.05	0.066	0.098	0.036 J	0.031 J	0.075 U	0.068	0.015 UJ	0.037 J
NICKEL	1500	20000	21.2 J	14.6 J	30	13.9 J	15.6 J	17.7	18.5	32.8	29.2 J
POTASSIUM			230	233	244 J	187 J	207 J	331 J	545 J	353 J	325
SELENIUM	390	5100	0.97 J	1.1 J	1 J	0.77 U	0.92 J	4.4 UJ	3.5	4.8 UJ	1.6 J
SILVER	390	5100	0.054 UJ	0.071 UJ	0.086 U	0.078 U	0.079 U	0.11 UJ	0.068 J	0.08 UJ	0.12 UJ
SODIUM			50.2	23.5 J	41.5 J	23.9 J	49.6 J	23.9 UJ	35.9 J	15.5 UJ	93.9
THALLIUM			0.16 U	0.21 U	0.26 U	0.24 U	0.24 U	3.2	2.7	4.7	0.36 U
VANADIUM	390	5200	21.6	21.4	22.2	17.4	26.3	17.9	13.2	17.4 J	18.6
ZINC	23000	310000	69.6 J	37.1 J	106	30.2 J	50.2 J	57.2	57.4	125	55.1 J
MISCELLANEOUS PARAMETERS (S.U.)											
PH			NA	NA	NA	NA	NA	5.1	NA	NA	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			2890 J	8550 J	1890 J	9440 J	21100 J	4520 J	6170 J	721 J	1940
1,2,3,4,6,7,8,9-OCDF			1.88 J	4.13 J	26.6	0.519 J	0.0641 U	3.48 U	1.9 U	20.6 J	1.33 J
1,2,3,4,6,7,8-HPCDD			29.2	79.3	55.2	46.6	78	37.2	52.7	39.5	15.1
1,2,3,4,6,7,8-HPCDF			1.3 J	2.36 J	7.87	0.271 J	0.14 J	1.42 U	0.931 UJ	6.56	0.766 J
1,2,3,4,7,8,9-HPCDF			0.0454 U	0.167 J	0.491 J	0.0327 U	0.0605 U	0.456 U	0.115 U	0.562 J	0.118 U
1,2,3,4,7,8-HXCDD			0.274 J	0.765 J	0.806 J	0.126 J	0.17 J	0.326 U	0.263 J	0.576 J	0.117 U
1,2,3,4,7,8-HXCDF			0.508 J	0.688 J	0.499 J	0.115 J	0.0380 U	0.257 U	0.232 J	0.438 J	0.283 J
1,2,3,6,7,8-HXCDD			0.506 J	1.19 J	1.81 J	0.226 J	0.23 J	0.596 J	0.455 J	1.63 J	0.187 J
1,2,3,6,7,8-HXCDF			0.251 J	0.318 J	0.457 J	0.0719 J	0.0361 U	0.244 U	0.171 J	0.389 J	0.204 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-929-0001	TF4-SB-930-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001
LOCATION ID			TF4-SB929	TF4-SB930	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937
SAMPLE DATE			4/23/2010	4/23/2010	4/20/2010	4/20/2010	4/20/2010	4/15/2010	4/14/2010	4/14/2010	4/22/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,7,8,9-HXCDD			0.485 J	1.45 J	1.85 J	0.208 J	0.328 J	0.814 J	0.77 J	1.36 J	0.336 J
1,2,3,7,8-PECDD			0.0934 U	0.324 J	0.329 J	0.0403 U	0.0443 U	0.486 U	0.173 J	0.29 J	0.0979 U
1,2,3,7,8-PECDF			0.162 J	0.256 J	0.105 J	0.0398 U	0.0344 U	0.377 U	0.0588 U	0.145 U	0.0981 U
2,3,4,6,7,8-HXCDF			0.243 J	0.44 J	0.464 J	0.0736 J	0.0404 U	0.279 U	0.0693 U	0.413 J	0.0554 U
2,3,4,7,8-PECDF			0.187 J	0.274 J	0.0723 U	0.0393 U	0.0339 U	0.374 U	0.0583 U	0.144 U	0.0968 U
2,3,7,8-TCDD	4.5	18	0.0551 U	0.0452 U	0.0880 U	0.0329 U	0.0579 U	1.25 U	0.111 U	0.175 U	0.0979 U
2,3,7,8-TCDF			0.376 J	0.446 J	0.243 J	0.0651 U	0.0572 U	0.988 U	0.140 U	0.137 U	0.169 U
TOTAL HPCDD			68.1	201	101	185	172	94	108	73.6	15.1
TOTAL HPCDF			2.22 J	4.27	21.3	0.271 J	0.14 J	1.42 U	1.04 U	17.5	0.703 J
TOTAL HXCDD			5.56	18.2	12.7	3.18	1.56 J	6.27 U	5.58 U	11 U	1.47 J
TOTAL HXCDF			2.08 J	4.13	10.5	0.908 J	0.0361 U	0.953 J	0.778 J	7.66	1.01 J
TOTAL PECDD			0.934 J	2.85 J	0.591 J	0.1 J	0.0443 U	0.486 U	1.25 J	0.29 J	0.0979 U
TOTAL PECDF			3.21 J	2.33 J	5.78	1.89 J	0.0531 J	0.374 U	1.03 J	1.45 J	0.333 J
TOTAL TCDD			0.388 J	0.654 J	0.0880 U	0.0329 U	0.0579 U	1.25 U	0.111 U	0.175 U	0.0979 U
TOTAL TCDF			2.59	2.59	0.825 J	0.696 J	0.0572 U	0.988 U	0.140 U	0.137 U	0.169 U
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			43 J	47 J	140	14 U	15 U	NA	NA	NA	80 J

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TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB938	TF4-SB939	TF4-SB940	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/15/2010	4/20/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)								
2-BUTANONE	28000000	200000000	4.3 U	4.7 U	4.6 U	5.4 U	13	4.3 U
ACETONE	61000000	630000000	3.5 J	4.7 UJ	4.6 UJ	5.4 UJ	44 J	25 J
BTEX			1.8 J	2.5 J	4.6 U	5.4 U	2 J	4.3 U
M+P-XYLENES			1.8 J	2.5 J	4.6 U	5.4 U	8.5 U	4.3 U
TOLUENE	5000000	45000000	4.3 U	4.7 U	4.6 U	5.4 U	8.5 U	4.3 U
TOTAL XYLENES	630000	2700000	1.8 J	2.5 J	4.6 U	5.4 U	2 J	4.3 U
SEMIVOLATILES (UG/KG)								
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	330 UJ	330 UJ	440 UJ	4.8 UJ	3.6 UJ
2-CHLOROPHENOL	390000	5100000	6.5	8	6.4	4.4 U	4.8 U	3.6 U
2-METHYLNAPHTHALENE	310000	4100000	3.3 UJ	3.3 UJ	3.3 UJ	4.4 UJ	4.8 U	3.6 UJ
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.3 UJ	3.3 UJ	440 U	4.8 U	3.6 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.3 UJ	3.3 UJ	4.4 UJ	4.8 U	3.6 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.3 U	3.3 U	4.4 U	4.8 U	3.6 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.3 U	3.3 U	4.4 U	17	3.6 U
ANTHRACENE	17000000	170000000	4.5	3.3 U	3.3 U	4.4 U	27	4.3
BENZO(A)ANTHRACENE	150	2100	8.2	3.3 U	17	16	120	14
BENZO(A)PYRENE	15	210	8.5	3.3 U	15	15	140 J	10
BENZO(B)FLUORANTHENE	150	2100	14	3.3 U	23	27 J	220 J	21 J
BENZO(G,H,I)PERYLENE	1700000	17000000	7.5	3.3 U	10	12	100	6
BENZO(K)FLUORANTHENE	1500	21000	10	3.3 U	15	11 J	71	7.4 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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DATA GAPS ASSESSMENT
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SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB938	TF4-SB939	TF4-SB940	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/15/2010	4/20/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	36 J	330 U	440 U	120 J	360 U
CARBAZOLE			330 U	330 U	330 U	440 U	480 U	360 U
CHRYSENE	15000	210000	12	3.3 U	21	17	130	14
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.3 U	3.8	4.4 UJ	29 J	3.6 UJ
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	440 U	480 U	360 U
FLUORANTHENE	2300000	22000000	14	3.3 U	31	28	240	29
FLUORENE	2300000	22000000	3.3 U	3.3 U	3.3 U	4.4 U	6.6	3.6 U
HIGH MOLECULAR WEIGHT PAHS			93.6	3.3 U	169	160 J	1330 J	131 J
INDENO(1,2,3-CD)PYRENE	150	2100	6.4	3.3 U	9.3	11 J	93 J	5.7 J
LOW MOLECULAR WEIGHT PAHS			10.1 J	3.3 UJ	12 J	12 J	151	15.3 J
NAPHTHALENE	3600	18000	3.3 U	3.3 U	3.3 U	4.4 U	4.8 U	3.6 U
PHENANTHRENE	1700000	17000000	5.6	3.3 U	12	12	100	11
PHENOL	18000000	180000000	28	23	25	4.4 U	4.8 U	3.6 U
PYRENE	1700000	17000000	13	3.3 U	24	23	190	24
TOTAL CARCINOGENIC PAHS-HALFND	15	210	60.8	3.3 U	104	99.2 J	803 J	73.9 J
TOTAL CARCINOGENIC PAHS-POS	15	210	59.1	3.3 U	104	97 J	803 J	72.1 J
TOTAL PAHS			104 J	3.3 UJ	181 J	172 J	1480 J	146 J
PESTICIDES/PCBS (UG/KG)								
4,4'-DDD	2000	7200	3.3 U	4.2 U	3.3 U	4.5 U	4.8 U	3.6 U
4,4'-DDE	1400	5100	3.3 U	4.2 U	3.3 U	4.5 U	4.8 U	3.6 U
4,4'-DDT	1700	7000	3.3 U	4.2 U	3.3 U	4.5 UJ	30 UJ	3.6 UJ
BETA-BHC	270	960	1.7 U	2.2 U	1.7 U	2.3 U	6.1 J	1.8 UJ

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TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB938	TF4-SB939	TF4-SB940	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/15/2010	4/20/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
DELTA-BHC	77	270	1.7 U	2.2 U	1.7 U	2.3 U	3.9	1.8 U
ENDOSULFAN I	370000	3700000	1.7 U	2.2 U	1.7 U	2.3 U	2.5	1.8 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	4.2 U	3.3 U	4.5 U	4.8 J	3.6 U
ENDRIN	18000	180000	3.3 U	4.2 U	3.3 U	4.5 U	4.8 U	3.6 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	4.2 U	3.3 U	4.5 U	4.8 U	3.6 U
ENDRIN KETONE	18000	180000	3.3 U	4.2 U	3.3 U	4.5 U	4.8 U	3.6 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	2.2 U	1.7 U	2.3 U	2.5 U	1.8 UJ
TOTAL DDD/DDE/DDT			3.3 U	4.2 U	3.3 U	4.5 UJ	13.2 UJ	3.6 UJ
TOXAPHENE	440	1600	170 U	220 U	170 U	230 U	250 U	180 U
METALS (MG/KG)								
ALUMINUM	77000	990000	8870	9800	11200	8450	7390	5300
ARSENIC	0.39	1.6	14.7 J	7.2 J	6 J	11.3	10.8 J	59.5
BARIUM	15000	190000	34.5	28.6	24.7	23.3	30.9	19.8
BERYLLIUM	160	2000	0.28	0.33	0.47	0.7 J	0.14 J	0.51 J
CADMIUM	70	800	0.16 J	0.07 J	0.1 J	0.13 J	0.29 J	0.3
CALCIUM			832 J	314 J	105 J	478 J	1450 J	1900 J
CHROMIUM	0.29	5.6	10 J	10.3 J	8.4 J	10.7	10	11
COBALT	23	300	14.4 J	8.7 J	5.4 J	11.1 J	12	20.4 J
COPPER	3100	41000	11.2 J	8.8 J	8 J	13.9 J	17.9	16.1 J
IRON	55000	720000	25100	18000	19100	26800	25700	48400
LEAD	400	800	10.5 J	6.9 J	15.9 J	18.3	28.8 J	30.1
MAGNESIUM			1750	1570	1140	1240 J	2100	1870 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
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SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB938	TF4-SB939	TF4-SB940	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/15/2010	4/20/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
MANGANESE	1800	23000	335 J	334 J	351 J	459	591	818
MERCURY	5.6	34	0.043	0.036 J	0.038 J	0.08 U	0.064	0.019 UJ
NICKEL	1500	20000	23.5	16	11.5	17.4	20.8 J	37.1
POTASSIUM			466 J	245 J	258 J	271 J	260 J	279 J
SELENIUM	390	5100	1.2 J	1.5 J	1.4 J	3.6 UJ	1.2 J	5.1 UJ
SILVER	390	5100	0.075 U	0.087 U	0.083 U	0.15 UJ	0.091 U	0.19 UJ
SODIUM			44.5 J	31 J	21 J	27.1 J	45.2 J	16.7 UJ
THALLIUM			0.23 U	0.26 U	0.25 U	3	0.28 U	5.3
VANADIUM	390	5200	17.7	18.8	18.3	16.8	15.8	12.6 J
ZINC	23000	310000	46.3	34.3	27.8	51.2	82 J	110
MISCELLANEOUS PARAMETERS (S.U.)								
PH			NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)								
1,2,3,4,6,7,8,9-OCDD			3360 J	5910 J	1980 J	6140 J	2360 J	1370 J
1,2,3,4,6,7,8,9-OCDF			0.736 J	0.386 J	0.913 J	1.8 U	26.9	7.7
1,2,3,4,6,7,8-HPCDD			25.4	37.4	24.4	53.7	63.1	39.4
1,2,3,4,6,7,8-HPCDF			0.988 J	0.157 J	0.512 J	0.797 UJ	8.41	3.19
1,2,3,4,7,8,9-HPCDF			0.0336 U	0.0328 U	0.0489 U	0.0841 U	0.682 J	0.258 J
1,2,3,4,7,8-HXCDD			0.2 J	0.102 J	0.261 J	0.32 J	0.855 J	0.452 J
1,2,3,4,7,8-HXCDF			0.136 J	0.035 J	0.18 J	0.118 J	0.577 J	0.41 J
1,2,3,6,7,8-HXCDD			0.26 J	0.147 J	0.347 J	0.522 J	2.09 J	1.05 J
1,2,3,6,7,8-HXCDF			0.0604 J	0.0273 U	0.0717 J	0.0663 U	0.574 J	0.244 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-2
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB938	TF4-SB939	TF4-SB940	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/15/2010	4/20/2010	4/15/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
1,2,3,7,8,9-HXCDD			0.334 J	0.171 J	0.498 J	0.486 J	1.58 J	1.18 J
1,2,3,7,8-PECDD			0.116 J	0.0290 U	0.0365 U	0.0776 U	0.442 J	0.267 J
1,2,3,7,8-PECDF			0.0907 J	0.0240 U	0.0394 U	0.0566 U	0.0988 U	0.0531 U
2,3,4,6,7,8-HXCDF			0.0876 J	0.320 U	0.104 J	0.0761 U	0.519 J	0.275 J
2,3,4,7,8-PECDF			0.0977 J	0.0231 U	0.0384 U	0.0562 U	0.0976 U	0.0527 U
2,3,7,8-TCDD	4.5	18	0.0603 J	0.0354 U	0.0391 U	0.138 U	0.0760 U	0.0902 U
2,3,7,8-TCDF			0.0718 U	0.0588 U	0.102 U	0.103 U	0.298 J	0.0949 U
TOTAL HPCDD			59.5	72.3	64.8	118	117	80.2
TOTAL HPCDF			1.53 J	0.157 J	0.512 J	0.967 U	23.1	7.22
TOTAL HXCDD			3.88	0.42 J	5.42	5.56 U	12.4	9.12 U
TOTAL HXCDF			0.698 J	0.0662 J	0.999 J	1.19 J	12.4	4.54
TOTAL PECDD			0.236 J	0.0290 U	0.324 J	0.538 J	1.08 J	0.898 J
TOTAL PECDF			0.417 J	0.0231 U	0.748 J	1.28 J	7.6	2.23 J
TOTAL TCDD			0.0298 U	0.0354 U	0.0391 U	0.138 U	0.0760 U	0.0902 U
TOTAL TCDF			0.551 J	0.182 J	0.391 J	0.103 U	2.25	0.835 J
PETROLEUM HYDROCARBONS (MG/KG)								
EXTRACTABLE PETROLEUM HYDROCARBONS			30 J	25 UJ	NA	NA	79	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/19/2010	4/19/2010	4/20/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
2-BUTANONE	28000000	200000000	4.2 UJ	3.9 U	6.8 J	4.2 UJ	7 J	30	16 J	11	6.4 J
ACETONE	61000000	630000000	4.2 UJ	3.9 J	37 J	3.5 J	19.5 J	72 J	50 J	36 J	19 J
BENZENE	1100	5400	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U
BTEX			4.2 UJ	3.9 U	4.5 U	4.2 U	2.2 J	9.3 J	1.8 J	4.5 J	2.4 J
CARBON DISULFIDE	820000	3700000	4.2 UJ	3.9 U	0.96 J	4.2 U	5.7 U	12 J	7.2 UJ	6.7 U	4.3 U
M+P-XYLENES			4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	2.4 J
METHYL TERT-BUTYL ETHER	43000	220000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U
TOLUENE	5000000	45000000	4.2 UJ	3.9 U	4.5 U	4.2 U	2.2 J	5.6 J	1.8 J	2.6 J	4.3 U
TOTAL XYLENES	630000	2700000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	3.7 J	7.2 UJ	1.9 J	2.4 J
SEMIVOLATILES (UG/KG)											
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.3 U	3.3 U	3.9 UJ	4.25 UJ	6.1 UJ	5.2 UJ	4.7 UJ	4.1 U
2-CHLOROPHENOL	390000	5100000	4.8	3.9	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U
2-METHYLNAPHTHALENE	310000	4100000	13 J	3.3 UJ	3.3 UJ	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 UJ
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.3 UJ	3.3 UJ	3.9 U	430 UJ	610 U	520 UJ	470 UJ	4.1 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.3 UJ	3.3 UJ	3.9 U	4.25 UJ	6.1 UJ	5.2 UJ	4.7 UJ	4.1 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.5
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.3 U	3.3 U	3.9 U	12	6.1 U	5.2 U	4.7 U	13
ANTHRACENE	17000000	170000000	3.3 U	3.3 U	3.3 U	3.9 U	7.8 J	6.1 U	5.2 U	4.7 U	24
BENZO(A)ANTHRACENE	150	2100	3.9	3.3 U	3.3 U	3.9 U	29	6.1 U	8	10	64 J
BENZO(A)PYRENE	15	210	3.3 U	3.3 U	3.3 U	3.9 U	36.5 J	6.1 U	5.9 J	9.3 J	65 J
BENZO(B)FLUORANTHENE	150	2100	3.3 U	3.3 U	3.3 U	3.9 UJ	64 J	6.1 U	9.2 J	13 J	120 J
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	3.3 U	3.3 U	3.9 U	30.5	6.1 U	5.2 U	8	44

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/19/2010	4/19/2010	4/20/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	3.3 U	3.3 U	3.9 U	21.5	6.1 U	7.2	10	27 J
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	41 J	330 U	80 J	430 UJ	100 J	87 J	59 J	410 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	69 J	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U
CHRYSENE	15000	210000	4.3	3.3 U	3.3 U	3.9 U	36	6.1 U	8.1	11	79 J
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.3 U	3.3 U	3.9 U	8.45 J	6.1 UJ	5.2 UJ	4.7 UJ	12 J
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U
FLUORANTHENE	2300000	22000000	4.4	3.3 U	3.3 U	3.9 U	53.5	6.1 U	10	14	140 J
FLUORENE	2300000	22000000	3.3 U	3.3 U	3.3 U	3.9 U	3.35	6.1 U	5.2 U	4.7 U	9.3
HIGH MOLECULAR WEIGHT PAHS			17.5 J	3.3 U	3.3 U	3.9 UJ	354 J	6.1 UJ	57.9 J	95.1 J	707 J
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	3.3 U	3.3 U	3.9 UJ	27.5 J	6.1 UJ	5.2 UJ	6.8 J	36 J
LOW MOLECULAR WEIGHT PAHS			26.4 J	3.3 UJ	3.3 UJ	3.9 U	42.6 J	6.1 U	5.2 U	5.7	126 J
NAPHTHALENE	3600	18000	6.5	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.3
PHENANTHRENE	1700000	17000000	6.9 J	3.3 U	3.3 U	3.9 U	20.5 J	6.1 U	5.2 U	5.7	71 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/19/2010	4/19/2010	4/20/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
PHENOL	18000000	180000000	30	25	31	27.5	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U
PYRENE	1700000	17000000	4.9 J	3.3 U	3.3 U	3.9 U	47	6.1 U	9.5	13	120 J
TOTAL CARCINOGENIC PAHS-HALFND	15	210	16.4	3.3 U	3.3 U	3.9 UJ	223 J	6.1 UJ	43.6 J	62.4 J	403 J
TOTAL CARCINOGENIC PAHS-POS	15	210	8.2	3.3 U	3.3 U	3.9 UJ	223 J	6.1 UJ	38.4 J	60.1 J	403 J
TOTAL PAHS			43.9 J	3.3 UJ	3.3 UJ	3.9 UJ	397 J	6.1 UJ	57.9 J	101 J	833 J
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U
AROCLOR-1254	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U
TOTAL AROCLOR	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U
TOTAL DDD/DDE/DDT			3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U
METALS (MG/KG)											
ALUMINUM	77000	990000	10400	981	17200	5160 J	12200	13700	10700	12900	7770
ARSENIC	0.39	1.6	6.5 J	9 J	20.2 J	10.6 J	10.8 J	20 J	13.3 J	18.9 J	13.5 J
BARIUM	15000	190000	30	2.3 J	36.8 J	4.85 J	34.2	27.7 J	45.8	67.9	20.3 J
BERYLLIUM	160	2000	0.43	0.21 J	0.78	0.22 J	0.18 J	0.38 J	0.25 J	0.34 J	0.34
CADMIUM	70	800	0.16	0.45	0.38	0.41	0.092 J	0.018 U	0.014 U	0.075 J	0.49
CALCIUM			280 J	6 UJ	7.8 UJ	338 J	197 J	525 J	215 J	8.1 UJ	5.5 UJ
CHROMIUM	0.29	5.6	11.9 J	4.3 J	17.3 J	11.4	12.5	16.5	12.2	12.6	13.2 J
COBALT	23	300	13.1 J	22.3 J	35.3 J	18.2	11.7	22.7	14.3	27.8	31.1 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/19/2010	4/19/2010	4/20/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
COPPER	3100	41000	6.1 J	19 J	8.9 J	20.6	17	14.3	10.4	21.4	25.1 J
IRON	55000	720000	25000	61600	59800	49300	29000	45000	38100	51500	50700
LEAD	400	800	8.1 J	8.8 J	9.2 J	8.25 J	20.5 J	13.5 J	10.9 J	20.9 J	14.1 J
MAGNESIUM			1750	836	2600	2260	2700	3610	2570	2620	2210
MANGANESE	1800	23000	471 J	729 J	775 J	332	335	318	314	1020	914 J
MERCURY	5.6	34	0.028 J	0.0064 U	0.033 J	0.0062 U	0.0666 J	0.032 J	0.055 J	0.16	0.023 J
NICKEL	1500	20000	26.4	58.4	77	54.1 J	21.4 J	26.2 J	21.2 J	28 J	50.3
POTASSIUM			259 J	120 J	313 J	198	500 J	616 J	438 J	376 J	333 J
SELENIUM	390	5100	0.72 J	0.71 U	0.93 U	0.64 U	0.725 J	1.1 U	1.1 J	2.1	0.65 U
SILVER	390	5100	0.048 U	0.072 U	0.094 U	0.0645 UJ	0.0885 U	0.11 U	0.082 U	0.096 U	0.066 U
SODIUM			46.9	18 J	64.6	15.4 J	254 J	664 J	479 J	349 J	25.2 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/19/2010	4/19/2010	4/20/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.15 U	0.22 U	0.28 U	0.195 U	0.27 U	0.33 U	0.25 U	0.29 U	0.2 U
VANADIUM	390	5200	18.3	10.8	30.2	12	20.4	23.7	18.7	23	18.1
ZINC	23000	310000	47.6	130	112	142 J	64.8 J	70.3 J	46 J	76.6 J	106
MISCELLANEOUS PARAMETERS (S.U.)											
PH			NA	5.8	NA	6	NA	6.7	NA	6	NA
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			NA	17000	NA	7300	NA	34000	NA	5800	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			4480 J	NA	2030 J	NA	5580 J	NA	3810 J	19100 J	3220 J
1,2,3,4,6,7,8,9-OCDF			0.136 U	NA	0.091 J	NA	1.03 J	NA	0.517 J	0.695 J	2.47 J
1,2,3,4,6,7,8-HPCDD			38.7	NA	16.4	NA	41.8 J	NA	59.7	292	31.5
1,2,3,4,6,7,8-HPCDF			0.175 J	NA	0.0298 U	NA	0.695 J	NA	0.342 J	0.385 J	1.02 J
1,2,3,4,7,8-HXCDD			0.212 J	NA	0.0883 U	NA	0.244 J	NA	0.355 J	0.883 J	0.244 J
1,2,3,4,7,8-HXCDF			0.0775 U	NA	0.0374 U	NA	0.195 J	NA	0.118 J	0.0696 U	0.217 J
1,2,3,6,7,8-HXCDD			0.82 J	NA	0.107 J	NA	0.406 J	NA	0.857 J	2.1 J	0.394 J
1,2,3,6,7,8-HXCDF			0.733 U	NA	0.0356 U	NA	0.14 J	NA	0.0483 U	0.0658 U	0.129 J
1,2,3,7,8,9-HXCDD			0.84 J	NA	0.189 J	NA	0.556 J	NA	1.01 J	4.24	0.519 J
1,2,3,7,8,9-HXCDF			0.0985 U	NA	0.0464 U	NA	0.132 U	NA	0.0629 U	0.0884 U	0.0789 J
1,2,3,7,8-PECDD			0.140 U	NA	0.0871 U	NA	0.114 U	NA	0.158 J	0.224 J	0.0351 U
1,2,3,7,8-PECDF			0.109 U	NA	0.0536 U	NA	0.0927 U	NA	0.0683 U	0.112 U	0.0234 U
2,3,4,6,7,8-HXCDF			0.0841 U	NA	0.0399 U	NA	0.156 J	NA	0.0540 U	0.0755 U	0.099 J
2,3,4,7,8-PECDF			0.108 U	NA	0.0529 U	NA	0.0908 J	NA	0.0675 U	0.111 U	0.0228 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924
SAMPLE DATE			4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/19/2010	4/19/2010	4/19/2010	4/19/2010	4/20/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
2,3,7,8-TCDD	4.5	18	0.266 U	NA	0.0578 U	NA	0.124 U	NA	0.105 U	0.136 U	0.0483 U
2,3,7,8-TCDF			0.248 U	NA	0.0715 U	NA	0.177 J	NA	0.150 U	0.143 U	0.0704 U
TOTAL HPCDD			81.5	NA	16.4	NA	98.2 J	NA	131	705	75.9
TOTAL HPCDF			0.175 J	NA	0.0298 U	NA	0.582 J	NA	0.342 J	0.385 J	2.59 J
TOTAL HXCDD			9.73	NA	0.189 J	NA	7.5 J	NA	14.6	199	6.97
TOTAL HXCDF			0.0733 U	NA	0.0356 U	NA	1.66 J	NA	0.632 J	0.334 J	1.23 J
TOTAL PECDD			0.140 U	NA	0.0871 U	NA	0.383 J	NA	1.35 J	60	0.689 J
TOTAL PECDF			0.108 U	NA	0.0529 U	NA	2	NA	0.0675 U	0.946 J	1.11 J
TOTAL TCDD			0.266 U	NA	0.0578 U	NA	0.124 U	NA	0.105 U	75.6	0.0483 U
TOTAL TCDF			0.248 U	NA	0.0715 U	NA	0.941	NA	0.423 J	0.143 U	1.12 J
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			66 J	22 UJ	24 UJ	28 UJ	30.5 J	23 U	19 U	18	93

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-924-0810-AVG	TF4-SB-925-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608
LOCATION ID			TF4-SB924	TF4-SB925	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929
SAMPLE DATE			4/20/2010	4/23/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010	4/15/2010	4/23/2010	4/23/2010
TOP DEPTH			8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT
BOTTOM DEPTH			10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT
SACODE			AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
2-BUTANONE	28000000	200000000	3.7 UJ	4.3 U	4.3 U	23	7.5	5.1 U	4.4 U	4.35 U	4 U
ACETONE	61000000	630000000	10.5 J	4.3 UJ	3.7 J	59.5 J	23 J	140 J	96 J	4.35 UJ	4 UJ
BENZENE	1100	5400	3.7 U	4.3 U	4.3 U	4.9 U	5.8 U	5.1 U	0.97 J	4.35 U	4 U
BTEX			3.7 U	4.3 U	4.3 U	4.9 U	5.8 U	5.1 U	0.97 J	4.35 U	4 U
CARBON DISULFIDE	820000	3700000	3.7 U	4.3 U	4.3 U	2.45 J	3.2 J	5.1 U	4.4 U	4.35 U	4 U
M+P-XYLENES			3.7 U	4.3 U	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U
METHYL TERT-BUTYL ETHER	43000	220000	3.7 U	4.3 U	4.3 U	4.9 U	5.8 U	5.1 U	1.2 J	4.35 U	4 U
TOLUENE	5000000	45000000	3.7 U	4.3 U	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U
TOTAL XYLENES	630000	2700000	3.7 U	4.3 U	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U
SEMIVOLATILES (UG/KG)											
2,4-DICHLOROPHENOL	180000	1800000	3.9 U	4.1 UJ	4 UJ	4.05 UJ	3.9 UJ	4.1 U	3.8 U	3.8 UJ	3.8 UJ
2-CHLOROPHENOL	390000	5100000	3.9 U	4.1 U	4 U	4.05 U	3.9 U	4.1 U	3.8 U	4	3.8 U
2-METHYLNAPHTHALENE	310000	4100000	5.75 J	4.1 U	4 U	4.05 U	6.9	4.1 UJ	3.8 UJ	3.8 U	3.8 U
2-METHYLPHENOL	3100000	31000000	3.9 U	4.1 U	4 U	405 U	390 U	410 U	380 U	3.8 U	3.8 U
4-METHYLPHENOL	310000	3100000	3.9 U	4.1 U	4 U	4.05 UJ	3.9 UJ	4.1 UJ	3.8 UJ	3.8 U	3.8 U
ACENAPHTHENE	3400000	33000000	3.9 U	4.1 U	4 U	4.05 U	4.5	4.1 U	3.8 U	3.8 U	3.8 U
ACENAPHTHYLENE	3400000	33000000	3.9 U	4.1 U	4 U	4.05 U	3.9 U	12	3.8 U	3.8 U	3.8 U
ANTHRACENE	17000000	170000000	3.9 U	4.1 U	4 U	4.05 U	4.7	24	3.8 U	4.55	3.8 U
BENZO(A)ANTHRACENE	150	2100	3.9 U	4.1 U	4 U	3.95	8.6	57	3.8 U	10.4	3.8 U
BENZO(A)PYRENE	15	210	3.9 UJ	4.1 U	4 U	3.3 J	8.4 J	56	3.8 U	11.5 J	3.8 U
BENZO(B)FLUORANTHENE	150	2100	3.9 UJ	4.1 UJ	4 UJ	7.5 J	17 J	93 J	3.8 U	34 J	3.8 UJ
BENZO(G,H,I)PERYLENE	1700000	17000000	3.9 U	4.1 U	4 U	5.1	6.3	46	3.8 U	5.75	3.8 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-924-0810-AVG	TF4-SB-925-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608
LOCATION ID			TF4-SB924	TF4-SB925	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929
SAMPLE DATE			4/20/2010	4/23/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010	4/15/2010	4/23/2010	4/23/2010
TOP DEPTH			8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT
BOTTOM DEPTH			10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT
SACODE			AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	3.9 U	4.1 U	4 U	5.25	3.9 U	62 J	3.8 UJ	18.5	3.8 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	390 U	75 J	400 U	405 U	100 J	410 U	380 U	380 U	380 U
BUTYL BENZYL PHTHALATE	260000	910000	390 U	410 U	59 J	405 U	390 U	410 U	380 U	380 U	380 U
CHRYSENE	15000	210000	3.9 U	4.1 U	4 U	4.7	9.9	62	3.8 U	21	3.8 U
DIBENZO(A,H)ANTHRACENE	15	210	3.9 UJ	4.1 U	4 U	4.05 UJ	3.9 UJ	13 J	3.8 UJ	3.8 U	3.8 U
DI-N-BUTYL PHTHALATE	6100000	62000000	390 U	52 J	400 U	405 U	390 U	410 U	380 U	120 J	380 U
FLUORANTHENE	2300000	22000000	3.9 U	4.1 U	4 U	7.8	17	100	3.8 U	11.5	3.8 U
FLUORENE	2300000	22000000	3.9 U	4.1 U	4 U	4.05 U	4.3	8.4	3.8 U	3.8 U	3.8 U
HIGH MOLECULAR WEIGHT PAHS			3.9 UJ	4.1 UJ	4 UJ	44.2 J	90 J	613 J	3.8 UJ	130 J	3.8 UJ
INDENO(1,2,3-CD)PYRENE	150	2100	3.9 UJ	4.1 UJ	4 UJ	3.3 J	5.8 J	38 J	3.8 UJ	7.1 J	3.8 UJ
LOW MOLECULAR WEIGHT PAHS			11.8 J	4.1 U	4 U	4.05 U	32.4	87.4 J	3.8 UJ	4.55	3.8 U
NAPHTHALENE	3600	18000	6.95 J	4.1 U	4 U	4.05 U	18 U	4.1 U	3.8 U	3.8 U	3.8 U
PHENANTHRENE	1700000	17000000	3.9 U	4.1 U	4 U	4.05 U	12	43	3.8 U	3.8 U	3.8 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-924-0810-AVG	TF4-SB-925-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608
LOCATION ID			TF4-SB924	TF4-SB925	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929
SAMPLE DATE			4/20/2010	4/23/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010	4/15/2010	4/23/2010	4/23/2010
TOP DEPTH			8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT
BOTTOM DEPTH			10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT
SACODE			AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
PHENOL	18000000	180000000	3.9 U	6.4	4 U	4.05 U	3.9 U	7.3	3.8 U	3.8 U	3.8 U
PYRENE	1700000	17000000	3.9 U	4.1 U	4 U	6.35	17	86	3.8 U	11	3.8 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.9 UJ	4.1 UJ	4 UJ	30 J	53.6 J	381 J	3.8 UJ	105 J	3.8 UJ
TOTAL CARCINOGENIC PAHS-POS	15	210	3.9 UJ	4.1 UJ	4 UJ	25 J	49.7 J	381 J	3.8 UJ	103 J	3.8 UJ
TOTAL PAHS			11.8 J	4.1 UJ	4 UJ	44.2 J	122 J	700 J	3.8 UJ	135 J	3.8 UJ
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	3.9 U	4.1 U	4 U	4 U	3.9 U	8.2	3.8 U	3.8 U	3.8 U
4,4'-DDT	1700	7000	3.9 U	4.1 U	4 U	4 U	3.9 U	4.1 UJ	3.8 UJ	3.8 U	3.8 U
AROCLOR-1254	220	740	39 U	41 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U
ENDOSULFAN SULFATE	370000	3700000	3.9 U	4.1 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U
ENDRIN ALDEHYDE	18000	180000	3.9 U	4.1 U	5.7	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U
TOTAL AROCLOR	220	740	39 U	41 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U
TOTAL DDD/DDE/DDT			3.9 U	4.1 U	4 U	4 U	3.9 U	8.2 J	3.8 UJ	3.8 U	3.8 U
METALS (MG/KG)											
ALUMINUM	77000	990000	3020	14700 J	4240 J	7040	8090	8740	697	4660 J	1500 J
ARSENIC	0.39	1.6	9.25 J	10.6 J	16.5 J	11.1 J	13.4 J	5.3 J	10.9 J	27.8 J	31.5 J
BARIUM	15000	190000	5.7 J	51.4	15.2 J	10.1 J	9.1 J	24.6	1.8 J	8.65 J	13.3 J
BERYLLIUM	160	2000	0.28	0.4	0.3	0.21 J	0.24 J	0.66 J	0.22 J	0.295	0.34
CADMIUM	70	800	0.56	0.34	0.82	0.042 J	0.015 U	0.13 J	0.41	0.375 J	0.59
CALCIUM			82.6 J	1750 J	5.2 UJ	5.25 UJ	7.6 UJ	704 J	6 UJ	75.8 J	6.9 UJ
CHROMIUM	0.29	5.6	7.5 J	10.9	9.1	11	13.2	12.8	10.2	8.2	7.6
COBALT	23	300	41 J	31.3	30.9	8.25	10.7	10.7 J	22.9 J	22	30

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-924-0810-AVG	TF4-SB-925-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608
LOCATION ID			TF4-SB924	TF4-SB925	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929
SAMPLE DATE			4/20/2010	4/23/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010	4/15/2010	4/23/2010	4/23/2010
TOP DEPTH			8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT
BOTTOM DEPTH			10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT
SACODE			AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
COPPER	3100	41000	23.7 J	3.3	28.1	10.7	10.7	12 J	20 J	16.5 J	31.1
IRON	55000	720000	57300	38500	76900	27600	32700	35000	58400	44800 J	69600
LEAD	400	800	10.4 J	18.4 J	10.3 J	8 J	8.4 J	14.2	9.2 J	4.6 J	5.6 J
MAGNESIUM			972	5120	2220	2190	2810	1840 J	136 J	1410 J	285
MANGANESE	1800	23000	2740 J	3420	694	156	200	469	502	1440	1010
MERCURY	5.6	34	0.00595 U	0.017 J	0.0061 U	0.0475	0.036 J	0.02 UJ	0.0062 U	0.00692 J	0.0066 U
NICKEL	1500	20000	73	56.4 J	87.9 J	17.9 J	21.9 J	25.3	44.6	48.4 J	60.2 J
POTASSIUM			142 J	934	422	128 J	137 J	296 J	89.6 J	226	177
SELENIUM	390	5100	0.62 J	3.4	0.61 U	0.625 U	0.9 U	2.8 UJ	2.7 UJ	0.902	0.81 U
SILVER	390	5100	0.0615 U	0.075 UJ	0.062 UJ	0.063 U	0.091 U	0.13 UJ	0.15 UJ	0.0655 UJ	0.082 UJ
SODIUM			18.7 J	68.8	22.8 J	18.4 J	19 J	43.9 J	11.8 UJ	25.7 J	18.4 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-924-0810-AVG	TF4-SB-925-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608
LOCATION ID			TF4-SB924	TF4-SB925	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929
SAMPLE DATE			4/20/2010	4/23/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010	4/15/2010	4/23/2010	4/23/2010
TOP DEPTH			8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT
BOTTOM DEPTH			10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT
SACODE			AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.19 U	0.23 U	0.19 U	0.19 U	0.28 U	0.25 U	0.25 U	0.2 U	0.25 U
VANADIUM	390	5200	15.1	24.6	16.9	13.4	15.1	17.6	9.8 J	14.2	16.1
ZINC	23000	310000	138	78.3 J	187 J	57.4 J	67.2 J	66.2	130	75.2 J	107 J
MISCELLANEOUS PARAMETERS (S.U.)											
PH			6	NA	5.9	NA	6	NA	6	NA	6
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			12200	NA	6800	NA	7700	NA	5000 U	NA	7300
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			NA	368	NA	773	NA	4490 J	NA	7780 J	NA
1,2,3,4,6,7,8,9-OCDF			NA	0.267 J	NA	0.155 J	NA	3.95 U	NA	0.524 J	NA
1,2,3,4,6,7,8-HPCDD			NA	8.15	NA	12.2	NA	42.6	NA	66.6 J	NA
1,2,3,4,6,7,8-HPCDF			NA	0.289 J	NA	0.106 J	NA	1.36 U	NA	0.199 J	NA
1,2,3,4,7,8-HXCDD			NA	0.197 J	NA	0.0692 J	NA	0.303 J	NA	0.253 J	NA
1,2,3,4,7,8-HXCDF			NA	0.191 J	NA	0.0361 U	NA	0.345 J	NA	0.079 J	NA
1,2,3,6,7,8-HXCDD			NA	0.246 J	NA	0.214 J	NA	0.514 J	NA	0.309 J	NA
1,2,3,6,7,8-HXCDF			NA	0.148 J	NA	0.0342 U	NA	0.221 J	NA	0.0464 J	NA
1,2,3,7,8,9-HXCDD			NA	0.275 J	NA	0.209 J	NA	0.514 J	NA	0.365 J	NA
1,2,3,7,8,9-HXCDF			NA	0.0994 J	NA	0.0456 U	NA	0.0491 J	NA	0.042 U	NA
1,2,3,7,8-PECDD			NA	0.0483 U	NA	0.0564 U	NA	0.177 J	NA	0.0624 U	NA
1,2,3,7,8-PECDF			NA	0.135 J	NA	0.0583 U	NA	0.0356 U	NA	0.0454 U	NA
2,3,4,6,7,8-HXCDF			NA	0.11 J	NA	0.039 U	NA	0.179 J	NA	0.036 U	NA
2,3,4,7,8-PECDF			NA	0.0330 U	NA	0.0578 U	NA	0.18 J	NA	0.0449 U	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-924-0810-AVG	TF4-SB-925-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608
LOCATION ID			TF4-SB924	TF4-SB925	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929
SAMPLE DATE			4/20/2010	4/23/2010	4/23/2010	4/19/2010	4/19/2010	4/15/2010	4/15/2010	4/23/2010	4/23/2010
TOP DEPTH			8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT
BOTTOM DEPTH			10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT
SACODE			AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
2,3,7,8-TCDD	4.5	18	NA	0.0495 U	NA	0.094 U	NA	0.0845 U	NA	0.0612 U	NA
2,3,7,8-TCDF			NA	0.0619 U	NA	0.0953 U	NA	0.343 J	NA	0.0944 U	NA
TOTAL HPCDD			NA	17.4	NA	21.9	NA	121	NA	112 J	NA
TOTAL HPCDF			NA	0.289 J	NA	0.053 U	NA	4.02	NA	0.0776 J	NA
TOTAL HXCDD			NA	1.91 J	NA	1.66 J	NA	11.2 U	NA	3.08 J	NA
TOTAL HXCDF			NA	0.339 J	NA	0.0342 U	NA	2.59 J	NA	0.119 J	NA
TOTAL PECDD			NA	0.238 J	NA	0.124 J	NA	1.16 J	NA	0.249 J	NA
TOTAL PECDF			NA	0.135 J	NA	0.0578 U	NA	3.3	NA	0.203 J	NA
TOTAL TCDD			NA	0.606 J	NA	0.094 U	NA	0.376 J	NA	0.0954 J	NA
TOTAL TCDF			NA	0.701 J	NA	0.3 J	NA	3.6	NA	0.432 J	NA
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			18.5 U	19 J	15 U	24.5	14 U	240	14 U	14 U	14 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204
LOCATION ID			TF4-SB930	TF4-SB930	TF4-SB932	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935
SAMPLE DATE			4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/15/2010	4/15/2010	4/14/2010
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
2-BUTANONE	28000000	200000000	5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
ACETONE	61000000	630000000	5.1 UJ	5.1 J	4 UJ	4.9 UJ	4.7 UJ	4.3 UJ	67 J	4.8 J	9.9 J
BENZENE	1100	5400	5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
BTEX			5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
CARBON DISULFIDE	820000	3700000	5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
M+P-XYLENES			5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
METHYL TERT-BUTYL ETHER	43000	220000	5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	1 J	4.3 U	4.1 U
TOLUENE	5000000	45000000	5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
TOTAL XYLENES	630000	2700000	5.1 U	4.8 U	4 U	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U
SEMIVOLATILES (UG/KG)											
2,4-DICHLOROPHENOL	180000	1800000	4.8 UJ	4.1 UJ	3.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	4 U	3.6 U	3.6 U
2-CHLOROPHENOL	390000	5100000	4.8 U	4.1 U	3.6 U	4	3.8 U	3.9 U	4 U	3.6 U	3.8 U
2-METHYLNAPHTHALENE	310000	4100000	5.7	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U
2-METHYLPHENOL	3100000	31000000	4.8 U	4.1 U	3.6 U	12	3.8 U	3.9 U	4 U	3.6 U	3.6 UJ
4-METHYLPHENOL	310000	3100000	4.8 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 UJ
ACENAPHTHENE	3400000	33000000	4.8 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U
ACENAPHTHYLENE	3400000	33000000	4.8 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	69	3.6 U	3.6 U
ANTHRACENE	17000000	170000000	4.8 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	99 J	3.6 U	3.6 U
BENZO(A)ANTHRACENE	150	2100	6.5	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	320 J	3.6 U	6.5
BENZO(A)PYRENE	15	210	8.3 J	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	250 J	3.6 U	5.7
BENZO(B)FLUORANTHENE	150	2100	14 J	4.1 UJ	3.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	610 J	4.2 J	9.7 J
BENZO(G,H,I)PERYLENE	1700000	17000000	7.6	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	100 J	3.6 U	4.2

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204
LOCATION ID			TF4-SB930	TF4-SB930	TF4-SB932	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935
SAMPLE DATE			4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/15/2010	4/15/2010	4/14/2010
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	9.6	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	490	3.6 U	5.8
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	480 U	410 U	360 U	390 U	380 U	390 U	400 U	360 U	360 U
BUTYL BENZYL PHTHALATE	260000	910000	480 U	410 U	360 U	390 U	380 U	390 U	400 U	360 U	360 U
CHRYSENE	15000	210000	13	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	440	3.6 U	9.6
DIBENZO(A,H)ANTHRACENE	15	210	4.8 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	46	3.6 U	3.6 U
DI-N-BUTYL PHTHALATE	6100000	62000000	480 U	410 U	50 J	48 J	380 U	390 U	400 U	360 U	360 U
FLUORANTHENE	2300000	22000000	17	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	160 J	3.6 U	13
FLUORENE	2300000	22000000	4.8 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	12	3.6 U	3.6 U
HIGH MOLECULAR WEIGHT PAHS			97.7 J	4.1 UJ	3.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	2750 J	4.2 J	65.5 J
INDENO(1,2,3-CD)PYRENE	150	2100	6.7 J	4.1 UJ	3.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	130 J	3.6 U	3.6 U
LOW MOLECULAR WEIGHT PAHS			22.1	4.1 U	3.6 U	5.2	3.8 U	3.9 U	200 J	3.6 U	4.5
NAPHTHALENE	3600	18000	8.4	4.1 U	3.6 U	5.2	3.8 U	3.9 U	4 U	3.6 U	3.6 U
PHENANTHRENE	1700000	17000000	8	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	20	3.6 U	4.5

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204
LOCATION ID			TF4-SB930	TF4-SB930	TF4-SB932	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935
SAMPLE DATE			4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/15/2010	4/15/2010	4/14/2010
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
PHENOL	18000000	180000000	5.8	4.1 U	3.6 U	6.4	3.8 U	3.9 U	4 U	3.6 U	3.6 U
PYRENE	1700000	17000000	15	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	200 J	3.6 U	11
TOTAL CARCINOGENIC PAHS-HALFND	15	210	60.5 J	4.1 UJ	3.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	2290 J	15 J	40.9 J
TOTAL CARCINOGENIC PAHS-POS	15	210	58.1 J	4.1 UJ	3.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	2290 J	4.2 J	37.3 J
TOTAL PAHS			120 J	4.1 UJ	3.6 UJ	5.2 J	3.8 UJ	3.9 UJ	2950 J	4.2 J	70 J
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	4.9 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U
4,4'-DDT	1700	7000	4.9 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 UJ	3.6 UJ	3.6 U
AROCLOR-1254	220	740	49 U	41 U	36 U	39 U	38 U	39 U	40 U	36 U	36 U
ENDOSULFAN SULFATE	370000	3700000	4.9 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U
ENDRIN ALDEHYDE	18000	180000	4.9 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U
TOTAL AROCLOR	220	740	49 U	41 U	36 U	39 U	38 U	39 U	40 U	36 U	36 U
TOTAL DDD/DDE/DDT			4.9 U	4.1 U	3.6 U	3.9 U	3.8 U	3.9 U	4 UJ	3.6 UJ	3.6 U
METALS (MG/KG)											
ALUMINUM	77000	990000	12900 J	10600 J	6300 J	3100 J	7420 J	4660 J	8410	9130	7470 J
ARSENIC	0.39	1.6	8.3 J	9 J	24.1 J	42.9 J	4.9 J	34.4 J	6.8 J	28.2	9.1
BARIUM	15000	190000	103	16.2 J	9.8 J	7.1 J	17.9	17.6 J	20	6.2 J	19.7
BERYLLIUM	160	2000	0.69	0.28	0.35	0.24	0.17 J	0.2 J	0.74 J	0.44 J	0.53 J
CADMIUM	70	800	0.23 J	0.35	0.44	0.34	0.16 J	0.5	0.16 J	0.27	0.38
CALCIUM			583 J	924 J	74.3 J	321 J	111 J	6.7 UJ	270 J	1260 J	247 J
CHROMIUM	0.29	5.6	7.2	23.6	14.3	21.7	9.6	11.4	10.7	24.1	13.5 J
COBALT	23	300	37.1	20.4	19.5	26.6	5.8	40.2	8.4 J	27.7 J	14.5

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204
LOCATION ID			TF4-SB930	TF4-SB930	TF4-SB932	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935
SAMPLE DATE			4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/15/2010	4/15/2010	4/14/2010
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
COPPER	3100	41000	3.3	21.2	23.5	31	9.4	17.4	11.6 J	26.7 J	21
IRON	55000	720000	30700	48300	42800	31300	20300	46300	28600	61400	39000 J
LEAD	400	800	11.8 J	20.3 J	8.7 J	12 J	8.2 J	6 J	6.3 J	3.1 J	6.8 J
MAGNESIUM			2260	4630	1910	759	1950	1780	1680 J	3790 J	1980 J
MANGANESE	1800	23000	4480	441	303	734	120	1850	306	573	410
MERCURY	5.6	34	0.021 J	0.0064 U	0.006 U	0.0062 U	0.0056 U	0.0058 U	0.028 UJ	0.028 UJ	0.011 J
NICKEL	1500	20000	43.6 J	51 J	33.3 J	39.8 J	13.4 J	68.2 J	16.4	42.1	26.4
POTASSIUM			597	359	268	148	271	135	234 J	114 J	415 J
SELENIUM	390	5100	4.1	0.68 U	0.58 U	0.92 J	1.4	1.3 J	3.9 UJ	6 UJ	4.7
SILVER	390	5100	0.088 UJ	0.069 UJ	0.059 UJ	0.066 UJ	0.061 UJ	0.08 UJ	0.13 UJ	0.2 UJ	0.12 J
SODIUM			79.3	21.8 J	17.1 J	17.3 J	25.6 J	26.5 J	43.2 J	16.7 UJ	23.4 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204
LOCATION ID			TF4-SB930	TF4-SB930	TF4-SB932	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935
SAMPLE DATE			4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/15/2010	4/15/2010	4/14/2010
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.27 U	0.21 U	0.18 U	0.2 U	0.18 U	0.24 U	2.3	3.8	2.5
VANADIUM	390	5200	23.7	19.1	19.6	12	15.1	8.6	16.1	15.6 J	16
ZINC	23000	310000	49 J	99.6 J	90.3 J	83.2 J	37.1 J	78.4 J	42.3	85.5	83
MISCELLANEOUS PARAMETERS (S.U.)											
PH			NA	6	NA	5.5	NA	5.9	NA	6.1	NA
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			NA	7400	NA	9500	NA	7900	NA	4900 U	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			1070	NA	2160 J	NA	2090 J	NA	4020 J	NA	6030 J
1,2,3,4,6,7,8,9-OCDF			0.491 J	NA	0.321 J	NA	0.123 J	NA	0.663 U	NA	3.33 U
1,2,3,4,6,7,8-HPCDD			14.8	NA	17.1	NA	9.15	NA	24.8	NA	56.1
1,2,3,4,6,7,8-HPCDF			0.401 J	NA	0.129 J	NA	0.068 J	NA	0.406 U	NA	0.818 UJ
1,2,3,4,7,8-HXCDD			0.215 J	NA	0.0758 U	NA	0.0428 U	NA	0.295 J	NA	0.226 J
1,2,3,4,7,8-HXCDF			0.16 J	NA	0.0923 J	NA	0.0219 U	NA	0.160 U	NA	0.0683 U
1,2,3,6,7,8-HXCDD			0.313 J	NA	0.141 J	NA	0.0376 U	NA	0.499 J	NA	0.474 J
1,2,3,6,7,8-HXCDF			0.12 J	NA	0.0949 J	NA	0.0208 U	NA	0.152 U	NA	0.102 J
1,2,3,7,8,9-HXCDD			0.477 J	NA	0.251 J	NA	0.0410 U	NA	0.681 J	NA	0.446 J
1,2,3,7,8,9-HXCDF			0.0439 U	NA	0.0841 U	NA	0.0272 U	NA	0.204 U	NA	0.0868 U
1,2,3,7,8-PECDD			0.0718 U	NA	0.0912 U	NA	0.0474 U	NA	0.203 U	NA	0.0598 U
1,2,3,7,8-PECDF			0.0502 U	NA	0.0777 U	NA	0.0526 U	NA	0.151 U	NA	0.0516 U
2,3,4,6,7,8-HXCDF			0.107 J	NA	0.0718 U	NA	0.0234 U	NA	0.174 U	NA	0.0741 U
2,3,4,7,8-PECDF			0.0496 U	NA	0.0770 U	NA	0.0520 U	NA	0.149 U	NA	0.0512 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204
LOCATION ID			TF4-SB930	TF4-SB930	TF4-SB932	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935
SAMPLE DATE			4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/23/2010	4/15/2010	4/15/2010	4/14/2010
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
2,3,7,8-TCDD	4.5	18	0.0756 J	NA	0.122 U	NA	0.0481 U	NA	0.312 U	NA	0.0895 U
2,3,7,8-TCDF			0.130 U	NA	0.154 U	NA	0.0765 U	NA	0.294 U	NA	0.0811 U
TOTAL HPCDD			32	NA	35.7	NA	17	NA	56.3	NA	119
TOTAL HPCDF			0.708 J	NA	0.129 J	NA	0.0307 U	NA	0.406 U	NA	2.22 J
TOTAL HXCDD			4.1	NA	1.04 J	NA	0.0376 U	NA	2.49 U	NA	4.64 U
TOTAL HXCDF			0.622 J	NA	0.0949 J	NA	0.0208 U	NA	0.152 U	NA	0.914 J
TOTAL PECDD			0.0718 U	NA	1.71 J	NA	0.0474 U	NA	0.203 U	NA	0.802 J
TOTAL PECDF			1.79 J	NA	0.0770 U	NA	0.0520 U	NA	0.149 U	NA	0.614 J
TOTAL TCDD			0.0697 U	NA	1.08 J	NA	0.0481 U	NA	0.312 U	NA	0.0895 U
TOTAL TCDF			0.998 J	NA	0.154 U	NA	0.0765 U	NA	0.294 U	NA	0.246 J
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			71 J	15 U	13 U	14 U	14 U	14 U	NA	NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204
LOCATION ID			TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
2-BUTANONE	28000000	200000000	4.1 U	4.5 U	4.1 U	3.6 J	4.1 U	3.9 UJ	4.2 U	4.7 U	4 U
ACETONE	61000000	630000000	6.2 J	4.5 UJ	4.1 UJ	12 J	4.1 UJ	3.9 UJ	4.2 UJ	4.7 UJ	7.6 J
BENZENE	1100	5400	4.1 U	4.5 U	4.1 U	3.6 U	4.1 U	3.9 U	4.2 U	4.7 U	4 U
BTEX			4.1 U	4.5 U	4.1 UJ	3.6 U	4.1 U	3.9 U	4.2 U	2.7 J	4 U
CARBON DISULFIDE	820000	3700000	4.1 U	4.5 U	4.1 U	3.6 U	4.1 U	3.9 U	4.2 U	4.7 U	4 U
M+P-XYLENES			4.1 U	4.5 U	4.1 UJ	3.6 U	4.1 U	3.9 U	4.2 U	2.7 J	4 U
METHYL TERT-BUTYL ETHER	43000	220000	4.1 U	4.5 U	4.1 U	3.6 U	4.1 U	3.9 U	4.2 U	4.7 U	4 U
TOLUENE	5000000	45000000	4.1 U	4.5 U	4.1 U	3.6 U	4.1 U	3.9 U	4.2 U	4.7 U	4 U
TOTAL XYLENES	630000	2700000	4.1 U	4.5 U	4.1 UJ	3.6 U	4.1 U	3.9 U	4.2 U	2.7 J	4 U
SEMIVOLATILES (UG/KG)											
2,4-DICHLOROPHENOL	180000	1800000	3.7 U	3.7 U	3.9 U	5.1 J	3.5 UJ	3.3 U	3.7 UJ	3.3 U	3.3 U
2-CHLOROPHENOL	390000	5100000	6.5 U	3.7 U	3.9 U	7.9	3.5 U	3.6	3.7 UJ	3.3 U	3.3 U
2-METHYLNAPHTHALENE	310000	4100000	3.7 U	3.7 UJ	3.9 U	6.1	3.5 UJ	3.3 UJ	15 J	3.3 UJ	3.3 UJ
2-METHYLPHENOL	3100000	31000000	3.7 UJ	3.7 U	3.9 UJ	6.4	3.5 UJ	3.3 UJ	3.7 UJ	3.3 UJ	3.3 UJ
4-METHYLPHENOL	310000	3100000	3.7 UJ	3.7 U	3.9 UJ	6.1	3.5 UJ	3.3 UJ	3.7 UJ	3.3 UJ	3.3 UJ
ACENAPHTHENE	3400000	33000000	3.7 U	3.7 U	3.9 U	4.4 U	3.5 U	3.3 U	47 J	3.3 U	3.3 U
ACENAPHTHYLENE	3400000	33000000	3.7 U	3.7 U	3.9 U	4.4 U	3.5 U	3.3 U	76 J	3.3 U	3.3 U
ANTHRACENE	17000000	170000000	3.7 U	3.7 U	3.9 U	4.4 U	3.5 U	3.3 U	86 J	3.3 U	3.3 U
BENZO(A)ANTHRACENE	150	2100	3.7 U	3.7 U	3.9 U	7	3.5 U	3.3 U	150 J	3.3 U	3.3 U
BENZO(A)PYRENE	15	210	3.7 U	3.7 U	3.9 U	5.7 J	3.5 U	3.3 U	200 J	3.3 U	3.3 U
BENZO(B)FLUORANTHENE	150	2100	3.7 UJ	3.7 U	3.9 UJ	9.2 J	3.5 UJ	3.3 U	320 J	3.3 U	3.3 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.7 U	3.7 U	3.9 UJ	4.4 U	3.5 U	3.3 U	180 J	3.3 U	3.3 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204
LOCATION ID			TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	3.7 U	3.7 UJ	3.9 U	4.8	3.5 U	3.3 U	83 J	3.3 U	3.3 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	370 U	370 U	390 U	440 U	350 U	330 U	330 UJ	330 U	65 J
BUTYL BENZYL PHTHALATE	260000	910000	370 U	370 U	390 U	440 U	350 U	330 U	330 UJ	330 U	330 U
CHRYSENE	15000	210000	3.7 U	3.7 U	3.9 U	6.2	3.5 U	3.3 U	190 J	3.3 U	3.3 U
DIBENZO(A,H)ANTHRACENE	15	210	3.7 U	3.7 UJ	3.9 UJ	4.4 U	3.5 U	3.3 U	43 J	3.3 U	3.3 U
DI-N-BUTYL PHTHALATE	6100000	62000000	370 U	370 U	390 U	440 U	103 J	330 U	330 UJ	330 U	330 U
FLUORANTHENE	2300000	22000000	3.9	3.7 U	3.9 U	11	3.5 U	3.3 U	310 J	3.3 U	3.3 U
FLUORENE	2300000	22000000	3.7 U	3.7 U	3.9 U	4.4 U	3.5 U	3.3 U	84 J	3.3 U	3.3 U
HIGH MOLECULAR WEIGHT PAHS			3.9 J	3.7 UJ	3.9 UJ	53.9 J	3.5 UJ	3.3 U	1930 J	3.3 U	3.3 U
INDENO(1,2,3-CD)PYRENE	150	2100	3.7 U	3.7 UJ	3.9 UJ	4.4 UJ	3.5 UJ	3.3 U	140 J	3.3 U	3.3 U
LOW MOLECULAR WEIGHT PAHS			3.7 U	5.3 J	3.9 U	13.4	3.5 UJ	3.3 UJ	601 J	3.3 UJ	3.3 UJ
NAPHTHALENE	3600	18000	3.7 U	5.3	3.9 U	7.3	3.5 U	3.3 U	13 J	3.3 U	3.3 U
PHENANTHRENE	1700000	17000000	3.7 U	3.7 U	3.9 U	4.4 U	3.5 U	3.3 U	280 J	3.3 U	3.3 U

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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204
LOCATION ID			TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
PHENOL	18000000	180000000	3.7 U	3.7 U	3.9 U	39	11.4 J	19	3.7 UJ	5.8	29
PYRENE	1700000	17000000	3.7 U	3.7 U	3.9 U	10	3.5 U	3.3 U	310 J	3.3 U	3.3 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.7 UJ	3.7 UJ	3.9 UJ	37.3 J	3.5 UJ	3.3 U	1130 J	3.3 U	3.3 U
TOTAL CARCINOGENIC PAHS-POS	15	210	3.7 UJ	3.7 UJ	3.9 UJ	32.9 J	3.5 UJ	3.3 U	1130 J	3.3 U	3.3 U
TOTAL PAHS			3.9 J	5.3 J	3.9 UJ	67.3 J	3.5 UJ	3.3 UJ	2530 J	3.3 UJ	3.3 UJ
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	3.7 U	3.7 U	3.9 U	4.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U
4,4'-DDT	1700	7000	3.7 U	3.7 U	3.9 U	4.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U
AROCLOR-1254	220	740	37 U	37 U	39 U	43 U	35 U	33 U	33 U	33 U	33 U
ENDOSULFAN SULFATE	370000	3700000	3.7 U	3.7 U	3.9 U	4.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	3.7 U	3.7 U	3.9 U	4.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U
TOTAL AROCLOR	220	740	37 U	37 U	39 U	43 U	35 U	33 U	33 U	33 U	33 U
TOTAL DDD/DDE/DDT			3.7 U	3.7 U	3.9 U	4.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U
METALS (MG/KG)											
ALUMINUM	77000	990000	7370 J	6340	4110 J	7270 J	6070 J	1780	3070	8270	6480
ARSENIC	0.39	1.6	8	10.1 J	7.2	9.4 J	20.9 J	18 J	10 J	34.7 J	18.9 J
BARIUM	15000	190000	18	19.4	4.7 J	17.4 J	8.9 J	9.6 J	10.2 J	2.6 J	17.4 J
BERYLLIUM	160	2000	0.43 J	0.53 J	0.24 J	0.25	0.27	0.3	0.16	0.21	0.38
CADMIUM	70	800	0.33	0.17 J	0.51	0.15 J	0.285	0.22	0.15	0.29	0.25 J
CALCIUM			166 J	137 J	39 J	635 J	244 J	542 J	53.3 J	483 J	6.7 UJ
CHROMIUM	0.29	5.6	11 J	11.1	15.4 J	9.4	13.3 J	12.2 J	4.7 J	23.5 J	10.7 J
COBALT	23	300	10.7	12.7 J	19.7	9.4	13.4 J	7.2 J	13.3 J	18.4 J	17.3 J

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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204
LOCATION ID			TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
COPPER	3100	41000	15.7	18 J	24.4	10.4	23.4 J	21.8 J	13.1 J	28.1 J	22.8 J
IRON	55000	720000	32300 J	39100	45700 J	22600	31700	40800	18500	42100	39200
LEAD	400	800	5.7 J	6.4 J	4.6 J	11.5 J	7.45 J	30.3 J	5.3 J	3.5 J	12.4 J
MAGNESIUM			2470 J	1120 J	1430 J	1700	2030	175	849	3140	1240
MANGANESE	1800	23000	287	402	775	143	240 J	58.3 J	342 J	186 J	396 J
MERCURY	5.6	34	0.0054 U	0.0062 U	0.0065 U	0.035 J	0.0154 J	0.028 J	0.006 U	0.0061 U	0.028 J
NICKEL	1500	20000	25	20.5	39.9	17.1 J	31.4 J	31.8	17.6	38.8	25.8
POTASSIUM			337 J	247 J	107 J	198	208 J	147 J	242 J	92.6 J	301 J
SELENIUM	390	5100	3.9	3.8 UJ	5.3	0.87 J	0.495 U	0.63 U	0.48 U	0.62 U	0.8 U
SILVER	390	5100	0.07 U	0.057 U	0.21 J	0.068 UJ	0.0505 UJ	0.064 U	0.049 U	0.063 U	0.081 U
SODIUM			17.7 J	22.6 UJ	8.4 UJ	41.3 J	16 J	40.7	11 J	12.7 J	34.4 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204
LOCATION ID			TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			1.7	2.6	4.3	0.21 U	0.155 U	0.19 U	0.15 U	0.19 U	0.24 U
VANADIUM	390	5200	10.6 J	16.2	8.9 J	13.6	14	12.9	8.5	18.4	16.7
ZINC	23000	310000	57.1	58.6	156	40.3 J	83.4 J	66.9	35.7	96.6	66.3
MISCELLANEOUS PARAMETERS (S.U.)											
PH			5.2	NA	6.4	NA	NA	6.1	NA	6	NA
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			21000	NA	23000	NA	NA	22000	NA	9700	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			NA	6220 J	NA	2280 J	490	NA	1790 J	NA	6250 J
1,2,3,4,6,7,8,9-OCDF			NA	0.457 UJ	NA	0.232 J	0.136 U	NA	0.195 J	NA	0.358 J
1,2,3,4,6,7,8-HPCDD			NA	59.9	NA	15	5.76	NA	13	NA	41.1
1,2,3,4,6,7,8-HPCDF			NA	0.202 UJ	NA	0.196 J	0.0533 J	NA	0.0503 J	NA	0.08 J
1,2,3,4,7,8-HXCDD			NA	0.258 J	NA	0.146 J	0.131 J	NA	0.0854 J	NA	0.168 J
1,2,3,4,7,8-HXCDF			NA	0.0504 U	NA	0.0592 J	0.0574 U	NA	0.0141 U	NA	0.0386 J
1,2,3,6,7,8-HXCDD			NA	0.439 J	NA	0.165 J	0.0832 U	NA	0.0797 J	NA	0.088 J
1,2,3,6,7,8-HXCDF			NA	0.0907 J	NA	0.0372 U	0.054 J	NA	0.063 J	NA	0.0442 J
1,2,3,7,8,9-HXCDD			NA	0.707 J	NA	0.191 J	0.0881 U	NA	0.0666 J	NA	0.0838 J
1,2,3,7,8,9-HXCDF			NA	0.0641 U	NA	0.0485 U	0.073 U	NA	0.0184 U	NA	0.0220 U
1,2,3,7,8-PECDD			NA	0.0857 U	NA	0.0734 U	0.0842 U	NA	0.0263 U	NA	0.0286 U
1,2,3,7,8-PECDF			NA	0.0961 U	NA	0.0604 U	0.0843 U	NA	0.0202 U	NA	0.0236 U
2,3,4,6,7,8-HXCDF			NA	0.0547 U	NA	0.0417 U	0.0623 U	NA	0.0153 U	NA	0.0183 U
2,3,4,7,8-PECDF			NA	0.0954 U	NA	0.0597 U	0.0836 U	NA	0.0194 U	NA	0.0228 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204
LOCATION ID			TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010	4/22/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
2,3,7,8-TCDD	4.5	18	NA	0.165 U	NA	0.0644 U	0.106 U	NA	0.0254 U	NA	0.0269 U
2,3,7,8-TCDF			NA	0.158 U	NA	0.0998 U	0.13 U	NA	0.0492 U	NA	0.0360 U
TOTAL HPCDD			NA	113	NA	15	11.4 J	NA	20.9	NA	70.2
TOTAL HPCDF			NA	0.0725 U	NA	0.125 J	0.0533 J	NA	0.0169 U	NA	0.118 J
TOTAL HXCDD			NA	3.38 U	NA	1.14 J	1.31 J	NA	0.0797 J	NA	0.601 J
TOTAL HXCDF			NA	0.0477 U	NA	0.0372 U	0.0543 U	NA	0.0131 U	NA	0.0442 J
TOTAL PECDD			NA	0.569 J	NA	0.551 J	0.278 J	NA	0.183 J	NA	0.565 J
TOTAL PECDF			NA	0.0954 U	NA	0.15 J	0.0836 U	NA	0.0194 U	NA	0.0228 U
TOTAL TCDD			NA	0.165 U	NA	0.0644 U	0.0815 J	NA	0.184 J	NA	0.0269 U
TOTAL TCDF			NA	0.382 J	NA	0.0998 U	0.13 U	NA	0.299 J	NA	0.134 J
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			NA	NA	NA	30 U	18 U	21 UJ	58 U	22 UJ	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943	TF4-SB943
SAMPLE DATE			4/22/2010	4/15/2010	4/15/2010	4/20/2010	4/15/2010	4/15/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)								
2-BUTANONE	28000000	200000000	6.8	4.5 U	4.5 U	8.3	5 U	4.5 U
ACETONE	61000000	630000000	150 J	7.6 J	4.5 UJ	22 J	180 J	4.5 UJ
BENZENE	1100	5400	3.8 U	4.5 U	4.5 U	5.2 U	5 U	4.5 U
BTEX			3.8 U	4.5 U	4.5 U	1.1 J	5 U	4.5 U
CARBON DISULFIDE	820000	3700000	3.8 U	4.5 U	4.5 U	5.2 U	5 U	4.5 U
M+P-XYLENES			3.8 U	4.5 U	4.5 U	5.2 U	5 U	4.5 U
METHYL TERT-BUTYL ETHER	43000	220000	3.8 U	4.5 U	4.5 U	5.2 U	1.1 J	4.5 U
TOLUENE	5000000	45000000	3.8 U	4.5 U	4.5 U	5.2 U	5 U	4.5 U
TOTAL XYLENES	630000	2700000	3.8 U	4.5 U	4.5 U	1.1 J	5 U	4.5 U
SEMIVOLATILES (UG/KG)								
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.8 UJ	3.85 UJ	4 UJ	4 U	3.7 U
2-CHLOROPHENOL	390000	5100000	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U	3.7 U
2-METHYLNAPHTHALENE	310000	4100000	3.3 UJ	3.8 UJ	3.85 UJ	4 U	4 UJ	3.7 U
2-METHYLPHENOL	3100000	31000000	3.3 UJ	380 U	99.8 J	4 U	4 U	3.7 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.8 UJ	5.52 J	4 U	4 U	3.7 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U	3.7 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U	3.7 U
ANTHRACENE	17000000	170000000	3.3 U	3.8 UJ	3.85 UJ	12	4 U	3.7 U
BENZO(A)ANTHRACENE	150	2100	3.3 U	3.8 UJ	3.85 UJ	28	4 U	3.7 U
BENZO(A)PYRENE	15	210	3.3 U	3.8 UJ	3.85 UJ	29 J	4 U	3.7 U
BENZO(B)FLUORANTHENE	150	2100	3.3 U	3.8 UJ	3.85 UJ	37 J	4 U	3.7 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	3.8 UJ	3.85 UJ	21	4 U	3.7 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943	TF4-SB943
SAMPLE DATE			4/22/2010	4/15/2010	4/15/2010	4/20/2010	4/15/2010	4/15/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	3.8 UJ	3.85 UJ	27	4 UJ	3.7 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	380 U	131 J	400 U	400 U	370 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	380 U	170 J	400 U	400 U	370 U
CHRYSENE	15000	210000	3.3 U	3.8 UJ	3.85 UJ	36	4 U	3.7 U
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.8 UJ	3.85 UJ	5.6 J	4 UJ	3.7 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	380 U	385 U	400 U	400 U	370 U
FLUORANTHENE	2300000	22000000	3.3 U	3.8 UJ	3.85 UJ	56	4 U	3.7 U
FLUORENE	2300000	22000000	3.3 U	3.8 UJ	3.85 UJ	4.9	4 U	3.7 U
HIGH MOLECULAR WEIGHT PAHS			3.3 U	3.8 UJ	3.85 UJ	308 J	4 UJ	3.7 U
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	3.8 UJ	3.85 UJ	19 J	4 UJ	3.7 U
LOW MOLECULAR WEIGHT PAHS			3.3 UJ	3.8 UJ	3.85 UJ	53.9	4 UJ	3.7 U
NAPHTHALENE	3600	18000	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U	3.7 U
PHENANTHRENE	1700000	17000000	3.3 U	3.8 UJ	3.85 UJ	37	4 U	3.7 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943	TF4-SB943
SAMPLE DATE			4/22/2010	4/15/2010	4/15/2010	4/20/2010	4/15/2010	4/15/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
PHENOL	18000000	180000000	19	4.5 J	4.82 J	4 U	4 U	3.7 U
PYRENE	1700000	17000000	3.3 U	3.8 UJ	3.85 UJ	49	4 U	3.7 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.3 U	3.8 UJ	3.85 UJ	182 J	4 UJ	3.7 U
TOTAL CARCINOGENIC PAHS-POS	15	210	3.3 U	3.8 UJ	3.85 UJ	182 J	4 UJ	3.7 U
TOTAL PAHS			3.3 UJ	3.8 UJ	3.85 UJ	362 J	4 UJ	3.7 U
PESTICIDES/PCBS (UG/KG)								
4,4'-DDD	2000	7200	3.3 U	3.7 U	3.85 U	4.6	4 U	3.6 U
4,4'-DDT	1700	7000	3.3 U	3.7 UJ	3.85 UJ	7.1 J	4 UJ	3.6 UJ
AROCLOR-1254	220	740	33 U	37 U	38.5 U	100 J	40 U	36 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.7 U	3.85 U	7.1	4 U	3.6 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.7 U	3.85 U	4.1 U	4 U	3.6 U
TOTAL AROCLOR	220	740	33 U	37 U	38.5 U	100 J	40 U	36 U
TOTAL DDD/DDE/DDT			3.3 U	3.7 UJ	3.85 UJ	11.7 J	4 UJ	3.6 UJ
METALS (MG/KG)								
ALUMINUM	77000	990000	9640	4930	3460	9220	4920	1000
ARSENIC	0.39	1.6	6.5 J	8.5 J	29.5	11.3 J	10.6 J	6.4 J
BARIUM	15000	190000	24.1 J	16.1	8.95 J	21.1 J	49.3	6.1 J
BERYLLIUM	160	2000	0.44	0.51 J	0.42 J	0.19 J	0.63 J	0.32 J
CADMIUM	70	800	0.19	0.13 J	1.15	0.081 J	0.48	0.75
CALCIUM			4.5 UJ	221 J	298 J	217 J	307 J	6 J
CHROMIUM	0.29	5.6	11.8 J	9.6	11.9	11.4	7	5.2 J
COBALT	23	300	12.2 J	10.8 J	29.2 J	11.1	29 J	28.2 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943	TF4-SB943
SAMPLE DATE			4/22/2010	4/15/2010	4/15/2010	4/20/2010	4/15/2010	4/15/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
COPPER	3100	41000	18.2 J	19.7 J	31.8 J	12.3	20 J	20.2 J
IRON	55000	720000	30200	39600	45400	29000	66500	70700
LEAD	400	800	7.3 J	5.7 J	29.7	12.9 J	5.9 J	4.1 J
MAGNESIUM			2880	1020 J	949 J	2510	963 J	222 J
MANGANESE	1800	23000	364 J	282	382	391	2410	1740
MERCURY	5.6	34	0.0057 U	0.0061 U	0.0056 U	0.024 J	0.011 UJ	0.006 U
NICKEL	1500	20000	20	18.7	46.9	19.3 J	39.4	96.9
POTASSIUM			624 J	321 J	299 J	201 J	206 J	89.5 J
SELENIUM	390	5100	0.7 J	4.1 UJ	3.45 UJ	0.86 U	7 UJ	6.5 UJ
SILVER	390	5100	0.054 U	0.096 UJ	0.255 UJ	0.087 U	0.22 UJ	0.35 UJ
SODIUM			35.9	22 UJ	19.6 UJ	40.9 J	14.5 UJ	8.8 UJ

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943	TF4-SB943
SAMPLE DATE			4/22/2010	4/15/2010	4/15/2010	4/20/2010	4/15/2010	4/15/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
THALLIUM			0.16 U	2	1.2	0.27 U	11.8	9
VANADIUM	390	5200	16.6	13.6 J	13.9 J	16.8	10.5 J	8.7 J
ZINC	23000	310000	45.5	48.8	122	54.8 J	176	193
MISCELLANEOUS PARAMETERS (S.U.)								
PH			6.2	NA	5.55	NA	NA	5.8
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON			16000	NA	4600	NA	NA	5000 U
DIOXINS/FURANS (NG/KG)								
1,2,3,4,6,7,8,9-OCDD			NA	4570 J	NA	1840 J	4320 J	NA
1,2,3,4,6,7,8,9-OCDF			NA	0.138 UJ	NA	2.11 J	0.132 UJ	NA
1,2,3,4,6,7,8-HPCDD			NA	30.3	NA	20.6	36.2	NA
1,2,3,4,6,7,8-HPCDF			NA	0.113 UJ	NA	0.892 J	0.12 U	NA
1,2,3,4,7,8-HXCDD			NA	0.468 J	NA	0.149 J	0.151 J	NA
1,2,3,4,7,8-HXCDF			NA	0.0152 U	NA	0.117 U	0.0979 J	NA
1,2,3,6,7,8-HXCDD			NA	0.154 J	NA	0.486 J	0.241 J	NA
1,2,3,6,7,8-HXCDF			NA	0.168 J	NA	0.111 U	0.0786 J	NA
1,2,3,7,8,9-HXCDD			NA	0.0366 U	NA	0.392 J	0.214 J	NA
1,2,3,7,8,9-HXCDF			NA	0.0190 U	NA	0.145 U	0.0572 U	NA
1,2,3,7,8-PECDD			NA	0.0238 U	NA	0.0554 U	0.0619 U	NA
1,2,3,7,8-PECDF			NA	0.0217 U	NA	0.0467 U	0.0722 U	NA
2,3,4,6,7,8-HXCDF			NA	0.0163 U	NA	0.124 U	0.0488 U	NA
2,3,4,7,8-PECDF			NA	0.0214 U	NA	0.0463 U	0.0716 U	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-3
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA SOIL RSL - Residential	EPA SOIL RSL - Industrial	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943	TF4-SB943
SAMPLE DATE			4/22/2010	4/15/2010	4/15/2010	4/20/2010	4/15/2010	4/15/2010
TOP DEPTH			8 FT	2 FT	8 FT	2 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT	4 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
2,3,7,8-TCDD	4.5	18	NA	0.0592 U	NA	0.0922 U	0.0986 U	NA
2,3,7,8-TCDF			NA	0.0556 U	NA	0.0919 U	0.0855 U	NA
TOTAL HPCDD			NA	48.6	NA	39	73.4	NA
TOTAL HPCDF			NA	0.119 U	NA	2.19 J	0.12 U	NA
TOTAL HXCDD			NA	1.14 U	NA	2.09 J	2.53 U	NA
TOTAL HXCDF			NA	0.0145 U	NA	0.111 U	0.212 J	NA
TOTAL PECDD			NA	0.896 J	NA	0.31 J	0.0619 U	NA
TOTAL PECDF			NA	0.0214 U	NA	0.773 J	0.0716 U	NA
TOTAL TCDD			NA	0.0592 U	NA	0.0922 U	0.0986 U	NA
TOTAL TCDF			NA	0.552 J	NA	0.0919 U	0.749 J	NA
PETROLEUM HYDROCARBONS (MG/KG)								
EXTRACTABLE PETROLEUM HYDROCARBONS			NA	NA	NA	46	NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-920-0001					TF4-SS-921-0001					TF4-SS-922-0001				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SS-920-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-921-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-922-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	3600	J	1.08	1.08	1.08	3920	J	1.176	1.176	1.176	3870	J	1.161	1.161	1.161
1,2,3,4,6,7,8,9-OCDF	0.0003	3.47	J	0.001041	0.001041	0.001041	1.75	J	0.000525	0.000525	0.000525	2.72	J	0.000816	0.000816	0.000816
1,2,3,4,6,7,8-HPCDD	0.01	41		0.41	0.41	0.41	38.5		0.385	0.385	0.385	27		0.27	0.27	0.27
1,2,3,4,6,7,8-HPCDF	0.01	1.23	J	0.0123	0.0123	0.0123	1.77	J	0.0177	0.0177	0.0177	1.25	J	0.0125	0.0125	0.0125
1,2,3,4,7,8-HXCDD	0.1	0.103	J	0.0103	0.0103	0.0103	0.0875	U	0.00875	0.004375	0	0.0992	J	0.00992	0.00992	0.00992
1,2,3,4,7,8-HXCDF	0.1	0.395	J	0.0395	0.0395	0.0395	0.364	J	0.0364	0.0364	0.0364	0.129	J	0.0129	0.0129	0.0129
1,2,3,6,7,8-HXCDD	0.1	0.283	J	0.0283	0.0283	0.0283	0.386	J	0.0386	0.0386	0.0386	0.266	J	0.0266	0.0266	0.0266
1,2,3,6,7,8-HXCDF	0.1	0.569	J	0.0569	0.0569	0.0569	0.59	J	0.059	0.059	0.059	0.305	J	0.0305	0.0305	0.0305
1,2,3,7,8,9-HXCDD	0.1	0.15	J	0.015	0.015	0.015	0.23	J	0.023	0.023	0.023	0.151	J	0.0151	0.0151	0.0151
1,2,3,7,8,9-HXCDF	0.1	0.592	J	0.0592	0.0592	0.0592	0.844	J	0.0844	0.0844	0.0844	0.247	J	0.0247	0.0247	0.0247
1,2,3,7,8-PECDD	1	0.22	J	0.22	0.22	0.22	0.0822	U	0.0822	0.0411	0	0.096	U	0.096	0.048	0
1,2,3,7,8-PECDF	0.03	0.163	J	0.00489	0.00489	0.00489	0.0894	U	0.002682	0.001341	0	0.103	U	0.00309	0.001545	0
2,3,4,6,7,8-HXCDF	0.1	0.169	J	0.0169	0.0169	0.0169	0.221	J	0.0221	0.0221	0.0221	0.142	J	0.0142	0.0142	0.0142
2,3,4,7,8-PECDF	0.3	0.142	J	0.0426	0.0426	0.0426	0.205	J	0.0615	0.0615	0.0615	0.102	U	0.0306	0.0153	0
2,3,7,8-TCDD	1	0.0547	U	0.0547	0.02735	0	0.0939	U	0.0939	0.04695	0	0.0863	U	0.0863	0.04315	0
2,3,7,8-TCDF	0.1	0.258	J	0.0258	0.0258	0.0258	0.158	U	0.0158	0.0079	0	0.14	U	0.014	0.007	0
Total of TEQ					2.05	2.02				2.01	1.90				1.69	1.58

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-923-0001					TF4-SS-924-0001					TF4-SS-925-0001				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SS-923-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-924-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-925-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	3190	J	0.957	0.957	0.957	5880	J	1.764	1.764	1.764	3840	J	1.152	1.152	1.152
1,2,3,4,6,7,8,9-OCDF	0.0003	16.1		0.00483	0.00483	0.00483	3.63	J	0.001089	0.001089	0.001089	2.09	J	0.000627	0.000627	0.000627
1,2,3,4,6,7,8-HPCDD	0.01	65.1		0.651	0.651	0.651	45.4		0.454	0.454	0.454	39.9		0.399	0.399	0.399
1,2,3,4,6,7,8-HPCDF	0.01	7.2		0.072	0.072	0.072	2.72	J	0.0272	0.0272	0.0272	1.23	J	0.0123	0.0123	0.0123
1,2,3,4,7,8-HXCDD	0.1	0.689	J	0.0689	0.0689	0.0689	0.0687	U	0.00687	0.003435	0	0.182	J	0.0182	0.0182	0.0182
1,2,3,4,7,8-HXCDF	0.1	0.89	J	0.089	0.089	0.089	0.34	J	0.034	0.034	0.034	0.358	J	0.0358	0.0358	0.0358
1,2,3,6,7,8-HXCDD	0.1	1.09	J	0.109	0.109	0.109	0.327	J	0.0327	0.0327	0.0327	0.432	J	0.0432	0.0432	0.0432
1,2,3,6,7,8-HXCDF	0.1	1.8	J	0.18	0.18	0.18	0.721	J	0.0721	0.0721	0.0721	0.577	J	0.0577	0.0577	0.0577
1,2,3,7,8,9-HXCDD	0.1	0.727	J	0.0727	0.0727	0.0727	0.19	J	0.019	0.019	0.019	0.198	J	0.0198	0.0198	0.0198
1,2,3,7,8,9-HXCDF	0.1	2.09	J	0.209	0.209	0.209	0.817	J	0.0817	0.0817	0.0817	0.644	J	0.0644	0.0644	0.0644
1,2,3,7,8-PECDD	1	0.537	J	0.537	0.537	0.537	0.167	J	0.167	0.167	0.167	0.136	J	0.136	0.136	0.136
1,2,3,7,8-PECDF	0.03	0.391	J	0.01173	0.01173	0.01173	0.0553	U	0.001659	0.0008295	0	0.0385	U	0.001155	0.0005775	0
2,3,4,6,7,8-HXCDF	0.1	0.832	J	0.0832	0.0832	0.0832	0.168	J	0.0168	0.0168	0.0168	0.157	J	0.0157	0.0157	0.0157
2,3,4,7,8-PECDF	0.3	0.435	J	0.1305	0.1305	0.1305	0.0546	U	0.01638	0.00819	0	0.0799	J	0.02397	0.02397	0.02397
2,3,7,8-TCDD	1	0.128	U	0.128	0.064	0	0.0621	U	0.0621	0.03105	0	0.0635	U	0.0635	0.03175	0
2,3,7,8-TCDF	0.1	0.617	J	0.0617	0.0617	0.0617	0.331	J	0.0331	0.0331	0.0331	0.377	J	0.0377	0.0377	0.0377
Total of TEQ					3.30	3.24				2.75	2.70				2.05	2.02

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-926-0001					TF4-SS-927-0001					TF4-SS-928-0001				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SS-926-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-927-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-928-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	4250	J	1.275	1.275	1.275	5270	J	1.581	1.581	1.581	5710	J	1.713	1.713	1.713
1,2,3,4,6,7,8,9-OCDF	0.0003	14.1		0.00423	0.00423	0.00423	3.19	J	0.000957	0.000957	0.000957	4.91	J	0.001473	0.001473	0.001473
1,2,3,4,6,7,8-HPCDD	0.01	79.7		0.797	0.797	0.797	64.3		0.643	0.643	0.643	53.5		0.535	0.535	0.535
1,2,3,4,6,7,8-HPCDF	0.01	6.55		0.0655	0.0655	0.0655	1.79	J	0.0179	0.0179	0.0179	2.38	U	0.0238	0.0119	0
1,2,3,4,7,8-HXCDD	0.1	0.419	J	0.0419	0.0419	0.0419	0.151	J	0.0151	0.0151	0.0151	0.249	J	0.0249	0.0249	0.0249
1,2,3,4,7,8-HXCDF	0.1	1.15	J	0.115	0.115	0.115	0.602	J	0.0602	0.0602	0.0602	0.597	J	0.0597	0.0597	0.0597
1,2,3,6,7,8-HXCDD	0.1	0.759	J	0.0759	0.0759	0.0759	0.554	J	0.0554	0.0554	0.0554	0.671	J	0.0671	0.0671	0.0671
1,2,3,6,7,8-HXCDF	0.1	2.24	J	0.224	0.224	0.224	1.02	J	0.102	0.102	0.102	0.864	J	0.0864	0.0864	0.0864
1,2,3,7,8,9-HXCDD	0.1	0.565	J	0.0565	0.0565	0.0565	0.28	J	0.028	0.028	0.028	0.333	J	0.0333	0.0333	0.0333
1,2,3,7,8,9-HXCDF	0.1	2.34	J	0.234	0.234	0.234	1.36	J	0.136	0.136	0.136	1.07	J	0.107	0.107	0.107
1,2,3,7,8-PECDD	1	0.562	J	0.562	0.562	0.562	0.251	J	0.251	0.251	0.251	0.336	J	0.336	0.336	0.336
1,2,3,7,8-PECDF	0.03	0.191	J	0.00573	0.00573	0.00573	0.134	J	0.00402	0.00402	0.00402	0.213	J	0.00639	0.00639	0.00639
2,3,4,6,7,8-HXCDF	0.1	0.845	J	0.0845	0.0845	0.0845	0.431	J	0.0431	0.0431	0.0431	0.303	J	0.0303	0.0303	0.0303
2,3,4,7,8-PECDF	0.3	0.396	J	0.1188	0.1188	0.1188	0.261	J	0.0783	0.0783	0.0783	0.28	J	0.084	0.084	0.084
2,3,7,8-TCDD	1	0.0543	U	0.0543	0.02715	0	0.0569	U	0.0569	0.02845	0	0.0517	U	0.0517	0.02585	0
2,3,7,8-TCDF	0.1	0.676	J	0.0676	0.0676	0.0676	0.561	J	0.0561	0.0561	0.0561	0.606	J	0.0606	0.0606	0.0606
Total of TEQ					3.75	3.73				3.10	3.07				3.18	3.15

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-929-0001					TF4-SS-930-0001					TF4-SS-931-0001				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SS-929 0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-930-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-931-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	2890	J	0.867	0.867	0.867	8550	J	2.565	2.565	2.565	1890	J	0.567	0.567	0.567
1,2,3,4,6,7,8,9-OCDF	0.0003	1.88	J	0.000564	0.000564	0.000564	4.13	J	0.001239	0.001239	0.001239	26.6		0.00798	0.00798	0.00798
1,2,3,4,6,7,8-HPCDD	0.01	29.2		0.292	0.292	0.292	79.3		0.793	0.793	0.793	55.2		0.552	0.552	0.552
1,2,3,4,6,7,8-HPCDF	0.01	1.3	J	0.013	0.013	0.013	2.36	J	0.0236	0.0236	0.0236	7.87		0.0787	0.0787	0.0787
1,2,3,4,7,8-HXCDD	0.1	0.0454	U	0.00454	0.00227	0	0.167	J	0.0167	0.0167	0.0167	0.491	J	0.0491	0.0491	0.0491
1,2,3,4,7,8-HXCDF	0.1	0.274	J	0.0274	0.0274	0.0274	0.765	J	0.0765	0.0765	0.0765	0.806	J	0.0806	0.0806	0.0806
1,2,3,6,7,8-HXCDD	0.1	0.508	J	0.0508	0.0508	0.0508	0.688	J	0.0688	0.0688	0.0688	0.499	J	0.0499	0.0499	0.0499
1,2,3,6,7,8-HXCDF	0.1	0.506	J	0.0506	0.0506	0.0506	1.19	J	0.119	0.119	0.119	1.81	J	0.181	0.181	0.181
1,2,3,7,8,9-HXCDD	0.1	0.251	J	0.0251	0.0251	0.0251	0.318	J	0.0318	0.0318	0.0318	0.457	J	0.0457	0.0457	0.0457
1,2,3,7,8,9-HXCDF	0.1	0.485	J	0.0485	0.0485	0.0485	1.45	J	0.145	0.145	0.145	1.85	J	0.185	0.185	0.185
1,2,3,7,8-PECDD	1	0.0934	U	0.0934	0.0467	0	0.324	J	0.324	0.324	0.324	0.329	J	0.329	0.329	0.329
1,2,3,7,8-PECDF	0.03	0.162	J	0.00486	0.00486	0.00486	0.256	J	0.00768	0.00768	0.00768	0.105	J	0.00315	0.00315	0.00315
2,3,4,6,7,8-HXCDF	0.1	0.243	J	0.0243	0.0243	0.0243	0.44	J	0.044	0.044	0.044	0.464	J	0.0464	0.0464	0.0464
2,3,4,7,8-PECDF	0.3	0.187	J	0.0561	0.0561	0.0561	0.274	J	0.0822	0.0822	0.0822	0.0723	U	0.02169	0.010845	0
2,3,7,8-TCDD	1	0.0551	U	0.0551	0.02755	0	0.0452	U	0.0452	0.0226	0	0.088	U	0.088	0.044	0
2,3,7,8-TCDF	0.1	0.376	J	0.0376	0.0376	0.0376	0.446	J	0.0446	0.0446	0.0446	0.243	J	0.0243	0.0243	0.0243
Total of TEQ					1.57	1.50				4.37	4.34				2.25	2.20

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-932-0001					TF4-SS-933-0001					TF4-SS-934-0001				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SS-932-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-933 0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-934-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	9440	J	2.832	2.832	2.832	21100	J	6.33	6.33	6.33	4520	J	1.356	1.356	1.356
1,2,3,4,6,7,8,9-OCDF	0.0003	0.519	J	0.0001557	0.0001557	0.0001557	0.0641	U	0.00001923	9.615E-06	0	3.48	U	0.001044	0.000522	0
1,2,3,4,6,7,8-HPCDD	0.01	46.6		0.466	0.466	0.466	78		0.78	0.78	0.78	37.2		0.372	0.372	0.372
1,2,3,4,6,7,8-HPCDF	0.01	0.271	J	0.00271	0.00271	0.00271	0.14	J	0.0014	0.0014	0.0014	1.42	U	0.0142	0.0071	0
1,2,3,4,7,8-HXCDD	0.1	0.0327	U	0.00327	0.001635	0	0.0605	U	0.00605	0.003025	0	0.456	U	0.0456	0.0228	0
1,2,3,4,7,8-HXCDF	0.1	0.126	J	0.0126	0.0126	0.0126	0.17	J	0.017	0.017	0.017	0.326	U	0.0326	0.0163	0
1,2,3,6,7,8-HXCDD	0.1	0.115	J	0.0115	0.0115	0.0115	0.038	U	0.0038	0.0019	0	0.257	U	0.0257	0.01285	0
1,2,3,6,7,8-HXCDF	0.1	0.226	J	0.0226	0.0226	0.0226	0.23	J	0.023	0.023	0.023	0.596	J	0.0596	0.0596	0.0596
1,2,3,7,8,9-HXCDD	0.1	0.0719	J	0.00719	0.00719	0.00719	0.0361	U	0.00361	0.001805	0	0.244	U	0.0244	0.0122	0
1,2,3,7,8,9-HXCDF	0.1	0.208	J	0.0208	0.0208	0.0208	0.328	J	0.0328	0.0328	0.0328	0.814	J	0.0814	0.0814	0.0814
1,2,3,7,8-PECDD	1	0.0403	U	0.0403	0.02015	0	0.0443	U	0.0443	0.02215	0	0.486	U	0.486	0.243	0
1,2,3,7,8-PECDF	0.03	0.0398	U	0.001194	0.000597	0	0.0344	U	0.001032	0.000516	0	0.377	U	0.01131	0.005655	0
2,3,4,6,7,8-HXCDF	0.1	0.0736	J	0.00736	0.00736	0.00736	0.0404	U	0.00404	0.00202	0	0.279	U	0.0279	0.01395	0
2,3,4,7,8-PECDF	0.3	0.0393	U	0.01179	0.005895	0	0.0339	U	0.01017	0.005085	0	0.374	U	0.1122	0.0561	0
2,3,7,8-TCDD	1	0.0329	U	0.0329	0.01645	0	0.0579	U	0.0579	0.02895	0	1.25	U	1.25	0.625	0
2,3,7,8-TCDF	0.1	0.0651	U	0.00651	0.003255	0	0.0572	U	0.00572	0.00286	0	0.988	U	0.0988	0.0494	0
Total of TEQ					3.43	3.38				7.25	7.18				2.93	1.87

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-935-0001					TF4-SS-936-0001					TF4-SS-937-0001				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SS-935-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SS-936-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SS-937-0001		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	6170	J	1.851	1.851	1.851	721	J	0.2163	0.2163	0.2163	1940		0.582	0.582	0.582
1,2,3,4,6,7,8,9-OCDF	0.0003	1.9	U	0.00057	0.000285	0	20.6	J	0.00618	0.00618	0.00618	1.33	J	0.000399	0.000399	0.000399
1,2,3,4,6,7,8-HPCDD	0.01	52.7		0.527	0.527	0.527	39.5		0.395	0.395	0.395	15.1		0.151	0.151	0.151
1,2,3,4,6,7,8-HPCDF	0.01	0.931	UJ	0.00931	0.004655	0	6.56		0.0656	0.0656	0.0656	0.766	J	0.00766	0.00766	0.00766
1,2,3,4,7,8-HXCDD	0.1	0.115	U	0.0115	0.00575	0	0.562	J	0.0562	0.0562	0.0562	0.118	U	0.0118	0.0059	0
1,2,3,4,7,8-HXCDF	0.1	0.263	J	0.0263	0.0263	0.0263	0.576	J	0.0576	0.0576	0.0576	0.117	U	0.0117	0.00585	0
1,2,3,6,7,8-HXCDD	0.1	0.232	J	0.0232	0.0232	0.0232	0.438	J	0.0438	0.0438	0.0438	0.283	J	0.0283	0.0283	0.0283
1,2,3,6,7,8-HXCDF	0.1	0.455	J	0.0455	0.0455	0.0455	1.63	J	0.163	0.163	0.163	0.187	J	0.0187	0.0187	0.0187
1,2,3,7,8,9-HXCDD	0.1	0.171	J	0.0171	0.0171	0.0171	0.389	J	0.0389	0.0389	0.0389	0.204	J	0.0204	0.0204	0.0204
1,2,3,7,8,9-HXCDF	0.1	0.77	J	0.077	0.077	0.077	1.36	J	0.136	0.136	0.136	0.336	J	0.0336	0.0336	0.0336
1,2,3,7,8-PECDD	1	0.173	J	0.173	0.173	0.173	0.29	J	0.29	0.29	0.29	0.0979	U	0.0979	0.04895	0
1,2,3,7,8-PECDF	0.03	0.0588	U	0.001764	0.000882	0	0.145	U	0.00435	0.002175	0	0.0981	U	0.002943	0.0014715	0
2,3,4,6,7,8-HXCDF	0.1	0.0693	U	0.00693	0.003465	0	0.413	J	0.0413	0.0413	0.0413	0.0554	U	0.00554	0.00277	0
2,3,4,7,8-PECDF	0.3	0.0583	U	0.01749	0.008745	0	0.144	U	0.0432	0.0216	0	0.0968	U	0.02904	0.01452	0
2,3,7,8-TCDD	1	0.111	U	0.111	0.0555	0	0.175	U	0.175	0.0875	0	0.0979	U	0.0979	0.04895	0
2,3,7,8-TCDF	0.1	0.14	U	0.014	0.007	0	0.137	U	0.0137	0.00685	0	0.169	U	0.0169	0.00845	0
Total of TEQ					2.83	2.74				1.63	1.51				0.98	0.84

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-938-0001					TF4-SS-939-0001					TF4-SS-940-0001				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SS-938-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SS-939-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SS-940-0001		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	3360	J	1.008	1.008	1.008	5910	J	1.773	1.773	1.773	1980	J	0.594	0.594	0.594
1,2,3,4,6,7,8,9-OCDF	0.0003	0.736	J	0.0002208	0.0002208	0.0002208	0.368	J	0.0001104	0.0001104	0.0001104	0.913	J	0.0002739	0.0002739	0.0002739
1,2,3,4,6,7,8-HPCDD	0.01	25.4		0.254	0.254	0.254	37.4		0.374	0.374	0.374	24.4		0.244	0.244	0.244
1,2,3,4,6,7,8-HPCDF	0.01	0.988	J	0.00988	0.00988	0.00988	0.157	J	0.00157	0.00157	0.00157	0.512	J	0.00512	0.00512	0.00512
1,2,3,4,7,8-HXCDD	0.1	0.0336	U	0.00336	0.00168	0	0.0328	U	0.00328	0.00164	0	0.0489	U	0.00489	0.002445	0
1,2,3,4,7,8-HXCDF	0.1	0.2	J	0.02	0.02	0.02	0.102	J	0.0102	0.0102	0.0102	0.261	J	0.0261	0.0261	0.0261
1,2,3,6,7,8-HXCDD	0.1	0.136	J	0.0136	0.0136	0.0136	0.035	J	0.0035	0.0035	0.0035	0.18	J	0.018	0.018	0.018
1,2,3,6,7,8-HXCDF	0.1	0.26	J	0.026	0.026	0.026	0.147	J	0.0147	0.0147	0.0147	0.347	J	0.0347	0.0347	0.0347
1,2,3,7,8,9-HXCDD	0.1	0.0604	J	0.00604	0.00604	0.00604	0.0273	U	0.00273	0.001365	0	0.0717	J	0.00717	0.00717	0.00717
1,2,3,7,8,9-HXCDF	0.1	0.334	J	0.0334	0.0334	0.0334	0.171	J	0.0171	0.0171	0.0171	0.498	J	0.0498	0.0498	0.0498
1,2,3,7,8-PECDD	1	0.116	J	0.116	0.116	0.116	0.029	U	0.029	0.0145	0	0.0365	U	0.0365	0.01825	0
1,2,3,7,8-PECDF	0.03	0.0907	J	0.002721	0.002721	0.002721	0.024	U	0.00072	0.00036	0	0.0394	U	0.001182	0.000591	0
2,3,4,6,7,8-HXCDF	0.1	0.0876	J	0.00876	0.00876	0.00876	0.32	U	0.032	0.016	0	0.104	J	0.0104	0.0104	0.0104
2,3,4,7,8-PECDF	0.3	0.0977	J	0.02931	0.02931	0.02931	0.0231	U	0.00693	0.003465	0	0.0384	U	0.01152	0.00576	0
2,3,7,8-TCDD	1	0.0603	J	0.0603	0.0603	0.0603	0.0354	U	0.0354	0.0177	0	0.0391	U	0.0391	0.01955	0
2,3,7,8-TCDF	0.1	0.0718	U	0.00718	0.00359	0	0.0588	U	0.00588	0.00294	0	0.102	U	0.0102	0.0051	0
Total of TEQ					1.59	1.59				2.25	2.19				1.04	0.99

TABLE 4-4
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SURFACE SOIL
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT RI

		TF4-SS-941-0001					TF4-SS-942-0001					TF4-SS-943-0001				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SS-941-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-942-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SS-943-0001**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	6140	J	1.842	1.842	1.842	2360	J	0.708	0.708	0.708	1370	J	0.411	0.411	0.411
1,2,3,4,6,7,8,9-OCDF	0.0003	1.8	U	0.00054	0.00027	0	26.9		0.00807	0.00807	0.00807	7.7		0.00231	0.00231	0.00231
1,2,3,4,6,7,8-HPCDD	0.01	53.7		0.537	0.537	0.537	63.1		0.631	0.631	0.631	39.4		0.394	0.394	0.394
1,2,3,4,6,7,8-HPCDF	0.01	0.797	UJ	0.00797	0.003985	0	8.41		0.0841	0.0841	0.0841	3.19		0.0319	0.0319	0.0319
1,2,3,4,7,8-HXCDD	0.1	0.0841	U	0.00841	0.004205	0	0.682	J	0.0682	0.0682	0.0682	0.258	J	0.0258	0.0258	0.0258
1,2,3,4,7,8-HXCDF	0.1	0.32	J	0.032	0.032	0.032	0.855	J	0.0855	0.0855	0.0855	0.452	J	0.0452	0.0452	0.0452
1,2,3,6,7,8-HXCDD	0.1	0.118	J	0.0118	0.0118	0.0118	0.577	J	0.0577	0.0577	0.0577	0.41	J	0.041	0.041	0.041
1,2,3,6,7,8-HXCDF	0.1	0.522	J	0.0522	0.0522	0.0522	2.09	J	0.209	0.209	0.209	1.05	J	0.105	0.105	0.105
1,2,3,7,8,9-HXCDD	0.1	0.0663	U	0.00663	0.003315	0	0.574	J	0.0574	0.0574	0.0574	0.244	J	0.0244	0.0244	0.0244
1,2,3,7,8,9-HXCDF	0.1	0.486	J	0.0486	0.0486	0.0486	1.58	J	0.158	0.158	0.158	1.18	J	0.118	0.118	0.118
1,2,3,7,8-PECDD	1	0.0776	U	0.0776	0.0388	0	0.442	J	0.442	0.442	0.442	0.267	J	0.267	0.267	0.267
1,2,3,7,8-PECDF	0.03	0.0566	U	0.001698	0.000849	0	0.0988	U	0.002964	0.001482	0	0.0531	U	0.001593	0.0007965	0
2,3,4,6,7,8-HXCDF	0.1	0.0761	U	0.00761	0.003805	0	0.519	J	0.0519	0.0519	0.0519	0.275	J	0.0275	0.0275	0.0275
2,3,4,7,8-PECDF	0.3	0.0562	U	0.01686	0.00843	0	0.0976	U	0.02928	0.01464	0	0.0527	U	0.01581	0.007905	0
2,3,7,8-TCDD	1	0.138	U	0.138	0.069	0	0.076	U	0.076	0.038	0	0.0902	U	0.0902	0.0451	0
2,3,7,8-TCDF	0.1	0.103	U	0.0103	0.00515	0	0.298	J	0.0298	0.0298	0.0298	0.0949	U	0.00949	0.004745	0
Total of TEQ					2.66	2.52				2.64	2.59				1.55	1.49

Notes:

[1] TEFs = Toxic Equivalency Factor. Reference: The 2005 World Health Organization Reevaluation of Human and mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. *Toxicological Sciences* , Volume 93, Number 2, July 2006, pp. 223-241.
TEQ = Toxic Equivalent
NG/KG = nanograms per kilogram

RSL = EPA Regional Screening Levels (RSLs)- Oak Ridge National Laboratory (May, 2009) available online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Values represent the risk-based soil screening level for residential land use.

[2] TEQ is calculated assuming a "U" designation is present in the sample at 1/2 U

[3] TEQ is calculated assuming a "U" designation is 0

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-920-0204					TF4-SB-921-0204					TF4-SB-922-0204				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SB-920-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-921-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-922-0204		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	4480	J	1.344	1.344	1.344	2030	J	0.609	0.609	0.609	5580	J	1.674	1.674	1.674
1,2,3,4,6,7,8,9-OCDF	0.0003	0.136	U	0.0000408	0.0000204	0	0.091	J	0.0000273	0.0000273	0.0000273	1.03	J	0.000309	0.000309	0.000309
1,2,3,4,6,7,8-HPCDD	0.01	38.7		0.387	0.387	0.387	16.4		0.164	0.164	0.164	41.8	J	0.418	0.418	0.418
1,2,3,4,6,7,8-HPCDF	0.01	0.175	J	0.00175	0.00175	0.00175	0.0298	U	0.000298	0.000149	0	0.695	J	0.00695	0.00695	0.00695
1,2,3,4,7,8-HXCDD	0.1	0.212	J	0.0212	0.0212	0.0212	0.0883	U	0.00883	0.004415	0	0.244	J	0.0244	0.0244	0.0244
1,2,3,4,7,8-HXCDF	0.1	0.0775	U	0.00775	0.003875	0	0.0374	U	0.00374	0.00187	0	0.195	J	0.0195	0.0195	0.0195
1,2,3,6,7,8-HXCDD	0.1	0.82	J	0.082	0.082	0.082	0.107	J	0.0107	0.0107	0.0107	0.406	J	0.0406	0.0406	0.0406
1,2,3,6,7,8-HXCDF	0.1	0.733	U	0.0733	0.03665	0	0.0356	U	0.00356	0.00178	0	0.14	J	0.014	0.014	0.014
1,2,3,7,8,9-HXCDD	0.1	0.84	J	0.084	0.084	0.084	0.189	J	0.0189	0.0189	0.0189	0.566	J	0.0566	0.0566	0.0566
1,2,3,7,8,9-HXCDF	0.1	0.0985	U	0.00985	0.004925	0	0.0464	U	0.00464	0.00232	0	0.132	U	0.0132	0.0066	0
1,2,3,7,8-PECDD	1	0.14	U	0.14	0.07	0	0.0871	U	0.0871	0.04355	0	0.114	U	0.114	0.057	0
1,2,3,7,8-PECDF	0.03	0.109	U	0.00327	0.001635	0	0.0536	U	0.001608	0.000804	0	0.0927	U	0.002781	0.0013905	0
2,3,4,6,7,8-HXCDF	0.1	0.0841	U	0.00841	0.004205	0	0.0399	U	0.00399	0.001995	0	0.156	J	0.0156	0.0156	0.0156
2,3,4,7,8-PECDF	0.3	0.108	U	0.0324	0.0162	0	0.0529	U	0.01587	0.007935	0	0.0908	J	0.02724	0.02724	0.02724
2,3,7,8-TCDD	1	0.266	U	0.266	0.133	0	0.0578	U	0.0578	0.0289	0	0.124	U	0.124	0.062	0
2,3,7,8-TCDF	0.1	0.248	U	0.0248	0.0124	0	0.0715	U	0.00715	0.003575	0	0.177	J	0.0177	0.0177	0.0177
Total of TEQ					2.20	1.92				0.90	0.80				2.44	2.31

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-923-0204					TF4-SB-923-0406					TF4-SB-924-0204				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SB-923-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-923-0406		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-924-0204		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	3810	J	1.143	1.143	1.143	19100	J	5.73	5.73	5.73	3220	J	0.966	0.966	0.966
1,2,3,4,6,7,8,9-OCDF	0.0003	0.517	J	0.0001551	0.0001551	0.0001551	0.695	J	0.0002085	0.0002085	0.0002085	2.47	J	0.000741	0.000741	0.000741
1,2,3,4,6,7,8-HPCDD	0.01	59.7		0.597	0.597	0.597	292		2.92	2.92	2.92	31.5		0.315	0.315	0.315
1,2,3,4,6,7,8-HPCDF	0.01	0.342	J	0.00342	0.00342	0.00342	0.385	J	0.00385	0.00385	0.00385	1.02	J	0.0102	0.0102	0.0102
1,2,3,4,7,8-HXCDD	0.1	0.355	J	0.0355	0.0355	0.0355	0.883	J	0.0883	0.0883	0.0883	0.244	J	0.0244	0.0244	0.0244
1,2,3,4,7,8-HXCDF	0.1	0.118	J	0.0118	0.0118	0.0118	0.0696	U	0.00696	0.00348	0	0.217	J	0.0217	0.0217	0.0217
1,2,3,6,7,8-HXCDD	0.1	0.857	J	0.0857	0.0857	0.0857	2.1	J	0.21	0.21	0.21	0.394	J	0.0394	0.0394	0.0394
1,2,3,6,7,8-HXCDF	0.1	0.0483	U	0.00483	0.002415	0	0.0658	U	0.00658	0.00329	0	0.129	J	0.0129	0.0129	0.0129
1,2,3,7,8,9-HXCDD	0.1	1.01	J	0.101	0.101	0.101	4.24		0.424	0.424	0.424	0.519	J	0.0519	0.0519	0.0519
1,2,3,7,8,9-HXCDF	0.1	0.0629	U	0.00629	0.003145	0	0.0884	U	0.00884	0.00442	0	0.0789	J	0.00789	0.00789	0.00789
1,2,3,7,8-PECDD	1	0.158	J	0.158	0.158	0.158	0.224	J	0.224	0.224	0.224	0.0351	U	0.0351	0.01755	0
1,2,3,7,8-PECDF	0.03	0.0683	U	0.002049	0.0010245	0	0.112	U	0.00336	0.00168	0	0.0234	U	0.000702	0.000351	0
2,3,4,6,7,8-HXCDF	0.1	0.054	U	0.0054	0.0027	0	0.0755	U	0.00755	0.003775	0	0.099	J	0.0099	0.0099	0.0099
2,3,4,7,8-PECDF	0.3	0.0675	U	0.02025	0.010125	0	0.111	U	0.0333	0.01665	0	0.0228	U	0.00684	0.00342	0
2,3,7,8-TCDD	1	0.105	U	0.105	0.0525	0	0.136	U	0.136	0.068	0	0.0483	U	0.0483	0.02415	0
2,3,7,8-TCDF	0.1	0.15	U	0.015	0.0075	0	0.143	U	0.0143	0.00715	0	0.0704	U	0.00704	0.00352	0
Total of TEQ					2.21	2.14				9.71	9.60				1.51	1.46

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-925-0204					TF4-SB-926-0204					TF4-SB-928-0204				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SB-925-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-926-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-928-0204		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	368		0.1104	0.1104	0.1104	773		0.2319	0.2319	0.2319	4490	J	1.347	1.347	1.347
1,2,3,4,6,7,8,9-OCDF	0.0003	0.267	J	0.0000801	0.0000801	0.0000801	0.155	J	0.0000465	0.0000465	0.0000465	3.95	U	0.001185	0.0005925	0
1,2,3,4,6,7,8-HPCDD	0.01	8.15		0.0815	0.0815	0.0815	12.2		0.122	0.122	0.122	42.6		0.426	0.426	0.426
1,2,3,4,6,7,8-HPCDF	0.01	0.289	J	0.00289	0.00289	0.00289	0.106	J	0.00106	0.00106	0.00106	1.36	U	0.0136	0.0068	0
1,2,3,4,7,8-HXCDD	0.1	0.197	J	0.0197	0.0197	0.0197	0.0692	J	0.00692	0.00692	0.00692	0.303	J	0.0303	0.0303	0.0303
1,2,3,4,7,8-HXCDF	0.1	0.191	J	0.0191	0.0191	0.0191	0.0361	U	0.00361	0.001805	0	0.345	J	0.0345	0.0345	0.0345
1,2,3,6,7,8-HXCDD	0.1	0.246	J	0.0246	0.0246	0.0246	0.214	J	0.0214	0.0214	0.0214	0.514	J	0.0514	0.0514	0.0514
1,2,3,6,7,8-HXCDF	0.1	0.148	J	0.0148	0.0148	0.0148	0.0342	U	0.00342	0.00171	0	0.221	J	0.0221	0.0221	0.0221
1,2,3,7,8,9-HXCDD	0.1	0.275	J	0.0275	0.0275	0.0275	0.209	J	0.0209	0.0209	0.0209	0.514	J	0.0514	0.0514	0.0514
1,2,3,7,8,9-HXCDF	0.1	0.0994	J	0.00994	0.00994	0.00994	0.0456	U	0.00456	0.00228	0	0.0491	J	0.00491	0.00491	0.00491
1,2,3,7,8-PECDD	1	0.0483	U	0.0483	0.02415	0	0.0564	U	0.0564	0.0282	0	0.177	J	0.177	0.177	0.177
1,2,3,7,8-PECDF	0.03	0.135	J	0.00405	0.00405	0.00405	0.0583	U	0.001749	0.0008745	0	0.0356	U	0.001068	0.000534	0
2,3,4,6,7,8-HXCDF	0.1	0.11	J	0.011	0.011	0.011	0.039	U	0.0039	0.00195	0	0.179	J	0.0179	0.0179	0.0179
2,3,4,7,8-PECDF	0.3	0.033	U	0.0099	0.00495	0	0.0578	U	0.01734	0.00867	0	0.18	J	0.054	0.054	0.054
2,3,7,8-TCDD	1	0.0495	U	0.0495	0.02475	0	0.094	U	0.094	0.047	0	0.0845	U	0.0845	0.04225	0
2,3,7,8-TCDF	0.1	0.0619	U	0.00619	0.003095	0	0.0953	U	0.00953	0.004765	0	0.343	J	0.0343	0.0343	0.0343
Total of TEQ					0.38	0.33				0.50	0.40				2.30	2.25

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-929-0204					TF4-SB-930-0204					TF4-SB-932-0204				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SB-929-0204**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SB-930-0204**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SB-932-0204**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	7780	J	2.334	2.334	2.334	1070		0.321	0.321	0.321	2160	J	0.648	0.648	0.648
1,2,3,4,6,7,8,9-OCDF	0.0003	0.524	J	0.0001572	0.0001572	0.0001572	0.491	J	0.0001473	0.0001473	0.0001473	0.321	J	0.0000963	0.0000963	0.0000963
1,2,3,4,6,7,8-HPCDD	0.01	66.6	J	0.666	0.666	0.666	14.8		0.148	0.148	0.148	17.1		0.171	0.171	0.171
1,2,3,4,6,7,8-HPCDF	0.01	0.199	J	0.00199	0.00199	0.00199	0.401	J	0.00401	0.00401	0.00401	0.129	J	0.00129	0.00129	0.00129
1,2,3,4,7,8-HXCDD	0.1	0.253	J	0.0253	0.0253	0.0253	0.215	J	0.0215	0.0215	0.0215	0.0758	U	0.00758	0.00379	0
1,2,3,4,7,8-HXCDF	0.1	0.079	J	0.0079	0.0079	0.0079	0.16	J	0.016	0.016	0.016	0.0923	J	0.00923	0.00923	0.00923
1,2,3,6,7,8-HXCDD	0.1	0.309	J	0.0309	0.0309	0.0309	0.313	J	0.0313	0.0313	0.0313	0.141	J	0.0141	0.0141	0.0141
1,2,3,6,7,8-HXCDF	0.1	0.0464	J	0.00464	0.00464	0.00464	0.12	J	0.012	0.012	0.012	0.0949	J	0.00949	0.00949	0.00949
1,2,3,7,8,9-HXCDD	0.1	0.365	J	0.0365	0.0365	0.0365	0.477	J	0.0477	0.0477	0.0477	0.251	J	0.0251	0.0251	0.0251
1,2,3,7,8,9-HXCDF	0.1	0.042	U	0.0042	0.0021	0	0.0439	U	0.00439	0.002195	0	0.0841	U	0.00841	0.004205	0
1,2,3,7,8-PECDD	1	0.0624	U	0.0624	0.0312	0	0.0718	U	0.0718	0.0359	0	0.0912	U	0.0912	0.0456	0
1,2,3,7,8-PECDF	0.03	0.0454	U	0.001362	0.000681	0	0.0502	U	0.001506	0.000753	0	0.0777	U	0.002331	0.0011655	0
2,3,4,6,7,8-HXCDF	0.1	0.036	U	0.0036	0.0018	0	0.107	J	0.0107	0.0107	0.0107	0.0718	U	0.00718	0.00359	0
2,3,4,7,8-PECDF	0.3	0.0449	U	0.01347	0.006735	0	0.0496	U	0.01488	0.00744	0	0.077	U	0.0231	0.01155	0
2,3,7,8-TCDD	1	0.0612	U	0.0612	0.0306	0	0.0756	J	0.0756	0.0756	0.0756	0.122	U	0.122	0.061	0
2,3,7,8-TCDF	0.1	0.0944	U	0.00944	0.00472	0	0.13	U	0.013	0.0065	0	0.154	U	0.0154	0.0077	0
Total of TEQ					3.19	3.11				0.74	0.69				1.02	0.88

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-933-0204					TF4-SB-934-0204					TF4-SB-935-0204				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SB-933-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-934-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-935-0204		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	2090	J	0.627	0.627	0.627	4020	J	1.206	1.206	1.206	6030	J	1.809	1.809	1.809
1,2,3,4,6,7,8,9-OCDF	0.0003	0.123	J	0.0000369	0.0000369	0.0000369	0.663	U	0.0001989	0.00009945	0	3.33	U	0.000999	0.0004995	0
1,2,3,4,6,7,8-HPCDD	0.01	9.15		0.0915	0.0915	0.0915	24.8		0.248	0.248	0.248	56.1		0.561	0.561	0.561
1,2,3,4,6,7,8-HPCDF	0.01	0.068	J	0.00068	0.00068	0.00068	0.406	U	0.00406	0.00203	0	0.818	UJ	0.00818	0.00409	0
1,2,3,4,7,8-HXCDD	0.1	0.0428	U	0.00428	0.00214	0	0.295	J	0.0295	0.0295	0.0295	0.226	J	0.0226	0.0226	0.0226
1,2,3,4,7,8-HXCDF	0.1	0.0219	U	0.00219	0.001095	0	0.16	U	0.016	0.008	0	0.0683	U	0.00683	0.003415	0
1,2,3,6,7,8-HXCDD	0.1	0.0376	U	0.00376	0.00188	0	0.499	J	0.0499	0.0499	0.0499	0.474	J	0.0474	0.0474	0.0474
1,2,3,6,7,8-HXCDF	0.1	0.0208	U	0.00208	0.00104	0	0.152	U	0.0152	0.0076	0	0.102	J	0.0102	0.0102	0.0102
1,2,3,7,8,9-HXCDD	0.1	0.041	U	0.0041	0.00205	0	0.681	J	0.0681	0.0681	0.0681	0.446	J	0.0446	0.0446	0.0446
1,2,3,7,8,9-HXCDF	0.1	0.0272	U	0.00272	0.00136	0	0.204	U	0.0204	0.0102	0	0.0868	U	0.00868	0.00434	0
1,2,3,7,8-PECDD	1	0.0474	U	0.0474	0.0237	0	0.203	U	0.203	0.1015	0	0.0598	U	0.0598	0.0299	0
1,2,3,7,8-PECDF	0.03	0.0526	U	0.001578	0.000789	0	0.151	U	0.00453	0.002265	0	0.0516	U	0.001548	0.000774	0
2,3,4,6,7,8-HXCDF	0.1	0.0234	U	0.00234	0.00117	0	0.174	U	0.0174	0.0087	0	0.0741	U	0.00741	0.003705	0
2,3,4,7,8-PECDF	0.3	0.052	U	0.0156	0.0078	0	0.149	U	0.0447	0.02235	0	0.0512	U	0.01536	0.00768	0
2,3,7,8-TCDD	1	0.0481	U	0.0481	0.02405	0	0.312	U	0.312	0.156	0	0.0895	U	0.0895	0.04475	0
2,3,7,8-TCDF	0.1	0.0765	U	0.00765	0.003825	0	0.294	U	0.0294	0.0147	0	0.0811	U	0.00811	0.004055	0
Total of TEQ					0.79	0.72				1.93	1.60				2.60	2.49

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-936-0204					TF4-SB-937-0204					TF4-SB-938-0204-AVG				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SB-936-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-937-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-938-0204-AVG		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	6220	J	1.866	1.866	1.866	2280	J	0.684	0.684	0.684	490		0.147	0.147	0.147
1,2,3,4,6,7,8,9-OCDF	0.0003	0.457	UJ	0.0001371	0.00006855	0	0.232	J	0.0000696	0.0000696	0.0000696	0.136	U	0.0000408	0.0000204	0
1,2,3,4,6,7,8-HPCDD	0.01	59.9		0.599	0.599	0.599	15		0.15	0.15	0.15	5.76		0.0576	0.0576	0.0576
1,2,3,4,6,7,8-HPCDF	0.01	0.202	UJ	0.00202	0.00101	0	0.196	J	0.00196	0.00196	0.00196	0.0533	J	0.000533	0.000533	0.000533
1,2,3,4,7,8-HXCDD	0.1	0.258	J	0.0258	0.0258	0.0258	0.146	J	0.0146	0.0146	0.0146	0.131	J	0.0131	0.0131	0.0131
1,2,3,4,7,8-HXCDF	0.1	0.0504	U	0.00504	0.00252	0	0.0592	J	0.00592	0.00592	0.00592	0.0574	U	0.00574	0.00287	0
1,2,3,6,7,8-HXCDD	0.1	0.439	J	0.0439	0.0439	0.0439	0.165	J	0.0165	0.0165	0.0165	0.0832	U	0.00832	0.00416	0
1,2,3,6,7,8-HXCDF	0.1	0.0907	J	0.00907	0.00907	0.00907	0.0372	U	0.00372	0.00186	0	0.054	J	0.0054	0.0054	0.0054
1,2,3,7,8,9-HXCDD	0.1	0.707	J	0.0707	0.0707	0.0707	0.191	J	0.0191	0.0191	0.0191	0.0881	U	0.00881	0.004405	0
1,2,3,7,8,9-HXCDF	0.1	0.0641	U	0.00641	0.003205	0	0.0485	U	0.00485	0.002425	0	0.073	U	0.0073	0.00365	0
1,2,3,7,8-PECDD	1	0.0857	U	0.0857	0.04285	0	0.0734	U	0.0734	0.0367	0	0.0842	U	0.0842	0.0421	0
1,2,3,7,8-PECDF	0.03	0.0961	U	0.002883	0.0014415	0	0.0604	U	0.001812	0.000906	0	0.0843	U	0.002529	0.0012645	0
2,3,4,6,7,8-HXCDF	0.1	0.0547	U	0.00547	0.002735	0	0.0417	U	0.00417	0.002085	0	0.0623	U	0.00623	0.003115	0
2,3,4,7,8-PECDF	0.3	0.0954	U	0.02862	0.01431	0	0.0597	U	0.01791	0.008955	0	0.0836	U	0.02508	0.01254	0
2,3,7,8-TCDD	1	0.165	U	0.165	0.0825	0	0.0644	U	0.0644	0.0322	0	0.106	U	0.106	0.053	0
2,3,7,8-TCDF	0.1	0.158	U	0.0158	0.0079	0	0.0998	U	0.00998	0.00499	0	0.13	U	0.013	0.0065	0
Total of TEQ					2.77	2.61				0.98	0.89				0.36	0.22

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-939-0204					TF4-SB-940-0204					TF4-SB-941-0204				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SB-939-0204**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SB-940-0204**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SB-941-0204**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	1790	J	0.537	0.537	0.537	6250	J	1.875	1.875	1.875	4570	J	1.371	1.371	1.371
1,2,3,4,6,7,8,9-OCDF	0.0003	0.195	J	0.0000585	0.0000585	0.0000585	0.358	J	0.0001074	0.0001074	0.0001074	0.138	UJ	0.0000414	0.0000207	0
1,2,3,4,6,7,8-HPCDD	0.01	13		0.13	0.13	0.13	41.1		0.411	0.411	0.411	30.3		0.303	0.303	0.303
1,2,3,4,6,7,8-HPCDF	0.01	0.0503	J	0.000503	0.000503	0.000503	0.08	J	0.0008	0.0008	0.0008	0.113	UJ	0.00113	0.000565	0
1,2,3,4,7,8-HXCDD	0.1	0.0854	J	0.00854	0.00854	0.00854	0.168	J	0.0168	0.0168	0.0168	0.468	J	0.0468	0.0468	0.0468
1,2,3,4,7,8-HXCDF	0.1	0.0141	U	0.00141	0.000705	0	0.0386	J	0.00386	0.00386	0.00386	0.0152	U	0.00152	0.00076	0
1,2,3,6,7,8-HXCDD	0.1	0.0797	J	0.00797	0.00797	0.00797	0.088	J	0.0088	0.0088	0.0088	0.154	J	0.0154	0.0154	0.0154
1,2,3,6,7,8-HXCDF	0.1	0.063	J	0.0063	0.0063	0.0063	0.0442	J	0.00442	0.00442	0.00442	0.168	J	0.0168	0.0168	0.0168
1,2,3,7,8,9-HXCDD	0.1	0.0666	J	0.00666	0.00666	0.00666	0.0838	J	0.00838	0.00838	0.00838	0.0366	U	0.00366	0.00183	0
1,2,3,7,8,9-HXCDF	0.1	0.0184	U	0.00184	0.00092	0	0.022	U	0.0022	0.0011	0	0.019	U	0.0019	0.00095	0
1,2,3,7,8-PECDD	1	0.0263	U	0.0263	0.01315	0	0.0286	U	0.0286	0.0143	0	0.0238	U	0.0238	0.0119	0
1,2,3,7,8-PECDF	0.03	0.0202	U	0.000606	0.000303	0	0.0236	U	0.000708	0.000354	0	0.0217	U	0.000651	0.0003255	0
2,3,4,6,7,8-HXCDF	0.1	0.0153	U	0.00153	0.000765	0	0.0183	U	0.00183	0.000915	0	0.0163	U	0.00163	0.000815	0
2,3,4,7,8-PECDF	0.3	0.0194	U	0.00582	0.00291	0	0.0228	U	0.00684	0.00342	0	0.0214	U	0.00642	0.00321	0
2,3,7,8-TCDD	1	0.0254	U	0.0254	0.0127	0	0.0269	U	0.0269	0.01345	0	0.0592	U	0.0592	0.0296	0
2,3,7,8-TCDF	0.1	0.0492	U	0.00492	0.00246	0	0.036	U	0.0036	0.0018	0	0.0556	U	0.00556	0.00278	0
Total of TEQ					0.73	0.70				2.36	2.33				1.81	1.75

TABLE 4-5
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SB-942-0204					TF4-SB-943-0204				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SB-942-0204		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SB-943-0204		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	1840	J	0.552	0.552	0.552	4320	J	1.296	1.296	1.296
1,2,3,4,6,7,8,9-OCDF	0.0003	2.11	J	0.000633	0.000633	0.000633	0.132	UJ	0.0000396	0.0000396	0.0000396
1,2,3,4,6,7,8-HPCDD	0.01	20.6		0.206	0.206	0.206	36.2		0.362	0.362	0.362
1,2,3,4,6,7,8-HPCDF	0.01	0.892	J	0.00892	0.00892	0.00892	0.12	U	0.0012	0.0006	0
1,2,3,4,7,8-HXCDD	0.1	0.149	J	0.0149	0.0149	0.0149	0.151	J	0.0151	0.0151	0.0151
1,2,3,4,7,8-HXCDF	0.1	0.117	U	0.0117	0.00585	0	0.0979	J	0.00979	0.00979	0.00979
1,2,3,6,7,8-HXCDD	0.1	0.486	J	0.0486	0.0486	0.0486	0.241	J	0.0241	0.0241	0.0241
1,2,3,6,7,8-HXCDF	0.1	0.111	U	0.0111	0.00555	0	0.0786	J	0.00786	0.00786	0.00786
1,2,3,7,8,9-HXCDD	0.1	0.392	J	0.0392	0.0392	0.0392	0.214	J	0.0214	0.0214	0.0214
1,2,3,7,8,9-HXCDF	0.1	0.145	U	0.0145	0.00725	0	0.0572	U	0.00572	0.00286	0
1,2,3,7,8-PECDD	1	0.0554	U	0.0554	0.0277	0	0.0619	U	0.0619	0.03095	0
1,2,3,7,8-PECDF	0.03	0.0467	U	0.001401	0.0007005	0	0.0722	U	0.002166	0.001083	0
2,3,4,6,7,8-HXCDF	0.1	0.124	U	0.0124	0.0062	0	0.0488	U	0.00488	0.00244	0
2,3,4,7,8-PECDF	0.3	0.0463	U	0.01389	0.006945	0	0.0716	U	0.02148	0.01074	0
2,3,7,8-TCDD	1	0.0922	U	0.0922	0.0461	0	0.0986	U	0.0986	0.0493	0
2,3,7,8-TCDF	0.1	0.0919	U	0.00919	0.004595	0	0.0855	U	0.00855	0.004275	0
Total of TEQ					0.98	0.87				1.84	1.74

Notes:
1 TEFs = Toxic Equivalency Factor. Reference: The 2005 World Health Organization Reevaluation of Human and mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences, Volume 93, Number 2. July 2006. pp. 223-241.
TEQ = Toxic Equivalent
NG/KG = nanograms per kilogram

RSL = EPA Regional Screening Levels (RSLs)- Oak Ridge National Laboratory (May, 2009) available online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Values represent the risk-based soil screening level for residential land use.

[2] TEQ is calculated assuming a "U" designation is present in the sample at 1/2 U

[3] TEQ is calculated assuming a "U" designation is 0

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 GROUNDWATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR TAPWATER	Federal MCL	TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			5/12/2010	5/12/2010	5/11/2010	5/12/2010	5/11/2010	5/10/2010	5/10/2010
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/L)									
CAPROLACTAM	18000		10 U	10.5	10 U	11	10 U	10 U	10 U
LOW MOLECULAR WEIGHT PAHS			0.1 UJ	0.19 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
NAPHTHALENE	0.14		0.1 U	0.19	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TOTAL PAHS			0.1 UJ	0.19 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
PESTICIDES/PCBS (UG/L)									
AROCLOR-1248	0.034	0.5	1 U	7.25 J**	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	0.034	0.5	1 U	3.05 J**	1 U	1 U	1 U	1 U	1 U
ENDRIN ALDEHYDE	11		0.1 U	6.52 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TOTAL AROCLOR		0.5	1 U	10 J**	1 U	1 U	1 U	1 U	1 U
METALS (UG/L)									
ALUMINUM	37000		12 U	12 U	24.8 UJ	23.6 UJ	83.9 UJ	253	60.4 J
ARSENIC	0.045	10	1.6	4.45	6.3	4	0.236 U	0.236 U	0.236 U
BARIUM	7300	2000	27.4	40.8	29.5	14.9	7.9	13.9	13.1
BERYLLIUM	73	4	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.049 J	0.045 U
CADMIUM	18	5	0.054 U	0.054 U	0.054 U	0.054 U	0.234 J	0.19 UJ	0.054 U
CALCIUM			18500	20200	19700	16600	28800	11700	20000
COBALT	11		12.6	11.8	10.5	12.1	3.8	11.2	1.2
COPPER	1500	1300*	0.428 J	1.01 J	0.284 U	0.478 J	1.1	1.1	0.723 J
IRON	26000		12300	11000	12200	17100	779	10300	252

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-6
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 GROUNDWATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR TAPWATER	Federal MCL	TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			5/12/2010	5/12/2010	5/11/2010	5/12/2010	5/11/2010	5/10/2010	5/10/2010
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM
LEAD		15*	0.162 U	0.162 U	0.168 J	0.162 U	0.162 U	0.385 UJ	0.162 U
MAGNESIUM			16000	17000	11000	10400	11100	8580	9510
MANGANESE	880		1110	994	882	1130	5030	1120	321
NICKEL	730		36	26.3	20.4	30	64.4	67.6	9.2
POTASSIUM			1300	1120	662 J	539 J	3300	797 J	1600
SODIUM			23300	24900	10300	15600	29400	17600	21400
ZINC	11000		50.3 U	34.2 UJ	44.1 UJ	51.3 U	29.4 UJ	143	36.8 J

* The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.

** Posible false positive result due to laboratory cross-contamination.

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006	TF4-SD-909-0006	TF4-SD-910-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908	TF4-SD-909	TF4-SD-910
SAMPLE DATE			3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/17/2010	3/17/2010	3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)												
ACETONE	6.1E+07	630000000	90 J	5.45 UJ	150	16	81	55 J	240 J	4.3 UJ	16 J	11 U
CARBON DISULFIDE	820000	3700000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	1.9 J	8 UJ	4.3 UJ	8.9 UJ	11 U
SEMIVOLATILES (UG/KG)												
2-METHYLNAPHTHALENE	310000	4100000	3.3 U	4.62 J	10	3.3 U	4.2	13 U	3.3 U	3.3 U	3.3 U	3.3 U
2-METHYLPHENOL	3100000	31000000	10 J	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	13 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ
4-METHYLPHENOL	310000	3100000	3.3 U	3.3 U	5.9	16	10	13 U	5	3.3 U	3.3 U	3.3 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.3 U	8.9	3.3 U	19	13 U	6.5	3.3 U	3.3 U	3.3 U
ACENAPHTHYLENE	3400000	33000000	4.7	3.3 U	28	3.3 U	4.9	13 U	10	3.3 U	5.3	5
ANTHRACENE	1.7E+07	170000000	11	7.85	120	8.5	61	15	28	6.2	8.3	6.1
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	170 J	330 UJ	330 UJ	1300 UJ	64 J	330 UJ	330 UJ	330 UJ
BENZO(A)ANTHRACENE	150	2100	46 J	27 J	200 J	34 J	100 J	66 J	130 J	26 J	32 J	27 J
BENZO(A)PYRENE	15	210	61 J	23.5 J	210	49	120	73	140	34	44	41
BENZO(B)FLUORANTHENE	150	2100	67 J	25 J	240 J	61 J	130 J	76 J	170 J	41 J	50 J	48 J
BENZO(G,H,I)PERYLENE	1700000	17000000	49 J	19.5	150	39	92	55	130	27	32	33
BENZO(K)FLUORANTHENE	1500	21000	68	33 J	200	51	130	71	200	43	42	36
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	120 J	330 U	210 J	41 J	57 J	1300 U	220 J	35 J	330 U	330 U
CHRYSENE	15000	210000	78 J	35.5 J	290 J	53 J	130 J	70 J	160 J	40 J	48 J	40 J
DIBENZO(A,H)ANTHRACENE	15	210	13 J	6.6 J	53	11	30	14	36	8.2	13	12
FLUORANTHENE	2300000	22000000	110 J	49.5 J	330	86	230	130	260	69	73	64
FLUORENE	2300000	22000000	5.4	4.2	3.3 U	3.9	24	13 U	10	3.3 U	4	3.3 U
HIGH MOLECULAR WEIGHT PAHS			614 J	278 J	2050 J	484 J	1220 J	701 J	1550 J	366 J	422 J	384 J
INDENO(1,2,3-CD)PYRENE	150	2100	39 J	16.5 J	120	34	80	46	110	23	28	28
LOW MOLECULAR WEIGHT PAHS			82.2	44.8 J	343	54.4	309	76	200	44.5	59.1	38.1

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006	TF4-SD-909-0006	TF4-SD-910-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908	TF4-SD-909	TF4-SD-910
SAMPLE DATE			3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/17/2010	3/17/2010	3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
NAPHTHALENE	3600	18000	4.1	3.3 U	6	3.3 U	5.8	13 U	5	5.3	5.5	3.3 U
PHENANTHRENE	1700000	17000000	57	29 J	170	42	190	61	140	33	36	27
PHENOL	1.8E+07	180000000	3.3 U	3.3 U	3.3 U	3.3 U	15	13 U	4.8	3.3 U	3.3 U	3.3 U
PYRENE	1700000	17000000	83	41.5	260	66	180	100	210	55	60	55
TOTAL CARCINOGENIC PAHS-HALFND	15	210	372 J	168 J	1310 J	293 J	720 J	416 J	946 J	215 J	257 J	232 J
TOTAL CARCINOGENIC PAHS-POS	15	210	372 J	168 J	1310 J	293 J	720 J	416 J	946 J	215 J	257 J	232 J
TOTAL PAHS			696 J	322 J	2400 J	538 J	1530 J	777 J	1750 J	411 J	481 J	422 J
PESTICIDES/PCBS (UG/KG)												
4,4'-DDD	2000	7200	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.4
4,4'-DDE	1400	5100	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	15 J
4,4'-DDT	1700	7000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	6.7
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	20.8 J	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
TOTAL DDD/DDE/DDT			3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	25.1 J
METALS (MG/KG)												
ALUMINUM	77000	990000	6470	6650	10100	6280	7790	11700	8680	8930	12100	12900
ARSENIC	0.39	1.6	10.8	11.2	13.5 J	9.2	11.1 J	46.6 J	12.2	12.5	14.7 J	11.7 J
BARIUM	15000	190000	19 J	16.6 J	63.9 J	17 J	27.3 J	64.7 J	43.1 J	27.3 J	44.8 J	29.2 J
BERYLLIUM	160	2000	0.37 J	0.295 J	0.6 J	0.31 J	0.37 J	0.53 J	0.47 J	0.44 J	0.56 J	0.68 J
CADMIUM	70	800	0.24 J	0.285	0.68	0.34	0.27 J	1.2	0.37 J	0.25 J	0.42	0.25 J
CALCIUM			509 J	494 J	1080 J	614 J	1200 J	1120 J	830 J	758 J	624 J	590 J
CHROMIUM	0.29	5.6	11.2 J	29.2 J	12.6 J	11.5 J	12.3 J	23.6 J	19.3 J	12.1 J	14.9 J	15.2 J
COBALT	23	300	9.5	9.4	33.7	10.1	13.5	76.2	13.8	9.6	17.2	12
COPPER	3100	41000	11.9	9.8	19.4	12.3	13.5	19.1	21.3	12.9	20	24.9

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006	TF4-SD-909-0006	TF4-SD-910-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908	TF4-SD-909	TF4-SD-910
SAMPLE DATE			3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/17/2010	3/17/2010	3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
IRON	55000	720000	25000	26400	55600	21700	29400	145000	26200	28900	39500	41100
LEAD	400	800	21.6 J	96.2 J	37.6 J	19.9 J	25.3 J	21.6 J	54.2 J	27.3 J	65.5 J	59.2 J
MAGNESIUM			1920	2060	1930	2280	2480	4160	2320	2090	2420	3040
MANGANESE	1800	23000	301	310	3440	171	736	2770	451	368	676	309
MERCURY	5.6	34	0.047 J	0.0325 J	0.07 J	0.055	0.051 J	0.046 J	0.093	0.058	0.17	0.1
NICKEL	1500	20000	16.3	17.6	50.4	20.8	22.7	132	25.7	18	22	22.5
POTASSIUM			216	166 J	372	187	241	351 J	208	271	272	583
SILVER	390	5100	0.083 U	0.068 U	0.12 J	0.094 U	0.094 U	0.22 U	0.14 U	0.1 U	0.077 U	0.12 U
SODIUM			23.9 J	40.8 J	145	33 J	50.6 J	114 J	32.7 J	54 J	55.7	518
THALLIUM			0.85 J	0.45 J	11.5	0.29 U	2.4	6.8	1.4 J	1 J	2	0.77 J
VANADIUM	390	5200	13.6	12.3	22.3	11.4	14.4	19.3	17.7	16.5	26.5	27.2
ZINC	23000	310000	65.5	71.4	161	69.3	79.3	199	101	67.8	76.6	88
MISCELLANEOUS PARAMETERS (S.U.)												
PH			5	5.8	6	5.9	5.9	6.1	5.7	5.9	6	5.9
MISCELLANEOUS PARAMETERS (MG/KG)												
TOTAL ORGANIC CARBON			22000	15000	46000	18000	22000	47000	31000	18000	26000	36000
DIOXINS/FURANS (NG/KG)												
1,2,3,4,6,7,8,9-OCDD			6190 J	852	2910 J	2290 J	507	502	2640 J	2080 J	2120 J	8750 J
1,2,3,4,6,7,8,9-OCDF			169 J	3.63	8.03 J	31.2	7.42 J	4.52 U	35.4	6.8 J	6.95	27.6
1,2,3,4,6,7,8-HPCDD			203 J	19.4	75.1	86.1	20.6	14.6	89.2	30.1	33.2	129
1,2,3,4,6,7,8-HPCDF			24.7 J	1.62 J	2.74 J	12.6 U	3.6 J	2.22 J	12.4	2.87 J	2.99 J	12.3
1,2,3,4,7,8,9-HPCDF			2.65 J	0.208 U	0.242 U	0.941 J	0.229 UJ	0.132 U	1.24 J	0.314 U	0.383 U	1.33 J
1,2,3,4,7,8-HXCDD			1.74 J	0.236 J	0.497 J	1.14 J	0.259 J	0.242 J	1.01 J	0.415 J	0.37 J	1.73 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006	TF4-SD-909-0006	TF4-SD-910-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908	TF4-SD-909	TF4-SD-910
SAMPLE DATE			3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/17/2010	3/17/2010	3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,4,7,8-HXCDF			1.34 J	0.206 J	0.429 J	0.796 J	0.278 J	0.249 J	0.864 J	0.416 J	0.585 J	2.15 J
1,2,3,6,7,8-HXCDD			4.7	0.652 J	1.09 J	2.93 J	0.862 J	0.587 J	2.95 J	0.891 J	0.943 J	3.58 J
1,2,3,6,7,8-HXCDF			1.16 J	0.176 J	0.246 J	0.727 J	0.211 J	0.129 J	0.886 J	0.354 J	0.426 J	1.69 J
1,2,3,7,8,9-HXCDD			4.07 J	0.475 J	1.26 J	3.12 J	0.789 U	0.572 U	3.21 J	0.985 J	0.985 J	4.02 J
1,2,3,7,8,9-HXCDF			0.332 U	0.0336 U	0.0644 U	0.136 U	0.15 U	0.0631 U	0.125 J	0.0791 J	0.0578 U	0.093 J
1,2,3,7,8-PECDD			0.83 J	0.154 J	0.225 J	0.665 J	0.201 J	0.0435 U	0.655 J	0.192 J	0.244 J	0.928 J
1,2,3,7,8-PECDF			0.272 J	0.0854 J	0.0309 U	0.238 J	0.0762 J	0.106 J	0.22 J	0.133 J	0.224 J	0.853 J
2,3,4,6,7,8-HXCDF			1.13 J	0.116 J	0.301 J	0.477 J	0.201 J	0.216 J	0.676 J	0.326 J	0.446 J	1.52 J
2,3,4,7,8-PECDF			0.261 J	0.0426 J	0.204 J	0.193 J	0.0608 J	0.164 J	0.162 J	0.187 J	0.243 J	0.883 J
2,3,7,8-TCDD	4.5	18	0.0398 U	0.0258 J	0.0234 U	0.0966 J	0.0278 U	0.0465 U	0.0287 U	0.0252 U	0.0249 U	0.145 J
2,3,7,8-TCDF			0.536 J	0.202 J	0.424 J	0.108 UJ	0.0581 U	0.308 J	0.257 J	0.292 J	0.408 J	1.56 J
TOTAL HPCDD			363	37.2	155	165	39	30.1	177	63.5	69.3	261
TOTAL HPCDF			104	4.36	8.53	33.8	8.9	6.19 J	33.5	7.04	7.63	31.4
TOTAL HXCDD			32.3	4.49	11.4	23.4	5.66	4.86 J	19.6	7.8	8.07	32.6
TOTAL HXCDF			20	2.8 J	3.99 J	17.6	4.55	3.21 J	17.6	5.86	7.13	26.8
TOTAL PECDD			4.38	0.398 J	1.5 J	3.08 J	0.768 J	0.0435 U	2.57 J	0.762 J	1.43 J	8.09
TOTAL PECDF			12	2.26 J	4.01 J	9.59	1.9 J	1.69 J	6.99	5.11	8.07	26.4
TOTAL TCDD			0.421 J	0.0337 J	0.0234 U	0.623 J	0.0278 U	0.0465 U	0.0287 U	0.0252 U	0.583 J	3.31
TOTAL TCDF			5.59	2.07	4.12	3.84	1.67 U	2.79 U	2.53	1.32 J	2.09	6.53

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-911	TF4-SD-912
SAMPLE DATE			3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT
SACODE			AVG	NORMAL
QC TYPE			NM	NM
VOLATILES (UG/KG)				
ACETONE	6.1E+07	630000000	120 J	73 J
CARBON DISULFIDE	820000	3700000	8.25 UJ	15 J
SEMIVOLATILES (UG/KG)				
2-METHYLNAPHTHALENE	310000	4100000	2.68	3.3 U
2-METHYLPHENOL	3100000	31000000	3.3 UJ	12 J
4-METHYLPHENOL	310000	3100000	3.68	3.3 U
ACENAPHTHENE	3400000	33000000	5.82 J	3.3 U
ACENAPHTHYLENE	3400000	33000000	5.9 J	4.5
ANTHRACENE	1.7E+07	170000000	20.8 J	11
BENZALDEHYDE	7800000	100000000	182 J	160 J
BENZO(A)ANTHRACENE	150	2100	72 J	50 J
BENZO(A)PYRENE	15	210	80 J	55
BENZO(B)FLUORANTHENE	150	2100	92.5 J	64 J
BENZO(G,H,I)PERYLENE	1700000	17000000	71 J	34
BENZO(K)FLUORANTHENE	1500	21000	111 J	66 J
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	162 J	150 J
CHRYSENE	15000	210000	91.5 J	81 J
DIBENZO(A,H)ANTHRACENE	15	210	25 J	11
FLUORANTHENE	2300000	22000000	134 J	110
FLUORENE	2300000	22000000	9.7 J	5.6
HIGH MOLECULAR WEIGHT PAHS			848 J	594 J
INDENO(1,2,3-CD)PYRENE	150	2100	59.5 J	27
LOW MOLECULAR WEIGHT PAHS			135 J	85.3

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-911	TF4-SD-912
SAMPLE DATE			3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT
SACODE			AVG	NORMAL
QC TYPE			NM	NM
NAPHTHALENE	3600	18000	4.42 J	4.2
PHENANTHRENE	1700000	17000000	88.5 J	60
PHENOL	1.8E+07	180000000	3.52	3.3 U
PYRENE	1700000	17000000	114 J	96
TOTAL CARCINOGENIC PAHS-HALFND	15	210	532 J	354 J
TOTAL CARCINOGENIC PAHS-POS	15	210	532 J	354 J
TOTAL PAHS			984 J	679 J
PESTICIDES/PCBS (UG/KG)				
4,4'-DDD	2000	7200	3.3 U	3.3 U
4,4'-DDE	1400	5100	3.3 U	3.3 U
4,4'-DDT	1700	7000	3.3 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	2.72	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	3.3 U
TOTAL DDD/DDE/DDT			3.3 U	3.3 U
METALS (MG/KG)				
ALUMINUM	77000	990000	9880	4730
ARSENIC	0.39	1.6	16	20.3
BARIUM	15000	190000	32.7 J	21.4 J
BERYLLIUM	160	2000	0.5 J	0.21 J
CADMIUM	70	800	0.545	0.13 J
CALCIUM			1220 J	691 J
CHROMIUM	0.29	5.6	16.2 J	7.3 J
COBALT	23	300	15.5	9.6
COPPER	3100	41000	22.4	13.7

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-911	TF4-SD-912
SAMPLE DATE			3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT
SACODE			AVG	NORMAL
QC TYPE			NM	NM
IRON	55000	720000	36200	32400
LEAD	400	800	41.8 J	6.3 J
MAGNESIUM			3160	1370
MANGANESE	1800	23000	432	279
MERCURY	5.6	34	0.0935	0.019 J
NICKEL	1500	20000	24.9	18.4
POTASSIUM			456	155 J
SILVER	390	5100	0.125 U	0.13 U
SODIUM			558	75.8 J
THALLIUM			0.995 J	0.38 U
VANADIUM	390	5200	20.4	9.6
ZINC	23000	310000	124	59
MISCELLANEOUS PARAMETERS (S.U.)				
PH			6.6	4.9
MISCELLANEOUS PARAMETERS (MG/KG)				
TOTAL ORGANIC CARBON			39500	50000
DIOXINS/FURANS (NG/KG)				
1,2,3,4,6,7,8,9-OCDD			3650 J	1120
1,2,3,4,6,7,8,9-OCDF			42.4 J	4.97 U
1,2,3,4,6,7,8-HPCDD			127 J	27.7
1,2,3,4,6,7,8-HPCDF			20.6 J	2.71 J
1,2,3,4,7,8,9-HPCDF			1.48 J	0.292 UJ
1,2,3,4,7,8-HXCDD			1.81 J	0.358 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-7
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL FOR SOIL - Residential	EPA RSL FOR SOIL - Industrial	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-911	TF4-SD-912
SAMPLE DATE			3/17/2010	3/17/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT
SACODE			AVG	NORMAL
QC TYPE			NM	NM
1,2,3,4,7,8-HXCDF			1.35 J	0.317 J
1,2,3,6,7,8-HXCDD			3.83 J	0.824 J
1,2,3,6,7,8-HXCDF			1.27 J	0.293 J
1,2,3,7,8,9-HXCDD			4.8 J	0.926 U
1,2,3,7,8,9-HXCDF			0.138 J	0.0984 U
1,2,3,7,8-PECDD			0.953 J	0.0694 U
1,2,3,7,8-PECDF			0.388 J	0.171 J
2,3,4,6,7,8-HXCDF			1.2 J	0.242 J
2,3,4,7,8-PECDF			0.428 J	0.107 J
2,3,7,8-TCDD	4.5	18	0.136 J	0.0455 U
2,3,7,8-TCDF			0.441 J	0.171 U
TOTAL HPCDD			260 J	57.2
TOTAL HPCDF			51.6 J	6.82
TOTAL HXCDD			33.6 J	7.66
TOTAL HXCDF			21.3 J	1.92 J
TOTAL PECDD			4.6 J	0.0694 U
TOTAL PECDF			14.2 J	0.293 J
TOTAL TCDD			0.159 J	0.218 J
TOTAL TCDF			4.8 J	4.11

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-8
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SD-901-0006					TF4-SD-902-0006					TF4-SD-903-0006				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF4-SD-901-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SD-902-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF4-SD-903-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	6190	J	1.857	1.857	1.857	852		0.2556	0.2556	0.2556	2910	J	0.873	0.873	0.873
1,2,3,4,6,7,8,9-OCDF	0.0003	169	J	0.0507	0.0507	0.0507	3.63		0.001089	0.001089	0.001089	8.03	J	0.002409	0.002409	0.002409
1,2,3,4,6,7,8-HPCDD	0.01	203	J	2.03	2.03	2.03	19.4	J	0.194	0.194	0.194	75.1		0.751	0.751	0.751
1,2,3,4,6,7,8-HPCDF	0.01	24.7	J	0.247	0.247	0.247	1.62	J	0.0162	0.0162	0.0162	2.74	J	0.0274	0.0274	0.0274
1,2,3,4,7,8,9-HPCDF	0.01	2.65	J	0.0265	0.0265	0.0265	0.208	U	0.00208	0.00104	0	0.242	U	0.00242	0.00121	0
1,2,3,4,7,8-HXCDD	0.1	1.74	J	0.174	0.174	0.174	0.236	J	0.0236	0.0236	0.0236	0.497	J	0.0497	0.0497	0.0497
1,2,3,4,7,8-HXCDF	0.1	1.34	J	0.134	0.134	0.134	0.206	J	0.0206	0.0206	0.0206	0.429	J	0.0429	0.0429	0.0429
1,2,3,6,7,8-HXCDD	0.1	4.7		0.47	0.47	0.47	0.652	J	0.0652	0.0652	0.0652	1.09	J	0.109	0.109	0.109
1,2,3,6,7,8-HXCDF	0.1	1.16	J	0.116	0.116	0.116	0.176	J	0.0176	0.0176	0.0176	0.246	J	0.0246	0.0246	0.0246
1,2,3,7,8,9-HXCDD	0.1	4.07	J	0.407	0.407	0.407	0.475	J	0.0475	0.0475	0.0475	1.26	J	0.126	0.126	0.126
1,2,3,7,8,9-HXCDF	0.1	0.332	U	0.0332	0.0166	0	0.0336	U	0.00336	0.00168	0	0.0644	U	0.00644	0.00322	0
1,2,3,7,8-PECDD	1	0.83	J	0.83	0.83	0.83	0.154	J	0.154	0.154	0.154	0.225	J	0.225	0.225	0.225
1,2,3,7,8-PECDF	0.03	0.272	J	0.00816	0.00816	0.00816	0.0854	J	0.002562	0.002562	0.002562	0.0309	U	0.000927	0.0004635	0
2,3,4,6,7,8-HXCDF	0.1	1.13	J	0.113	0.113	0.113	0.116	J	0.0116	0.0116	0.0116	0.301	J	0.0301	0.0301	0.0301
2,3,4,7,8-PECDF	0.3	0.261	J	0.0783	0.0783	0.0783	0.0426	J	0.01278	0.01278	0.01278	0.204	J	0.0612	0.0612	0.0612
2,3,7,8-TCDD	1	0.0398	U	0.0398	0.0199	0	0.0258	J	0.0258	0.0258	0.0258	0.0234	U	0.0234	0.0117	0
2,3,7,8-TCDF	0.1	0.536	J	0.0536	0.0536	0.0536	0.202	J	0.0202	0.0202	0.0202	0.424	J	0.0424	0.0424	0.0424
Total of TEQ					6.63	6.60				0.87	0.87				2.38	2.36

TABLE 4-8
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SD-904-0006					TF4-SD-905-0006					TF4-SD-906-0006				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SD-904-0006		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SD-905-0006		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SD-906-0006		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	2290	J	0.687	0.687	0.687	507		0.1521	0.1521	0.1521	502		0.1506	0.1506	0.1506
1,2,3,4,6,7,8,9-OCDF	0.0003	31.2		0.00936	0.00936	0.00936	7.42	J	0.002226	0.002226	0.002226	4.52	U	0.001356	0.000678	0
1,2,3,4,6,7,8-HPCDD	0.01	86.1		0.861	0.861	0.861	20.6		0.206	0.206	0.206	14.6		0.146	0.146	0.146
1,2,3,4,6,7,8-HPCDF	0.01	12.6	U	0.126	0.063	0	3.6	J	0.036	0.036	0.036	2.22	J	0.0222	0.0222	0.0222
1,2,3,4,7,8,9-HPCDF	0.01	0.941	J	0.00941	0.00941	0.00941	0.229	UJ	0.00229	0.001145	0	0.132	U	0.00132	0.00066	0
1,2,3,4,7,8-HXCDD	0.1	1.14	J	0.114	0.114	0.114	0.259	J	0.0259	0.0259	0.0259	0.242	J	0.0242	0.0242	0.0242
1,2,3,4,7,8-HXCDF	0.1	0.796	J	0.0796	0.0796	0.0796	0.278	J	0.0278	0.0278	0.0278	0.249	J	0.0249	0.0249	0.0249
1,2,3,6,7,8-HXCDD	0.1	2.93	J	0.293	0.293	0.293	0.862	J	0.0862	0.0862	0.0862	0.587	J	0.0587	0.0587	0.0587
1,2,3,6,7,8-HXCDF	0.1	0.727	J	0.0727	0.0727	0.0727	0.211	J	0.0211	0.0211	0.0211	0.129	J	0.0129	0.0129	0.0129
1,2,3,7,8,9-HXCDD	0.1	3.12	J	0.312	0.312	0.312	0.789	U	0.0789	0.03945	0	0.572	U	0.0572	0.0286	0
1,2,3,7,8,9-HXCDF	0.1	0.136	U	0.0136	0.0068	0	0.15	U	0.015	0.0075	0	0.0631	U	0.00631	0.003155	0
1,2,3,7,8-PECDD	1	0.665	J	0.665	0.665	0.665	0.201	J	0.201	0.201	0.201	0.0435	U	0.0435	0.02175	0
1,2,3,7,8-PECDF	0.03	0.238	J	0.00714	0.00714	0.00714	0.0762	J	0.002286	0.002286	0.002286	0.106	J	0.00318	0.00318	0.00318
2,3,4,6,7,8-HXCDF	0.1	0.477	J	0.0477	0.0477	0.0477	0.201	J	0.0201	0.0201	0.0201	0.216	J	0.0216	0.0216	0.0216
2,3,4,7,8-PECDF	0.3	0.193	J	0.0579	0.0579	0.0579	0.0608	J	0.01824	0.01824	0.01824	0.164	J	0.0492	0.0492	0.0492
2,3,7,8-TCDD	1	0.0966	J	0.0966	0.0966	0.0966	0.0278	U	0.0278	0.0139	0	0.0465	U	0.0465	0.02325	0
2,3,7,8-TCDF	0.1	0.108	UJ	0.0108	0.0054	0	0.0581	U	0.00581	0.002905	0	0.308	J	0.0308	0.0308	0.0308
Total of TEQ					3.39	3.31				0.86	0.80				0.62	0.54

TABLE 4-8
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SD-907-0006					TF4-SD-908-0006					TF4-SD-909-0006				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SD-907-0006		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SD-908-0006		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SD-909-0006		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	2640	J	0.792	0.792	0.792	2080	J	0.624	0.624	0.624	2120	J	0.636	0.636	0.636
1,2,3,4,6,7,8,9-OCDF	0.0003	35.4		0.01062	0.01062	0.01062	6.8	J	0.00204	0.00204	0.00204	6.95		0.002085	0.002085	0.002085
1,2,3,4,6,7,8-HPCDD	0.01	89.2		0.892	0.892	0.892	30.1		0.301	0.301	0.301	33.2		0.332	0.332	0.332
1,2,3,4,6,7,8-HPCDF	0.01	12.4		0.124	0.124	0.124	2.87	J	0.0287	0.0287	0.0287	2.99	J	0.0299	0.0299	0.0299
1,2,3,4,7,8,9-HPCDF	0.01	1.24	J	0.0124	0.0124	0.0124	0.314	U	0.00314	0.00157	0	0.383	U	0.00383	0.001915	0
1,2,3,4,7,8-HXCDD	0.1	1.01	J	0.101	0.101	0.101	0.415	J	0.0415	0.0415	0.0415	0.37	J	0.037	0.037	0.037
1,2,3,4,7,8-HXCDF	0.1	0.864	J	0.0864	0.0864	0.0864	0.416	J	0.0416	0.0416	0.0416	0.585	J	0.0585	0.0585	0.0585
1,2,3,6,7,8-HXCDD	0.1	2.95	J	0.295	0.295	0.295	0.891	J	0.0891	0.0891	0.0891	0.943	J	0.0943	0.0943	0.0943
1,2,3,6,7,8-HXCDF	0.1	0.886	J	0.0886	0.0886	0.0886	0.354	J	0.0354	0.0354	0.0354	0.426	J	0.0426	0.0426	0.0426
1,2,3,7,8,9-HXCDD	0.1	3.21	J	0.321	0.321	0.321	0.985	J	0.0985	0.0985	0.0985	0.985	J	0.0985	0.0985	0.0985
1,2,3,7,8,9-HXCDF	0.1	0.125	J	0.0125	0.0125	0.0125	0.0791	J	0.00791	0.00791	0.00791	0.0578	U	0.00578	0.00289	0
1,2,3,7,8-PECDD	1	0.655	J	0.655	0.655	0.655	0.192	J	0.192	0.192	0.192	0.244	J	0.244	0.244	0.244
1,2,3,7,8-PECDF	0.03	0.22	J	0.0066	0.0066	0.0066	0.133	J	0.00399	0.00399	0.00399	0.224	J	0.00672	0.00672	0.00672
2,3,4,6,7,8-HXCDF	0.1	0.676	J	0.0676	0.0676	0.0676	0.326	J	0.0326	0.0326	0.0326	0.446	J	0.0446	0.0446	0.0446
2,3,4,7,8-PECDF	0.3	0.162	J	0.0486	0.0486	0.0486	0.187	J	0.0561	0.0561	0.0561	0.243	J	0.0729	0.0729	0.0729
2,3,7,8-TCDD	1	0.0287	U	0.0287	0.01435	0	0.0252	U	0.0252	0.0126	0	0.0249	U	0.0249	0.01245	0
2,3,7,8-TCDF	0.1	0.257	J	0.0257	0.0257	0.0257	0.292	J	0.0292	0.0292	0.0292	0.408	J	0.0408	0.0408	0.0408
Total of TEQ					3.55	3.54				1.60	1.58				1.76	1.74

TABLE 4-8
SUMMARY OF TEQ CALCULATIONS FOR DU 4-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF4-SD-910-0006					TF4-SD-911-0006-AVERAGE					TF4-SD-912-0006-AVERAGE				
DIOXINS/FURANS (NG/KG)	TEF[1]	TF4-SD-910-0006		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SD-911-0006-AVERAGE		TEQ*analytical result	TEQ[2]	TEQ[3]	TF4-SD-912-0006-AVERAGE		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	8750	J	2.625	2.625	2.625	3650	J	1.095	1.095	1.095	1120		0.336	0.336	0.336
1,2,3,4,6,7,8,9-OCDF	0.0003	27.6		0.00828	0.00828	0.00828	42.4	J	0.01272	0.01272	0.01272	4.97	U	0.001491	0.0007455	0
1,2,3,4,6,7,8-HPCDD	0.01	129		1.29	1.29	1.29	127	J	1.27	1.27	1.27	27.7		0.277	0.277	0.277
1,2,3,4,6,7,8-HPCDF	0.01	12.3		0.123	0.123	0.123	20.6	J	0.206	0.206	0.206	2.71	J	0.0271	0.0271	0.0271
1,2,3,4,7,8,9-HPCDF	0.01	1.33	J	0.0133	0.0133	0.0133	1.48	J	0.0148	0.0148	0.0148	0.292	UJ	0.00292	0.00146	0
1,2,3,4,7,8-HXCDD	0.1	1.73	J	0.173	0.173	0.173	1.81	J	0.181	0.181	0.181	0.358	J	0.0358	0.0358	0.0358
1,2,3,4,7,8-HXCDF	0.1	2.15	J	0.215	0.215	0.215	1.35	J	0.135	0.135	0.135	0.317	J	0.0317	0.0317	0.0317
1,2,3,6,7,8-HXCDD	0.1	3.58	J	0.358	0.358	0.358	3.83	J	0.383	0.383	0.383	0.824	J	0.0824	0.0824	0.0824
1,2,3,6,7,8-HXCDF	0.1	1.69	J	0.169	0.169	0.169	1.27	J	0.127	0.127	0.127	0.293	J	0.0293	0.0293	0.0293
1,2,3,7,8,9-HXCDD	0.1	4.02	J	0.402	0.402	0.402	4.8	J	0.48	0.48	0.48	0.926	U	0.0926	0.0463	0
1,2,3,7,8,9-HXCDF	0.1	0.093	J	0.0093	0.0093	0.0093	0.138	J	0.0138	0.0138	0.0138	0.0984	U	0.00984	0.00492	0
1,2,3,7,8-PECDD	1	0.928	J	0.928	0.928	0.928	0.953	J	0.953	0.953	0.953	0.0694	U	0.0694	0.0347	0
1,2,3,7,8-PECDF	0.03	0.853	J	0.02559	0.02559	0.02559	0.388	J	0.01164	0.01164	0.01164	0.171	J	0.00513	0.00513	0.00513
2,3,4,6,7,8-HXCDF	0.1	1.52	J	0.152	0.152	0.152	1.2	J	0.12	0.12	0.12	0.242	J	0.0242	0.0242	0.0242
2,3,4,7,8-PECDF	0.3	0.883	J	0.2649	0.2649	0.2649	0.428	J	0.1284	0.1284	0.1284	0.107	J	0.0321	0.0321	0.0321
2,3,7,8-TCDD	1	0.145	J	0.145	0.145	0.145	0.136	J	0.136	0.136	0.136	0.0455	U	0.0455	0.02275	0
2,3,7,8-TCDF	0.1	1.56	J	0.156	0.156	0.156	0.441	J	0.0441	0.0441	0.0441	0.171	U	0.0171	0.00855	0
Total of TEQ					7.06	7.06				5.31	5.31				1.00	0.88

Notes:
1 TEFs = Toxic Equivalency Factor. Reference: The 2005 World Health Organization Reevaluation of Human and mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences, Volume 93, Number 2. July 2006. pp. 223-241.
TEQ = Toxic Equivalent
NG/KG = nanograms per kilogram
RSL = EPA Regional Screening Levels (RSLs)- Oak Ridge National Laboratory (May, 2009) available online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Values represent the risk-based soil screening level for residential land use.
[2] TEQ is calculated assuming a "U" designation is present in the sample at 1/2 U
[3] TEQ is calculated assuming a "U" designation is 0

TABLE 4-9
SUMMARY OF ANALYTICAL RESULTS FOR DU 4-1 SURFACE WATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908	TF4-SW-911	TF4-SW-912
SAMPLE DATE			3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/18/2010	3/17/2010	3/17/2010	3/17/2010	3/17/2010
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/L)												
BENZO(A)ANTHRACENE	0.029		0.1 J	0.1 UJ	0.17 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.15 UJ	0.1 UJ	0.1 UJ
CHRYSENE	2.9		0.1 U	0.1 U	0.11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
FLUORANTHENE	1500		0.1 U	0.1 U	0.16	0.1 U	0.1 U	0.1 U	0.1 U	0.14 U	0.1 U	0.1 U
HIGH MOLECULAR WEIGHT PAHS			0.1 J	0.1 UJ	0.67 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.112 UJ	0.1 UJ	0.1 UJ
LOW MOLECULAR WEIGHT PAHS			0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.111 U	0.1 U	0.1 U
PHENANTHRENE	1100		0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.18 U	0.1 U	0.1 U
PHENOL	11000		0.1 U	0.1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	1100		0.1 U	0.1 U	0.23	0.1 U	0.1 U	0.1 U	0.1 U	0.13 U	0.1 U	0.1 U
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.4 J	0.1 UJ	0.53 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.107 UJ	0.1 UJ	0.1 UJ
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 J	0.1 UJ	0.28 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.107 UJ	0.1 UJ	0.1 UJ
TOTAL PAHS			0.1 J	0.1 UJ	0.79 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.112 UJ	0.1 UJ	0.1 UJ
METALS (UG/L)												
ARSENIC	0.045	10	0.473 J	0.46 J	0.236 U	0.236 U	0.236 U	0.236 U	0.465 J	0.236 U	0.19 J	0.236 U
BARIUM	7300	2000	10.3	10.2	5.2	9.8	9.6	10.4	10	10.2	9.85	7.2
CALCIUM			14500	14400	15800	14300	14800	14200	10400	14200	14000	15200
COBALT	11		0.398 J	0.418 J	0.297 J	0.404 J	0.393 J	0.413 J	0.931 J	0.469 J	0.42 J	0.383 J
COPPER	1500	1300	3.7	1.75	0.807 J	1.5	1.4	1.4	2.9	1.8	2.25	1.1
IRON	26000		284	328	270	414	545	374	513	351	330	307
LEAD		15	0.407 J	0.299 J	0.162 U	0.192 J	0.191 J	0.337 J	0.928 J	0.398 J	0.308 J	0.162 U
MAGNESIUM			4870	4830	16900	4860	4820	4810	3480	4720	4630	13700
NICKEL	730		2.3	2.45	1.4	2.1	2.2	2.3	3.5	2.4	2.55	1.7
POTASSIUM			2990	3020	1440	2970	2930	2890	2420	3070	3020	1860
SELENIUM	180	50	0.154 J	0.19 J	0.123 U	0.214 J	0.162 J	0.162 J	0.229 J	0.231 J	0.22 J	0.227 J
SODIUM			29500	29600	23400	29400	29100	28800	24400	30600	30500	25200

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974
SAMPLE DATE			4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/13/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
ACETONE	61000000	630000000	7.4 U	56	65 J	13	61 J	11 J	6 J	21 J	5 UJ
BTEX			7.4 U	6.4 U	1.8 J	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ
ISOPROPYLBENZENE	2100000	11000000	7.4 U	6.4 U	5.7 U	6.2	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ
TOLUENE	5000000	45000000	7.4 U	6.4 U	1.8 J	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ
SEMIVOLATILES (UG/KG)											
ACENAPHTHENE	3400000	33000000	4.9 U	7.7	3.9 U	3.9 U	5.2 J	4.2	4.2 U	3.7 U	4.1 U
ACENAPHTHYLENE	3400000	33000000	4.9 U	12	3.9 U	3.9 U	26 J	12	7.6	3.7 U	4.1 U
ANTHRACENE	17000000	170000000	5.8	27	3.9 U	3.9 U	25 J	15	6.9	3.7 U	6.2
BENZALDEHYDE	7800000	100000000	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 UJ	420 UJ	370 UJ	410 UJ
BENZO(A)ANTHRACENE	150	2100	35	230	5.9	8.1	89 J	69	29	6.4	12
BENZO(A)PYRENE	15	210	42	300	7	8.9	92 J	76	33	6.4	13
BENZO(B)FLUORANTHENE	150	2100	76 J	530 J	10	15	130 J	130	52	10	18 J
BENZO(G,H,I)PERYLENE	1700000	17000000	39	270	6	7.4	63 J	57	25	4.4	27
BENZO(K)FLUORANTHENE	1500	21000	24 J	200 J	4.8 J	7.5 J	56 J	37	20 J	4.6 J	9.3
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	490 U	470 U	390 U	390 U	58 J	390 U	420 U	370 UJ	410 U
CHRYSENE	15000	210000	44	300	8.9	12	110 J	84	39	8.4	15
DIBENZO(A,H)ANTHRACENE	15	210	8.9 J	57 J	3.9 U	3.9 U	21 J	19	7.4	3.7 U	4.3
FLUORANTHENE	2300000	22000000	91	600	14	20	190 J	150	59	13	27
FLUORENE	2300000	22000000	4.9 U	11	3.9 U	3.9 U	9.7 J	5.5	4.2 U	3.7 U	4.1 U
HIGH MOLECULAR WEIGHT PAHS			463 J	3160 J	73.5 J	102 J	968 J	802	337 J	68.2 J	161 J
INDENO(1,2,3-CD)PYRENE	150	2100	33 J	240 J	4.9	6.4	57 J	50	21	4	13
LOW MOLECULAR WEIGHT PAHS			42.8 J	258 J	7.7 J	9.5 J	166 J	98.7	40.5 J	4.4 J	22.2
PHENANTHRENE	1700000	17000000	37	200	7.7	9.5	100 J	62	26	4.4	16
PYRENE	1700000	17000000	70	430	12	17	160 J	130	52	11	22

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TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974
SAMPLE DATE			4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/13/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CARCINOGENIC PAHS-HALFND	15	210	263 J	1860 J	43.4 J	59.8 J	555 J	465	201 J	41.6 J	84.6 J
TOTAL CARCINOGENIC PAHS-POS	15	210	263 J	1860 J	41.5 J	57.9 J	555 J	465	201 J	39.8 J	84.6 J
TOTAL PAHS			506 J	3410 J	81.2 J	112 J	1130 J	901	378 J	72.6 J	183 J
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	4.8 U	5.1	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U
4,4'-DDE	1400	5100	4.8 U	5.5	3.9 U	3.8 U	3.9 U	6.6	4.3 U	3.8 U	4.1 U
4,4'-DDT	1700	7000	4.8 U	4.6 U	3.9 UJ	3.8 UJ	3.9 UJ	5.6 J	4.3 UJ	3.8 UJ	4.1 U
AROCLOR-1254	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	39	41 U
TOTAL AROCLOR	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	39	41 U
TOTAL DDD/DDE/DDT			4.8 U	10.6	3.9 UJ	3.8 UJ	3.9 UJ	12.2 J	4.3 UJ	3.8 UJ	4.1 U
METALS (MG/KG)											
ALUMINUM	77000	990000	5460	8860	6540	9740	6790	7590	7420	7940	7990 J
ARSENIC	0.39	1.6	5.6	13.7	7.1	13.8 J	34.6	5.6 J	43.7	27.8	17.5
BARIUM	15000	190000	18.6	23.7	9.5 J	11.2 J	10.2 J	19.3 J	19.8 J	16.9 J	14.5
BERYLLIUM	160	2000	0.35 J	0.53 J	0.35 J	0.33	0.52 J	0.48 J	0.47 J	0.49 J	0.39 J
CADMIUM	70	800	0.1 J	0.1 J	0.11 J	0.23 J	0.27	0.19	0.25	0.21 J	0.33
CALCIUM			1680 J	829 J	166 J	655 J	1710 J	489 J	1070 J	575 J	975 J
CHROMIUM	0.29	5.6	5.6	12.7	7.3	12.8	9.2	9.2	8.9	9.8	12 J
COBALT	23	300	5.2 J	9.2 J	2.2 J	13.2 J	10.9 J	5.8 J	12.3 J	11.1 J	11.6
COPPER	3100	41000	8.1	24.2	8.4	12.5	15.1	11.2	13.4	13.7	16.2
IRON	55000	720000	14100	23800	11500	33700	28400	17800	23700	25700	28900 J
LEAD	400	800	21	30.9	33.3 J	9.3 J	12.6 J	21.9 J	21.0 J	12.3 J	12.7 J
MAGNESIUM			1120 J	2290 J	824 J	2320 J	1710 J	1470 J	1450 J	1700 J	2250 J
MANGANESE	1800	23000	225	221	95.8 J	412 J	289 J	210 J	415 J	384 J	462
MERCURY	5.6	34	0.091 U	0.074 U	0.12	0.025 UJ	0.059 U	0.033 UJ	0.038 UJ	0.030 UJ	0.019 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974
SAMPLE DATE			4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/13/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
NICKEL	1500	20000	15.3	19.3	6.8 J	20.1 J	18.6 J	14.6 J	21.1 J	19.5 J	22.6
POTASSIUM			388 J	219 J	206 J	142 J	166 J	270 J	294 J	206 J	185 J
SELENIUM	390	5100	2.9 J	3.5 UJ	2.4 U	4	2.2 U	2.2 U	3.3	3.6	4.2
SILVER	390	5100	0.22 UJ	0.13 UJ	0.21 J	0.2 J	0.15 J	0.095 J	0.21 J	0.18 J	0.21 J
SODIUM			53.9 J	47.8 J	29.2 UJ	23.1 UJ	39.4 J	30.1 J	28.2 UJ	29.2 UJ	20.3 J
THALLIUM			1.5	1.7	0.65 J	2.4	1.9	1.3	2.3	2.5	2.4
VANADIUM	390	5200	12.2	16.5	24.0 J	19.0 J	10.9 J	13.1 J	17.8 J	13.1 J	13.9
ZINC	23000	310000	39.7	69.5	18.4 J	66.1 J	41.4 J	36.8 J	43.0 J	39.7 J	51.9
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			2380 J	2910 J	2060 J	6010 J	8000 J	5670 J	1930 J	7160 J	9650 J
1,2,3,4,6,7,8,9-OCDF			1.27 J	6.64 J	2.16 J	3.53 J	32	24.1	5.94	2.39 J	3.63 J
1,2,3,4,6,7,8-HPCDD			37.6	43.7	49.4	60.2	141	76.8	26.2	74.7	94
1,2,3,4,6,7,8-HPCDF			0.734 UJ	4.37	1.28 U	1.41 U	12	7.78	1.64 U	1.21 U	1.8 U
1,2,3,4,7,8,9-HPCDF			0.188 U	0.429 J	0.103 U	0.121 U	0.86 J	0.484 J	0.145 U	0.0736 U	0.111 J
1,2,3,4,7,8-HXCDD			0.194 U	0.437 J	0.634 J	0.434 J	1.22 J	0.694 J	0.2 J	0.397 J	0.674 J
1,2,3,4,7,8-HXCDF			0.159 J	1.59 J	0.425 J	0.312 J	1.05 J	0.606 J	0.243 J	0.256 J	0.464 J
1,2,3,6,7,8-HXCDD			0.676 J	0.962 J	1.05 J	0.805 J	3.63	1.69 J	0.478 J	0.724 J	0.865 J
1,2,3,6,7,8-HXCDF			0.137 U	0.685 J	0.223 J	0.141 J	0.732 J	0.405 J	0.0997 J	0.112 J	0.167 J
1,2,3,7,8,9-HXCDD			0.613 J	1.21 J	0.868 J	0.952 J	2.87 J	1.76 J	0.411 J	0.758 J	0.995 J
1,2,3,7,8,9-HXCDF			0.184 U	0.175 U	0.156 U	0.0925 U	0.154 U	0.0866 U	0.0923 U	0.0894 U	0.07 J
1,2,3,7,8-PECDD			0.198 U	0.283 J	0.284 J	0.0881 U	0.388 J	0.245 J	0.0948 U	0.257 J	0.287 J
1,2,3,7,8-PECDF			0.155 U	0.621 J	0.124 U	0.0955 J	0.292 J	0.202 J	0.0865 U	0.109 U	0.175 J
2,3,4,6,7,8-HXCDF			0.157 U	0.779 J	0.188 J	0.0790 U	0.762 J	0.427 J	0.143 J	0.164 J	0.204 J
2,3,4,7,8-PECDF			0.154 U	0.519 J	0.123 U	0.0820 U	0.105 U	0.279 J	0.0859 U	0.108 U	0.233 J
2,3,7,8-TCDD	4.5	18	0.236 U	0.142 U	0.181 U	0.0963 U	0.159 U	0.120 U	0.196 U	0.119 U	0.107 J
2,3,7,8-TCDF			0.277 U	0.657 J	0.141 U	0.134 U	0.346 J	0.491 J	0.108 U	0.0942 U	0.517 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974
SAMPLE DATE			4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/13/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL HPCDD			89	96.9	137	133	268	157	60.8	175	199
TOTAL HPCDF			1.62 U	8.4	2.16 U	3.64	35.2	21.1	4.91	2.46 J	1.99 U
TOTAL HXCDD			5.44	11.4	13.5	8.85	22.7	13.4	3.65	9.08	12.1
TOTAL HXCDF			0.583 J	9.05	1.71 J	1.16 J	16.9	7.96	0.926 J	0.803 J	2.95
TOTAL PECDD			0.198 U	2.49 J	1.35 J	0.476 J	1.34 J	2.5 J	0.459 J	0.94 J	2.76
TOTAL PECDF			0.439 J	8.28	2.17 J	0.94 J	6.5	5.22	1.2 J	0.834 J	3.55
TOTAL TCDD			0.236 U	0.463 J	0.181 U	0.0963 U	0.159 U	0.53 J	0.196 U	0.119 U	0.0307 U
TOTAL TCDF			0.277 U	7.79	0.937 J	0.134 U	2.91	1.42	0.479 J	0.926 J	2.63
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			23 J	22 J	NA	NA	16 J	NA	NA	NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB975	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT
SACODE			NORMAL	NORMAL
QC TYPE			NM	NM
VOLATILES (UG/KG)				
ACETONE	61000000	630000000	4.7 UJ	4.3 UJ
BTEX			4.7 U	4.3 U
ISOPROPYLBENZENE	2100000	11000000	4.7 U	4.3 U
TOLUENE	5000000	45000000	4.7 U	4.3 U
SEMIVOLATILES (UG/KG)				
ACENAPHTHENE	3400000	33000000	4 U	3.7 U
ACENAPHTHYLENE	3400000	33000000	4 U	3.7 U
ANTHRACENE	17000000	170000000	4.5	3.7 U
BENZALDEHYDE	7800000	100000000	73 J	370 UJ
BENZO(A)ANTHRACENE	150	2100	17	13
BENZO(A)PYRENE	15	210	21	14
BENZO(B)FLUORANTHENE	150	2100	28 J	21
BENZO(G,H,I)PERYLENE	1700000	17000000	18	11
BENZO(K)FLUORANTHENE	1500	21000	24 J	13
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	400 U	370 U
CHRYSENE	15000	210000	24	18
DIBENZO(A,H)ANTHRACENE	15	210	4.4 J	3.7 U
FLUORANTHENE	2300000	22000000	41	28
FLUORENE	2300000	22000000	4 U	3.7 U
HIGH MOLECULAR WEIGHT PAHS			227 J	151
INDENO(1,2,3-CD)PYRENE	150	2100	16 J	9.7
LOW MOLECULAR WEIGHT PAHS			22.5 J	13
PHENANTHRENE	1700000	17000000	18	13
PYRENE	1700000	17000000	34	23

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB975	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT
SACODE			NORMAL	NORMAL
QC TYPE			NM	NM
TOTAL CARCINOGENIC PAHS-HALFND	15	210	134 J	90.6
TOTAL CARCINOGENIC PAHS-POS	15	210	134 J	88.7
TOTAL PAHS			250 J	164
PESTICIDES/PCBS (UG/KG)				
4,4'-DDD	2000	7200	4 U	3.8 U
4,4'-DDE	1400	5100	4 U	3.8 U
4,4'-DDT	1700	7000	4 U	3.8 UJ
AROCLOR-1254	220	740	40 U	38 U
TOTAL AROCLOR	220	740	40 U	38 U
TOTAL DDD/DDE/DDT			4 U	3.8 UJ
METALS (MG/KG)				
ALUMINUM	77000	990000	9530	7970
ARSENIC	0.39	1.6	7.2	4.3 J
BARIUM	15000	190000	11.4	18.6 J
BERYLLIUM	160	2000	0.55 J	0.50 J
CADMIUM	70	800	0.012 U	0.18 J
CALCIUM			249 J	216 J
CHROMIUM	0.29	5.6	8.9	7.5
COBALT	23	300	4.1 J	4.0 J
COPPER	3100	41000	12.1	7.5
IRON	55000	720000	17400	15000
LEAD	400	800	32.5	31.0 J
MAGNESIUM			1230 J	1200 J
MANGANESE	1800	23000	140	157 J
MERCURY	5.6	34	0.042 UJ	0.036 UJ

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB975	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT
SACODE			NORMAL	NORMAL
QC TYPE			NM	NM
NICKEL	1500	20000	10.4	8.2 J
POTASSIUM			205 J	207 J
SELENIUM	390	5100	3.3 J	2.1 U
SILVER	390	5100	0.1 UJ	0.12 J
SODIUM			19.3 J	22.7 UJ
THALLIUM			1.2	1.1
VANADIUM	390	5200	16.2	11.3 J
ZINC	23000	310000	28.8	26.6 J
DIOXINS/FURANS (NG/KG)				
1,2,3,4,6,7,8,9-OCDD			6700 J	2660 J
1,2,3,4,6,7,8,9-OCDF			13 J	8.95
1,2,3,4,6,7,8-HPCDD			132	57.9
1,2,3,4,6,7,8-HPCDF			9.12	5.5
1,2,3,4,7,8,9-HPCDF			0.509 J	0.317 J
1,2,3,4,7,8-HXCDD			1.62 J	0.679 J
1,2,3,4,7,8-HXCDF			3.09 J	0.638 J
1,2,3,6,7,8-HXCDD			2.68 J	1.38 J
1,2,3,6,7,8-HXCDF			1.01 J	0.32 J
1,2,3,7,8,9-HXCDD			3.64	1.52 J
1,2,3,7,8,9-HXCDF			0.0856 U	0.144 U
1,2,3,7,8-PECDD			0.813 J	0.264 J
1,2,3,7,8-PECDF			0.717 J	0.292 J
2,3,4,6,7,8-HXCDF			1.35 J	0.426 J
2,3,4,7,8-PECDF			0.978 J	0.3 J
2,3,7,8-TCDD	4.5	18	0.104 U	0.172 U
2,3,7,8-TCDF			0.842 J	0.551 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-10
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB975	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010
TOP DEPTH			0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT
SACODE			NORMAL	NORMAL
QC TYPE			NM	NM
TOTAL HPCDD			329	142
TOTAL HPCDF			15.9	11.3
TOTAL HXCDD			36.7	17.1
TOTAL HXCDF			13.4	5.91
TOTAL PECDD			7.49	2.13 J
TOTAL PECDF			12.2	4
TOTAL TCDD			2.05	0.317 J
TOTAL TCDF			8.63	2.74
PETROLEUM HYDROCARBONS (MG/KG)				
EXTRACTABLE PETROLEUM HYDROCARBONS			NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
ACETONE	61000000	630000000	7.8	8.7	19 J	5.4 J	3.4 UJ	32 J	4.3 UJ	44 J	5.7 J
BTEX			4.4 U	3.9 U	4.8 U	4.1 UJ	1 J	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ
CARBON DISULFIDE	820000	3700000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	1.9 J	4.9 UJ	4.6 UJ
TOLUENE	5000000	45000000	4.4 U	3.9 U	4.8 U	4.1 UJ	1 J	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ
SEMIVOLATILES (UG/KG)											
2-METHYLNAPHTHALENE	310000	4100000	3.7 U	3.6 UJ	4 UJ	3.7 UJ	3.4 UJ	4.3 J	3.4 UJ	4 U	3.6 U
4-METHYLPHENOL	310000	3100000	3.7 U	3.6 UJ	4 U	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 UJ
BENZO(A)ANTHRACENE	150	2100	3.7 U	3.6 UJ	9.6	3.7 U	3.4 U	6.1	3.4 U	4 U	3.6 U
BENZO(A)PYRENE	15	210	3.7 U	3.6 UJ	8.8	3.7 U	3.4 U	5.5	3.4 U	4 UJ	3.6 U
BENZO(B)FLUORANTHENE	150	2100	3.7 UJ	3.6 UJ	11 J	3.7 U	3.4 U	8	3.4 U	4 U	3.6 UJ
BENZO(G,H,I)PERYLENE	1700000	17000000	3.7 U	3.6 UJ	8.3	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U
BENZO(K)FLUORANTHENE	1500	21000	3.7 U	3.6 UJ	9.9 J	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 U	3.6 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	52 J
CHRYSENE	15000	210000	3.7 U	3.6 UJ	15	3.7 U	3.8	6.4	3.4 U	4 U	3.6 U
DI-N-BUTYL PHTHALATE	6100000	62000000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U
FLUORANTHENE	2300000	22000000	3.7 U	3.6 UJ	16	3.7 U	3.4 U	11	3.4 U	5.1	3.6 U
HIGH MOLECULAR WEIGHT PAHS			3.7 UJ	3.6 UJ	98 J	3.7 UJ	7.4 J	48 J	4.3 J	9.8 J	3.6 UJ
INDENO(1,2,3-CD)PYRENE	150	2100	3.7 U	3.6 UJ	6.4 J	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U
LOW MOLECULAR WEIGHT PAHS			3.7 U	3.6 UJ	4.9 J	3.7 UJ	3.4 UJ	17.9 J	8.9 J	4 U	3.6 U
NAPHTHALENE	3600	18000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	5.9	4.7	4 U	3.6 U
PHENANTHRENE	1700000	17000000	3.7 U	3.6 UJ	4.9	3.7 U	3.4 U	7.7	4.2	4 U	3.6 U
PYRENE	1700000	17000000	3.7 U	3.6 UJ	13	3.7 U	3.6	11	4.3	4.7	3.6 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.7 UJ	3.6 UJ	62.7 J	3.7 UJ	14 J	31.4 J	3.4 UJ	4 UJ	3.6 UJ

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CARCINOGENIC PAHS-POS	15	210	3.7 UJ	3.6 UJ	60.7 J	3.7 UJ	3.8 J	26 J	3.4 UJ	4 UJ	3.6 UJ
TOTAL PAHS			3.7 UJ	3.6 UJ	103 J	3.7 UJ	7.4 J	65.9 J	13.2 J	9.8 J	3.6 UJ
METALS (MG/KG)											
ALUMINUM	77000	990000	9150	2250	6280	5130	876	7950	5020	7490	2490 J
ARSENIC	0.39	1.6	46.1	30.7	11.9	11.6	52.5	12.4 J	9.7 J	19.8	67.2
BARIUM	15000	190000	5.4 J	2.2 J	8.1 J	8.6 J	6.3 J	9.7 J	1.4 J	17.1	8
BERYLLIUM	160	2000	0.33 J	0.22 J	0.33 J	0.31 J	0.14 J	0.31	0.11 J	0.39	0.29 J
CADMIUM	70	800	0.42	0.3	0.13 J	0.15 J	0.53	0.34	0.35	0.14 J	0.86
CALCIUM			4.6 UJ	1040 J	543 J	163 J	4.2 UJ	316 J	675 J	593 J	1230 J
CHROMIUM	0.29	5.6	16.9	5.2 J	9.1	7.6	2.3	11	8.7	7.5	7.9 J
COBALT	23	300	24.4 J	19.3 J	8.9 J	8.3 J	18.2 J	15.1 J	15.5 J	6.3	32.8
COPPER	3100	41000	8.7 J	9.9 J	10.6 J	14	21.9	12.9	4.9	7.7	18.1
IRON	55000	720000	72100	65500	23000	19100	41600	30600	29100	20200	63200 J
LEAD	400	800	1.7 J	1.1 J	7.9	6.4 J	3.5 J	10.7 J	1.1 J	11.8 J	8.3 J
MAGNESIUM			3110 J	1170 J	1960 J	1290 J	271 J	1890 J	1410 J	1080	601 J
MANGANESE	1800	23000	262	239	114	274 J	613 J	435 J	593 J	121	4220
MERCURY	5.6	34	0.03 UJ	0.031 UJ	0.0065 U	0.021 UJ	0.0053 U	0.017 UJ	0.0057 U	0.0096 UJ	0.0058 U
NICKEL	1500	20000	58.4	37.2	18.6	13.2 J	33.4 J	21.2 J	29.1 J	18.7	72.5
POTASSIUM			175 J	107 J	120 J	147 J	96.8 J	128 J	43.5 J	165 J	137 J
SELENIUM	390	5100	5 UJ	4.6 UJ	2.5 UJ	2.3	3.9	3.6	3.1	2.2 U	7
SILVER	390	5100	0.18 UJ	0.22 UJ	0.13 UJ	0.081 J	0.26 J	0.19 J	0.20 J	0.14 J	0.65 J
SODIUM			18.4 UJ	17.2 UJ	23.7 J	17.6 UJ	23.4 J	18.5 UJ	15.1 UJ	61.4	28.4 J
THALLIUM			1.9	1.8	1.1	1.7	3.3	2.5	3.3	1	0.18 U
VANADIUM	390	5200	9.7 J	3.8 J	10.1	7.4 J	0.45 J	14.4 J	14.0 J	10.3	6.7 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
ZINC	23000	310000	111	109	42.6	30.3 J	58.2 J	71.2 J	72.2 J	30.2	123
MISCELLANEOUS PARAMETERS (S.U.)											
PH			NA	5.1	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			NA	19000	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			24.9	NA	1170 J	16200 J	NA	7970 J	NA	1140 J	NA
1,2,3,4,6,7,8,9-OCDF			0.183 U	NA	0.159 U	0.333 J	NA	2.7 J	NA	0.409 J	NA
1,2,3,4,6,7,8-HPCDD			0.82 U	NA	13.5	138	NA	82.3	NA	25.1	NA
1,2,3,4,6,7,8-HPCDF			0.0676 U	NA	0.256 U	0.324 U	NA	1.24 U	NA	0.237 UJ	NA
1,2,3,4,7,8,9-HPCDF			0.0939 U	NA	0.104 U	0.142 U	NA	0.136 U	NA	0.0961 U	NA
1,2,3,4,7,8-HXCDD			0.0922 U	NA	0.0941 J	0.484 J	NA	0.395 J	NA	0.294 J	NA
1,2,3,4,7,8-HXCDF			0.0668 U	NA	0.0665 U	0.0763 U	NA	0.254 J	NA	0.0706 U	NA
1,2,3,6,7,8-HXCDD			0.0828 U	NA	0.203 J	0.63 J	NA	0.888 J	NA	0.374 J	NA
1,2,3,6,7,8-HXCDF			0.0632 U	NA	0.0628 U	0.0721 U	NA	0.11 J	NA	0.0671 U	NA
1,2,3,7,8,9-HXCDD			0.0877 U	NA	0.249 J	0.868 J	NA	0.709 J	NA	0.438 J	NA
1,2,3,7,8-PECDD			0.102 U	NA	0.0917 U	0.139 U	NA	0.112 U	NA	0.0865 U	NA
2,3,4,6,7,8-HXCDF			0.0726 U	NA	0.0721 U	0.0828 U	NA	0.0963 J	NA	0.0978 U	NA
2,3,7,8-TCDF			0.158 U	NA	0.133 U	0.224 U	NA	0.222 U	NA	0.169 U	NA
TOTAL HPCDD			0.82 J	NA	28.2	259	NA	173	NA	63.4	NA
TOTAL HPCDF			0.0676 U	NA	0.256 U	0.324 U	NA	2.42 J	NA	0.0679 U	NA
TOTAL HXCDD			0.0828 U	NA	1.67 J	5.33	NA	6.33	NA	5.59	NA
TOTAL HXCDF			0.0632 U	NA	0.335 J	0.138 J	NA	0.972 J	NA	0.0671 U	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970
SAMPLE DATE			4/14/2010	4/14/2010	4/14/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL PECDD			0.102 U	NA	0.0917 U	1.87 J	NA	0.112 U	NA	0.25 J	NA
TOTAL PECDF			0.0976 U	NA	0.0752 U	0.110 U	NA	0.994 J	NA	0.0825 U	NA
TOTAL TCDD			0.158 U	NA	0.103 U	0.186 U	NA	0.182 U	NA	0.122 U	NA
TOTAL TCDF			0.129 U	NA	0.285 J	0.224 U	NA	0.222 U	NA	0.169 U	NA
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			14 U	13 UJ	35 J	NA	NA	NA	NA	15 UJ	13 UJ

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-971-0204-AVG	TF5-SB-971-0810	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204
LOCATION ID			TF5-SB971	TF5-SB971	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975
SAMPLE DATE			4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/14/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
ACETONE	61000000	630000000	4.5 UJ	3.5 J	4.1 UJ	4.2 UJ	8.72 J	4.4 UJ	7.3 J	17.4 J	4.2 UJ
BTEX			4.5 U	4.9 UJ	4.1 U	4.2 UJ	1.78 J	4.4 UJ	4.3 U	4.3 UJ	4.2 U
CARBON DISULFIDE	820000	3700000	4.5 U	4.9 UJ	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4 J	4.3 UJ	4.2 U
TOLUENE	5000000	45000000	4.5 U	4.9 UJ	4.1 U	4.2 UJ	1.78 J	4.4 UJ	4.3 U	4.3 UJ	4.2 U
SEMIVOLATILES (UG/KG)											
2-METHYLNAPHTHALENE	310000	4100000	4 U	3.9 U	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ
4-METHYLPHENOL	310000	3100000	4.9 J	3.9 UJ	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 UJ	3.7 UJ	3.6 U
BENZO(A)ANTHRACENE	150	2100	11.5	3.9 U	3.7 U	3.6 U	6.55	3.7 UJ	4.2 U	3.7 UJ	3.6 U
BENZO(A)PYRENE	15	210	11	3.9 U	3.7 U	3.6 U	6.5	3.7 UJ	4.2 U	3.7 UJ	3.6 U
BENZO(B)FLUORANTHENE	150	2100	19	3.9 U	3.7 U	3.6 U	10	3.7 UJ	5.2 J	3.7 UJ	3.6 U
BENZO(G,H,I)PERYLENE	1700000	17000000	8	3.9 U	3.7 U	3.6 U	4.5	3.7 UJ	4.2 U	3.7 UJ	3.6 U
BENZO(K)FLUORANTHENE	1500	21000	7.5	3.9 U	3.7 UJ	3.6 UJ	4.65 J	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	130 J	390 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U
CHRYSENE	15000	210000	15.5 J	3.9 U	3.7 U	3.6 U	8.75	3.7 UJ	4.2 U	3.7 UJ	3.6 U
DI-N-BUTYL PHTHALATE	6100000	62000000	280 J	390 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U
FLUORANTHENE	2300000	22000000	21.5	3.9 U	3.7 U	3.6 U	14.5	3.7 UJ	6.6	3.7 UJ	3.6 U
HIGH MOLECULAR WEIGHT PAHS			120 J	3.9 U	3.7 UJ	3.6 UJ	70.6 J	3.7 UJ	17.1 J	3.7 UJ	3.6 UJ
INDENO(1,2,3-CD)PYRENE	150	2100	7.25	3.9 U	3.7 U	3.6 U	3.1	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ
LOW MOLECULAR WEIGHT PAHS			12.5	3.9 U	3.7 UJ	3.6 UJ	6.65 J	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ
NAPHTHALENE	3600	18000	4 U	3.9 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U
PHENANTHRENE	1700000	17000000	12.5	3.9 U	3.7 U	3.6 U	6.65	3.7 UJ	4.2 U	3.7 UJ	3.6 U
PYRENE	1700000	17000000	18.5	3.9 U	3.7 U	3.6 U	13	3.7 UJ	5.3	3.7 UJ	3.6 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	73.8 J	3.9 U	3.7 UJ	3.6 UJ	41.4 J	3.7 UJ	17.8 J	3.7 UJ	3.6 UJ

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-971-0204-AVG	TF5-SB-971-0810	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204
LOCATION ID			TF5-SB971	TF5-SB971	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975
SAMPLE DATE			4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/14/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CARCINOGENIC PAHS-POS	15	210	71.8 J	3.9 U	3.7 UJ	3.6 UJ	38.6 J	3.7 UJ	5.2 J	3.7 UJ	3.6 UJ
TOTAL PAHS			132 J	3.9 U	3.7 UJ	3.6 UJ	77.2 J	3.7 UJ	17.1 J	3.7 UJ	3.6 UJ
METALS (MG/KG)											
ALUMINUM	77000	990000	7730 J	14000	7340	1200	7320	4110	5970 J	9320 J	9090
ARSENIC	0.39	1.6	6.4 J	20.6 J	29.6	50.7	42.3	31.9	20.6	26.2	23.7
BARIUM	15000	190000	20 J	7.3 J	13.5 J	10.3 J	17.6 J	3.4 J	12.9	4.2 J	8
BERYLLIUM	160	2000	0.5 J	0.33 J	0.38 J	0.35 J	0.525 J	0.31 J	0.42 J	0.28 J	0.45 J
CADMIUM	70	800	0.215 J	0.75	0.22 J	0.61	0.24 J	0.23	0.22 J	0.48	0.24
CALCIUM			602 J	576 J	257 J	5.7 UJ	858 J	183 J	518 J	2200 J	5.1 UJ
CHROMIUM	0.29	5.6	9.95 J	21.7	11.7	3.6	9.05	9.8	8.3 J	16.2 J	16
COBALT	23	300	7.55 J	12.4 J	14.6 J	19.5 J	13 J	19.5 J	9.2	30	15.7 J
COPPER	3100	41000	12	12.8	18.5	34.7	14.2	35.8	11.3	19.9	18 J
IRON	55000	720000	22800 J	59800	31100	52000	26600	30900	20900 J	48200 J	55500
LEAD	400	800	11.1 J	2.5 J	5.4 J	2.8 J	10.2 J	8.1 J	15.3 J	5.5 J	8 J
MAGNESIUM			1570 J	4870 J	2030 J	172 J	1560 J	1220 J	1460 J	3280 J	2560 J
MANGANESE	1800	23000	200 J	716 J	407 J	1560 J	462 J	215 J	183	162	306
MERCURY	5.6	34	0.0148 J	0.0056 U	0.018 UJ	0.0053 U	0.0275 UJ	0.0066 UJ	0.012 J	0.00565 U	0.0089 UJ
NICKEL	1500	20000	17.2 J	33.7 J	24.9 J	39.4 J	22.4 J	21.8 J	15.1	41.4	26.8
POTASSIUM			289 J	107 J	210 J	106 J	220	159 J	141 J	158 J	137 J
SELENIUM	390	5100	3.55	3.2	3.6	4.8	3.25	3.4	3.5	4.4	4.5 UJ
SILVER	390	5100	0.11 J	0.2 J	0.17 J	0.37 J	0.17 J	0.23 J	0.15 J	0.25 J	0.12 UJ
SODIUM			28.8 J	30.9 J	24.1 UJ	25.9 UJ	26 UJ	15.6 UJ	20.6 J	17.6 UJ	10.7 UJ
THALLIUM			1.2	3.8	2.5	7.4	2.55	1.7	1	1.25	2.2
VANADIUM	390	5200	12.5 J	25.0 J	10.4 J	4.1 J	12.4 J	9.5 J	10.3	11.4 J	14.5 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-971-0204-AVG	TF5-SB-971-0810	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204
LOCATION ID			TF5-SB971	TF5-SB971	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975
SAMPLE DATE			4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/14/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
ZINC	23000	310000	40.5 J	72.8 J	52.7 J	87.5 J	39.9 J	41.1 J	35.7	74	58.8
MISCELLANEOUS PARAMETERS (S.U.)											
PH			NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD			4010 J	NA	13700 J	NA	6540 J	NA	4560 J	NA	17000 J
1,2,3,4,6,7,8,9-OCDF			0.746 J	NA	0.344 J	NA	1.25 J	NA	0.796 J	NA	0.864 UJ
1,2,3,4,6,7,8-HPCDD			30.6 J	NA	126	NA	47 J	NA	58.9	NA	146 J
1,2,3,4,6,7,8-HPCDF			1.48 J	NA	0.224 UJ	NA	0.838 U	NA	0.324 U	NA	0.491 U
1,2,3,4,7,8,9-HPCDF			0.183 J	NA	0.0894 U	NA	0.0896 U	NA	0.0388 U	NA	0.126 U
1,2,3,4,7,8-HXCDD			0.184 J	NA	0.391 J	NA	0.284 J	NA	0.369 J	NA	0.438 J
1,2,3,4,7,8-HXCDF			0.351 J	NA	0.0815 U	NA	0.21 J	NA	0.0983 J	NA	0.144 J
1,2,3,6,7,8-HXCDD			0.258 J	NA	0.705 J	NA	0.44 J	NA	0.785 J	NA	0.604 J
1,2,3,6,7,8-HXCDF			0.15 J	NA	0.0770 U	NA	0.104 J	NA	0.067 J	NA	0.114 J
1,2,3,7,8,9-HXCDD			0.329 J	NA	0.678 J	NA	0.457 J	NA	0.981 J	NA	1.21 J
1,2,3,7,8-PECDD			0.0622 U	NA	0.118 U	NA	0.109 J	NA	0.176 J	NA	0.0790 U
2,3,4,6,7,8-HXCDF			0.051 J	NA	0.0884 U	NA	0.112 J	NA	0.0242 U	NA	0.0939 U
2,3,7,8-TCDF			0.0872 U	NA	0.200 U	NA	0.175 J	NA	0.0594 U	NA	0.140 U
TOTAL HPCDD			67.4 J	NA	236	NA	103	NA	122	NA	271 J
TOTAL HPCDF			1.72	NA	0.246 U	NA	1.56 J	NA	0.501 U	NA	0.491 U
TOTAL HXCDD			2.83	NA	4.03	NA	3.13 J	NA	9.92	NA	8.5 U
TOTAL HXCDF			0.74 J	NA	0.13 J	NA	0.989 J	NA	0.389 J	NA	0.542 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-971-0204-AVG	TF5-SB-971-0810	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204
LOCATION ID			TF5-SB971	TF5-SB971	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975
SAMPLE DATE			4/13/2010	4/13/2010	4/12/2010	4/12/2010	4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/14/2010
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL PECDD			0.242 J	NA	0.118 U	NA	1.1 J	NA	1.34 J	NA	4.32
TOTAL PECDF			0.393 J	NA	0.0892 U	NA	0.586 J	NA	0.594 J	NA	0.0761 U
TOTAL TCDD			0.11 J	NA	0.134 U	NA	0.132 U	NA	0.0382 U	NA	0.0976 U
TOTAL TCDF			0.114 J	NA	0.200 U	NA	0.297 J	NA	0.0594 U	NA	0.140 U
PETROLEUM HYDROCARBONS (MG/KG)											
EXTRACTABLE PETROLEUM HYDROCARBONS			NA	NA	NA	NA	NA	NA	NA	NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010	4/13/2010
TOP DEPTH			8 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM
VOLATILES (UG/KG)					
ACETONE	61000000	630000000	5.2 UJ	4.6 UJ	4.1 UJ
BTEX			5.2 U	4.6 U	4.1 U
CARBON DISULFIDE	820000	3700000	5.2 U	4.6 U	4.1 U
TOLUENE	5000000	45000000	5.2 U	4.6 U	4.1 U
SEMIVOLATILES (UG/KG)					
2-METHYLNAPHTHALENE	310000	4100000	3.5 UJ	3.7 U	3.7 U
4-METHYLPHENOL	310000	3100000	3.5 U	3.7 UJ	3.7 UJ
BENZO(A)ANTHRACENE	150	2100	3.5 U	3.7 U	3.7 U
BENZO(A)PYRENE	15	210	3.5 U	3.7 U	3.7 U
BENZO(B)FLUORANTHENE	150	2100	3.5 U	3.7 U	3.7 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.5 U	3.7 U	3.7 U
BENZO(K)FLUORANTHENE	1500	21000	3.5 UJ	3.7 U	3.7 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	350 U	370 U	370 U
CHRYSENE	15000	210000	3.5 U	3.7 U	3.7 U
DI-N-BUTYL PHTHALATE	6100000	62000000	350 U	370 U	370 U
FLUORANTHENE	2300000	22000000	3.5 U	3.7 U	3.7 U
HIGH MOLECULAR WEIGHT PAHS			3.5 UJ	3.7 U	3.7 U
INDENO(1,2,3-CD)PYRENE	150	2100	3.5 UJ	3.7 U	3.7 U
LOW MOLECULAR WEIGHT PAHS			4.9 J	3.7 U	3.7 U
NAPHTHALENE	3600	18000	4.9	3.7 U	3.7 U
PHENANTHRENE	1700000	17000000	3.5 U	3.7 U	3.7 U
PYRENE	1700000	17000000	3.5 U	3.7 U	3.7 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.5 UJ	3.7 U	3.7 U

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010	4/13/2010
TOP DEPTH			8 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM
TOTAL CARCINOGENIC PAHS-POS	15	210	3.5 UJ	3.7 U	3.7 U
TOTAL PAHS			4.9 J	3.7 U	3.7 U
METALS (MG/KG)					
ALUMINUM	77000	990000	2580	7470	5270
ARSENIC	0.39	1.6	46.7	3.5 J	8.1
BARIUM	15000	190000	6.3 J	17.1 J	13.3 J
BERYLLIUM	160	2000	0.28 J	0.48 J	0.48 J
CADMIUM	70	800	0.31	0.18 J	0.31
CALCIUM			527 J	150 J	72.5 J
CHROMIUM	0.29	5.6	11.8	9.1	10.3
COBALT	23	300	23 J	9.0 J	10.7 J
COPPER	3100	41000	32.7	12.5	18.1
IRON	55000	720000	51200	18500	29400
LEAD	400	800	7.8 J	4.3 J	5.4 J
MAGNESIUM			862 J	2240 J	1450 J
MANGANESE	1800	23000	778	300 J	387 J
MERCURY	5.6	34	0.0058 U	0.018 UJ	0.012 UJ
NICKEL	1500	20000	48	13.9 J	19.9 J
POTASSIUM			127 J	313 J	374 J
SELENIUM	390	5100	5.5 UJ	2.3 U	2.8
SILVER	390	5100	0.21 UJ	0.069 U	0.13 J
SODIUM			14.6 UJ	18.9 UJ	32.1 J
THALLIUM			4.7	1.9	2.3
VANADIUM	390	5200	10.8 J	9.4 J	12.0 J

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010	4/13/2010
TOP DEPTH			8 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM
ZINC	23000	310000	75.3	32.8 J	41.7 J
MISCELLANEOUS PARAMETERS (S.U.)					
PH			5.5	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON			5000 U	NA	NA
DIOXINS/FURANS (NG/KG)					
1,2,3,4,6,7,8,9-OCDD			NA	21200 J	NA
1,2,3,4,6,7,8,9-OCDF			NA	0.708 J	NA
1,2,3,4,6,7,8-HPCDD			NA	106	NA
1,2,3,4,6,7,8-HPCDF			NA	0.178 U	NA
1,2,3,4,7,8,9-HPCDF			NA	0.0454 U	NA
1,2,3,4,7,8-HXCDD			NA	0.252 J	NA
1,2,3,4,7,8-HXCDF			NA	0.0113 U	NA
1,2,3,6,7,8-HXCDD			NA	0.132 J	NA
1,2,3,6,7,8-HXCDF			NA	0.0108 U	NA
1,2,3,7,8,9-HXCDD			NA	0.213 J	NA
1,2,3,7,8-PECDD			NA	0.0598 J	NA
2,3,4,6,7,8-HXCDF			NA	0.0121 U	NA
2,3,7,8-TCDF			NA	0.0682 U	NA
TOTAL HPCDD			NA	189	NA
TOTAL HPCDF			NA	0.178 U	NA
TOTAL HXCDD			NA	1.77 J	NA
TOTAL HXCDF			NA	0.0108 U	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-11
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Residential Soil	EPA RSL For Industrial Soil	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			4/14/2010	4/13/2010	4/13/2010
TOP DEPTH			8 FT	2 FT	8 FT
BOTTOM DEPTH			10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM
TOTAL PECDD			NA	2.74	NA
TOTAL PECDF			NA	0.0282 U	NA
TOTAL TCDD			NA	0.142 J	NA
TOTAL TCDF			NA	0.0682 U	NA
PETROLEUM HYDROCARBONS (MG/KG)					
EXTRACTABLE PETROLEUM HYDROCARBONS			NA	NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-12
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-966-0001					TF5-SB-967-0001					TF5-SB-968-0001				
QC TYPE	TEF[1]	TF5-SB-966-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-967-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-968-0001		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	2380	J	0.714	0.714	0.714	2910	J	0.873	0.873	0.873	2060	J	0.618	0.618	0.618
1,2,3,4,6,7,8,9-OCDF	0.0003	1.27	J	0.000381	0.000381	0.000381	6.64	J	0.001992	0.001992	0.001992	2.16	J	0.000648	0.000648	0.000648
1,2,3,4,6,7,8-HPCDD	0.01	37.6		0.376	0.376	0.376	43.7		0.437	0.437	0.437	49.4		0.494	0.494	0.494
1,2,3,4,6,7,8-HPCDF	0.01	0.734	UJ	0.00734	0.00734	0	4.37		0.0437	0.0437	0.0437	1.28	U	0.0128	0.0064	0
1,2,3,4,7,8,9-HPCDF	0.01	0.188	U	0.00188	0.00094	0	0.429	J	0.00429	0.00429	0.00429	0.103	U	0.00103	0.000515	0
1,2,3,4,7,8-HXCDD	0.1	0.194	U	0.0194	0.0097	0	0.437	J	0.0437	0.0437	0.0437	0.634	J	0.0634	0.0634	0.0634
1,2,3,4,7,8-HXCDF	0.1	0.159	J	0.0159	0.0159	0.0159	1.59	J	0.159	0.159	0.159	0.425	J	0.0425	0.0425	0.0425
1,2,3,6,7,8-HXCDD	0.1	0.676	J	0.0676	0.0676	0.0676	0.962	J	0.0962	0.0962	0.0962	1.05	J	0.105	0.105	0.105
1,2,3,6,7,8-HXCDF	0.1	0.137	U	0.0137	0.00685	0	0.685	J	0.0685	0.0685	0.0685	0.223	J	0.0223	0.0223	0.0223
1,2,3,7,8,9-HXCDD	0.1	0.613	J	0.0613	0.0613	0.0613	1.21	J	0.121	0.121	0.121	0.868	J	0.0868	0.0868	0.0868
1,2,3,7,8,9-HXCDF	0.1	0.184	U	0.0184	0.0092	0	0.175	U	0.0175	0.00875	0	0.156	U	0.0156	0.0078	0
1,2,3,7,8-PECDD	1	0.198	U	0.198	0.099	0	0.283	J	0.283	0.283	0.283	0.284	J	0.284	0.284	0.284
1,2,3,7,8-PECDF	0.03	0.155	U	0.00465	0.002325	0	0.621	J	0.01863	0.01863	0.01863	0.124	U	0.00372	0.00186	0
2,3,4,6,7,8-HXCDF	0.1	0.157	U	0.0157	0.00785	0	0.779	J	0.0779	0.0779	0.0779	0.188	J	0.0188	0.0188	0.0188
2,3,4,7,8-PECDF	0.3	0.154	U	0.0462	0.0231	0	0.519	J	0.1557	0.1557	0.1557	0.123	U	0.0369	0.01845	0
2,3,7,8-TCDD	1	0.236	U	0.236	0.118	0	0.142	U	0.142	0.071	0	0.181	U	0.181	0.0905	0
2,3,7,8-TCDF	0.1	0.277	U	0.0277	0.01385	0	0.657	J	0.0657	0.0657	0.0657	0.141	U	0.0141	0.00705	0
Total of TEQ					1.53	1.24				2.53	2.45				1.87	1.74

TABLE 4-12
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-969-0001					TF5-SB-970-0001					TF5-SB-971-0001				
QC TYPE	TEF[1]	TF5-SB-969-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-970-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-971-0001		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	6010	J	1.803	1.803	1.803	8000	J	2.4	2.4	2.4	5670	J	1.701	1.701	1.701
1,2,3,4,6,7,8,9-OCDF	0.0003	3.53	J	0.001059	0.001059	0.001059	32		0.0096	0.0096	0.0096	24.1		0.00723	0.00723	0.00723
1,2,3,4,6,7,8-HPCDD	0.01	60.2		0.602	0.602	0.602	141		1.41	1.41	1.41	76.8		0.768	0.768	0.768
1,2,3,4,6,7,8-HPCDF	0.01	1.41	U	0.0141	0.00705	0	12		0.12	0.12	0.12	7.78		0.0778	0.0778	0.0778
1,2,3,4,7,8,9-HPCDF	0.01	0.121	U	0.00121	0.000605	0	0.86	J	0.0086	0.0086	0.0086	0.484	J	0.00484	0.00484	0.00484
1,2,3,4,7,8-HXCDD	0.1	0.434	J	0.0434	0.0434	0.0434	1.22	J	0.122	0.122	0.122	0.694	J	0.0694	0.0694	0.0694
1,2,3,4,7,8-HXCDF	0.1	0.312	J	0.0312	0.0312	0.0312	1.05	J	0.105	0.105	0.105	0.606	J	0.0606	0.0606	0.0606
1,2,3,6,7,8-HXCDD	0.1	0.805	J	0.0805	0.0805	0.0805	3.63		0.363	0.363	0.363	1.69	J	0.169	0.169	0.169
1,2,3,6,7,8-HXCDF	0.1	0.141	J	0.0141	0.0141	0.0141	0.732	J	0.0732	0.0732	0.0732	0.405	J	0.0405	0.0405	0.0405
1,2,3,7,8,9-HXCDD	0.1	0.952	J	0.0952	0.0952	0.0952	2.87	J	0.287	0.287	0.287	1.76	J	0.176	0.176	0.176
1,2,3,7,8,9-HXCDF	0.1	0.0925	U	0.00925	0.004625	0	0.154	U	0.0154	0.0077	0	0.0866	U	0.00866	0.00433	0
1,2,3,7,8-PECDD	1	0.0881	U	0.0881	0.04405	0	0.388	J	0.388	0.388	0.388	0.245	J	0.245	0.245	0.245
1,2,3,7,8-PECDF	0.03	0.0955	J	0.002865	0.002865	0.002865	0.292	J	0.00876	0.00876	0.00876	0.202	J	0.00606	0.00606	0.00606
2,3,4,6,7,8-HXCDF	0.1	0.079	U	0.0079	0.00395	0	0.762	J	0.0762	0.0762	0.0762	0.427	J	0.0427	0.0427	0.0427
2,3,4,7,8-PECDF	0.3	0.082	U	0.0246	0.0123	0	0.105	U	0.0315	0.01575	0	0.279	J	0.0837	0.0837	0.0837
2,3,7,8-TCDD	1	0.0963	U	0.0963	0.04815	0	0.159	U	0.159	0.0795	0	0.12	U	0.12	0.06	0
2,3,7,8-TCDF	0.1	0.134	U	0.0134	0.0067	0	0.346	J	0.0346	0.0346	0.0346	0.491	J	0.0491	0.0491	0.0491
Total of TEQ					2.80	2.67				5.51	5.41				3.57	3.50

TABLE 4-12
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-972-0001					TF5-SB-973-0001					TF5-SB-974-0001				
QC TYPE	TEF[1]	TF5-SB-972-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-973-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-974-0001		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	1930	J	0.579	0.579	0.579	7160	J	2.148	2.148	2.148	9650	J	2.895	2.895	2.895
1,2,3,4,6,7,8,9-OCDF	0.0003	5.94		0.001782	0.001782	0.001782	2.39	J	0.000717	0.000717	0.000717	3.63	J	0.001089	0.001089	0.001089
1,2,3,4,6,7,8-HPCDD	0.01	26.2		0.262	0.262	0.262	74.7		0.747	0.747	0.747	94		0.94	0.94	0.94
1,2,3,4,6,7,8-HPCDF	0.01	1.64	U	0.0164	0.0082	0	1.21	U	0.0121	0.00605	0	1.8	U	0.018	0.009	0
1,2,3,4,7,8,9-HPCDF	0.01	0.145	U	0.00145	0.000725	0	0.0736	U	0.000736	0.000368	0	0.111	J	0.00111	0.00111	0.00111
1,2,3,4,7,8-HXCDD	0.1	0.2	J	0.02	0.02	0.02	0.397	J	0.0397	0.0397	0.0397	0.674	J	0.0674	0.0674	0.0674
1,2,3,4,7,8-HXCDF	0.1	0.243	J	0.0243	0.0243	0.0243	0.256	J	0.0256	0.0256	0.0256	0.464	J	0.0464	0.0464	0.0464
1,2,3,6,7,8-HXCDD	0.1	0.478	J	0.0478	0.0478	0.0478	0.724	J	0.0724	0.0724	0.0724	0.865	J	0.0865	0.0865	0.0865
1,2,3,6,7,8-HXCDF	0.1	0.0997	J	0.00997	0.00997	0.00997	0.112	J	0.0112	0.0112	0.0112	0.167	J	0.0167	0.0167	0.0167
1,2,3,7,8,9-HXCDD	0.1	0.411	J	0.0411	0.0411	0.0411	0.758	J	0.0758	0.0758	0.0758	0.995	J	0.0995	0.0995	0.0995
1,2,3,7,8,9-HXCDF	0.1	0.0923	U	0.00923	0.004615	0	0.0894	U	0.00894	0.00447	0	0.07	J	0.007	0.007	0.007
1,2,3,7,8-PECDD	1	0.0948	U	0.0948	0.0474	0	0.257	J	0.257	0.257	0.257	0.287	J	0.287	0.287	0.287
1,2,3,7,8-PECDF	0.03	0.0865	U	0.002595	0.0012975	0	0.109	U	0.00327	0.001635	0	0.175	J	0.00525	0.00525	0.00525
2,3,4,6,7,8-HXCDF	0.1	0.143	J	0.0143	0.0143	0.0143	0.164	J	0.0164	0.0164	0.0164	0.204	J	0.0204	0.0204	0.0204
2,3,4,7,8-PECDF	0.3	0.0859	U	0.02577	0.012885	0	0.108	U	0.0324	0.0162	0	0.233	J	0.0699	0.0699	0.0699
2,3,7,8-TCDD	1	0.196	U	0.196	0.098	0	0.119	U	0.119	0.0595	0	0.107	J	0.107	0.107	0.107
2,3,7,8-TCDF	0.1	0.108	U	0.0108	0.0054	0	0.0942	U	0.00942	0.00471	0	0.517	J	0.0517	0.0517	0.0517
Total of TEQ					1.18	1.00				3.49	3.39				4.71	4.70

TABLE 4-12
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-975-0001					TF5-SB-976-0001				
QC TYPE	TEF[1]	TF5-SB-975-0001		TEQ*analytical result	TEQ[2]	TEQ[3]	TF5-SB-976-0001		TEQ*analytical result	TEQ[2]	TEQ[3]
1,2,3,4,6,7,8,9-OCDD	0.0003	6700	J	2.01	2.01	2.01	2660	J	0.798	0.798	0.798
1,2,3,4,6,7,8,9-OCDF	0.0003	13	J	0.0039	0.0039	0.0039	8.95		0.002685	0.002685	0.002685
1,2,3,4,6,7,8-HPCDD	0.01	132		1.32	1.32	1.32	57.9		0.579	0.579	0.579
1,2,3,4,6,7,8-HPCDF	0.01	9.12		0.0912	0.0912	0.0912	5.5		0.055	0.055	0.055
1,2,3,4,7,8,9-HPCDF	0.01	0.509	J	0.00509	0.00509	0.00509	0.317	J	0.00317	0.00317	0.00317
1,2,3,4,7,8-HXCDD	0.1	1.62	J	0.162	0.162	0.162	0.679	J	0.0679	0.0679	0.0679
1,2,3,4,7,8-HXCDF	0.1	3.09	J	0.309	0.309	0.309	0.638	J	0.0638	0.0638	0.0638
1,2,3,6,7,8-HXCDD	0.1	2.68	J	0.268	0.268	0.268	1.38	J	0.138	0.138	0.138
1,2,3,6,7,8-HXCDF	0.1	1.01	J	0.101	0.101	0.101	0.32	J	0.032	0.032	0.032
1,2,3,7,8,9-HXCDD	0.1	3.64		0.364	0.364	0.364	1.52	J	0.152	0.152	0.152
1,2,3,7,8,9-HXCDF	0.1	0.0856	U	0.00856	0.00428	0	0.144	U	0.0144	0.0072	0
1,2,3,7,8-PECDD	1	0.813	J	0.813	0.813	0.813	0.264	J	0.264	0.264	0.264
1,2,3,7,8-PECDF	0.03	0.717	J	0.02151	0.02151	0.02151	0.292	J	0.00876	0.00876	0.00876
2,3,4,6,7,8-HXCDF	0.1	1.35	J	0.135	0.135	0.135	0.426	J	0.0426	0.0426	0.0426
2,3,4,7,8-PECDF	0.3	0.978	J	0.2934	0.2934	0.2934	0.3	J	0.09	0.09	0.09
2,3,7,8-TCDD	1	0.104	U	0.104	0.052	0	0.172	U	0.172	0.086	0
2,3,7,8-TCDF	0.1	0.842	J	0.0842	0.0842	0.0842	0.551	J	0.0551	0.0551	0.0551
Total of TEQ					6.04	5.98				2.45	2.35

Notes:
1 TEFs = Toxic Equivalency Factor. Reference: The 2005 World Health Organization Reevaluation of Human and mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences, Volume 93, Number 2. July 2006. pp. 223-241.

TEQ = Toxic Equivalent
NG/KG = nanograms per kilogram

RSL = EPA Regional Screening Levels (RSLs)- Oak Ridge National Laboratory (May, 2009) available online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Values represent the risk-based soil screening level for residential land use.
[2] TEQ is calculated assuming a "U" designation is present in the sample at 1/2 U
[3] TEQ is calculated assuming a "U" designation is 0

TABLE 4-13
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-966-0406					TF5-SB-967-0204					TF5-SB-968-0204				
QC TYPE	**TEF[1]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
DIOXINS/FURANS (NG/KG)																
1,2,3,4,6,7,8,9-OCDD	0.0003	24.9		0.00747	0.00747	0.00747	1170	J	0.351	0.351	0.351	16200	J	4.86	4.86	4.86
1,2,3,4,6,7,8,9-OCDF	0.0003	0.183	U	0.0000549	0.00002745	0	0.159	U	0.0000477	0.00002385	0	0.333	J	0.0000999	0.0000999	0.0000999
1,2,3,4,6,7,8-HPCDD	0.01	0.82	U	0.0082	0.0041	0	13.5		0.135	0.135	0.135	138		1.38	1.38	1.38
1,2,3,4,6,7,8-HPCDF	0.01	0.0676	U	0.000676	0.000338	0	0.256	U	0.00256	0.00128	0	0.324	U	0.00324	0.00162	0
1,2,3,4,7,8,9-HPCDF	0.01	0.0939	U	0.000939	0.0004695	0	0.104	U	0.00104	0.00052	0	0.142	U	0.00142	0.00071	0
1,2,3,4,7,8-HXCDD	0.1	0.0922	U	0.00922	0.00461	0	0.0941	J	0.00941	0.00941	0.00941	0.484	J	0.0484	0.0484	0.0484
1,2,3,4,7,8-HXCDF	0.1	0.0668	U	0.00668	0.00334	0	0.0665	U	0.00665	0.003325	0	0.0763	U	0.00763	0.003815	0
1,2,3,6,7,8-HXCDD	0.1	0.0828	U	0.00828	0.00414	0	0.203	J	0.0203	0.0203	0.0203	0.63	J	0.063	0.063	0.063
1,2,3,6,7,8-HXCDF	0.1	0.0632	U	0.00632	0.00316	0	0.0628	U	0.00628	0.00314	0	0.0721	U	0.00721	0.003605	0
1,2,3,7,8,9-HXCDD	0.1	0.0877	U	0.00877	0.004385	0	0.249	J	0.0249	0.0249	0.0249	0.868	J	0.0868	0.0868	0.0868
1,2,3,7,8-PECDD	1	0.102	U	0.102	0.051	0	0.0917	U	0.0917	0.04585	0	0.139	U	0.139	0.0695	0
2,3,4,6,7,8-HXCDF	0.1	0.0726	U	0.00726	0.00363	0	0.0721	U	0.00721	0.003605	0	0.0828	U	0.00828	0.00414	0
2,3,7,8-TCDF	0.1	0.158	U	0.0158	0.0079	0	0.133	U	0.0133	0.00665	0	0.224	U	0.0224	0.0112	0
Total of TEQ					0.09	0.01				0.61	0.54				6.53	6.44

TABLE 4-13
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-969-0204					TF5-SB-970-0204					TF5-SB-971-0204-AVG				
QC TYPE	**TEF[1]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
DIOXINS/FURANS (NG/KG)																
1,2,3,4,6,7,8,9-OCDD	0.0003	7970	J	2.391	2.391	2.391	1140	J	0.342	0.342	0.342	4010	J	1.203	1.203	1.203
1,2,3,4,6,7,8,9-OCDF	0.0003	2.7	J	0.00081	0.00081	0.00081	0.409	J	0.0001227	0.0001227	0.0001227	0.746	J	0.0002238	0.0002238	0.0002238
1,2,3,4,6,7,8-HPCDD	0.01	82.3		0.823	0.823	0.823	25.1		0.251	0.251	0.251	30.6	J	0.306	0.306	0.306
1,2,3,4,6,7,8-HPCDF	0.01	1.24	U	0.0124	0.0062	0	0.237	UJ	0.00237	0.00237	0.00237	1.48	J	0.0148	0.0148	0.0148
1,2,3,4,7,8,9-HPCDF	0.01	0.136	U	0.00136	0.00068	0	0.0961	U	0.000961	0.0004805	0	0.183	J	0.00183	0.00183	0.00183
1,2,3,4,7,8-HXCDD	0.1	0.395	J	0.0395	0.0395	0.0395	0.294	J	0.0294	0.0294	0.0294	0.184	J	0.0184	0.0184	0.0184
1,2,3,4,7,8-HXCDF	0.1	0.254	J	0.0254	0.0254	0.0254	0.0706	U	0.00706	0.00353	0	0.351	J	0.0351	0.0351	0.0351
1,2,3,6,7,8-HXCDD	0.1	0.888	J	0.0888	0.0888	0.0888	0.374	J	0.0374	0.0374	0.0374	0.258	J	0.0258	0.0258	0.0258
1,2,3,6,7,8-HXCDF	0.1	0.11	J	0.011	0.011	0.011	0.0671	U	0.00671	0.003355	0	0.15	J	0.015	0.015	0.015
1,2,3,7,8,9-HXCDD	0.1	0.709	J	0.0709	0.0709	0.0709	0.438	J	0.0438	0.0438	0.0438	0.329	J	0.0329	0.0329	0.0329
1,2,3,7,8-PECDD	1	0.112	U	0.112	0.056	0	0.0865	U	0.0865	0.04325	0	0.0622	U	0.0622	0.0311	0
2,3,4,6,7,8-HXCDF	0.1	0.0963	J	0.00963	0.00963	0.00963	0.0978	U	0.00978	0.00489	0	0.051	J	0.0051	0.0051	0.0051
2,3,7,8-TCDF	0.1	0.222	U	0.0222	0.0111	0	0.169	U	0.0169	0.00845	0	0.0872	U	0.00872	0.00436	0
Total of TEQ					3.53	3.46				0.77	0.71				1.69	1.66

TABLE 4-13
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-972-0204					TF5-SB-973-0204-AVG					TF5-SB-974-0204				
QC TYPE	**TEF[1]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
DIOXINS/FURANS (NG/KG)																
1,2,3,4,6,7,8,9-OCDD	0.0003	13700	J	4.11	4.11	4.11	6540	J	1.962	1.962	1.962	4560	J	1.368	1.368	1.368
1,2,3,4,6,7,8,9-OCDF	0.0003	0.344	J	0.0001032	0.0001032	0.0001032	1.25	J	0.000375	0.000375	0.000375	0.796	J	0.0002388	0.0002388	0.0002388
1,2,3,4,6,7,8-HPCDD	0.01	126		1.26	1.26	1.26	47	J	0.47	0.47	0.47	58.9		0.589	0.589	0.589
1,2,3,4,6,7,8-HPCDF	0.01	0.224	UJ	0.00224	0.00224	0.00224	0.838	U	0.00838	0.00419	0	0.324	U	0.00324	0.00162	0
1,2,3,4,7,8,9-HPCDF	0.01	0.0894	U	0.000894	0.000447	0	0.0896	U	0.000896	0.000448	0	0.0388	U	0.000388	0.000194	0
1,2,3,4,7,8-HXCDD	0.1	0.391	J	0.0391	0.0391	0.0391	0.284	J	0.0284	0.0284	0.0284	0.369	J	0.0369	0.0369	0.0369
1,2,3,4,7,8-HXCDF	0.1	0.0815	U	0.00815	0.004075	0	0.21	J	0.021	0.021	0.021	0.0983	J	0.00983	0.00983	0.00983
1,2,3,6,7,8-HXCDD	0.1	0.705	J	0.0705	0.0705	0.0705	0.44	J	0.044	0.044	0.044	0.785	J	0.0785	0.0785	0.0785
1,2,3,6,7,8-HXCDF	0.1	0.077	U	0.0077	0.00385	0	0.104	J	0.0104	0.0104	0.0104	0.067	J	0.0067	0.0067	0.0067
1,2,3,7,8,9-HXCDD	0.1	0.678	J	0.0678	0.0678	0.0678	0.457	J	0.0457	0.0457	0.0457	0.981	J	0.0981	0.0981	0.0981
1,2,3,7,8-PECDD	1	0.118	U	0.118	0.059	0	0.109	J	0.109	0.109	0.109	0.176	J	0.176	0.176	0.176
2,3,4,6,7,8-HXCDF	0.1	0.0884	U	0.00884	0.00442	0	0.112	J	0.0112	0.0112	0.0112	0.0242	U	0.00242	0.00121	0
2,3,7,8-TCDF	0.1	0.2	U	0.02	0.01	0	0.175	J	0.0175	0.0175	0.0175	0.0594	U	0.00594	0.00297	0
Total of TEQ					5.63	5.55				2.72	2.72				2.37	2.36

TABLE 4-13
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SUBSURFACE SOIL
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SB-975-0204					TF5-SB-976-0204				
QC TYPE	**TEF[1]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	NM		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD	0.0003	17000	J	5.1	5.1	5.1	21200	J	6.36	6.36	6.36
1,2,3,4,6,7,8,9-OCDF	0.0003	0.864	UJ	0.0002592	0.0002592	0.0002592	0.708	J	0.0002124	0.0002124	0.0002124
1,2,3,4,6,7,8-HPCDD	0.01	146	J	1.46	1.46	1.46	106		1.06	1.06	1.06
1,2,3,4,6,7,8-HPCDF	0.01	0.491	U	0.00491	0.002455	0	0.178	U	0.00178	0.00089	0
1,2,3,4,7,8,9-HPCDF	0.01	0.126	U	0.00126	0.00063	0	0.0454	U	0.000454	0.000227	0
1,2,3,4,7,8-HXCDD	0.1	0.438	J	0.0438	0.0438	0.0438	0.252	J	0.0252	0.0252	0.0252
1,2,3,4,7,8-HXCDF	0.1	0.144	J	0.0144	0.0144	0.0144	0.0113	U	0.00113	0.000565	0
1,2,3,6,7,8-HXCDD	0.1	0.604	J	0.0604	0.0604	0.0604	0.132	J	0.0132	0.0132	0.0132
1,2,3,6,7,8-HXCDF	0.1	0.114	J	0.0114	0.0114	0.0114	0.0108	U	0.00108	0.00054	0
1,2,3,7,8,9-HXCDD	0.1	1.21	J	0.121	0.121	0.121	0.213	J	0.0213	0.0213	0.0213
1,2,3,7,8-PECDD	1	0.079	U	0.079	0.0395	0	0.0598	J	0.0598	0.0598	0.0598
2,3,4,6,7,8-HXCDF	0.1	0.0939	U	0.00939	0.004695	0	0.0121	U	0.00121	0.000605	0
2,3,7,8-TCDF	0.1	0.14	U	0.014	0.007	0	0.0682	U	0.00682	0.00341	0
Total of TEQ					6.87	6.81				7.55	7.54

Notes:
1 TEFs = Toxic Equivalency Factor. Reference: The 2005 World Health Organization Reevaluation of Human and mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences, Volume 93, Number 2. July 2006. pp. 223-241.

TEQ = Toxic Equivalent
NG/KG = nanograms per kilogram

RSL = EPA Regional Screening Levels (RSLs)- Oak Ridge National Laboratory (May, 2009) available online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Values represent the risk-based soil screening level for residential land use.

[2] TEQ is calculated assuming a "U" designation is present in the sample at 1/2 U

[3] TEQ is calculated assuming a "U" designation is 0

TABLE 4-14
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 GROUNDWATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			5/17/2010	5/17/2010	5/13/2010	5/18/2010	5/14/2010	5/18/2010
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)								
1,2,3-TRICHLOROBENZENE	29		1.2 J	1 U	NA	1 U	NA	1 UJ
BENZENE	0.41	5	1 U	1 U	NA	1 U	NA	1.2
BTEX			1 U	1 U	NA	1 U	NA	1.2
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	NA	1 U	NA	2
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	NA	1 U	NA	2
TOTAL CHLORINATED ETHENES			1 U	1 UJ	NA	1 UJ	NA	2
TOTAL CHLORINATED VOCS			1.2 J	1 UJ	NA	1 UJ	NA	2 J
SEMIVOLATILES (UG/L)								
CAPROLACTAM	18000		1.7 J	4.9 J	NA	160 J	25 J	NA
METALS (UG/L)								
ALUMINUM	37000		38.5 UJ	1480	53.5 UJ	NA	35.7 UJ	NA
ARSENIC	0.045	10	8.8	0.59 J	0.911 J	NA	1.1	NA
BARIUM	7300	2000	9.9	69.3	15.1	NA	6.8	NA
BERYLLIUM	73	4	0.045 U	0.188 J	0.166 J	NA	0.045 U	NA
CADMIUM	18	5	0.054 U	0.183 J	0.074 J	NA	0.054 U	NA
CALCIUM			20400	11800	12900	NA	28200	NA
COBALT	11		10.6	14.3	19	NA	0.427 J	NA
COPPER	1500	1300	0.361 J	5.8	0.374 J	NA	1	NA
IRON	26000		17500	2260	24300	NA	225	NA
LEAD		15	0.162 U	1.7	0.162 U	NA	0.162 U	NA
MAGNESIUM			16500	7620	16700	NA	19600	NA
MANGANESE	880		1580	498	2510	NA	82.4	NA
NICKEL	730		27.4	43.4	57.8	NA	14.5	NA
POTASSIUM			520 J	2440	1130	NA	2150	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-14
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 GROUNDWATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			5/17/2010	5/17/2010	5/13/2010	5/18/2010	5/14/2010	5/18/2010
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM
SELENIUM	180	50	0.123 U	0.667 J	0.123 U	NA	0.185 J	NA
SODIUM			9520	29200	11200	NA	27600	NA
VANADIUM	180		0.331 UJ	1.2 J	0.331 UJ	NA	0.331 UJ	NA
ZINC	11000		45 UJ	24.4 UJ	81.7 J	NA	16.6 UJ	NA
DISSOLVED METALS (UG/L)								
ALUMINUM	37000		NA	446	36.7 UJ	NA	NA	NA
ARSENIC	0.045	10	NA	0.236 U	0.794 J	NA	NA	NA
BARIUM	7300	2000	NA	53.8	15.1	NA	NA	NA
BERYLLIUM	73	4	NA	0.107 J	0.16 J	NA	NA	NA
CADMIUM	18	5	NA	0.084 J	0.054 U	NA	NA	NA
CALCIUM			NA	12700	12900	NA	NA	NA
COBALT	11		NA	9.3	18.3	NA	NA	NA
COPPER	1500	1300	NA	3.7	0.45 J	NA	NA	NA
IRON	26000		NA	128 J	23500	NA	NA	NA
MAGNESIUM			NA	8720	16800	NA	NA	NA
MANGANESE	880		NA	333	2520	NA	NA	NA
NICKEL	730		NA	32.3	55.5	NA	NA	NA
POTASSIUM			NA	2250	1130	NA	NA	NA
SELENIUM	180	50	NA	0.573 J	0.123 U	NA	NA	NA
SODIUM			NA	26700	11400	NA	NA	NA
ZINC	11000		NA	19.6 UJ	78.7	NA	NA	NA

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006	TF5-SD-921-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920	TF5-SD-921
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)											
1,2-DICHLOROBENZENE	1900000	9800000	1.6 J	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ	14 UJ
ACETONE	61000000	630000000	38 J	6.1 UJ	38 J	37 J	130 J	200 J	48 J	63 J	170 J
CARBON DISULFIDE	820000	3700000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ	3.9 J
TOTAL CHLORINATED VOCS			1.6 J	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ	14 UJ
SEMIVOLATILES (UG/KG)											
2,4-DIMETHYLPHENOL	1200000	12000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.5	3.3 U	3.3 U
2-METHYLNAPHTHALENE	310000	4100000	210	24	31	4.7	7.3	7.4	15	3.3 U	5.8
2-METHYLPHENOL	3100000	31000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	12	3.5	3.3 U	3.3 U
4-METHYLPHENOL	310000	3100000	3.3 U	3.3 U	3.3 U	11	5.3	8.8	6.3	9.4	21
ACENAPHTHENE	3400000	33000000	48	24	14	10	8.9	12	36	7.2	25
ACENAPHTHYLENE	3400000	33000000	110	14	31	19	20	24	64	14	31
ANTHRACENE	17000000	170000000	120	29	54	51	35	59	130	29	120
ATRAZINE	2100	7500	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	4.6 J	3.3 UJ	3.3 UJ	3.3 UJ
BENZO(A)ANTHRACENE	150	2100	140 J	33 J	96 J	270 J	160 J	230 J	270 J	90 J	650
BENZO(A)PYRENE	15	210	190	42	130	260	230 J	300	390	130	780
BENZO(B)FLUORANTHENE	150	2100	290 J	72 J	170 J	420 J	230 J	430 J	470 J	250 J	750
BENZO(G,H,I)PERYLENE	1700000	17000000	150	32	81	250	200 J	320	350	100	600
BENZO(K)FLUORANTHENE	1500	21000	140 J	29 J	91 J	160	290 J	200 J	460	69 J	860
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	45 J	41 J	130 J	250 J	140 J	130 J	310 J	410
CARBAZOLE			330 U	330 U	330 U	39 J	330 U	36 J	49 J	330 U	100 J
CHRYSENE	15000	210000	220	51	130	330 J	230 J	350 J	440 J	170	860
DIBENZO(A,H)ANTHRACENE	15	210	40	8.7	26	130	57	110	110	38	180
FLUORANTHENE	2300000	22000000	400	100	210	710	380	700	640	270	1800
FLUORENE	2300000	22000000	120	34	35	20	16	22	62	14	42
HIGH MOLECULAR WEIGHT PAHS			2070 J	482 J	1210 J	3410 J	2270 J	3460 J	4020 J	1430 J	8370

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006	TF5-SD-921-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920	TF5-SD-921
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
INDENO(1,2,3-CD)PYRENE	150	2100	130	29	72	320	180 J	280	310	92	590
LOW MOLECULAR WEIGHT PAHS			1170	265	366	419	294 J	393	689	194	922
NAPHTHALENE	3600	18000	130	9.6	21	4.2	7	8.6	22	3.3 U	7.7
PENTACHLOROPHENOL	3000	9000	33 U	33 U	33 U	33 U	33 U	33 U	34	33 U	33 U
PHENANTHRENE	1700000	17000000	430	130	180	310	200 J	260	360	130	690
PHENOL	18000000	180000000	3.3 U	3.3 U	3.3 U	7.6	3.3 U	7.3	6.2	3.3 U	8.7
PYRENE	1700000	17000000	370	85	200	560	310	540	580	220	1300
TOTAL CARCINOGENIC PAHS-HALFND	15	210	1150 J	265 J	715 J	1890 J	1380 J	1900 J	2450 J	839 J	4670
TOTAL CARCINOGENIC PAHS-POS	15	210	1150 J	265 J	715 J	1890 J	1380 J	1900 J	2450 J	839 J	4670
TOTAL PAHS			3240 J	746 J	1570 J	3830 J	2560 J	3850 J	4710 J	1620 J	9290
PESTICIDES/PCBS (UG/KG)											
4,4'-DDD	2000	7200	3.3 U	3.3 U	3.3 U	3.3 U	3.4 J	3.3 U	3.3 U	3.3 U	3.3 U
4,4'-DDE	1400	5100	3.3 U	3.3 U	4.8	3.3 U	3.3 UJ	3.3 U	4.7	3.3 U	3.3 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.4	3.3 U	3.3 U
ALDRIN	29	100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
ALPHA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
AROCLOR-1260	220	740	33 U	33 U	33 U	33 U	33 U	33 U	45	40 J	33 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.4	3.3 U	3.3 U
GAMMA-CHLORDANE	1600	6500	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
TOTAL AROCLOR	220	740	33 U	33 U	33 U	33 U	33 U	33 U	45	40 J	33 U
TOTAL CHLORDANE			1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
TOTAL DDD/DDE/DDT			3.3 U	3.3 U	4.8	3.3 U	3.4 J	3.3 U	8.1	3.3 U	3.3 U
METALS (MG/KG)											
ALUMINUM	77000	990000	9480	7350	9390	6360	12600	12000	11300	7110	10800

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006	TF5-SD-921-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920	TF5-SD-921
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
ARSENIC	0.39	1.6	10.5	121	12.7	11.5	14.1	12.8	25.9	11.4	17.1
BARIUM	15000	190000	26.4 J	24.6 J	17.1 J	19.1 J	36.3 J	38.7 J	38 J	21.6 J	35.4 J
BERYLLIUM	160	2000	0.43 J	1.1 J	0.36 J	0.33 J	0.56 J	0.65 J	0.57 J	0.32 J	0.53 J
CADMIUM	70	800	0.25 J	2	0.37	0.26 J	0.43 J	0.49 J	0.62	0.49	0.54
CALCIUM			1510 J	6.6 UJ	1580 J	813 J	1780 J	2850 J	2710 J	1410 J	1630 J
CHROMIUM	0.29	5.6	10.6 J	18.8 J	13.5 J	10 J	16.6 J	16.8 J	16.1 J	17.6 J	16.6 J
COBALT	23	300	6.5	95	8.8	8.5	14.6	6.6 J	9.5	8.1	10.1
COPPER	3100	41000	23.5	4.9	22.5	17.1	40.5	43	30.2	21.1	32.1
IRON	55000	720000	18900	166000	28600	15300	24600	24500	27400	22100	25100
LEAD	400	800	47.8 J	11.5 J	39.5 J	27.1 J	71 J	95.8 J	52.5 J	61.6 J	56.9 J
MAGNESIUM			1860	784	2740	1560	2980	2350	2680	2120	2780
MANGANESE	1800	23000	121	982	163	204	215	112	216	252	171
MERCURY	5.6	34	0.12	0.054 J	0.063	0.038 J	0.12	0.19 J	0.095 J	0.045 J	0.14
NICKEL	1500	20000	30.9	127	23.6	16.2	29	41	25.5	20.3	30.3
POTASSIUM			271	193 J	213	275	376	450	490	269	455
SILVER	390	5100	0.14 J	0.079 U	0.08 U	0.1 U	0.15 U	0.35 UJ	0.16 U	0.077 U	0.17 U
SODIUM			56.6 J	39.6 J	113	30.2 J	132	252	102	68.9	198
THALLIUM			0.38 U	0.24 U	0.24 U	0.33 J	0.45 U	1.1 UJ	0.5 U	0.67 J	0.51 U
VANADIUM	390	5200	23.9	6.6 J	19.4	12.5	23.5	27.3	22.8	13.7	21.8
ZINC	23000	310000	63.8	109	90.7	71	123	83.6	133	112	122
MISCELLANEOUS PARAMETERS (S.U.)											
PH			4.7	5.3	5.5	5.3	5.7	5.4	5.7	5.7	5.7
MISCELLANEOUS PARAMETERS (MG/KG)											
TOTAL ORGANIC CARBON			44000	32000	37000	29000	37000	60000	44000	33000	55000
DIOXINS/FURANS (NG/KG)											

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006	TF5-SD-921-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920	TF5-SD-921
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,4,6,7,8,9-OCDD			3990 J	1050	1700 J	2780 J	9160 J	2950	5500 J	1980 J	4120 J
1,2,3,4,6,7,8,9-OCDF			13.6	5.52 J	9.13	24	90.1	25.3	123	48.3	47.6
1,2,3,4,6,7,8-HPCDD			75.7	25.3	35.4	70.3	237 J	85.7	327	103	169
1,2,3,4,6,7,8-HPCDF			6.77	3.23 J	5.31	17.8	46.2	12.6	50.4	17.5	28.4
1,2,3,4,7,8,9-HPCDF			0.826 U	0.233 UJ	0.504 U	1.04 J	4.32 J	1.19 U	3.65 J	1.42 J	2.16 J
1,2,3,4,7,8-HXCDD			0.987 J	0.332 J	0.501 J	1.08 J	3.71 J	1.3 J	4.3 J	1.32 J	2.79 J
1,2,3,4,7,8-HXCDF			2.13 J	0.368 J	1.45 J	1.61 J	8.63	1.89 J	3.87 J	1.95 J	2.69 J
1,2,3,6,7,8-HXCDD			1.83 J	0.739 J	0.997 J	2.37 J	8.2 J	3 J	12.1	3.6 J	6.16
1,2,3,6,7,8-HXCDF			0.941 J	0.268 J	0.619 J	1.29 J	4.08 J	0.959 J	2.9 J	1.25 J	1.84 J
1,2,3,7,8,9-HXCDD			1.94 J	1.09 J	1.42 J	3.03 J	9.36 J	3.31 J	10.4	3.29 J	7.63
1,2,3,7,8,9-HXCDF			0.174 U	0.11 U	0.0671 U	0.428 U	0.282 U	0.438 U	0.267 U	0.259 U	0.184 U
1,2,3,7,8-PECDD			0.477 J	0.0503 U	0.291 J	0.681 J	1.97 J	0.763 J	1.98 J	0.727 J	1.5 J
1,2,3,7,8-PECDF			0.561 J	0.0971 J	0.435 J	0.301 J	1.5 J	0.605 J	0.605 J	0.601 J	0.664 J
2,3,4,6,7,8-HXCDF			1.22 J	0.322 J	0.712 J	1.37 J	5.96	1.21 J	3.44 J	1.3 J	2.9 J
2,3,4,7,8-PECDF			0.694 J	0.139 J	0.517 J	0.266 J	2.1 J	0.75 J	0.934 J	0.526 J	0.612 J
2,3,7,8-TCDD	4.5	18	0.119 J	0.0444 U	0.0846 J	0.123 J	0.414 JK	0.117 U	0.317 J	0.114 J	0.191 J
2,3,7,8-TCDF			1.29 J	0.178 J	0.892 J	0.402 J	2.02 J	1.35 J	0.739 J	0.871 J	0.796 J
TOTAL HPCDD			161	49.9	70.6	136	458	169	579	180	325
TOTAL HPCDF			15.7	6.98	11.5	35.2	107	30.6	143	51.1	66.3
TOTAL HXCDD			17.4	7.55	11.3	18.7	64.9	26.9	76.2	24.8	45.6
TOTAL HXCDF			11.7	3.52 J	7.36	16.7	60.1	13.5	51.4	21.2	15.9
TOTAL PECDD			4.77 J	0.0503 U	3.23 J	3.43 J	14.8	1.7 J	6.72	3.73 J	6.18
TOTAL PECDF			7.66	1.5 J	7.44	6.97	37.2	11.4	23.9	12.7	23.1
TOTAL TCDD			0.91 J	0.0444 U	1.69	0.244 J	3.41	0.117 U	0.652 J	0.475 J	0.272 J
TOTAL TCDF			10.5	0.778 J	2.78	3.53	33.7	10.8	0.437 J	3.97	7.68

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM
VOLATILES (UG/KG)					
1,2-DICHLOROBENZENE	1900000	9800000	7.1 UJ	5.95 UJ	13 UJ
ACETONE	61000000	630000000	91 J	13.4 J	140 J
CARBON DISULFIDE	820000	3700000	7.1 UJ	5.95 UJ	13 UJ
TOTAL CHLORINATED VOCS			7.1 UJ	5.95 UJ	13 UJ
SEMIVOLATILES (UG/KG)					
2,4-DIMETHYLPHENOL	1200000	12000000	3.3 U	3.3 U	3.3 U
2-METHYLNAPHTHALENE	310000	4100000	11	3.3 U	3.6
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.3 UJ	3.3 UJ
4-METHYLPHENOL	310000	3100000	3.8	3.88	5.3
ACENAPHTHENE	3400000	33000000	41	11.8 J	14
ACENAPHTHYLENE	3400000	33000000	39	6.6	12
ANTHRACENE	17000000	170000000	150	40 J	55
ATRAZINE	2100	7500	3.3 UJ	3.3 UJ	3.3 UJ
BENZO(A)ANTHRACENE	150	2100	620	190 J	600
BENZO(A)PYRENE	15	210	690	280	760
BENZO(B)FLUORANTHENE	150	2100	710	385 J	1000
BENZO(G,H,I)PERYLENE	1700000	17000000	450	270	630
BENZO(K)FLUORANTHENE	1500	21000	630	360 J	720
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	220 J	112 J	210 J
CARBAZOLE			81 J	50.5 J	100 J
CHRYSENE	15000	210000	860	400 J	890
DIBENZO(A,H)ANTHRACENE	15	210	150	87 J	160
FLUORANTHENE	2300000	22000000	1500	855	1800
FLUORENE	2300000	22000000	66	20 J	24
HIGH MOLECULAR WEIGHT PAHS			7140	3650 J	8520

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM
INDENO(1,2,3-CD)PYRENE	150	2100	430	215	660
LOW MOLECULAR WEIGHT PAHS			964	326 J	666
NAPHTHALENE	3600	18000	17	3.92	7.7
PENTACHLOROPHENOL	3000	9000	33 UJ	33 UJ	33 UJ
PHENANTHRENE	1700000	17000000	640	245	550
PHENOL	18000000	180000000	3.3 U	2.52	5.5
PYRENE	1700000	17000000	1100	610	1300
TOTAL CARCINOGENIC PAHS-HALFND	15	210	4090	1920 J	4790
TOTAL CARCINOGENIC PAHS-POS	15	210	4090	1920 J	4790
TOTAL PAHS			8100	3980 J	9190
PESTICIDES/PCBS (UG/KG)					
4,4'-DDD	2000	7200	51 UJ	3.62 J	3.3 U
4,4'-DDE	1400	5100	5.4	3.3 U	3.9
4,4'-DDT	1700	7000	15	3.3 U	4.3
ALDRIN	29	100	2.6	1.7 U	1.7 U
ALPHA-BHC	77	270	2.1	1.7 U	1.7 U
AROCLOR-1260	220	740	78 J	54.2 J	73 J
ENDRIN ALDEHYDE	18000	180000	3.3 U	2.92 J	3.5
ENDRIN KETONE	18000	180000	11	2.82	3.3 U
GAMMA-CHLORDANE	1600	6500	4.9 J	1.7 U	1.7 U
TOTAL AROCLOR	220	740	78 J	54.2 J	73 J
TOTAL CHLORDANE			4.9 J	1.7 U	1.7 U
TOTAL DDD/DDE/DDT			20.4 J	3.62 J	8.2
METALS (MG/KG)					
ALUMINUM	77000	990000	10200	4500	11200

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM
ARSENIC	0.39	1.6	16.6	11.5	16.7
BARIUM	15000	190000	30.6 J	12 J	47.2 J
BERYLLIUM	160	2000	0.4 J	0.24 J	0.62 J
CADMIUM	70	800	0.85	0.28 J	0.77
CALCIUM			2330 J	1000 J	3680 J
CHROMIUM	0.29	5.6	18.3 J	6.9 J	18.1 J
COBALT	23	300	10.4	5.55	13.3
COPPER	3100	41000	26.8	10.8	41.2
IRON	55000	720000	33200	17300	26800
LEAD	400	800	48.1 J	16.4 J	70.3 J
MAGNESIUM			3050	1580	2940
MANGANESE	1800	23000	350	187	525
MERCURY	5.6	34	0.063	0.0145 J	0.11 J
NICKEL	1500	20000	22.5	13.4	30.7
POTASSIUM			331	197	546
SILVER	390	5100	0.12 U	0.278 J	0.2 U
SODIUM			227	46.9 J	166
THALLIUM			0.48 J	0.27 U	1.7 J
VANADIUM	390	5200	19.1	8.3	24.2
ZINC	23000	310000	168	78.2	190
MISCELLANEOUS PARAMETERS (S.U.)					
PH			6.4	6	6
MISCELLANEOUS PARAMETERS (MG/KG)					
TOTAL ORGANIC CARBON			37000	20000	53000
DIOXINS/FURANS (NG/KG)					

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-15
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL for Residential Soil	EPA RSL For Industrial Soil	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010
TOP DEPTH			0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL
QC TYPE			NM	NM	NM
1,2,3,4,6,7,8,9-OCDD			4040 J	951	6520 J
1,2,3,4,6,7,8,9-OCDF			102	17.6 J	147
1,2,3,4,6,7,8-HPCDD			244	39.2	302
1,2,3,4,6,7,8-HPCDF			56.6	8.88 J	69.6
1,2,3,4,7,8,9-HPCDF			3.72 J	0.736 J	5.32 J
1,2,3,4,7,8-HXCDD			3.73 J	0.77 J	5.76 J
1,2,3,4,7,8-HXCDF			4.67	1.04 J	6.61 J
1,2,3,6,7,8-HXCDD			9.61	1.54 J	11
1,2,3,6,7,8-HXCDF			3.6 J	0.756 J	4.49 J
1,2,3,7,8,9-HXCDD			9.53	2.18 J	14.4
1,2,3,7,8,9-HXCDF			0.389 J	0.138 J	0.575 J
1,2,3,7,8-PECDD			1.85 J	0.428 J	3.06 J
1,2,3,7,8-PECDF			0.709 J	0.217 J	1.07 J
2,3,4,6,7,8-HXCDF			3.76 J	0.783 J	5.05 J
2,3,4,7,8-PECDF			0.968 J	0.216 J	1.48 J
2,3,7,8-TCDD	4.5	18	0.319 J	0.0183 U	0.48 J
2,3,7,8-TCDF			0.745 J	0.326 J	1.17 J
TOTAL HPCDD			446	72.8	575
TOTAL HPCDF			125	20.7 J	167
TOTAL HXCDD			66.1	12.7 J	96.1
TOTAL HXCDF			62.1	11.5	77
TOTAL PECDD			9.32	1.99 J	16
TOTAL PECDF			33	5.42	40.5
TOTAL TCDD			0.0252 U	0.135 J	2.55 J
TOTAL TCDF			4.28	1.93 J	8.17

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-16
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SD-913-0006					TF5-SD-914-0006					TF5-SD-915-0006				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF5-SD-913-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-914-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-915-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	3990	J	1.197	1.197	1.197	1050		0.315	0.315	0.315	1700	J	0.51	0.51	0.51
1,2,3,4,6,7,8,9-OCDF	0.0003	13.6		0.00408	0.00408	0.00408	5.52	J	0.001656	0.001656	0.001656	9.13		0.002739	0.002739	0.002739
1,2,3,4,6,7,8-HPCDD	0.01	75.7		0.757	0.757	0.757	25.3		0.253	0.253	0.253	35.4		0.354	0.354	0.354
1,2,3,4,6,7,8-HPCDF	0.01	6.77		0.0677	0.0677	0.0677	3.23	J	0.0323	0.0323	0.0323	5.31		0.0531	0.0531	0.0531
1,2,3,4,7,8,9-HPCDF	0.01	0.826	U	0.00826	0.00413	0	0.233	UJ	0.00233	0.001165	0	0.504	U	0.00504	0.00252	0
1,2,3,4,7,8-HXCDD	0.1	0.987	J	0.0987	0.0987	0.0987	0.332	J	0.0332	0.0332	0.0332	0.501	J	0.0501	0.0501	0.0501
1,2,3,4,7,8-HXCDF	0.1	2.13	J	0.213	0.213	0.213	0.368	J	0.0368	0.0368	0.0368	1.45	J	0.145	0.145	0.145
1,2,3,6,7,8-HXCDD	0.1	1.83	J	0.183	0.183	0.183	0.739	J	0.0739	0.0739	0.0739	0.997	J	0.0997	0.0997	0.0997
1,2,3,6,7,8-HXCDF	0.1	0.941	J	0.0941	0.0941	0.0941	0.268	J	0.0268	0.0268	0.0268	0.619	J	0.0619	0.0619	0.0619
1,2,3,7,8,9-HXCDD	0.1	1.94	J	0.194	0.194	0.194	1.09	J	0.109	0.109	0.109	1.42	J	0.142	0.142	0.142
1,2,3,7,8,9-HXCDF	0.1	0.174	U	0.0174	0.0087	0	0.11	U	0.011	0.0055	0	0.0671	U	0.00671	0.003355	0
1,2,3,7,8-PECDD	1	0.477	J	0.477	0.477	0.477	0.0503	U	0.0503	0.02515	0	0.291	J	0.291	0.291	0.291
1,2,3,7,8-PECDF	0.03	0.561	J	0.01683	0.01683	0.01683	0.0971	J	0.002913	0.002913	0.002913	0.435	J	0.01305	0.01305	0.01305
2,3,4,6,7,8-HXCDF	0.1	1.22	J	0.122	0.122	0.122	0.322	J	0.0322	0.0322	0.0322	0.712	J	0.0712	0.0712	0.0712
2,3,4,7,8-PECDF	0.3	0.694	J	0.2082	0.2082	0.2082	0.139	J	0.0417	0.0417	0.0417	0.517	J	0.1551	0.1551	0.1551
2,3,7,8-TCDD	1	0.119	J	0.119	0.119	0.119	0.0444	U	0.0444	0.0222	0	0.0846	J	0.0846	0.0846	0.0846
2,3,7,8-TCDF	0.1	1.29	J	0.129	0.129	0.129	0.178	J	0.0178	0.0178	0.0178	0.892	J	0.0892	0.0892	0.0892
Total of TEQ					3.89	3.88				1.03	0.98				2.13	2.12

TABLE 4-16
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SD-916-0006					TF5-SD-917-0006					TF5-SD-918-0006				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF5-SD-916-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-917-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-918-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	2780	J	0.834	0.834	0.834	9160	J	2.748	2.748	2.748	2950		0.885	0.885	0.885
1,2,3,4,6,7,8,9-OCDF	0.0003	24		0.0072	0.0072	0.0072	90.1		0.02703	0.02703	0.02703	25.3		0.00759	0.00759	0.00759
1,2,3,4,6,7,8-HPCDD	0.01	70.3		0.703	0.703	0.703	237	J	2.37	2.37	2.37	85.7		0.857	0.857	0.857
1,2,3,4,6,7,8-HPCDF	0.01	17.8		0.178	0.178	0.178	46.2		0.462	0.462	0.462	12.6		0.126	0.126	0.126
1,2,3,4,7,8,9-HPCDF	0.01	1.04	J	0.0104	0.0104	0.0104	4.32	J	0.0432	0.0432	0.0432	1.19	U	0.0119	0.00595	0
1,2,3,4,7,8-HXCDD	0.1	1.08	J	0.108	0.108	0.108	3.71	J	0.371	0.371	0.371	1.3	J	0.13	0.13	0.13
1,2,3,4,7,8-HXCDF	0.1	1.61	J	0.161	0.161	0.161	8.63		0.863	0.863	0.863	1.89	J	0.189	0.189	0.189
1,2,3,6,7,8-HXCDD	0.1	2.37	J	0.237	0.237	0.237	8.2	J	0.82	0.82	0.82	3	J	0.3	0.3	0.3
1,2,3,6,7,8-HXCDF	0.1	1.29	J	0.129	0.129	0.129	4.08	J	0.408	0.408	0.408	0.959	J	0.0959	0.0959	0.0959
1,2,3,7,8,9-HXCDD	0.1	3.03	J	0.303	0.303	0.303	9.36	J	0.936	0.936	0.936	3.31	J	0.331	0.331	0.331
1,2,3,7,8,9-HXCDF	0.1	0.428	U	0.0428	0.0214	0	0.282	U	0.0282	0.0141	0	0.438	U	0.0438	0.0219	0
1,2,3,7,8-PECDD	1	0.681	J	0.681	0.681	0.681	1.97	J	1.97	1.97	1.97	0.763	J	0.763	0.763	0.763
1,2,3,7,8-PECDF	0.03	0.301	J	0.00903	0.00903	0.00903	1.5	J	0.045	0.045	0.045	0.605	J	0.01815	0.01815	0.01815
2,3,4,6,7,8-HXCDF	0.1	1.37	J	0.137	0.137	0.137	5.96		0.596	0.596	0.596	1.21	J	0.121	0.121	0.121
2,3,4,7,8-PECDF	0.3	0.266	J	0.0798	0.0798	0.0798	2.1	J	0.63	0.63	0.63	0.75	J	0.225	0.225	0.225
2,3,7,8-TCDD	1	0.123	J	0.123	0.123	0.123	0.414	JK	0.414	0.414	0.414	0.117	U	0.117	0.0585	0
2,3,7,8-TCDF	0.1	0.402	J	0.0402	0.0402	0.0402	2.02	J	0.202	0.202	0.202	1.35	J	0.135	0.135	0.135
Total of TEQ					3.76	3.74				12.92	12.91				4.27	4.18

TABLE 4-16
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SD-919-0006					TF5-SD-920-0006					TF5-SD-921-0006				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF5-SD-919-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-920-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-921-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	5500	J	1.65	1.65	1.65	1980	J	0.594	0.594	0.594	4120	J	1.236	1.236	1.236
1,2,3,4,6,7,8,9-OCDF	0.0003	123		0.0369	0.0369	0.0369	48.3		0.01449	0.01449	0.01449	47.6		0.01428	0.01428	0.01428
1,2,3,4,6,7,8-HPCDD	0.01	327		3.27	3.27	3.27	103		1.03	1.03	1.03	169		1.69	1.69	1.69
1,2,3,4,6,7,8-HPCDF	0.01	50.4		0.504	0.504	0.504	17.5		0.175	0.175	0.175	28.4		0.284	0.284	0.284
1,2,3,4,7,8,9-HPCDF	0.01	3.65	J	0.0365	0.0365	0.0365	1.42	J	0.0142	0.0142	0.0142	2.16	J	0.0216	0.0216	0.0216
1,2,3,4,7,8-HXCDD	0.1	4.3	J	0.43	0.43	0.43	1.32	J	0.132	0.132	0.132	2.79	J	0.279	0.279	0.279
1,2,3,4,7,8-HXCDF	0.1	3.87	J	0.387	0.387	0.387	1.95	J	0.195	0.195	0.195	2.69	J	0.269	0.269	0.269
1,2,3,6,7,8-HXCDD	0.1	12.1		1.21	1.21	1.21	3.6	J	0.36	0.36	0.36	6.16		0.616	0.616	0.616
1,2,3,6,7,8-HXCDF	0.1	2.9	J	0.29	0.29	0.29	1.25	J	0.125	0.125	0.125	1.84	J	0.184	0.184	0.184
1,2,3,7,8,9-HXCDD	0.1	10.4		1.04	1.04	1.04	3.29	J	0.329	0.329	0.329	7.63		0.763	0.763	0.763
1,2,3,7,8,9-HXCDF	0.1	0.267	U	0.0267	0.01335	0	0.259	U	0.0259	0.01295	0	0.184	U	0.0184	0.0092	0
1,2,3,7,8-PECDD	1	1.98	J	1.98	1.98	1.98	0.727	J	0.727	0.727	0.727	1.5	J	1.5	1.5	1.5
1,2,3,7,8-PECDF	0.03	0.605	J	0.01815	0.01815	0.01815	0.601	J	0.01803	0.01803	0.01803	0.664		0.01992	0.01992	0.01992
2,3,4,6,7,8-HXCDF	0.1	3.44	J	0.344	0.344	0.344	1.3	J	0.13	0.13	0.13	2.9	J	0.29	0.29	0.29
2,3,4,7,8-PECDF	0.3	0.934	J	0.2802	0.2802	0.2802	0.526	J	0.1578	0.1578	0.1578	0.612	J	0.1836	0.1836	0.1836
2,3,7,8-TCDD	1	0.317	J	0.317	0.317	0.317	0.114	J	0.114	0.114	0.114	0.191	J	0.191	0.191	0.191
2,3,7,8-TCDF	0.1	0.739	J	0.0739	0.0739	0.0739	0.871	J	0.0871	0.0871	0.0871	0.796	J	0.0796	0.0796	0.0796
Total of TEQ					11.88	11.87				4.22	4.20				7.63	7.62

TABLE 4-16
SUMMARY OF TEQ CALCULATIONS FOR DU 5-1 SEDIMENT
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT
NEWPORT, RI

		TF5-SD-922-0006					TF5-SD-923-0006-AVERAGE					TF5-SD-924-0006				
DIOXINS/FURANS (NG/KG)	**TEF[1]**	**TF5-SD-922-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-923-0006-AVERAGE**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**	**TF5-SD-924-0006**		**TEQ*analytical result**	**TEQ[2]**	**TEQ[3]**
1,2,3,4,6,7,8,9-OCDD	0.0003	4040	J	1.212	1.212	1.212	951		0.2853	0.2853	0.2853	6520	J	1.956	1.956	1.956
1,2,3,4,6,7,8,9-OCDF	0.0003	102		0.0306	0.0306	0.0306	17.6	J	0.00528	0.00528	0.00528	147		0.0441	0.0441	0.0441
1,2,3,4,6,7,8-HPCDD	0.01	244		2.44	2.44	2.44	39.2		0.392	0.392	0.392	302		3.02	3.02	3.02
1,2,3,4,6,7,8-HPCDF	0.01	56.6		0.566	0.566	0.566	8.88	J	0.0888	0.0888	0.0888	69.6		0.696	0.696	0.696
1,2,3,4,7,8,9-HPCDF	0.01	3.72	J	0.0372	0.0372	0.0372	0.736	J	0.00736	0.00736	0.00736	5.32	J	0.0532	0.0532	0.0532
1,2,3,4,7,8-HXCDD	0.1	3.73	J	0.373	0.373	0.373	0.77	J	0.077	0.077	0.077	5.76	J	0.576	0.576	0.576
1,2,3,4,7,8-HXCDF	0.1	4.67		0.467	0.467	0.467	1.04	J	0.104	0.104	0.104	6.61	J	0.661	0.661	0.661
1,2,3,6,7,8-HXCDD	0.1	9.61		0.961	0.961	0.961	1.54	J	0.154	0.154	0.154	11		1.1	1.1	1.1
1,2,3,6,7,8-HXCDF	0.1	3.6	J	0.36	0.36	0.36	0.756	J	0.0756	0.0756	0.0756	4.49	J	0.449	0.449	0.449
1,2,3,7,8,9-HXCDD	0.1	9.53		0.953	0.953	0.953	2.18	J	0.218	0.218	0.218	14.4		1.44	1.44	1.44
1,2,3,7,8,9-HXCDF	0.1	0.389	J	0.0389	0.0389	0.0389	0.138	J	0.0138	0.0138	0.0138	0.575	J	0.0575	0.0575	0.0575
1,2,3,7,8-PECDD	1	1.85	J	1.85	1.85	1.85	0.428	J	0.428	0.428	0.428	3.06	J	3.06	3.06	3.06
1,2,3,7,8-PECDF	0.03	0.709	J	0.02127	0.02127	0.02127	0.217	J	0.00651	0.00651	0.00651	1.07	J	0.0321	0.0321	0.0321
2,3,4,6,7,8-HXCDF	0.1	3.76	J	0.376	0.376	0.376	0.783	J	0.0783	0.0783	0.0783	5.05	J	0.505	0.505	0.505
2,3,4,7,8-PECDF	0.3	0.968	J	0.2904	0.2904	0.2904	0.216	J	0.0648	0.0648	0.0648	1.48	J	0.444	0.444	0.444
2,3,7,8-TCDD	1	0.319	J	0.319	0.319	0.319	0.0183	U	0.0183	0.00915	0	0.48	J	0.48	0.48	0.48
2,3,7,8-TCDF	0.1	0.745	J	0.0745	0.0745	0.0745	0.326	J	0.0326	0.0326	0.0326	1.17	J	0.117	0.117	0.117
Total of TEQ					10.37	10.37				2.04	2.03				14.69	14.69

Notes:

[1] TEFs = Toxic Equivalency Factor. Reference: The 2005 World Health Organization Reevaluation of Human and mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. *Toxicological Sciences*, Volume 93, Number 2. July 2006. pp. 223-241.

TEQ = Toxic Equivalent
NG/KG = nanograms per kilogram

RSL = EPA Regional Screening Levels (RSLs)- Oak Ridge National Laboratory (May, 2009) available online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Values represent the risk-based soil screening level for residential land use

[2] TEQ is calculated assuming a "U" designation is present in the sample at 1/2 U

[3] TEQ is calculated assuming a "U" designation is 0

TABLE 4-17
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE WATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006	TF5-SW-922-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921	TF5-SW-922
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)											
CHLOROFORM	0.19	80	1 U	1 U	1 U	1 U	1	1 U	1 U	1 U	1 U
SEMIVOLATILES (UG/L)											
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U	0.1 U	0.25	0.1 U	3.3	0.1 U	0.1 U	0.1 U
ACENAPHTHENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.36	0.1 U	0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.82	0.1 U	0.1 U	0.1 U
ANTHRACENE	11000		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11	0.1 U	0.1 U	0.1 U
BENZO(A)ANTHRACENE	0.029		0.1 UJ	0.13 J	0.1 UJ	0.2 J	0.18 J	0.16 J	0.1 UJ	0.1 UJ	0.1 UJ
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	0.1 U	0.13	0.16	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.11	0.1 U	0.13	0.25	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.13	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 U	0.1 U	0.1 U	0.15	0.1 U	0.1 U	0.1 U	0.1 U
CHRYSENE	2.9		0.1 U	0.1 U	0.1 U	0.15	0.18	0.11	0.1 U	0.1 U	0.1 U
FLUORANTHENE	1500		0.1 U	0.17	0.1 U	0.29	0.36	0.26	0.1 U	0.1 U	0.1 U
FLUORENE	1500		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1.3	0.1 U	0.1 U	0.1 U
HIGH MOLECULAR WEIGHT PAHS			0.1 UJ	0.54 J	0.1 UJ	1.2 J	1.8 J	0.77 J	0.1 UJ	0.1 UJ	0.1 UJ
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.11	0.1 U	0.1 U	0.1 U	0.1 U
LOW MOLECULAR WEIGHT PAHS			0.11	0.12	0.14	1.27	0.15	8.49	0.1 U	0.11	0.13
NAPHTHALENE	0.14		0.1 U	0.1 U	0.1 U	0.59	0.1 U	1.5	0.1 U	0.1 U	0.1 U
PHENANTHRENE	1100		0.11	0.12	0.14	0.43	0.15	1.1	0.1 U	0.11	0.13
PYRENE	1100		0.1 U	0.13	0.1 U	0.3	0.28	0.24	0.1 U	0.1 U	0.1 U
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.1 UJ	0.49 J	0.1 UJ	0.76 J	1.08 J	0.52 J	0.1 UJ	0.1 UJ	0.1 UJ
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 UJ	0.24 J	0.1 UJ	0.61 J	1.03 J	0.27 J	0.1 UJ	0.1 UJ	0.1 UJ
TOTAL PAHS			0.11 J	0.66 J	0.14 J	2.47 J	1.95 J	9.26 J	0.1 UJ	0.11 J	0.13 J
METALS (UG/L)											

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 4-17
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE WATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006	TF5-SW-922-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921	TF5-SW-922
SAMPLE DATE			3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010	3/16/2010
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE			NM	NM	NM	NM	NM	NM	NM	NM	NM
ALUMINUM	37000		58.9 UJ	281 U	55.9 UJ	68.2 UJ	852	71.8 UJ	74.9 UJ	73.8 UJ	65.4 UJ
ARSENIC	0.045	10	0.297 J	0.236 U	0.297 J	0.236 U	0.236 U	0.299 J	0.262 J	0.244 J	0.236 U
BARIUM	7300	2000	9.4	7.9	8.9	10.2	11	8.1	9.1	9.1	9
CALCIUM			15200	17700	15200	14700	17300	11400	15100	14700	14900
COBALT	11		0.3 J	0.405 J	0.309 J	0.274 J	0.517 J	0.564 J	0.303 J	0.31 J	0.332 J
COPPER	1500	1300	1.9	3.3	1.9	1.1	0.9 J	1.4	2	1.8	1.9
IRON	26000		222 U	504	174 UJ	197 UJ	2930	592	270	243	319
LEAD		15	0.233 J	0.533 J	0.248 J	0.391 J	0.247 J	0.352 J	0.285 J	0.196 J	0.23 J
MAGNESIUM			6280	8250	6510	5250	5690	7340	6320	6130	6400
NICKEL	730		2.8	4.8	2.9	4.6	5.4	1.6	2.7	2.8	2.6
POTASSIUM			2230	1520	2170	2130	2760	1170	2170	2080	2080
SELENIUM	180	50	0.243 J	0.224 J	0.178 J	0.256 J	0.221 J	0.168 J	0.206 J	0.206 J	0.188 J
SODIUM			30100	39600	29200	32900	35000	22500	29900	28900	28900

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TABLE 4-17
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE WATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-923	TF5-SW-924
SAMPLE DATE			3/16/2010	3/16/2010
SACODE			AVG	NORMAL
QC TYPE			NM	NM
VOLATILES (UG/L)				
CHLOROFORM	0.19	80	1 U	1 U
SEMIVOLATILES (UG/L)				
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U
ACENAPHTHENE	2200		0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U
ANTHRACENE	11000		0.1 U	0.1 U
BENZO(A)ANTHRACENE	0.029		0.11 J	0.13 J
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.14
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 U
CHRYSENE	2.9		0.1 U	0.11
FLUORANTHENE	1500		0.12	0.24
FLUORENE	1500		0.1 U	0.1 U
HIGH MOLECULAR WEIGHT PAHS			0.23 J	0.79 J
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U
LOW MOLECULAR WEIGHT PAHS			0.075	0.13
NAPHTHALENE	0.14		0.1 U	0.1 U
PHENANTHRENE	1100		0.075	0.13
PYRENE	1100		0.1 U	0.17
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.41 J	0.58 J
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.11 J	0.38 J
TOTAL PAHS			0.28 J	0.92 J
METALS (UG/L)				

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
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TABLE 4-17
SUMMARY OF ANALYTICAL RESULTS FOR DU 5-1 SURFACE WATER
DATA GAPS ASSESSMENT TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

SAMPLE ID	EPA RSL For Tapwater	Federal MCL	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-923	TF5-SW-924
SAMPLE DATE			3/16/2010	3/16/2010
SACODE			AVG	NORMAL
QC TYPE			NM	NM
ALUMINUM	37000		65.4 UJ	67.3 UJ
ARSENIC	0.045	10	0.236 U	0.236 U
BARIUM	7300	2000	9	9.1
CALCIUM			14600	14500
COBALT	11		0.326 J	0.363 J
COPPER	1500	1300	1.8	1.8
IRON	26000		215	227 U
LEAD		15	0.193 J	0.268 J
MAGNESIUM			6140	6040
NICKEL	730		2.65	2.7
POTASSIUM			2140	2100
SELENIUM	180	50	0.196 J	0.219 J
SODIUM			29700	29500

DARK SHADING - EXCEEDS CRITERION; LIGHT SHADING - DETECTED; U - NOT DETECTED;
UJ - DETECTION LIMIT APPROXIMATE; J - QUANTITATION APPROXIMATE; R - REJECTED; NA - NOT ANALYZED

TABLE 6-1
SCREENING CRITERIA FOR SOIL AND SEDIMENT
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

CAS No.	Parameter	USEPA Regional Screening Levels[1]		Rhode Island Department of Environmental Management[2]	
		Direct Contact Residential	Protection of Groundwater	Direct Exposure Residential	GA Leachability Criteria
Volatile Organic Compounds (ug/kg)					
95-50-1	1,2-Dichlorobenzene	1,900,000 N	360	510,000	NA
78-93-3	2-Butanone	28,000,000 N	1,500	10,000,000	NA
67-64-1	Acetone	61,000,000 N	4,500	7,800,000	NA
71-43-2	Benzene	1,100 C	0.21	2,500	200
75-15-0	Carbon Disulfide	820,000 N	310	NA	NA
98-82-8	Isopropylbenzene	2,100,000 N	1,100	27,000	NA
TTNUS054	m+p-Xylenes	630,000 N[3]	200 [3]	110,000 [3]	540,000 [3]
1634-04-4	Methyl Tert-Butyl Ether	43,000 C	2.8	390,000	900
108-88-3	Toluene	5,000,000 N	1,600	190,000	32,000
1330-20-7	Total Xylenes	630,000 N	200	110,000	540,000
Semivolatile Organic Compounds (ug/kg)					
120-83-2	2,4-Dichlorophenol	180,000 N	130	30,000	NA
105-67-9	2,4-Dimethylphenol	1,200,000 N	860	1,400,000	NA
95-57-8	2-Chlorophenol	390,000 N	150	50,000	NA
91-57-6	2-Methylnaphthalene	310,000 N	750	123,000	NA
95-48-7	2-Methylphenol	3,100,000 N	1,500	NA	NA
106-44-5	4-Methylphenol	310,000 N	150	NA	NA
83-32-9	Acenaphthene	3,400,000 N	22,000	43,000	NA
208-96-8	Acenaphthylene	3,400,000 N[4]	22,000 [4]	23,000	NA
120-12-7	Anthracene	17,000,000 N	360,000	35,000	NA
1912-24-9	Atrazine	2,100 C	0.19	NA	NA
100-52-7	Benzaldehyde	7,800,000 N	810	NA	NA
56-55-3	Benzo(a)anthracene	150 C	10	900	NA
50-32-8	Benzo(a)pyrene	15 C	3.5	400	240,000
205-99-2	Benzo(b)fluoranthene	150 C	35	900	NA
191-24-2	Benzo(g,h,i)perylene	1,700,000 N[5]	120,000 [5]	800	NA
207-08-9	Benzo(k)fluoranthene	1,500 C	350	900	NA
117-81-7	Bis(2-ethylhexyl)phthalate	35,000 C	1,100	46,000	120,000
85-68-7	Butyl Benzyl Phthalate	260,000 C	510	NA	NA
86-74-8	Carbazole	NA	NA	NA	NA
218-01-9	Chrysene	15,000 C	1,100	400	NA
53-70-3	Dibenzo(a,h)anthracene	15 C	11	400	NA
84-74-2	di-n-Butyl Phthalate	6,100,000 N	9,200	NA	NA
206-44-0	Fluoranthene	2,300,000 N	160,000	20,000	NA
86-73-7	Fluorene	2,300,000 N	27,000	28,000	NA
193-39-5	Indeno(1,2,3-cd)pyrene	150 C	120	900	NA
91-20-3	Naphthalene	3,600 C	0.47	54,000	800
87-86-5	Pentachlorophenol	89 C	1.7	5,300	7,100
85-01-8	Phenanthrene	1,700,000 N[5]	120,000 [5]	40,000	NA
108-95-2	Phenol	18,000,000 N	6,300	6,000,000	NA
129-00-0	Pyrene	1,700,000 N	120,000	13,000	NA
50-32-8	Benzo(a)pyrene Equivalents	15 C	NA	NA	NA
Pesticides/PCBs (ug/kg)					
72-54-8	4,4'-DDD	2,000 C	66	NA	NA
72-55-9	4,4'-DDE	1,400 C	47	NA	NA
50-29-3	4,4'-DDT	1,700 C	67	NA	NA
309-00-2	Aldrin	29 C	0.65	NA	NA
319-84-6	alpha-BHC	77 C	0.062	NA	NA
11097-69-1	Aroclor-1254	110 N[6]	8.8	NA	NA
11096-82-5	Aroclor-1260	220 C	24	NA	NA
319-85-7	beta-BHC	270 C	0.22	NA	NA
319-86-8	delta-BHC	77 C[7]	0.062 [7]	NA	NA
959-98-8	Endosulfan I	370,000 N[8]	3,000 [8]	NA	NA
1031-07-8	Endosulfan Sulfate	370,000 N[8]	3,000 [8]	NA	NA
72-20-8	Endrin	18,000 N	440	NA	NA
7421-93-4	Endrin Aldehyde	18,000 N[9]	440 [9]	NA	NA
53494-70-5	Endrin Ketone	18,000 N[9]	440 [9]	NA	NA
58-89-9	gamma-BHC (Lindane)	520 C	0.36	NA	NA
5103-74-2	gamma-Chlordane	1,600 C[10]	13 [10]	NA	NA
Pesticides/PCBs (ug/kg) (Continued)					
1336-36-3	Total Aroclor	220 C[11]	NA	10,000	10,000

TABLE 6-1
SCREENING CRITERIA FOR SOIL AND SEDIMENT
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

CAS No.	Parameter	USEPA Regional Screening Levels[1]		Rhode Island Department of Environmental Management[2]	
		Direct Contact Residential	Protection of Groundwater	Direct Exposure Residential	GA Leachability Criteria
TTNUS843	Total Chlordane	1,600 C[10]	13 [10]	NA	NA
8001-35-2	Toxaphene	440 C	9.4	NA	NA
Metals (mg/kg)					
7429-90-5	Aluminum	77,000 N	55,000	NA	NA
7440-38-2	Arsenic	0.39 C	0.0013	7	NA
7440-39-3	Barium	15,000 N	300	5,500	[16]
7440-41-7	Beryllium	160 N	58	0.4	[16]
7440-43-9	Cadmium	70 N	1.4	39	[16]
7440-70-2	Calcium	NA	NA	NA	NA
7440-47-3	Chromium	0.29 C[12]	0.00083 [12]	390 [12]	[16]
7440-48-4	Cobalt	23 N	0.49	NA	NA
7440-50-8	Copper	3,100 N	51	3,100	NA
7439-89-6	Iron	55,000 N	640	NA	NA
7439-92-1	Lead	400	14 [14]	150	[16]
7439-95-4	Magnesium	NA	NA	NA	NA
7439-96-5	Manganese	1,800 N	57	390	NA
7439-97-6	Mercury	23 N[13]	0.57 [13]	23	[16]
7440-02-0	Nickel	1,500 N	48	1,000	[16]
7440-09-7	Potassium	NA	NA	NA	NA
7782-49-2	Selenium	390 N	0.95	390	[16]
7440-22-4	Silver	390 N	1.6	200	NA
7440-23-5	Sodium	NA	NA	NA	NA
7440-28-0	Thallium	NA	NA	5.5	[16]
7440-62-2	Vanadium	390 N	180	550	NA
7440-66-6	Zinc	23,000 N	680	6,000	NA
Dioxins/Furans (ng/kg)					
3268-87-9	1,2,3,4,6,7,8,9-OCDD	15,000 C[15]	870 [15]	NA	NA
39001-02-0	1,2,3,4,6,7,8,9-OCDF	15,000 C[15]	870 [15]	NA	NA
35822-46-9	1,2,3,4,6,7,8-HPCDD	450 C[15]	26 [15]	NA	NA
67562-39-4	1,2,3,4,6,7,8-HPCDF	450 C[15]	26 [15]	NA	NA
55673-89-7	1,2,3,4,7,8,9-HPCDF	450 C[15]	26 [15]	NA	NA
39227-28-6	1,2,3,4,7,8-HXCDD	45 C[15]	2.6 [15]	NA	NA
70648-26-9	1,2,3,4,7,8-HXCDF	45 C[15]	2.6 [15]	NA	NA
57653-85-7	1,2,3,6,7,8-HXCDD	45 C[15]	2.6 [15]	NA	NA
57117-44-9	1,2,3,6,7,8-HXCDF	45 C[15]	2.6 [15]	NA	NA
19408-74-3	1,2,3,7,8,9-HXCDD	45 C[15]	2.6 [15]	NA	NA
72918-21-9	1,2,3,7,8,9-HXCDF	45 C[15]	2.6 [15]	NA	NA
40321-76-4	1,2,3,7,8-PECDD	4.5 C[15]	0.26 [15]	NA	NA
57117-41-6	1,2,3,7,8-PECDF	150 C[15]	8.7 [15]	NA	NA
60851-34-5	2,3,4,6,7,8-HXCDF	45 C[15]	2.6 [15]	NA	NA
57117-31-4	2,3,4,7,8-PECDF	15 C[15]	0.87 [15]	NA	NA
1746-01-6	2,3,7,8-TCDD	4.5 C	0.26	NA	NA
51207-31-9	2,3,7,8-TCDF	45 C[15]	2.6 [15]	NA	NA
Petroleum Hydrocarbons (mg/kg)					
TTNUS573	Extractable Petroleum Hydrocarbons	NA	NA	500	500

TABLE 6-1
SCREENING CRITERIA FOR SOIL AND SEDIMENT
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

CAS No.	Parameter	USEPA Regional Screening Levels[1]		Rhode Island Department of Environmental Management[2]	
		Direct Contact Residential	Protection of Groundwater	Direct Exposure Residential	GA Leachability Criteria

Notes:
1 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May, 2010.
[Cancer benchmark value = 1E-06, Hazard index (HI) = 1.0].
2 - Rhode Island Department of Environmental Management (RIDEM), DEM-DSR-01-93, February 2004.
3 - Value is for xylene, mixture.
4 - Value is for acenaphthene.
5 - Value is for pyrene.
6 - Ten percent of noncarcinogenic screening level is less then the carcinogenic screening level, therefore the noncarcinogenic value is presented.
7 - Value is for alpha-BHC.
8 - Value is for Endosulfan.
9 - Value is for Endrin.
10- Value is for Chlordane.
11 - Value is for high risk polychlorinated biphenyls.
12 - Value is for hexavalent chromium.
13 - Value is for mercuric chloride and other mercury salts.
14 - Value is MCL based soil screening level.
15 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
16 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
N - Noncarcinogenic
C - Carcinogenic

TABLE 6-2
SCREENING CRITERIA FOR GROUNDWATER AND SURFACE WATER
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS No.	Parameter	USEPA Regional Screening Level[1] Tap Water	USEPA MCL[2]	RIDEM GA Groundwater Objective[3]	USEPA Groundwater Volatilization Criteria[4]
Volatile Organic Compounds (ug/L)					
87-61-6	1,2,3-Trichlorobenzene	29 N	NA	NA	36 N[5]
71-43-2	Benzene	0.41 C	5	5	1.3 C
67-66-3	Chloroform	0.19 C	80	NA	0.73 C
156-59-2	cis-1,2-Dichloroethene	73 N	70	70	NA
540-59-0	Total 1,2-Dichloroethene	330 N	NA	NA	NA
Semivolatile Organic Compounds (ug/L)					
91-57-6	2-Methylnaphthalene	150 N	NA	NA	NA
83-32-9	Acenaphthene	2,200 N	NA	NA	NA
208-96-8	Acenaphthylene	2,200 N[6]	NA	NA	NA
120-12-7	Anthracene	11,000 N	NA	NA	NA
56-55-3	Benzo(a)anthracene	0.029 C	NA	NA	NA
50-32-8	Benzo(a)pyrene	0.0029 C	0.2	0.2	NA
205-99-2	Benzo(b)fluoranthene	0.029 C	NA	NA	320 C
191-24-2	Benzo(g,h,i)perylene	1,100 N[7]	NA	NA	NA
207-08-9	Benzo(k)fluoranthene	0.29 C	NA	NA	NA
105-60-2	Caprolactam	18,000 N	NA	NA	NA
218-01-9	Chrysene	2.9 C	NA	NA	410 C
206-44-0	Fluoranthene	1,500 N	NA	NA	NA
86-73-7	Fluorene	1,500 N	NA	NA	NA
193-39-5	Indeno(1,2,3-cd)pyrene	0.029 C	NA	NA	NA
91-20-3	Naphthalene	0.14 C	NA	20	4 C
85-01-8	Phenanthrene	1,100 N[7]	NA	NA	NA
108-95-2	Phenol	11,000 N	NA	NA	NA
129-00-0	Pyrene	1,100 N	NA	NA	NA
50-32-8	Benzo(a)pyrene Equivalents	0.0029 C	0.2	NA	NA
Pesticides/PCBs (ug/L)					
7421-93-4	Endrin Aldehyde	11 N[9]	NA	NA	NA
1336-36-3	Total Aroclor	0.17 C[10]	0.5	0.5	NA
Metals (ug/L)					
7429-90-5	Aluminum	37,000 N	50 [11]	NA	NA
7440-38-2	Arsenic	0.045 C	10	NA	NA
7440-39-3	Barium	7,300 N	2,000	2,000	NA
7440-41-7	Beryllium	73 N	4	4	NA
7440-43-9	Cadmium	18 N	5	5	NA
7440-70-2	Calcium	NA	NA	NA	NA
7440-48-4	Cobalt	11 N	NA	NA	NA
7440-50-8	Copper	1,500 N	1,300 [12]	NA	NA
7439-89-6	Iron	26,000 N	300 [11]	NA	NA
7439-92-1	Lead	NA	15 [12]	15	NA
7439-95-4	Magnesium	NA	NA	NA	NA
7439-96-5	Manganese	880 N	50 [11]	NA	NA
7440-02-0	Nickel	730 N	NA	100	NA
7440-09-7	Potassium	NA	NA	NA	NA
7782-49-2	Selenium	180 N	50	50	NA
7440-23-5	Sodium	NA	NA	NA	NA
7440-62-2	Vanadium	180 N	NA	NA	NA
7440-66-6	Zinc	11,000 N	5,000 [11]	NA	NA

TABLE 6-2
SCREENING CRITERIA FOR GROUNDWATER AND SURFACE WATER
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Notes:
1 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November, 2010. [Cancer benchmark value = 1E-06, Hazard index (HI) = 1.0].
2 - 2009 Edition of the Drinking Water Standards and Health Advisories (USEPA, October 2009).
3 - RIDEM, DEM-DSR-01-93, February 2004.
4 - Calculated using methodology presented in Appendix D of USEPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002. EPA530-F-02-052. Values correspond to a target cancer risk level of 1E-6 or HI =1 and an attenuation factor of 0.001.
5 - Value is for 1,2,4-trichlorobenzene.
6 - Value is for acenaphthene.
7 - Value is for pyrene.
8 - Value is for total PCBs.
9 - Value is for Endrin.
10 - Value is for low risk PCBs.
11 - Secondary MCL.
12 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.

TABLE 6-3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
78-93-3	2-Butanone	3 J	150	ug/kg	TF4-SB-927-0001	6/24	3.5 - 5.7	150	NA	2,800,000 N	10,000,000	No	BSL
67-64-1	Acetone	3.5 J	160 J	ug/kg	TF4-SB-928-0001	15/24	3.5 - 5.7	160	NA	6,100,000 N	7,800,000	No	BSL
- -	m+p-Xylenes	1.3 J	2.5 J	ug/kg	TF4-SB-939-0001	4/24	3.6 - 8.5	2.5	NA	63,000 N[8]	110,000 [8]	No	BSL
108-88-3	Toluene	1.2 J	2 J	ug/kg	TF4-SB-923-0001, TF4-SB-926-0001	3/24	3.5 - 8.5	2	NA	500,000 N	190,000	No	BSL
1330-20-7	Total Xylenes	0.87 J	2.6 J	ug/kg	TF4-SB-931-0001	7/24	3.6 - 7.7	2.6	NA	63,000 N	110,000	No	BSL
Semivolatile Organic Compounds													
105-67-9	2,4-Dimethylphenol	39 J	39 J	ug/kg	TF4-SB-934-0001	1/24	3.6 - 500	39	NA	120,000 N	1,400,000	No	BSL
95-57-8	2-Chlorophenol	5.4	8	ug/kg	TF4-SB-939-0001	5/24	3.3 - 23	8	NA	39,000 N	50,000	No	BSL
91-57-6	2-Methylnaphthalene	4.7 J	47	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	47	NA	31,000 N	123,000	No	BSL
95-48-7	2-Methylphenol	4.5	30	ug/kg	TF4-SB-934-0001	2/24	3.3 - 500	30	NA	310,000 N	NA	No	BSL
106-44-5	4-Methylphenol	5	81	ug/kg	TF4-SB-934-0001	3/24	3.3 - 6	81	NA	31,000 N	NA	No	BSL
83-32-9	Acenaphthene	6.2	100	ug/kg	TF4-SB-934-0001	5/24	3.3 - 6.4	100	NA	340,000 N	43,000	No	BSL
208-96-8	Acenaphthylene	4	2,500	ug/kg	TF4-SB-934-0001	15/24	3.3 - 4.8	2,500	NA	340,000 N[9]	23,000	No	BSL
120-12-7	Anthracene	4.3	8,800	ug/kg	TF4-SB-934-0001	16/24	3.3 - 6.4	8,800	NA	1,700,000 N	35,000	No	BSL
56-55-3	**Benzo(a)anthracene**	8.2	54,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	54,000	NA	**150 C**	**900**	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	8.5 J	24,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	24,000	NA	**15 C**	**400**	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	4.3 J	49,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	49,000	NA	**150 C**	**900**	**Yes**	ASL
191-24-2	**Benzo(g,h,i)perylene**	6	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	170,000 N[10]	**800**	**Yes**	ASL
207-08-9	**Benzo(k)fluoranthene**	7.4 J	19,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	19,000	NA	**1,500 C**	**900**	**Yes**	ASL
117-81-7	Bis(2-ethylhexyl)phthalate	36 J	320 J	ug/kg	TF4-SB-931-0001	6/24	330 - 2300	320	NA	35,000 C	46,000	No	BSL
86-74-8	Carbazole	740 J	740 J	ug/kg	TF4-SB-934-0001	1/24	330 - 640	740	NA	NA	NA	No	NTX
218-01-9	**Chrysene**	12	59,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	59,000	NA	**15,000 C**	**400**	**Yes**	ASL
53-70-3	**Dibenzo(a,h)anthracene**	3.8 J	3,900 J	ug/kg	TF4-SB-934-0001	14/24	3.3 - 6.4	3,900	NA	**15 C**	**400**	**Yes**	ASL
84-74-2	di-n-Butyl Phthalate	78 J	78 J	ug/kg	TF4-SB-925-0001	1/24	330 - 2300	78	NA	610,000 N	NA	No	BSL
206-44-0	**Fluoranthene**	5.1	83,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	83,000	NA	230,000 N	**20,000**	**Yes**	ASL
86-73-7	Fluorene	6.6	470	ug/kg	TF4-SB-934-0001	9/24	3.3 - 6.4	470	NA	230,000 N	28,000	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	5.7 J	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	**150 C**	**900**	**Yes**	ASL
91-20-3	Naphthalene	4.5	21	ug/kg	TF4-SB-931-0001	5/24	3.3 - 23	21	NA	3,600 C	54,000	No	BSL
85-01-8	Phenanthrene	5.6	440	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	440	NA	170,000 N[10]	40,000	No	BSL
108-95-2	Phenol	7.1	68	ug/kg	TF4-SB-934-0001	8/24	3.6 - 6	68	NA	1,800,000 N	6,000,000	No	BSL
129-00-0	**Pyrene**	4.4	86,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	86,000	NA	170,000 N	**13,000**	**Yes**	ASL
50-32-8	**Benzo(a)pyrene Equivalents**	16 J	217,000 J	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	217,000	NA	**15 C**	NA	**Yes**	ASL
Pesticides/PCBs													
72-54-8	4,4'-DDD	6 J	49	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	49	NA	2,000 C	NA	No	BSL
72-55-9	4,4'-DDE	5.1 J	10 J	ug/kg	TF4-SB-921-0001	3/24	3.3 - 6.4	10	NA	1,400 C	NA	No	BSL
50-29-3	4,4'-DDT	10 J	10 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 30	10	NA	1,700 C	NA	No	BSL
319-85-7	beta-BHC	6.1 J	14	ug/kg	TF4-SB-931-0001	2/24	1.7 - 3.3	14	NA	270 C	NA	No	BSL
319-86-8	delta-BHC	3.9	3.9	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	3.9	NA	77 C[11]	NA	No	BSL
959-98-8	Endosulfan I	2.5	2.5	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	2.5	NA	37,000 N[12]	NA	No	BSL
1031-07-8	Endosulfan Sulfate	4.8 J	22 J	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	22	NA	37,000 N[12]	NA	No	BSL
72-20-8	Endrin	7.9 J	7.9 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	7.9	NA	1,800 N	NA	No	BSL
7421-93-4	Endrin Aldehyde	35 J	35 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	35	NA	1,800 N[13]	NA	No	BSL
53494-70-5	Endrin Ketone	3.7 J	69	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	69	NA	1,800 N[13]	NA	No	BSL
58-89-9	gamma-BHC (Lindane)	3.4 J	3.4 J	ug/kg	TF4-SB-931-0001	1/24	1.7 - 3.3	3.4	NA	520 C	NA	No	BSL
8001-35-2	Toxaphene	240 J	240 J	ug/kg	TF4-SB-928-0001	1/24	170 - 330	240	NA	440 C	NA	No	BSL

TABLE 6-3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals													
7429-90-5	Aluminum	4,850 J	15,200	mg/kg	TF4-SB-927-0001	24/24	-	15,200	No	**7,700 N**	NA	No	BKG
7440-38-2	**Arsenic**	4.2 J	59.5	mg/kg	TF4-SB-943-0001	24/24	-	59.5	Yes	**0.39 C**	**7**	**Yes**	ASL
7440-39-3	Barium	13.1 J	56.7	mg/kg	TF4-SB-927-0001	24/24	-	56.7	No	1,500 N	5,500	No	BSL, BKG
7440-41-7	**Beryllium**	0.096 J	0.7 J	mg/kg	TF4-SB-941-0001	24/24	-	0.7	Yes	16 N	**0.4**	**Yes**	ASL
7440-43-9	Cadmium	0.027 J	0.48	mg/kg	TF4-SB-931-0001	21/24	0.013 - 0.013	0.48	Yes	7 N	39	No	BSL
7440-70-2	Calcium	101 J	1,900 J	mg/kg	TF4-SB-943-0001	21/24	5.6 - 6.6	1,900	Yes	NA	NA	No	NUT
7440-47-3	Chromium	8.4 J	20.8	mg/kg	TF4-SB-927-0001	24/24	-	20.8	No	**0.29 C[14]**	390 [14]	No	BKG
7440-48-4	**Cobalt**	4.9 J	20.5 J	mg/kg	TF4-SB-936-0001	24/24	-	20.5	Yes	**2.3 N**	NA	**Yes**	ASL
7440-50-8	Copper	5.4 J	25.2	mg/kg	TF4-SB-923-0001	24/24	-	25.2	Yes	310 N	3,100	No	BSL
7439-89-6	**Iron**	18,000	53,200	mg/kg	TF4-SB-936-0001	24/24	-	53,200	Yes	**5,500 N**	NA	**Yes**	ASL
7439-92-1	Lead	6.9 J	63.5 J	mg/kg	TF4-SB-923-0001	24/24	-	63.5	Yes	400	150	No	BSL
7439-95-4	Magnesium	1,110 J	3,040	mg/kg	TF4-SB-927-0001	24/24	-	3,040	Yes	NA	NA	No	NUT
7439-96-5	**Manganese**	144 J	818	mg/kg	TF4-SB-943-0001	24/24	-	818	Yes	**180 N**	**390**	**Yes**	ASL
7439-97-6	Mercury	0.031 J	0.14	mg/kg	TF4-SB-923-0001	19/24	0.015 - 0.08	0.14	Yes	2.3 N[15]	23	No	BSL
7440-02-0	Nickel	11.5 J	37.1	mg/kg	TF4-SB-943-0001	24/24	-	37.1	Yes	150 N	1,000	No	BSL
7440-09-7	Potassium	187 J	545 J	mg/kg	TF4-SB-935-0001	24/24	-	545	Yes	NA	NA	No	NUT
7782-49-2	Selenium	0.82 J	3.5	mg/kg	TF4-SB-935-0001	14/24	0.77 - 5.1	3.5	Yes	39 N	390	No	BSL
7440-22-4	Silver	0.068 J	0.068 J	mg/kg	TF4-SB-935-0001	1/24	0.054 - 0.19	0.068	Yes	39 N	200	No	BSL
7440-23-5	Sodium	21 J	137 J	mg/kg	TF4-SB-923-0001	21/24	15.5 - 23.9	137	Yes	NA	NA	No	NUT
7440-28-0	Thallium	2.6	5.3	mg/kg	TF4-SB-943-0001	6/24	0.16 - 0.36	5.3	Yes	NA	5.5	No	BSL
7440-62-2	Vanadium	12.6 J	37.6	mg/kg	TF4-SB-927-0001	24/24	-	37.6	Yes	39 N	550	No	BSL
7440-66-6	Zinc	27.8 J	125	mg/kg	TF4-SB-936-0001	24/24	-	125	Yes	2,300 N	6,000	No	BSL
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	721 J	21,100 J	ng/kg	TF4-SB-933-0001	24/24	-	21,100	NA	**15,000 C[16]**	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.386 J	26.9	ng/kg	TF4-SB-942-0001	20/24	0.0641 - 3.48	26.9	NA	15,000 C[16]	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	15.1	79.7	ng/kg	TF4-SB-926-0001	24/24	-	79.7	NA	450 C[16]	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	0.14 J	8.41	ng/kg	TF4-SB-942-0001	20/24	0.797 - 2.38	8.41	NA	450 C[16]	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.0992 J	0.689 J	ng/kg	TF4-SB-923-0001	12/24	0.0327 - 0.456	0.689	NA	450 C[16]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.102 J	1.15 J	ng/kg	TF4-SB-926-0001	22/24	0.117 - 0.326	1.15	NA	45 C[16]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.035 J	1.09 J	ng/kg	TF4-SB-923-0001	22/24	0.038 - 0.257	1.09	NA	45 C[16]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.147 J	2.24 J	ng/kg	TF4-SB-926-0001	24/24	-	2.24	NA	45 C[16]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.0604 J	0.727 J	ng/kg	TF4-SB-923-0001	20/24	0.0273 - 0.244	0.727	NA	45 C[16]	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.171 J	2.34 J	ng/kg	TF4-SB-926-0001	24/24	-	2.34	NA	45 C[16]	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.116 J	0.562 J	ng/kg	TF4-SB-926-0001	14/24	0.029 - 0.486	0.562	NA	4.5 C[16]	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.0907 J	0.391 J	ng/kg	TF4-SB-923-0001	9/24	0.024 - 0.377	0.391	NA	150 C[16]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.0736 J	0.845 J	ng/kg	TF4-SB-926-0001	18/24	0.0404 - 0.32	0.845	NA	45 C[16]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.0799 J	0.435 J	ng/kg	TF4-SB-923-0001	10/24	0.0231 - 0.374	0.435	NA	15 C[16]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.0603 J	0.0603 J	ng/kg	TF4-SB-938-0001	1/24	0.0329 - 1.25	0.0603	NA	4.5 C	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.243 J	0.676 J	ng/kg	TF4-SB-926-0001	11/24	0.0572 - 0.988	0.676	NA	45 C[16]	NA	No	BSL
- -	**2,3,7,8-TCDD Equivalents**	0.977	7.25	ng/kg	TF4-SB-933-0001	24/24	-	7.25	NA	**4.5 C**	NA	**Yes**	ASL
Petroleum Hydrocarbons													
- -	**Extractable Petroleum Hydrocarbons**	30 J	540	mg/kg	TF4-SB-921-0001	13/18	14 - 25	540	NA	NA	**500**	**Yes**	ASL

TABLE 6-3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Residential Soil(5)	RIDEM Residential Direct Exposure Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management (RIDEM), DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Value is for alpha-BHC.
12 - Value is for Endosulfan.
13 - Value is for Endrin.
14 - Value is for hexavalent chromium.
15 - Value is for mercuric chloride and other mercury salts.
16 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples

TF4-SB-920-0001	TF4-SB-932-0001
TF4-SB-921-0001	TF4-SB-933-0001
TF4-SB-922-0001	TF4-SB-934-0001
TF4-SB-923-0001	TF4-SB-935-0001
TF4-SB-924-0001	TF4-SB-936-0001
TF4-SB-925-0001	TF4-SB-937-0001
TF4-SB-926-0001	TF4-SB-938-0001
TF4-SB-927-0001	TF4-SB-939-0001
TF4-SB-928-0001	TF4-SB-940-0001
TF4-SB-929-0001	TF4-SB-941-0001
TF4-SB-930-0001	TF4-SB-942-0001
TF4-SB-931-0001	TF4-SB-943-0001

Definitions:
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
78-93-3	2-Butanone	3 J	150	ug/kg	TF4-SB-927-0001	6/24	3.5 - 5.7	150	NA	1,500	NA	No	BSL
67-64-1	Acetone	3.5 J	160 J	ug/kg	TF4-SB-928-0001	15/24	3.5 - 5.7	160	NA	4,500	NA	No	BSL
- -	m+p-Xylenes	1.3 J	2.5 J	ug/kg	TF4-SB-939-0001	4/24	3.6 - 8.5	2.5	NA	200 [8]	540,000 [8]	No	BSL
108-88-3	Toluene	1.2 J	2 J	ug/kg	TF4-SB-923-0001, TF4-SB-926-0001	3/24	3.5 - 8.5	2	NA	1,600	32,000	No	BSL
1330-20-7	Total Xylenes	0.87 J	2.6 J	ug/kg	TF4-SB-931-0001	7/24	3.6 - 7.7	2.6	NA	200	540,000	No	BSL
Semivolatile Organic Compounds													
105-67-9	2,4-Dimethylphenol	39 J	39 J	ug/kg	TF4-SB-934-0001	1/24	3.6 - 500	39	NA	860	NA	No	BSL
95-57-8	2-Chlorophenol	5.4	8	ug/kg	TF4-SB-939-0001	5/24	3.3 - 23	8	NA	150	NA	No	BSL
91-57-6	2-Methylnaphthalene	4.7 J	47	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	47	NA	750	NA	No	BSL
95-48-7	2-Methylphenol	4.5	30	ug/kg	TF4-SB-934-0001	2/24	3.3 - 500	30	NA	1,500	NA	No	BSL
106-44-5	4-Methylphenol	5	81	ug/kg	TF4-SB-934-0001	3/24	3.3 - 6	81	NA	150	NA	No	BSL
83-32-9	Acenaphthene	6.2	100	ug/kg	TF4-SB-934-0001	5/24	3.3 - 6.4	100	NA	22,000	NA	No	BSL
208-96-8	Acenaphthylene	4	2,500	ug/kg	TF4-SB-934-0001	15/24	3.3 - 4.8	2,500	NA	22,000 [9]	NA	No	BSL
120-12-7	Anthracene	4.3	8,800	ug/kg	TF4-SB-934-0001	16/24	3.3 - 6.4	8,800	NA	360,000	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	8.2	54,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	54,000	NA	**10**	NA	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	8.5 J	24,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	24,000	NA	**3.5**	240,000	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	4.3 J	49,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	49,000	NA	**35**	NA	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	6	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	120,000 [10]	NA	No	BSL
207-08-9	**Benzo(k)fluoranthene**	7.4 J	19,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	19,000	NA	**350**	NA	**Yes**	ASL
117-81-7	Bis(2-ethylhexyl)phthalate	36 J	320 J	ug/kg	TF4-SB-931-0001	6/24	330 - 2300	320	NA	1,100	120,000	No	BSL
86-74-8	Carbazole	740 J	740 J	ug/kg	TF4-SB-934-0001	1/24	330 - 640	740	NA	NA	NA	No	NTX
218-01-9	**Chrysene**	12	59,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	59,000	NA	**1,100**	NA	**Yes**	ASL
53-70-3	**Dibenzo(a,h)anthracene**	3.8 J	3,900 J	ug/kg	TF4-SB-934-0001	14/24	3.3 - 6.4	3,900	NA	**11**	NA	**Yes**	ASL
84-74-2	di-n-Butyl Phthalate	78 J	78 J	ug/kg	TF4-SB-925-0001	1/24	330 - 2300	78	NA	9,200	NA	No	BSL
206-44-0	Fluoranthene	5.1	83,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	83,000	NA	160,000	NA	No	BSL
86-73-7	Fluorene	6.6	470	ug/kg	TF4-SB-934-0001	9/24	3.3 - 6.4	470	NA	27,000	NA	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	5.7 J	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	**120**	NA	**Yes**	ASL
91-20-3	**Naphthalene**	4.5	21	ug/kg	TF4-SB-931-0001	5/24	3.3 - 23	21	NA	**0.47**	800	**Yes**	ASL
85-01-8	Phenanthrene	5.6	440	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	440	NA	120,000 [10]	NA	No	BSL
108-95-2	Phenol	7.1	68	ug/kg	TF4-SB-934-0001	8/24	3.6 - 6	68	NA	6,300	NA	No	BSL
129-00-0	Pyrene	4.4	86,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	86,000	NA	120,000	NA	No	BSL
50-32-8	Benzo(a)pyrene Equivalents	16 J	217,000 J	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	217,000	NA	NA	NA	No	BSL
Pesticides/PCBs													
72-54-8	4,4'-DDD	6 J	49	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	49	NA	66	NA	No	BSL
72-55-9	4,4'-DDE	5.1 J	10 J	ug/kg	TF4-SB-921-0001	3/24	3.3 - 6.4	10	NA	47	NA	No	BSL
50-29-3	4,4'-DDT	10 J	10 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 30	10	NA	67	NA	No	BSL
319-85-7	**beta-BHC**	6.1 J	14	ug/kg	TF4-SB-931-0001	2/24	1.7 - 3.3	14	NA	**0.22**	NA	**Yes**	ASL
319-86-8	**delta-BHC**	3.9	3.9	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	3.9	NA	**0.062** [11]	NA	**Yes**	ASL
959-98-8	Endosulfan I	2.5	2.5	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	2.5	NA	3,000 [12]	NA	No	BSL
1031-07-8	Endosulfan Sulfate	4.8 J	22 J	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	22	NA	3,000 [12]	NA	No	BSL
72-20-8	Endrin	7.9 J	7.9 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	7.9	NA	440	NA	No	BSL
7421-93-4	Endrin Aldehyde	35 J	35 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	35	NA	440 [13]	NA	No	BSL
53494-70-5	Endrin Ketone	3.7 J	69	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	69	NA	440 [13]	NA	No	BSL
58-89-9	**gamma-BHC (Lindane)**	3.4 J	3.4 J	ug/kg	TF4-SB-931-0001	1/24	1.7 - 3.3	3.4	NA	**0.36**	NA	**Yes**	ASL

TABLE 6-4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Pesticides/PCBs (Continued)													
8001-35-2	**Toxaphene**	240 J	240 J	ug/kg	TF4-SB-928-0001	1/24	170 - 330	240	NA	**9.4**	NA	**Yes**	ASL
Metals													
7429-90-5	Aluminum	4,850 J	15,200	mg/kg	TF4-SB-927-0001	24/24	-	15,200	No	55,000	NA	No	BSL, BKG
7440-38-2	**Arsenic**	4.2 J	59.5	mg/kg	TF4-SB-943-0001	24/24	-	59.5	Yes	**0.0013**	NA	**Yes**	ASL
7440-39-3	Barium	13.1 J	56.7	mg/kg	TF4-SB-927-0001	24/24	-	56.7	No	300	[14]	No	BSL, BKG
7440-41-7	Beryllium	0.096 J	0.7 J	mg/kg	TF4-SB-941-0001	24/24	-	0.7	Yes	58	[14]	No	BSL
7440-43-9	Cadmium	0.027 J	0.48	mg/kg	TF4-SB-931-0001	21/24	0.013 - 0.013	0.48	Yes	1.4	[14]	No	BSL
7440-70-2	Calcium	101 J	1,900 J	mg/kg	TF4-SB-943-0001	21/24	5.6 - 6.6	1,900	Yes	NA	NA	No	NUT
7440-47-3	Chromium	8.4 J	20.8	mg/kg	TF4-SB-927-0001	24/24	-	20.8	No	**0.00083** [15]	[14]	No	BKG
7440-48-4	**Cobalt**	4.9 J	20.5 J	mg/kg	TF4-SB-936-0001	24/24	-	20.5	Yes	**0.49**	NA	**Yes**	ASL
7440-50-8	Copper	5.4 J	25.2	mg/kg	TF4-SB-923-0001	24/24	-	25.2	Yes	51	NA	No	BSL
7439-89-6	**Iron**	18,000	53,200	mg/kg	TF4-SB-936-0001	24/24	-	53,200	Yes	**640**	NA	**Yes**	ASL
7439-92-1	**Lead**	6.9 J	63.5 J	mg/kg	TF4-SB-923-0001	24/24	-	63.5	Yes	**14** [16]	[14]	**Yes**	ASL
7439-95-4	Magnesium	1,110 J	3,040	mg/kg	TF4-SB-927-0001	24/24	-	3,040	Yes	NA	NA	No	NUT
7439-96-5	**Manganese**	144 J	818	mg/kg	TF4-SB-943-0001	24/24	-	818	Yes	**57**	NA	**Yes**	ASL
7439-97-6	Mercury	0.031 J	0.14	mg/kg	TF4-SB-923-0001	19/24	0.015 - 0.08	0.14	Yes	0.57 [17]	[14]	No	BSL
7440-02-0	Nickel	11.5 J	37.1	mg/kg	TF4-SB-943-0001	24/24	-	37.1	Yes	48	[14]	No	BSL
7440-09-7	Potassium	187 J	545 J	mg/kg	TF4-SB-935-0001	24/24	-	545	Yes	NA	NA	No	NUT
7782-49-2	**Selenium**	0.82 J	3.5	mg/kg	TF4-SB-935-0001	14/24	0.77 - 5.1	3.5	Yes	**0.95**	[14]	**Yes**	ASL
7440-22-4	Silver	0.068 J	0.068 J	mg/kg	TF4-SB-935-0001	1/24	0.054 - 0.19	0.068	Yes	1.6	NA	No	BSL
7440-23-5	Sodium	21 J	137 J	mg/kg	TF4-SB-923-0001	21/24	15.5 - 23.9	137	Yes	NA	NA	No	NUT
7440-28-0	Thallium	2.6	5.3	mg/kg	TF4-SB-943-0001	6/24	0.16 - 0.36	5.3	Yes	NA	[14]	No	NTX
7440-62-2	Vanadium	12.6 J	37.6	mg/kg	TF4-SB-927-0001	24/24	-	37.6	Yes	180	NA	No	BSL
7440-66-6	Zinc	27.8 J	125	mg/kg	TF4-SB-936-0001	24/24	-	125	Yes	680	NA	No	BSL
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	721 J	21,100 J	ng/kg	TF4-SB-933-0001	24/24	-	21,100	NA	**870** [18]	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.386 J	26.9	ng/kg	TF4-SB-942-0001	20/24	0.0641 - 3.48	26.9	NA	870 [18]	NA	No	BSL
35822-46-9	**1,2,3,4,6,7,8-HPCDD**	15.1	79.7	ng/kg	TF4-SB-926-0001	24/24	-	79.7	NA	**26** [18]	NA	**Yes**	ASL
67562-39-4	1,2,3,4,6,7,8-HPCDF	0.14 J	8.41	ng/kg	TF4-SB-942-0001	20/24	0.797 - 2.38	8.41	NA	26 [18]	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.0992 J	0.689 J	ng/kg	TF4-SB-923-0001	12/24	0.0327 - 0.456	0.689	NA	26 [18]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.102 J	1.15 J	ng/kg	TF4-SB-926-0001	22/24	0.117 - 0.326	1.15	NA	2.6 [18]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.035 J	1.09 J	ng/kg	TF4-SB-923-0001	22/24	0.038 - 0.257	1.09	NA	2.6 [18]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.147 J	2.24 J	ng/kg	TF4-SB-926-0001	24/24	-	2.24	NA	2.6 [18]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.0604 J	0.727 J	ng/kg	TF4-SB-923-0001	20/24	0.0273 - 0.244	0.727	NA	2.6 [18]	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.171 J	2.34 J	ng/kg	TF4-SB-926-0001	24/24	-	2.34	NA	2.6 [18]	NA	No	BSL
40321-76-4	**1,2,3,7,8-PECDD**	0.116 J	0.562 J	ng/kg	TF4-SB-926-0001	14/24	0.029 - 0.486	0.562	NA	**0.26** [18]	NA	**Yes**	ASL
57117-41-6	1,2,3,7,8-PECDF	0.0907 J	0.391 J	ng/kg	TF4-SB-923-0001	9/24	0.024 - 0.377	0.391	NA	8.7 [18]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.0736 J	0.845 J	ng/kg	TF4-SB-926-0001	18/24	0.0404 - 0.32	0.845	NA	2.6 [18]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.0799 J	0.435 J	ng/kg	TF4-SB-923-0001	10/24	0.0231 - 0.374	0.435	NA	0.87 [18]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.0603 J	0.0603 J	ng/kg	TF4-SB-938-0001	1/24	0.0329 - 1.25	0.0603	NA	0.26	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.243 J	0.676 J	ng/kg	TF4-SB-926-0001	11/24	0.0572 - 0.988	0.676	NA	2.6 [18]	NA	No	BSL
- -	2,3,7,8-TCDD TEQ	0.977	7.25	ng/kg	TF4-SB-933-0001	24/24	-	7.25	NA	NA	NA	No	NTX
Petroleum Hydrocarbons													
- -	**Extractable Petroleum Hydrocarbons**	30 J	540	mg/kg	TF4-SB-921-0001	13/18	14 - 25	540	NA	NA	**500**	**Yes**	ASL

TABLE 6-4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Migration from Soil to Groundwater(5)	RIDEM GA Leachability Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Value is for alpha-BHC.
12 - Value is for Endosulfan.
13 - Value is for Endrin.
14 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
15 - Value is for hexavalent chromium.
16 - Value is MCL based soil screening level.
17 - Value is for mercuric chloride and other mercury salts.
18 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

Associated Samples

TF4-SB-920-0001	TF4-SB-932-0001
TF4-SB-921-0001	TF4-SB-933-0001
TF4-SB-922-0001	TF4-SB-934-0001
TF4-SB-923-0001	TF4-SB-935-0001
TF4-SB-924-0001	TF4-SB-936-0001
TF4-SB-925-0001	TF4-SB-937-0001
TF4-SB-926-0001	TF4-SB-938-0001
TF4-SB-927-0001	TF4-SB-939-0001
TF4-SB-928-0001	TF4-SB-940-0001
TF4-SB-929-0001	TF4-SB-941-0001
TF4-SB-930-0001	TF4-SB-942-0001
TF4-SB-931-0001	TF4-SB-943-0001

TABLE 6-5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
78-93-3	2-Butanone	3.6 J	30	ug/kg	TF4-SB-922-0608	11/42	3.7 - 5.1	30	NA	2,800,000 N	10,000,000	No	BSL
67-64-1	Acetone	3.5 J	180 J	ug/kg	TF4-SB-943-0204	25/42	3.9 - 5.1	180	NA	6,100,000 N	7,800,000	No	BSL
71-43-2	Benzene	0.97 J	0.97 J	ug/kg	TF4-SB-928-0810	1/42	3.6 - 13	0.97	NA	1,100 C	2,500	No	BSL
75-15-0	Carbon Disulfide	0.96 J	12 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 7.2	12	NA	82,000 N	NA	No	BSL
- -	m+p-Xylenes	2.4 J	2.7 J	ug/kg	TF4-SB-939-0810	2/42	3.6 - 13	2.7	NA	63,000 N[8]	110,000 [8]	No	BSL
1634-04-4	Methyl Tert-Butyl Ether	1 J	1.2 J	ug/kg	TF4-SB-928-0810	3/42	3.6 - 13	1.2	NA	43,000 C	390,000	No	BSL
108-88-3	Toluene	1.8 J	5.6 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 5.8	5.6	NA	500,000 N	190,000	No	BSL
1330-20-7	Total Xylenes	1.1 J	3.7 J	ug/kg	TF4-SB-922-0608	5/42	3.6 - 7.2	3.7	NA	63,000 N	110,000	No	BSL
Semivolatile Organic Compounds													
120-83-2	2,4-Dichlorophenol	5.1 J	5.1 J	ug/kg	TF4-SB-937-0204	1/42	3.3 - 6.1	5.1	NA	18,000 N	30,000	No	BSL
95-57-8	2-Chlorophenol	3.6	7.9	ug/kg	TF4-SB-937-0204	6/42	3.3 - 6.5	7.9	NA	39,000 N	50,000	No	BSL
91-57-6	2-Methylnaphthalene	5.7 J	15 J	ug/kg	TF4-SB-939-0204	6/42	3.3 - 6.1	15	NA	31,000 N	123,000	No	BSL
95-48-7	2-Methylphenol	6.4	99.8 J	ug/kg	TF4-SB-941-0810-AVG	3/42	3.3 - 610	99.8	NA	310,000 N	NA	No	BSL
106-44-5	4-Methylphenol	5.52 J	6.1	ug/kg	TF4-SB-937-0204	2/42	3.3 - 6.1	6.1	NA	31,000 N	NA	No	BSL
83-32-9	Acenaphthene	4.5	47 J	ug/kg	TF4-SB-939-0204	3/42	3.3 - 6.1	47	NA	340,000 N	43,000	No	BSL
208-96-8	Acenaphthylene	12	76 J	ug/kg	TF4-SB-939-0204	5/42	3.3 - 6.1	76	NA	340,000 N[9]	23,000	No	BSL
120-12-7	Anthracene	4.55 J	99 J	ug/kg	TF4-SB-934-0204	8/42	3.3 - 6.1	99	NA	1,700,000 N	35,000	No	BSL
56-55-3	**Benzo(a)anthracene**	3.9	320 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	320	NA	**150 C**	900	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	3.3 J	250 J	ug/kg	TF4-SB-934-0204	14/42	3.3 - 6.1	250	NA	**15 C**	400	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	4.2 J	610 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	610	NA	**150 C**	900	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	4.2	180 J	ug/kg	TF4-SB-939-0204	12/42	3.3 - 6.1	180	NA	170,000 N[10]	800	No	BSL
207-08-9	Benzo(k)fluoranthene	4.8	490	ug/kg	TF4-SB-934-0204	13/42	3.3 - 6.1	490	NA	1,500 C	900	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	41 J	131 J	ug/kg	TF4-SB-941-0810-AVG	9/42	330 - 480	131	NA	35,000 C	46,000	No	BSL
85-68-7	Butyl Benzyl Phthalate	59 J	170 J	ug/kg	TF4-SB-941-0810-AVG	3/42	330 - 610	170	NA	260,000 C	NA	No	BSL
218-01-9	**Chrysene**	4.3	440	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	440	NA	15,000 C	**400**	**Yes**	ASL
53-70-3	**Dibenzo(a,h)anthracene**	5.6 J	46	ug/kg	TF4-SB-934-0204	6/42	3.3 - 6.1	46	NA	**15 C**	400	**Yes**	ASL
84-74-2	di-n-Butyl Phthalate	48 J	120 J	ug/kg	TF4-SB-929-0204-AVG	5/42	330 - 610	120	NA	610,000 N	NA	No	BSL
206-44-0	Fluoranthene	3.9	310 J	ug/kg	TF4-SB-939-0204	16/42	3.3 - 6.1	310	NA	230,000 N	20,000	No	BSL
86-73-7	Fluorene	3.35	84 J	ug/kg	TF4-SB-939-0204	7/42	3.3 - 6.1	84	NA	230,000 N	28,000	No	BSL
193-39-5	Indeno(1,2,3-cd)pyrene	3.3 J	140 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	140	NA	150 C	900	No	BSL
91-20-3	Naphthalene	4.3	13 J	ug/kg	TF4-SB-939-0204	8/42	3.3 - 18	13	NA	3,600 C	54,000	No	BSL
85-01-8	Phenanthrene	4.5 J	280 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	280	NA	170,000 N[10]	40,000	No	BSL
108-95-2	Phenol	4.5 J	39	ug/kg	TF4-SB-937-0204	16/42	3.6 - 6.1	39	NA	1,800,000 N	6,000,000	No	BSL
129-00-0	Pyrene	4.9 J	310 J	ug/kg	TF4-SB-939-0204	15/42	3.3 - 6.1	310	NA	170,000 N	13,000	No	BSL
50-32-8	**Benzo(a)pyrene Equivalents**	15 J	2,290 J	ug/kg	TF4-SB-934-0204	16/42	3.3 - 6.1	2,290	NA	**15 C**	NA	**Yes**	ASL
Pesticides/PCBs													
72-54-8	4,4'-DDD	4.6	8.2	ug/kg	TF4-SB-928-0204	2/42	3.3 - 6.2	8.2	NA	2,000 C	NA	No	BSL
50-29-3	4,4'-DDT	7.1 J	7.1 J	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	1,700 C	NA	No	BSL
11097-69-1	**Aroclor-1254**	100 J	100 J	ug/kg	TF4-SB-942-0204	1/42	33 - 62	100	NA	110 N[11]	NA	**Yes**	ASL
1031-07-8	Endosulfan Sulfate	7.1	7.1	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	37,000 N[12]	NA	No	BSL
7421-93-4	Endrin Aldehyde	5.7	5.7	ug/kg	TF4-SB-925-0608	1/42	3.3 - 6.2	5.7	NA	1,800 N[13]	NA	No	BSL

TABLE 6-5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals													
7429-90-5	Aluminum	697	17,200	mg/kg	TF4-SB-921-0204	42/42	-	17,200	No	**7,700 N**	NA	No	BKG
7440-38-2	**Arsenic**	4.9 J	42.9 J	mg/kg	TF4-SB-932-0607	42/42	-	42.9	Yes	**0.39 C**	**7**	**Yes**	ASL
7440-39-3	Barium	1.8 J	103	mg/kg	TF4-SB-930-0204	42/42	-	103	Yes	1,500 N	5,500	No	BSL
7440-41-7	**Beryllium**	0.16 J	0.78	mg/kg	TF4-SB-921-0204	42/42	-	0.78	Yes	16 N	**0.4**	**Yes**	ASL
7440-43-9	Cadmium	0.042 J	1.15	mg/kg	TF4-SB-941-0810-AVG	39/42	0.014 - 0.018	1.15	Yes	7 N	39	No	BSL
7440-70-2	Calcium	6 J	1,750 J	mg/kg	TF4-SB-925-0204	30/42	4.5 - 8.1	1,750	No	NA	NA	No	NUT,BKG
7440-47-3	Chromium	4.3 J	24.1	mg/kg	TF4-SB-934-0810	42/42	-	24.1	No	**0.29 C[15]**	390 [15]	No	BKG
7440-48-4	**Cobalt**	5.8 J	41 J	mg/kg	TF4-SB-924-0810-AVG	42/42	-	41	Yes	**2.3 N**	NA	**Yes**	ASL
7440-50-8	Copper	3.3 J	31.8 J	mg/kg	TF4-SB-941-0810-AVG	42/42	-	31.8	Yes	310 N	3,100	No	BSL
7439-89-6	**Iron**	18,500	76,900	mg/kg	TF4-SB-925-0608	42/42	-	76,900	Yes	**5,500 N**	NA	**Yes**	ASL
7439-92-1	Lead	3.1 J	30.3 J	mg/kg	TF4-SB-938-0810	42/42	-	30.3	Yes	400	150	No	BSL
7439-95-4	Magnesium	136 J	5,120	mg/kg	TF4-SB-925-0204	42/42	-	5,120	No	NA	NA	No	NUT,BKG
7439-96-5	**Manganese**	58.3 J	4,480	mg/kg	TF4-SB-930-0204	42/42	-	4,480	Yes	**180 N**	**390**	**Yes**	ASL
7439-97-6	Mercury	0.00692 J	0.16	mg/kg	TF4-SB-923-0406	18/42	0.0054 - 0.028	0.16	Yes	2.3 N[16]	23	No	BSL
7440-02-0	Nickel	13.4 J	96.9	mg/kg	TF4-SB-943-0810	42/42	-	96.9	Yes	150 N	1,000	No	BSL
7440-09-7	Potassium	89.5 J	934	mg/kg	TF4-SB-925-0204	42/42	-	934	No	NA	NA	No	NUT,BKG
7782-49-2	Selenium	0.62 J	5.3	mg/kg	TF4-SB-936-0810	16/42	0.48 - 7	5.3	Yes	39 N	390	No	BSL
7440-22-4	Silver	0.12 J	0.21 J	mg/kg	TF4-SB-936-0810	2/42	0.048 - 0.35	0.21	Yes	39 N	200	No	BSL
7440-23-5	Sodium	11 J	664 J	mg/kg	TF4-SB-922-0608	34/42	8.4 - 22.6	664	Yes	NA	NA	No	NUT
7440-28-0	**Thallium**	1.2	11.8	mg/kg	TF4-SB-943-0204	10/42	0.15 - 0.33	11.8	Yes	NA	**5.5**	**Yes**	ASL
7440-62-2	Vanadium	8.5 J	30.2	mg/kg	TF4-SB-921-0204	42/42	-	30.2	Yes	39 N	550	No	BSL
7440-66-6	Zinc	35.7 J	193	mg/kg	TF4-SB-943-0810	42/42	-	193	Yes	2,300 N	6,000	No	BSL
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	368 J	19,100 J	ng/kg	TF4-SB-923-0406	23/23	-	19,100	NA	**15,000 C[17]**	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.091 J	2.47 J	ng/kg	TF4-SB-924-0204	15/23	0.132 - 3.95	2.47	NA	15,000 C[17]	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	5.76	292	ng/kg	TF4-SB-923-0406	23/23	-	292	NA	450 C[17]	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	0.0503 J	1.02 J	ng/kg	TF4-SB-924-0204	16/23	0.0298 - 1.36	1.02	NA	450 C[17]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.0692 J	0.883 J	ng/kg	TF4-SB-923-0406	20/23	0.0428 - 0.0883	0.883	NA	45 C[17]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.0386 J	0.345 J	ng/kg	TF4-SB-928-0204	11/23	0.0141 - 0.16	0.345	NA	45 C[17]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.0797 J	2.1 J	ng/kg	TF4-SB-923-0406	21/23	0.0376 - 0.0832	2.1	NA	45 C[17]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.0442 J	0.221 J	ng/kg	TF4-SB-928-0204	14/23	0.0208 - 0.733	0.221	NA	45 C[17]	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.0666 J	4.24	ng/kg	TF4-SB-923-0406	20/23	0.0366 - 0.0881	4.24	NA	45 C[17]	NA	No	BSL
72918-21-9	1,2,3,7,8,9-HXCDF	0.0491 J	0.0994 J	ng/kg	TF4-SB-925-0204	3/23	0.0184 - 0.204	0.0994	NA	45 C[17]	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.158 J	0.224 J	ng/kg	TF4-SB-923-0406	3/23	0.0238 - 0.203	0.224	NA	4.5 C[17]	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.135 J	0.135 J	ng/kg	TF4-SB-925-0204	1/23	0.0202 - 0.151	0.135	NA	150 C[17]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.099 J	0.179 J	ng/kg	TF4-SB-928-0204	5/23	0.0153 - 0.174	0.179	NA	45 C[17]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.0908 J	0.18 J	ng/kg	TF4-SB-928-0204	2/23	0.0194 - 0.149	0.18	NA	15 C[17]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.0756 J	0.0756 J	ng/kg	TF4-SB-930-0204	1/23	0.0254 - 0.312	0.0756	NA	4.5 C	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.177 J	0.343 J	ng/kg	TF4-SB-928-0204	2/23	0.036 - 0.294	0.343	NA	45 C[17]	NA	No	BSL
- -	**2,3,7,8-TCDD Equivalents**	0.358	9.71	ng/kg	TF4-SB-923-0406	23/23	-	9.71	NA	**4.5 C**	NA	**Yes**	ASL
Petroleum Hydrocarbons													
- -	Extractable Petroleum Hydrocarbons	18 J	240	mg/kg	TF4-SB-928-0204	9/30	13 - 58	240	NA	NA	500	No	BSL

TABLE 6-5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Residential Soil(5)	RIDEM Residential Direct Exposure Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Ten percent of noncarcinogenic screening level is less then the carcinogenic screening level, therefore the noncarcinogenic value is presented.
12 - Value is for Endosulfan.
13 - Value is for Endrin.
14 - Value is for high risk polychlorinated biphenyls.
15 - Value is for hexavalent chromium.
16 - Value is for mercuric chloride and other mercury salts.
17 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

Associated Samples

TF4-SB-920-0204	TF4-SB-928-0204	TF4-SB-936-0204
TF4-SB-920-0810	TF4-SB-928-0810	TF4-SB-936-0810
TF4-SB-921-0204	TF4-SB-929-0204-AVG	TF4-SB-937-0204
TF4-SB-921-0810-AVG	TF4-SB-929-0608	TF4-SB-938-0204-AVG
TF4-SB-922-0204-AVG	TF4-SB-930-0204	TF4-SB-938-0810
TF4-SB-922-0608	TF4-SB-930-0608	TF4-SB-939-0204
TF4-SB-923-0204	TF4-SB-932-0204	TF4-SB-939-0810
TF4-SB-923-0406	TF4-SB-932-0607	TF4-SB-940-0204
TF4-SB-924-0204	TF4-SB-933-0204	TF4-SB-940-0810
TF4-SB-924-0810-AVG	TF4-SB-933-0608	TF4-SB-941-0204
TF4-SB-925-0204	TF4-SB-934-0204	TF4-SB-941-0810-AVG
TF4-SB-925-0608	TF4-SB-934-0810	TF4-SB-942-0204
TF4-SB-926-0204-AVG	TF4-SB-935-0204	TF4-SB-943-0204
TF4-SB-926-0406	TF4-SB-935-0810	TF4-SB-943-0810

TABLE 6-6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
78-93-3	2-Butanone	3.6 J	30	ug/kg	TF4-SB-922-0608	11/42	3.7 - 5.1	30	NA	1,500	NA	No	BSL
67-64-1	Acetone	3.5 J	180 J	ug/kg	TF4-SB-943-0204	25/42	3.9 - 5.1	180	NA	4,500	NA	No	BSL
71-43-2	**Benzene**	0.97 J	0.97 J	ug/kg	TF4-SB-928-0810	1/42	3.6 - 13	0.97	NA	**0.21**	200	**Yes**	ASL
75-15-0	Carbon Disulfide	0.96 J	12 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 7.2	12	NA	310	NA	No	BSL
- -	m+p-Xylenes	2.4 J	2.7 J	ug/kg	TF4-SB-939-0810	2/42	3.6 - 13	2.7	NA	200 [8]	540,000 [8]	No	BSL
1634-04-4	Methyl Tert-Butyl Ether	1 J	1.2 J	ug/kg	TF4-SB-928-0810	3/42	3.6 - 13	1.2	NA	2.8	900	No	BSL
108-88-3	Toluene	1.8 J	5.6 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 5.8	5.6	NA	1,600	32,000	No	BSL
1330-20-7	Total Xylenes	1.1 J	3.7 J	ug/kg	TF4-SB-922-0608	5/42	3.6 - 7.2	3.7	NA	200	540,000	No	BSL
Semivolatile Organic Compounds													
120-83-2	2,4-Dichlorophenol	5.1 J	5.1 J	ug/kg	TF4-SB-937-0204	1/42	3.3 - 6.1	5.1	NA	130	NA	No	BSL
95-57-8	2-Chlorophenol	3.6	7.9	ug/kg	TF4-SB-937-0204	6/42	3.3 - 6.5	7.9	NA	150	NA	No	BSL
91-57-6	2-Methylnaphthalene	5.7 J	15 J	ug/kg	TF4-SB-939-0204	6/42	3.3 - 6.1	15	NA	750	NA	No	BSL
95-48-7	2-Methylphenol	6.4	99.8 J	ug/kg	TF4-SB-941-0810-AVG	3/42	3.3 - 610	99.8	NA	1,500	NA	No	BSL
106-44-5	4-Methylphenol	5.52 J	6.1	ug/kg	TF4-SB-937-0204	2/42	3.3 - 6.1	6.1	NA	150	NA	No	BSL
83-32-9	Acenaphthene	4.5	47 J	ug/kg	TF4-SB-939-0204	3/42	3.3 - 6.1	47	NA	22,000	NA	No	BSL
208-96-8	Acenaphthylene	12	76 J	ug/kg	TF4-SB-939-0204	5/42	3.3 - 6.1	76	NA	22,000 [9]	NA	No	BSL
120-12-7	Anthracene	4.55 J	99 J	ug/kg	TF4-SB-934-0204	8/42	3.3 - 6.1	99	NA	360,000	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	3.9	320 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	320	NA	**10**	NA	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	3.3 J	250 J	ug/kg	TF4-SB-934-0204	14/42	3.3 - 6.1	250	NA	**3.5**	240,000	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	4.2 J	610 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	610	NA	**35**	NA	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	4.2	180 J	ug/kg	TF4-SB-939-0204	12/42	3.3 - 6.1	180	NA	120,000 [10]	NA	No	BSL
207-08-9	**Benzo(k)fluoranthene**	4.8	490	ug/kg	TF4-SB-934-0204	13/42	3.3 - 6.1	490	NA	**350**	NA	**Yes**	ASL
117-81-7	Bis(2-ethylhexyl)phthalate	41 J	131 J	ug/kg	TF4-SB-941-0810-AVG	9/42	330 - 480	131	NA	1,100	120,000	No	BSL
85-68-7	Butyl Benzyl Phthalate	59 J	170 J	ug/kg	TF4-SB-941-0810-AVG	3/42	330 - 610	170	NA	510	NA	No	BSL
218-01-9	Chrysene	4.3	440	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	440	NA	1,100	NA	No	BSL
53-70-3	**Dibenzo(a,h)anthracene**	5.6 J	46	ug/kg	TF4-SB-934-0204	6/42	3.3 - 6.1	46	NA	**11**	NA	**Yes**	ASL
84-74-2	di-n-Butyl Phthalate	48 J	120 J	ug/kg	TF4-SB-929-0204-AVG	5/42	330 - 610	120	NA	9,200	NA	No	BSL
206-44-0	Fluoranthene	3.9	310 J	ug/kg	TF4-SB-939-0204	16/42	3.3 - 6.1	310	NA	160,000	NA	No	BSL
86-73-7	Fluorene	3.35	84 J	ug/kg	TF4-SB-939-0204	7/42	3.3 - 6.1	84	NA	27,000	NA	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	3.3 J	140 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	140	NA	**120**	NA	**Yes**	ASL
91-20-3	**Naphthalene**	4.3	13 J	ug/kg	TF4-SB-939-0204	8/42	3.3 - 18	13	NA	**0.47**	800	**Yes**	ASL
85-01-8	Phenanthrene	4.5 J	280 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	280	NA	120,000 [10]	NA	No	BSL
108-95-2	Phenol	4.5 J	39	ug/kg	TF4-SB-937-0204	16/42	3.6 - 6.1	39	NA	6,300	NA	No	BSL
129-00-0	Pyrene	4.9 J	310 J	ug/kg	TF4-SB-939-0204	15/42	3.3 - 6.1	310	NA	120,000	NA	No	BSL
50-32-8	Benzo(a)pyrene Equivalents	15 J	2,290 J	ug/kg	TF4-SB-934-0204	16/42	3.3 - 6.1	2,290	NA	NA	NA	No	BSL
Pesticides/PCBs													
72-54-8	4,4'-DDD	4.6	8.2	ug/kg	TF4-SB-928-0204	2/42	3.3 - 6.2	8.2	NA	66	NA	No	BSL
50-29-3	4,4'-DDT	7.1 J	7.1 J	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	67	NA	No	BSL
11097-69-1	**Aroclor-1254**	100 J	100 J	ug/kg	TF4-SB-942-0204	1/42	33 - 62	100	NA	**8.8**	NA	**Yes**	ASL
1031-07-8	Endosulfan Sulfate	7.1	7.1	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	3,000 [11]	NA	No	BSL
7421-93-4	Endrin Aldehyde	5.7	5.7	ug/kg	TF4-SB-925-0608	1/42	3.3 - 6.2	5.7	NA	440 [12]	NA	No	BSL

TABLE 6-6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals													
7429-90-5	Aluminum	697	17,200	ng/kg	TF4-SB-921-0204	42/42	-	17,200	No	55,000	NA	No	BKG
7440-38-2	**Arsenic**	4.9 J	42.9 J	ng/kg	TF4-SB-932-0607	42/42	-	42.9	Yes	**0.0013**	NA	**Yes**	ASL
7440-39-3	Barium	1.8 J	103	ng/kg	TF4-SB-930-0204	42/42	-	103	Yes	300	[13]	No	BSL
7440-41-7	Beryllium	0.16 J	0.78	ng/kg	TF4-SB-921-0204	42/42	-	0.78	Yes	58	[13]	No	BSL
7440-43-9	Cadmium	0.042 J	1.15	ng/kg	TF4-SB-941-0810-AVG	39/42	0.014 - 0.018	1.15	Yes	1.4	[13]	No	BSL
7440-70-2	Calcium	6 J	1,750 J	ng/kg	TF4-SB-925-0204	30/42	4.5 - 8.1	1,750	No	NA	NA	No	NUT,BKG
7440-47-3	Chromium	4.3 J	24.1	ng/kg	TF4-SB-934-0810	42/42	-	24.1	No	**0.00083** [14]	[13]	No	BKG
7440-48-4	**Cobalt**	5.8 J	41 J	ng/kg	TF4-SB-924-0810-AVG	42/42	-	41	Yes	**0.49**	NA	**Yes**	ASL
7440-50-8	Copper	3.3 J	31.8 J	ng/kg	TF4-SB-941-0810-AVG	42/42	-	31.8	Yes	51	NA	No	BSL
7439-89-6	**Iron**	18,500	76,900	ng/kg	TF4-SB-925-0608	42/42	-	76,900	Yes	**640**	NA	**Yes**	ASL
7439-92-1	**Lead**	3.1 J	30.3 J	ng/kg	TF4-SB-938-0810	42/42	-	30.3	Yes	**14** [15]	[13]	**Yes**	ASL
7439-95-4	Magnesium	136 J	5,120	ng/kg	TF4-SB-925-0204	42/42	-	5,120	No	NA	NA	No	NUT,BKG
7439-96-5	**Manganese**	58.3 J	4,480	ng/kg	TF4-SB-930-0204	42/42	-	4,480	Yes	**57**	NA	**Yes**	ASL
7439-97-6	Mercury	0.00692 J	0.16	ng/kg	TF4-SB-923-0406	18/42	0.0054 - 0.028	0.16	Yes	0.57 [16]	[13]	No	BSL
7440-02-0	**Nickel**	13.4 J	96.9	ng/kg	TF4-SB-943-0810	42/42	-	96.9	Yes	**48**	[13]	**Yes**	ASL
7440-09-7	Potassium	89.5 J	934	ng/kg	TF4-SB-925-0204	42/42	-	934	No	NA	NA	No	NUT,BKG
7782-49-2	**Selenium**	0.62 J	5.3	ng/kg	TF4-SB-936-0810	16/42	0.48 - 7	5.3	Yes	**0.95**	[13]	**Yes**	ASL
7440-22-4	Silver	0.12 J	0.21 J	ng/kg	TF4-SB-936-0810	2/42	0.048 - 0.35	0.21	Yes	1.6	NA	No	BSL
7440-23-5	Sodium	11 J	664 J	ng/kg	TF4-SB-922-0608	34/42	8.4 - 22.6	664	Yes	NA	NA	No	NUT
7440-28-0	Thallium	1.2	11.8	ng/kg	TF4-SB-943-0204	10/42	0.15 - 0.33	11.8	Yes	NA	[13]	No	NTX
7440-62-2	Vanadium	8.5 J	30.2	ng/kg	TF4-SB-921-0204	42/42	-	30.2	Yes	180	NA	No	BSL
7440-66-6	Zinc	35.7 J	193	ng/kg	TF4-SB-943-0810	42/42	-	193	Yes	680	NA	No	BSL
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	368 J	19,100 J	ng/kg	TF4-SB-923-0406	23/23	-	19,100	NA	**870** [17]	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.091 J	2.47 J	ng/kg	TF4-SB-924-0204	15/23	0.132 - 3.95	2.47	NA	870 [17]	NA	No	BSL
35822-46-9	**1,2,3,4,6,7,8-HPCDD**	5.76	292	ng/kg	TF4-SB-923-0406	23/23	-	292	NA	**26** [17]	NA	**Yes**	ASL
67562-39-4	1,2,3,4,6,7,8-HPCDF	0.0503 J	1.02 J	ng/kg	TF4-SB-924-0204	16/23	0.0298 - 1.36	1.02	NA	26 [17]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.0692 J	0.883 J	ng/kg	TF4-SB-923-0406	20/23	0.0428 - 0.0883	0.883	NA	2.6 [17]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.0386 J	0.345 J	ng/kg	TF4-SB-928-0204	11/23	0.0141 - 0.16	0.345	NA	2.6 [17]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.0797 J	2.1 J	ng/kg	TF4-SB-923-0406	21/23	0.0376 - 0.0832	2.1	NA	2.6 [17]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.0442 J	0.221 J	ng/kg	TF4-SB-928-0204	14/23	0.0208 - 0.733	0.221	NA	2.6 [17]	NA	No	BSL
19408-74-3	**1,2,3,7,8,9-HXCDD**	0.0666 J	4.24	ng/kg	TF4-SB-923-0406	20/23	0.0366 - 0.0881	4.24	NA	**2.6** [17]	NA	**Yes**	ASL
72918-21-9	1,2,3,7,8,9-HXCDF	0.0491 J	0.0994 J	ng/kg	TF4-SB-925-0204	3/23	0.0184 - 0.204	0.0994	NA	2.6 [17]	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.158 J	0.224 J	ng/kg	TF4-SB-923-0406	3/23	0.0238 - 0.203	0.224	NA	0.26 [17]	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.135 J	0.135 J	ng/kg	TF4-SB-925-0204	1/23	0.0202 - 0.151	0.135	NA	8.7 [17]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.099 J	0.179 J	ng/kg	TF4-SB-928-0204	5/23	0.0153 - 0.174	0.179	NA	2.6 [17]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.0908 J	0.18 J	ng/kg	TF4-SB-928-0204	2/23	0.0194 - 0.149	0.18	NA	0.87 [17]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.0756 J	0.0756 J	ng/kg	TF4-SB-930-0204	1/23	0.0254 - 0.312	0.0756	NA	0.26	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.177 J	0.343 J	ng/kg	TF4-SB-928-0204	2/23	0.036 - 0.294	0.343	NA	2.6 [17]	NA	No	BSL
- -	2,3,7,8-TCDD	0.358	9.71	ng/kg	TF4-SB-923-0406	23/23	-	9.71	NA	NA	NA	No	NTX
Petroleum Hydrocarbons													
- -	Extractable Petroleum Hydrocarbons	18 J	240	ng/kg	TF4-SB-928-0204	9/30	13 - 58	240	NA	NA	500	No	BSL

TABLE 6-6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Migration from Soil to Groundwater(5)	RIDEM GA Leachability Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Value is for Endosulfan.
12 - Value is for Endrin.
13 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
14 - Value is for hexavalent chromium.
15 - Value is MCL based soil screening level.
16 - Value is for mercuric chloride and other mercury salts.
17 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available
Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

Associated Samples

TF4-SB-920-0204	TF4-SB-928-0204	TF4-SB-936-0204
TF4-SB-920-0810	TF4-SB-928-0810	TF4-SB-936-0810
TF4-SB-921-0204	TF4-SB-929-0204-AVG	TF4-SB-937-0204
TF4-SB-921-0810-AVG	TF4-SB-929-0608	TF4-SB-938-0204-AVG
TF4-SB-922-0204-AVG	TF4-SB-930-0204	TF4-SB-938-0810
TF4-SB-922-0608	TF4-SB-930-0608	TF4-SB-939-0204
TF4-SB-923-0204	TF4-SB-932-0204	TF4-SB-939-0810
TF4-SB-923-0406	TF4-SB-932-0607	TF4-SB-940-0204
TF4-SB-924-0204	TF4-SB-933-0204	TF4-SB-940-0810
TF4-SB-924-0810-AVG	TF4-SB-933-0608	TF4-SB-941-0204
TF4-SB-925-0204	TF4-SB-934-0204	TF4-SB-941-0810-AVG
TF4-SB-925-0608	TF4-SB-934-0810	TF4-SB-942-0204
TF4-SB-926-0204-AVG	TF4-SB-935-0204	TF4-SB-943-0204
TF4-SB-926-0406	TF4-SB-935-0810	TF4-SB-943-0810

TABLE 6-7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Semivolatile Organic Compounds														
105-60-2	Caprolactam	10.5	11	ug/L	TF4-MW-919-0510	2/7	10 - 10	11	NA	1,800 N	NA NA	NA NA	No	BSL
91-20-3	**Naphthalene**	0.19	0.19	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	0.19	NA	**0.14 C**	NA 20	NA RIDEM	**Yes**	ASL
Pesticides/PCBs														
7421-93-4	**Endrin Aldehyde**	6.52 J	6.52 J	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	6.52	NA	**1.1 N[8]**	NA NA	NA NA	**Yes**	ASL
Metals														
7429-90-5	**Aluminum**	60.4 J	253	ug/L	TF4-MW-921-0510	2/7	12 - 83.9	253	NA	3,700 N	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-38-2	**Arsenic**	1.6	6.3	ug/L	TF4-MW-914-0510	4/7	0.236 - 0.236	6.3	NA	**0.045 C**	10 NA	EPA-MCL NA	**Yes**	ASL
7440-39-3	Barium	7.9	40.8	ug/L	TF4-MW-913-0510-AVG	7/7	-	40.8	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
7440-41-7	Beryllium	0.049 J	0.049 J	ug/L	TF4-MW-921-0510	1/7	0.045 - 0.045	0.049	NA	7.3 N	4 4	EPA-MCL RIDEM	No	BSL
7440-43-9	Cadmium	0.234 J	0.234 J	ug/L	TF4-MW-920-0510	1/7	0.054 - 0.19	0.234	NA	1.8 N	5 5	EPA-MCL RIDEM	No	BSL
7440-70-2	Calcium	11,700	28,800	ug/L	TF4-MW-920-0510	7/7	-	28,800	NA	NA	NA NA	NA NA	No	NUT
7440-48-4	**Cobalt**	1.2	12.6	ug/L	TF4-MW-912-0510	7/7	-	12.6	NA	**1.1 N**	NA NA	NA NA	**Yes**	ASL
7440-50-8	Copper	0.428 J	1.1	ug/L	TF4-MW-920-0510, TF4-MW-921-0510	6/7	0.284 - 0.284	1.1	NA	150 N	1,300 NA	EPA-MCL[9] NA	No	BSL
7439-89-6	**Iron**	252	17,100	ug/L	TF4-MW-919-0510	7/7	-	17,100	NA	**2,600 N**	**300** NA	**EPA-SMCL** NA	**Yes**	ASL
7439-92-1	Lead	0.168 J	0.168 J	ug/L	TF4-MW-914-0510	1/7	0.162 - 0.385	0.168	NA	NA	15 15	EPA-MCL[9] RIDEM	No	BSL
7439-95-4	Magnesium	8,580	17,000	ug/L	TF4-MW-913-0510-AVG	7/7	-	17,000	NA	NA	NA NA	NA NA	No	NUT
7439-96-5	**Manganese**	321	5,030	ug/L	TF4-MW-920-0510	7/7	-	5,030	NA	**88 N**	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-02-0	Nickel	9.2	67.6	ug/L	TF4-MW-921-0510	7/7	-	67.6	NA	73 N	NA 100	NA RIDEM	No	BSL
7440-09-7	Potassium	539 J	3,300	ug/L	TF4-MW-920-0510	7/7	-	3,300	NA	NA	NA NA	NA NA	No	NUT
7440-23-5	Sodium	10,300	29,400	ug/L	TF4-MW-920-0510	7/7	-	29,400	NA	NA	NA NA	NA NA	No	NUT
7440-66-6	Zinc	36.8 J	143	ug/L	TF4-MW-921-0510	2/7	29.4 - 51.3	143	NA	1,100 N	5,000 NA	EPA-SMCL NA	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), November 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - Value is for total PCBs.
8 - Value is for Endrin.
9 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-MW-912-0510
TF4-MW-913-0510-AVG
TF4-MW-914-0510
TF4-MW-919-0510
TF4-MW-920-0510
TF4-MW-921-0510
TF4-MW-922-0510

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - VAPOR INTRUSION (GROUNDWATER TO INDOOR AIR) - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Is Chemical Sufficiently Volatile and Toxic?[5]	Vapor Intrusion Criteria[6]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Semivolatile Organic Compounds															
105-60-2	Caprolactam	10.5	11	ug/L	TF4-MW-919-0510	2/7	10 - 10	11	NA	No	NA	NA	NA	No	NTX
91-20-3	Naphthalene	0.19	0.19	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	0.19	NA	Yes	4 C	NA	NA	No	BSL
Pesticides/PCBs															
7421-93-4	Endrin Aldehyde	6.52 J	6.52 J	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	6.52	NA	No	NA	NA	NA	No	NTX
Metals															
7429-90-5	Aluminum	60.4 J	253	ug/L	TF4-MW-921-0510	2/7	12 - 83.9	253	NA	No	NA	NA	NA	No	NTX
7440-38-2	Arsenic	1.6	6.3	ug/L	TF4-MW-914-0510	4/7	0.236 - 0.236	6.3	NA	No	NA	NA	NA	No	NTX
7440-39-3	Barium	7.9	40.8	ug/L	TF4-MW-913-0510-AVG	7/7	-	40.8	NA	No	NA	NA	NA	No	NTX
7440-41-7	Beryllium	0.049 J	0.049 J	ug/L	TF4-MW-921-0510	1/7	0.045 - 0.045	0.049	NA	No	NA	NA	NA	No	NTX
7440-43-9	Cadmium	0.234 J	0.234 J	ug/L	TF4-MW-920-0510	1/7	0.054 - 0.19	0.234	NA	No	NA	NA	NA	No	NTX
7440-70-2	Calcium	11,700	28,800	ug/L	TF4-MW-920-0510	7/7	-	28,800	NA	No	NA	NA	NA	No	NUT
7440-48-4	Cobalt	1.2	12.6	ug/L	TF4-MW-912-0510	7/7	-	12.6	NA	No	NA	NA	NA	No	NTX
7440-50-8	Copper	0.428 J	1.1	ug/L	TF4-MW-920-0510, TF4-MW-921-0510	6/7	0.284 - 0.284	1.1	NA	No	NA	NA	NA	No	NTX
7439-89-6	Iron	252	17,100	ug/L	TF4-MW-919-0510	7/7	-	17,100	NA	No	NA	NA	NA	No	NTX
7439-92-1	Lead	0.168 J	0.168 J	ug/L	TF4-MW-914-0510	1/7	0.162 - 0.385	0.168	NA	No	NA	NA	NA	No	NTX
7439-95-4	Magnesium	8,580	17,000	ug/L	TF4-MW-913-0510-AVG	7/7	-	17,000	NA	No	NA	NA	NA	No	NUT
7439-96-5	Manganese	321	5,030	ug/L	TF4-MW-920-0510	7/7	-	5,030	NA	No	NA	NA	NA	No	NTX
7440-02-0	Nickel	9.2	67.6	ug/L	TF4-MW-921-0510	7/7	-	67.6	NA	No	NA	NA	NA	No	NTX
7440-09-7	Potassium	539 J	3,300	ug/L	TF4-MW-920-0510	7/7	-	3,300	NA	No	NA	NA	NA	No	NUT
7440-23-5	Sodium	10,300	29,400	ug/L	TF4-MW-920-0510	7/7	-	29,400	NA	No	NA	NA	NA	No	NUT
7440-66-6	Zinc	36.8 J	143	ug/L	TF4-MW-921-0510	2/7	29.4 - 51.3	143	NA	No	NA	NA	NA	No	NTX

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - Appendix A of DoD Vapor Intrusion Handbook, January 2009.
6 - Calculated using methodology presented in Appendix D of USEPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002. EPA530-F-02-052. Values correspond to a target cancer risk level of 1E-6 or HI =0.1 and an attenuation factor of 0.001.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-MW-912-0510
TF4-MW-913-0510-AVG
TF4-MW-914-0510
TF4-MW-919-0510
TF4-MW-920-0510
TF4-MW-921-0510
TF4-MW-922-0510

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Semivolatiles Organic Compounds														
56-55-3	**Benzo(a)anthracene**	0.1 J	0.17 J	ug/L	TF4-SW-903-0310	2/10	0.1 - 0.15	0.17	NA	**0.029 C**	NA NA	NA NA	**Yes**	ASL
218-01-9	Chrysene	0.11	0.11	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.1	0.11	NA	2.9 C	NA NA	NA NA	No	BSL
206-44-0	Fluoranthene	0.16	0.16	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.14	0.16	NA	150 N	NA NA	NA NA	No	BSL
85-01-8	Phenanthrene	0.12	0.12	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.18	0.12	NA	110 N[7]	NA NA	NA NA	No	BSL
108-95-2	Phenol	0.1	0.1	ug/L	TF4-SW-902-0310-AVG	1/10	0.1 - 0.1	0.1	NA	1,100 N	NA NA	NA NA	No	BSL
129-00-0	Pyrene	0.23	0.23	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.13	0.23	NA	110 N	NA NA	NA NA	No	BSL
- -	**Benzo(a)pyrene Equivalents**	0.4 J	0.53 J	ug/L	TF4-SW-903-0310	2/10	0.1 - 0.107	0.53	NA	**0.0029 C**	**0.2** NA	**EPA-MCL** NA	**Yes**	ASL
Metals														
7440-38-2	**Arsenic**	0.19 J	0.473 J	ug/L	TF4-SW-901-0310	4/10	0.236 - 0.236	0.473	NA	**0.045 C**	10 NA	EPA-MCL NA	**Yes**	ASL
7440-39-3	Barium	5.2	10.4	ug/L	TF4-SW-906-0310	10/10	-	10.4	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
7440-70-2	Calcium	10,400	15,800	ug/L	TF4-SW-903-0310	10/10	-	15,800	NA	NA	NA NA	NA NA	No	NUT
7440-48-4	Cobalt	0.297 J	0.931 J	ug/L	TF4-SW-907-0310	10/10	-	0.931	NA	1.1 N	NA NA	NA NA	No	BSL
7440-50-8	Copper	0.807 J	3.7	ug/L	TF4-SW-901-0310	10/10	-	3.7	NA	150 N	1,300 NA	EPA-MCL[8] NA	No	BSL
7439-89-6	**Iron**	270	545	ug/L	TF4-SW-905-0310	10/10	-	545	NA	2,600 N	**300** NA	**EPA-SMCL** NA	**Yes**	ASL
7439-92-1	Lead	0.191 J	0.928 J	ug/L	TF4-SW-907-0310	8/10	0.162 - 0.162	0.928	NA	NA	15 15	EPA-MCL[8] RIDEM	No	BSL
7439-95-4	Magnesium	3,480	16,900	ug/L	TF4-SW-903-0310	10/10	-	16,900	NA	NA	NA NA	NA NA	No	NUT
7440-02-0	Nickel	1.4	3.5	ug/L	TF4-SW-907-0310	10/10	-	3.5	NA	73 N	NA 100	NA RIDEM	No	BSL
7440-09-7	Potassium	1,440	3,070	ug/L	TF4-SW-908-0310	10/10	-	3,070	NA	NA	NA NA	NA NA	No	NUT
7782-49-2	Selenium	0.154 J	0.231 J	ug/L	TF4-SW-908-0310	9/10	0.123 - 0.123	0.231	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
7440-23-5	Sodium	23,400	30,600	ug/L	TF4-SW-908-0310	10/10	-	30,600	NA	NA	NA NA	NA NA	No	NUT

TABLE 6-9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	Screening Toxicity Value(5)	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for surface water.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), November 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - Value is for pyrene.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-SW-901-0310
TF4-SW-902-0310-AVG
TF4-SW-903-0310
TF4-SW-904-0310
TF4-SW-905-0310
TF4-SW-906-0310
TF4-SW-907-0310
TF4-SW-908-0310
TF4-SW-911-0310-AVG
TF4-SW-912-0310

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENT - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
67-64-1	Acetone	16 J	240 J	ug/kg	TF4-SD-907-0006	9/12	4.3 - 11	240	NA	6,100,000 N	7,800,000	No	BSL
75-15-0	Carbon Disulfide	1.9 J	15 J	ug/kg	TF4-SD-912-0006	2/12	4.3 - 11	15	NA	82,000 N	NA	No	BSL
Semivolatile Organic Compounds													
91-57-6	2-Methylnaphthalene	2.68 J	10	ug/kg	TF4-SD-903-0006	4/12	3.3 - 13	10	NA	31,000 N	123,000	No	BSL
95-48-7	2-Methylphenol	10 J	12 J	ug/kg	TF4-SD-912-0006	2/12	3.3 - 13	12	NA	310,000 N	NA	No	BSL
106-44-5	4-Methylphenol	3.68	16	ug/kg	TF4-SD-904-0006	5/12	3.3 - 13	16	NA	31,000 N	NA	No	BSL
83-32-9	Acenaphthene	5.82 J	19	ug/kg	TF4-SD-905-0006	4/12	3.3 - 13	19	NA	340,000 N	43,000	No	BSL
208-96-8	Acenaphthylene	4.5	28	ug/kg	TF4-SD-903-0006	8/12	3.3 - 13	28	NA	340,000 N[8]	23,000	No	BSL
120-12-7	Anthracene	6.1	120	ug/kg	TF4-SD-903-0006	12/12	-	120	NA	1,700,000 N	35,000	No	BSL
100-52-7	Benzaldehyde	64 J	182 J	ug/kg	TF4-SD-911-0006-AVG	4/12	330 - 1300	182	NA	780,000 N	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	26 J	200 J	ug/kg	TF4-SD-903-0006	12/12	-	200	NA	**150 C**	900	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	23.5 J	210	ug/kg	TF4-SD-903-0006	12/12	-	210	NA	**15 C**	400	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	25 J	240 J	ug/kg	TF4-SD-903-0006	12/12	-	240	NA	**150 C**	900	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	19.5 J	150	ug/kg	TF4-SD-903-0006	12/12	-	150	NA	170,000 N[9]	800	No	BSL
207-08-9	Benzo(k)fluoranthene	33 J	200	ug/kg	TF4-SD-903-0006, TF4-SD-907-0006	12/12	-	200	NA	1,500 C	900	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	35 J	220 J	ug/kg	TF4-SD-907-0006	8/12	330 - 1300	220	NA	35,000 C	46,000	No	BSL
218-01-9	Chrysene	35.5 J	290 J	ug/kg	TF4-SD-903-0006	12/12	-	290	NA	15,000 C	400	No	BSL
53-70-3	**Dibenzo(a,h)anthracene**	6.6 J	53	ug/kg	TF4-SD-903-0006	12/12	-	53	NA	**15 C**	400	**Yes**	ASL
206-44-0	Fluoranthene	49.5 J	330	ug/kg	TF4-SD-903-0006	12/12	-	330	NA	230,000 N	20,000	No	BSL
86-73-7	Fluorene	3.9	24	ug/kg	TF4-SD-905-0006	8/12	3.3 - 13	24	NA	230,000 N	28,000	No	BSL
193-39-5	Indeno(1,2,3-cd)pyrene	16.5 J	120	ug/kg	TF4-SD-903-0006	12/12	-	120	NA	150 C	900	No	BSL
91-20-3	Naphthalene	4.1	6	ug/kg	TF4-SD-903-0006	8/12	3.3 - 13	6	NA	3,600 C	54,000	No	BSL
85-01-8	Phenanthrene	27 J	190	ug/kg	TF4-SD-905-0006	12/12	-	190	NA	170,000 N[9]	40,000	No	BSL
108-95-2	Phenol	3.52	15	ug/kg	TF4-SD-905-0006	3/12	3.3 - 13	15	NA	1,800,000 N	6,000,000	No	BSL
129-00-0	Pyrene	41.5	260	ug/kg	TF4-SD-903-0006	12/12	-	260	NA	170,000 N	13,000	No	BSL
50-32-8	**Benzo(a)pyrene Equivalents**	168 J	1,310 J	ug/kg	TF4-SD-903-0006	12/12	-	1,310	NA	**15 C**	NA	**Yes**	ASL
Pesticides/PCBs													
72-54-8	4,4'-DDD	3.4	3.4	ug/kg	TF4-SD-910-0006	1/12	3.3 - 3.3	3.4	NA	2,000 C	NA	No	BSL
72-55-9	4,4'-DDE	15 J	15 J	ug/kg	TF4-SD-910-0006	1/12	3.3 - 3.3	15	NA	1,400 C	NA	No	BSL
50-29-3	4,4'-DDT	6.7	6.7	ug/kg	TF4-SD-910-0006	1/12	3.3 - 3.3	6.7	NA	1,700 C	NA	No	BSL
7421-93-4	Endrin Aldehyde	2.72	2.72	ug/kg	TF4-SD-911-0006-AVG	1/12	3.3 - 3.3	2.72	NA	1,800 N[10]	NA	No	BSL
53494-70-5	Endrin Ketone	20.8 J	20.8 J	ug/kg	TF4-SD-902-0006-AVG	1/12	3.3 - 3.3	20.8	NA	1,800 N[10]	NA	No	BSL
Metals													
7429-90-5	**Aluminum**	4,730	12,900	mg/kg	TF4-SD-910-0006	12/12	-	12,900	NA	**7,700 N**	NA	**Yes**	ASL
7440-38-2	**Arsenic**	9.2	46.6 J	mg/kg	TF4-SD-906-0006	12/12	-	46.6	NA	**0.39 C**	**7**	**Yes**	ASL
7440-39-3	Barium	16.6 J	64.7 J	mg/kg	TF4-SD-906-0006	12/12	-	64.7	NA	1,500 N	5,500	No	BSL
7440-41-7	**Beryllium**	0.21 J	0.68 J	mg/kg	TF4-SD-910-0006	12/12	-	0.68	NA	16 N	**0.4**	**Yes**	ASL
7440-43-9	Cadmium	0.13 J	1.2	mg/kg	TF4-SD-906-0006	12/12	-	1.2	NA	7 N	39	No	BSL
7440-70-2	Calcium	494 J	1,220 J	mg/kg	TF4-SD-911-0006-AVG	12/12	-	1,220	NA	NA	NA	No	NUT
7440-47-3	**Chromium**	7.3 J	29.2 J	mg/kg	TF4-SD-902-0006-AVG	12/12	-	29.2	NA	**0.29 C[11]**	390 [11]	**Yes**	ASL
7440-48-4	**Cobalt**	9.4	76.2	mg/kg	TF4-SD-906-0006	12/12	-	76.2	NA	**2.3 N**	NA	**Yes**	ASL

TABLE 6-10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENT - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals (Continued)													
7440-50-8	Copper	9.8	24.9	mg/kg	TF4-SD-910-0006	12/12	-	24.9	NA	310 N	3,100	No	BSL
7439-89-6	**Iron**	21,700	145,000	mg/kg	TF4-SD-906-0006	12/12	-	145,000	NA	**5,500 N**	NA	**Yes**	ASL
7439-92-1	Lead	6.3 J	96.2 J	mg/kg	TF4-SD-902-0006-AVG	12/12	-	96.2	NA	400	150	No	BSL
7439-95-4	Magnesium	1,370	4,160	mg/kg	TF4-SD-906-0006	12/12	-	4,160	NA	NA	NA	No	NUT
7439-96-5	**Manganese**	171	3,440	mg/kg	TF4-SD-903-0006	12/12	-	3,440	NA	**180 N**	**390**	**Yes**	ASL
7439-97-6	Mercury	0.019 J	0.17	mg/kg	TF4-SD-909-0006	12/12	-	0.17	NA	2.3 N[12]	23	No	BSL
7440-02-0	Nickel	16.3	132	mg/kg	TF4-SD-906-0006	12/12	-	132	NA	150 N	1,000	No	BSL
7440-09-7	Potassium	155 J	583	mg/kg	TF4-SD-910-0006	12/12	-	583	NA	NA	NA	No	NUT
7440-22-4	Silver	0.12 J	0.12 J	mg/kg	TF4-SD-903-0006	1/12	0.068 - 0.22	0.12	NA	39 N	200	No	BSL
7440-23-5	Sodium	23.9 J	558	mg/kg	TF4-SD-911-0006-AVG	12/12	-	558	NA	NA	NA	No	NUT
7440-28-0	**Thallium**	0.45 J	11.5	mg/kg	TF4-SD-903-0006	10/12	0.29 - 0.38	11.5	NA	NA	**5.5**	**Yes**	ASL
7440-62-2	Vanadium	9.6	27.2	mg/kg	TF4-SD-910-0006	12/12	-	27.2	NA	39 N	550	No	BSL
7440-66-6	Zinc	59	199	mg/kg	TF4-SD-906-0006	12/12	-	199	NA	2,300 N	6,000	No	BSL
Dioxins/Furans													
3268-87-9	1,2,3,4,6,7,8,9-OCDD	502 J	8,750 J	ng/kg	TF4-SD-910-0006	12/12	-	8,750	NA	15,000 C[13]	NA	No	BSL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	3.63 J	169 J	ng/kg	TF4-SD-901-0006	10/12	4.52 - 4.97	169	NA	15,000 C[13]	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	14.6 J	203 J	ng/kg	TF4-SD-901-0006	12/12	-	203	NA	450 C[13]	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	1.62 J	24.7 J	ng/kg	TF4-SD-901-0006	11/12	12.6 - 12.6	24.7	NA	450 C[13]	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.941 J	2.65 J	ng/kg	TF4-SD-901-0006	5/12	0.132 - 0.383	2.65	NA	450 C[13]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.236 J	1.81 J	ng/kg	TF4-SD-911-0006-AVG	12/12	-	1.81	NA	45 C[13]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.206 J	2.15 J	ng/kg	TF4-SD-910-0006	12/12	-	2.15	NA	45 C[13]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.587 J	4.7	ng/kg	TF4-SD-901-0006	12/12	-	4.7	NA	45 C[13]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.129 J	1.69 J	ng/kg	TF4-SD-910-0006	12/12	-	1.69	NA	45 C[13]	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.475 J	4.8 J	ng/kg	TF4-SD-911-0006-AVG	9/12	0.572 - 0.926	4.8	NA	45 C[13]	NA	No	BSL
72918-21-9	1,2,3,7,8,9-HXCDF	0.0791 J	0.138 J	ng/kg	TF4-SD-911-0006-AVG	4/12	0.0336 - 0.332	0.138	NA	45 C[13]	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.154 J	0.953 J	ng/kg	TF4-SD-911-0006-AVG	10/12	0.0435 - 0.0694	0.953	NA	4.5 C[13]	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.0762 J	0.853 J	ng/kg	TF4-SD-910-0006	11/12	0.0309 - 0.0309	0.853	NA	150 C[13]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.116 J	1.52 J	ng/kg	TF4-SD-910-0006	12/12	-	1.52	NA	45 C[13]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.0426 J	0.883 J	ng/kg	TF4-SD-910-0006	12/12	-	0.883	NA	15 C[13]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.0258 J	0.145 J	ng/kg	TF4-SD-910-0006	4/12	0.0234 - 0.0465	0.145	NA	4.5 C	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.202 J	1.56 J	ng/kg	TF4-SD-910-0006	9/12	0.0581 - 0.171	1.56	NA	45 C[13]	NA	No	BSL
- -	**2,3,7,8-TCDD Equivalents**	0.622	7.06	ng/kg	TF4-SD-910-0006	12/12	-	7.06	NA	**4.5 C**	NA	**Yes**	ASL

TABLE 6-10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENT - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	USEPA RSL Residential Soil(5)	RIDEM Residential Direct Exposure Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for sediment.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Value is for Endrin.
11 - Value is for hexavalent chromium.
12 - Value is for mercuric chloride and other mercury salts.
13 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-SD-901-0006
TF4-SD-902-0006-AVG
TF4-SD-903-0006
TF4-SD-904-0006
TF4-SD-905-0006
TF4-SD-906-0006
TF4-SD-907-0006
TF4-SD-908-0006
TF4-SD-909-0006
TF4-SD-910-0006
TF4-SD-911-0006-AVG
TF4-SD-912-0006

Definitions:
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
67-64-1	Acetone	6 J	65 J	ug/kg	TF5-SB-968-0001	7/11	4.3 - 7.4	65	NA	6,100,000 N	7,800,000	No	BSL
98-82-8	Isopropylbenzene	6.2	6.2	ug/kg	TF5-SB-969-0001	1/11	4.3 - 7.4	6.2	NA	210,000 N	27,000	No	BSL
108-88-3	Toluene	1.8 J	1.8 J	ug/kg	TF5-SB-968-0001	1/11	4.3 - 7.4	1.8	NA	500,000 N	190,000	No	BSL
Semivolatile Organic Compounds													
83-32-9	Acenaphthene	4.2 J	7.7	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	7.7	NA	340,000 N	43,000	No	BSL
208-96-8	Acenaphthylene	7.6	26 J	ug/kg	TF5-SB-970-0001	4/11	3.7 - 4.9	26	NA	340,000 N[8]	23,000	No	BSL
120-12-7	Anthracene	4.5	27	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	27	NA	1,700,000 N	35,000	No	BSL
100-52-7	Benzaldehyde	73 J	73 J	ug/kg	TF5-SB-975-0001	1/11	370 - 490	73	NA	780,000 N	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	5.9	230	ug/kg	TF5-SB-967-0001	11/11	-	230	NA	**150 C**	900	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	6.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	**15 C**	400	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	10 J	530 J	ug/kg	TF5-SB-967-0001	11/11	-	530	NA	**150 C**	900	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	4.4	270	ug/kg	TF5-SB-967-0001	11/11	-	270	NA	170,000 N[9]	800	No	BSL
207-08-9	Benzo(k)fluoranthene	4.6 J	200 J	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	1,500 C	900	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	58 J	58 J	ug/kg	TF5-SB-970-0001	1/11	370 - 490	58	NA	35,000 C	46,000	No	BSL
218-01-9	Chrysene	8.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	15,000 C	400	No	BSL
53-70-3	**Dibenzo(a,h)anthracene**	4.3 J	57 J	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	57	NA	**15 C**	400	**Yes**	ASL
206-44-0	Fluoranthene	13	600	ug/kg	TF5-SB-967-0001	11/11	-	600	NA	230,000 N	20,000	No	BSL
86-73-7	Fluorene	5.5 J	11	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	11	NA	230,000 N	28,000	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	4 J	240 J	ug/kg	TF5-SB-967-0001	11/11	-	240	NA	**150 C**	900	**Yes**	ASL
85-01-8	Phenanthrene	4.4	200	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	170,000 N[9]	40,000	No	BSL
129-00-0	Pyrene	11	430	ug/kg	TF5-SB-967-0001	11/11	-	430	NA	170,000 N	13,000	No	BSL
50-32-8	**Benzo(a)pyrene Equivalents**	41.6 J	1,860 J	ug/kg	TF5-SB-967-0001	11/11	-	1,860	NA	**15 C**	NA	**Yes**	ASL
Pesticides/PCBs													
72-54-8	4,4'-DDD	5.1	5.1	ug/kg	TF5-SB-967-0001	1/11	3.8 - 4.8	5.1	NA	2,000 C	NA	No	BSL
72-55-9	4,4'-DDE	5.5	6.6	ug/kg	TF5-SB-971-0001	2/11	3.8 - 4.8	6.6	NA	1,400 C	NA	No	BSL
50-29-3	4,4'-DDT	5.6 J	5.6 J	ug/kg	TF5-SB-971-0001	1/11	3.8 - 4.8	5.6	NA	1,700 C	NA	No	BSL
11097-69-1	**Aroclor-1254**	39	39	ug/kg	TF5-SB-973-0001	1/11	38 - 48	39	NA	**11 N[10]**	NA	**Yes**	ASL
Metals													
7429-90-5	Aluminum	5,460	9,740	mg/kg	TF5-SB-969-0001	11/11	-	9,740	No	**7,700 N**	NA	No	BKG
7440-38-2	**Arsenic**	4.3 J	43.7	mg/kg	TF5-SB-972-0001	11/11	-	43.7	Yes	**0.39 C**	**7**	**Yes**	ASL
7440-39-3	Barium	9.5 J	23.7	mg/kg	TF5-SB-967-0001	11/11	-	23.7	No	1,500 N	5,500	No	BSL,BKG
7440-41-7	**Beryllium**	0.33 J	0.55 J	mg/kg	TF5-SB-975-0001	11/11	-	0.55	Yes	16 N	**0.4**	**Yes**	ASL
7440-43-9	Cadmium	0.1 J	0.33	mg/kg	TF5-SB-974-0001	10/11	0.012 - 0.012	0.33	Yes	7 N	39	No	BSL
7440-70-2	Calcium	166 J	1,710 J	mg/kg	TF5-SB-970-0001	11/11	-	1,710	Yes	NA	NA	No	NUT
7440-47-3	Chromium	5.6	12.8	mg/kg	TF5-SB-969-0001	11/11	-	12.8	No	**0.29 C[11]**	390 [12]	No	BKG
7440-48-4	**Cobalt**	2.2 J	13.2 J	mg/kg	TF5-SB-969-0001	11/11	-	13.2	Yes	**2.3 N**	NA	**Yes**	ASL
7440-50-8	Copper	7.5	24.2	mg/kg	TF5-SB-967-0001	11/11	-	24.2	Yes	310 N	3,100	No	BSL
7439-89-6	**Iron**	11,500	33,700	mg/kg	TF5-SB-969-0001	11/11	-	33,700	Yes	**5,500 N**	NA	**Yes**	ASL
7439-92-1	Lead	9.3 J	33.3 J	mg/kg	TF5-SB-968-0001	11/11	-	33.3	Yes	400	150	No	BSL
7439-95-4	Magnesium	824 J	2,320 J	mg/kg	TF5-SB-969-0001	11/11	-	2,320	Yes	NA	NA	No	NUT
7439-96-5	**Manganese**	95.8 J	462	mg/kg	TF5-SB-974-0001	11/11	-	462	Yes	**180 N**	**390**	**Yes**	ASL
7439-97-6	Mercury	0.019 J	0.12	mg/kg	TF5-SB-968-0001	2/11	0.025 - 0.091	0.12	Yes	2.3 N[12]	23	No	BSL
7440-02-0	Nickel	6.8 J	22.6	mg/kg	TF5-SB-974-0001	11/11	-	22.6	Yes	150 N	1,000	No	BSL
7440-09-7	Potassium	142 J	388 J	mg/kg	TF5-SB-966-0001	11/11	-	388	Yes	NA	NA	No	NUT

TABLE 6-11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals (Continued)													
7782-49-2	Selenium	2.9 J	4.2	mg/kg	TF5-SB-974-0001	6/11	2.1 - 3.5	4.2	Yes	39 N	390	No	BSL
7440-22-4	Silver	0.095 J	0.21 J	mg/kg	TF5-SB-968-0001, TF5-SB-972-0001, TF5-SB-974-0001	8/11	0.1 - 0.22	0.21	Yes	39 N	200	No	BSL
7440-23-5	Sodium	19.3 J	53.9 J	mg/kg	TF5-SB-966-0001	6/11	22.7 - 29.2	53.9	Yes	NA	NA	No	NUT
7440-28-0	Thallium	0.65 J	2.5	mg/kg	TF5-SB-973-0001	11/11	-	2.5	Yes	NA	5.5	No	BSL
7440-62-2	Vanadium	10.9 J	24 J	mg/kg	TF5-SB-968-0001	11/11	-	24	No	39 N	550	No	BSL,BKG
7440-66-6	Zinc	18.4 J	69.5	mg/kg	TF5-SB-967-0001	11/11	-	69.5	Yes	2,300 N	6,000	No	BSL
Dioxins/Furans													
3268-87-9	1,2,3,4,6,7,8,9-OCDD	1,930 J	9,650 J	ng/kg	TF5-SB-974-0001	11/11	-	9,650	NA	15,000 C[13]	NA	No	BSL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	1.27 J	32	ng/kg	TF5-SB-970-0001	11/11	-	32	NA	15,000 C[13]	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	26.2	141	ng/kg	TF5-SB-970-0001	11/11	-	141	NA	450 C[13]	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	4.37	12	ng/kg	TF5-SB-970-0001	5/11	0.734 - 1.8	12	NA	450 C[13]	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.111 J	0.86 J	ng/kg	TF5-SB-970-0001	6/11	0.0736 - 0.188	0.86	NA	450 C[13]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.2 J	1.62 J	ng/kg	TF5-SB-975-0001	10/11	0.194 - 0.194	1.62	NA	45 C[13]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.159 J	3.09 J	ng/kg	TF5-SB-975-0001	11/11	-	3.09	NA	45 C[13]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.478 J	3.63	ng/kg	TF5-SB-970-0001	11/11	-	3.63	NA	45 C[13]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.0997 J	1.01 J	ng/kg	TF5-SB-975-0001	10/11	0.137 - 0.137	1.01	NA	45 C[13]	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.411 J	3.64	ng/kg	TF5-SB-975-0001	11/11	-	3.64	NA	45 C[13]	NA	No	BSL
72918-21-9	1,2,3,7,8,9-HXCDF	0.07 J	0.07 J	ng/kg	TF5-SB-974-0001	1/11	0.0856 - 0.184	0.07	NA	45 C[13]	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.245 J	0.813 J	ng/kg	TF5-SB-975-0001	8/11	0.0881 - 0.198	0.813	NA	4.5 C[13]	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.0955 J	0.717 J	ng/kg	TF5-SB-975-0001	7/11	0.0865 - 0.155	0.717	NA	150 C[13]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.143 J	1.35 J	ng/kg	TF5-SB-975-0001	9/11	0.079 - 0.157	1.35	NA	45 C[13]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.233 J	0.978 J	ng/kg	TF5-SB-975-0001	5/11	0.082 - 0.154	0.978	NA	15 C[13]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.107 J	0.107 J	ng/kg	TF5-SB-974-0001	1/11	0.0963 - 0.236	0.107	NA	4.5 C	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.346 J	0.842 J	ng/kg	TF5-SB-975-0001	6/11	0.0942 - 0.277	0.842	NA	45 C[13]	NA	No	BSL
- -	**2,3,7,8-TCDD Equivalents**	1.18	6.04	ng/kg	TF5-SB-975-0001	11/11	-	6.04	NA	**4.5 C**	NA	**Yes**	ASL
Petroleum Hydrocarbons													
- -	Extractable Petroleum Hydrocarbons	16 J	23 J	mg/kg	TF5-SB-966-0001	3/3	-	23	NA	NA	500	No	BSL

TABLE 6-11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	USEPA RSL Residential Soil(5)	RIDEM Residential Direct Exposure Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Ten percent of noncarcinogenic screening level is less then the carcinogenic screening level, therefore the noncarcinogenic value is presented.
11 - Value is for hexavalent chromium.
12 - Value is for mercuric chloride and other mercury salts.
13 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SB-966-0001
TF5-SB-967-0001
TF5-SB-968-0001
TF5-SB-969-0001
TF5-SB-970-0001
TF5-SB-971-0001
TF5-SB-972-0001
TF5-SB-973-0001
TF5-SB-974-0001
TF5-SB-975-0001
TF5-SB-976-0001

Definitions:
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
67-64-1	Acetone	6 J	65 J	ug/kg	TF5-SB-968-0001	7/11	4.3 - 7.4	65	NA	4,500	NA	No	BSL
98-82-8	Isopropylbenzene	6.2	6.2	ug/kg	TF5-SB-969-0001	1/11	4.3 - 7.4	6.2	NA	1,100	NA	No	BSL
108-88-3	Toluene	1.8 J	1.8 J	ug/kg	TF5-SB-968-0001	1/11	4.3 - 7.4	1.8	NA	1,600	32,000	No	BSL
Semivolatile Organic Compounds													
83-32-9	Acenaphthene	4.2 J	7.7	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	7.7	NA	22,000	NA	No	BSL
208-96-8	Acenaphthylene	7.6	26 J	ug/kg	TF5-SB-970-0001	4/11	3.7 - 4.9	26	NA	22,000 [8]	NA	No	BSL
120-12-7	Anthracene	4.5	27	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	27	NA	360,000	NA	No	BSL
100-52-7	Benzaldehyde	73 J	73 J	ug/kg	TF5-SB-975-0001	1/11	370 - 490	73	NA	810	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	5.9	230	ug/kg	TF5-SB-967-0001	11/11	-	230	NA	**10**	NA	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	6.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	**3.5**	240,000	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	10 J	530 J	ug/kg	TF5-SB-967-0001	11/11	-	530	NA	**35**	NA	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	4.4	270	ug/kg	TF5-SB-967-0001	11/11	-	270	NA	120,000 [9]	NA	No	BSL
207-08-9	Benzo(k)fluoranthene	4.6 J	200 J	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	350	NA	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	58 J	58 J	ug/kg	TF5-SB-970-0001	1/11	370 - 490	58	NA	1,100	120,000	No	BSL
218-01-9	Chrysene	8.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	1,100	NA	No	BSL
53-70-3	**Dibenzo(a,h)anthracene**	4.3 J	57 J	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	57	NA	**11**	NA	**Yes**	ASL
206-44-0	Fluoranthene	13	600	ug/kg	TF5-SB-967-0001	11/11	-	600	NA	160,000	NA	No	BSL
86-73-7	Fluorene	5.5 J	11	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	11	NA	27,000	NA	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	4 J	240 J	ug/kg	TF5-SB-967-0001	11/11	-	240	NA	**120**	NA	**Yes**	ASL
85-01-8	Phenanthrene	4.4	200	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	120,000 [9]	NA	No	BSL
129-00-0	Pyrene	11	430	ug/kg	TF5-SB-967-0001	11/11	-	430	NA	120,000	NA	No	BSL
50-32-8	Benzo(a)pyrene Equivalents	41.6 J	1,860 J	ug/kg	TF5-SB-967-0001	11/11	-	1,860	NA	NA	NA	No	NTX
Pesticides/PCBs													
72-54-8	4,4'-DDD	5.1	5.1	ug/kg	TF5-SB-967-0001	1/11	3.8 - 4.8	5.1	NA	66	NA	No	BSL
72-55-9	4,4'-DDE	5.5	6.6	ug/kg	TF5-SB-971-0001	2/11	3.8 - 4.8	6.6	NA	47	NA	No	BSL
50-29-3	4,4'-DDT	5.6 J	5.6 J	ug/kg	TF5-SB-971-0001	1/11	3.8 - 4.8	5.6	NA	67	NA	No	BSL
11097-69-1	**Aroclor-1254**	39	39	ug/kg	TF5-SB-973-0001	1/11	38 - 48	39	NA	**8.8**	NA	**Yes**	ASL
Metals													
7429-90-5	Aluminum	5,460	9,740	mg/kg	TF5-SB-969-0001	11/11	-	9,740	No	55,000	NA	No	BSL,BKG
7440-38-2	**Arsenic**	4.3 J	43.7	mg/kg	TF5-SB-972-0001	11/11	-	43.7	Yes	**0.0013**	NA	**Yes**	ASL
7440-39-3	Barium	9.5 J	23.7	mg/kg	TF5-SB-967-0001	11/11	-	23.7	No	300	[10]	No	BSL,BKG
7440-41-7	Beryllium	0.33 J	0.55 J	mg/kg	TF5-SB-975-0001	11/11	-	0.55	Yes	58	[10]	No	BSL
7440-43-9	Cadmium	0.1 J	0.33	mg/kg	TF5-SB-974-0001	10/11	0.012 - 0.012	0.33	Yes	1.4	[10]	No	BSL
7440-70-2	Calcium	166 J	1,710 J	mg/kg	TF5-SB-970-0001	11/11	-	1,710	Yes	NA	NA	No	NUT
7440-47-3	Chromium	5.6	12.8	mg/kg	TF5-SB-969-0001	11/11	-	12.8	No	**0.00083** [11]	[10]	No	BKG
7440-48-4	**Cobalt**	2.2 J	13.2 J	mg/kg	TF5-SB-969-0001	11/11	-	13.2	Yes	**0.49**	NA	**Yes**	ASL
7440-50-8	Copper	7.5	24.2	mg/kg	TF5-SB-967-0001	11/11	-	24.2	Yes	51	NA	No	BSL
7439-89-6	**Iron**	11,500	33,700	mg/kg	TF5-SB-969-0001	11/11	-	33,700	Yes	**640**	NA	**Yes**	ASL
7439-92-1	**Lead**	9.3 J	33.3 J	mg/kg	TF5-SB-968-0001	11/11	-	33.3	Yes	**14** [12]	[10]	**Yes**	ASL
7439-95-4	Magnesium	824 J	2,320 J	mg/kg	TF5-SB-969-0001	11/11	-	2,320	Yes	NA	NA	No	NUT
7439-96-5	**Manganese**	95.8 J	462	mg/kg	TF5-SB-974-0001	11/11	-	462	Yes	**57**	NA	**Yes**	ASL
7439-97-6	**Mercury**	0.019 J	0.12	mg/kg	TF5-SB-968-0001	2/11	0.025 - 0.091	0.12	Yes	0.57 [13]	[10]	**Yes**	ASL
7440-02-0	**Nickel**	6.8 J	22.6	mg/kg	TF5-SB-974-0001	11/11	-	22.6	Yes	48	[10]	**Yes**	ASL
7440-09-7	Potassium	142 J	388 J	mg/kg	TF5-SB-966-0001	11/11	-	388	Yes	NA	NA	No	NUT

TABLE 6-12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals (Continued)													
7782-49-2	**Selenium**	2.9 J	4.2	mg/kg	TF5-SB-974-0001	6/11	2.1 - 3.5	4.2	Yes	**0.95**	[10]	**Yes**	ASL
7440-22-4	Silver	0.095 J	0.21 J	mg/kg	TF5-SB-968-0001, TF5-SB-972-0001, TF5-SB-974-0001	8/11	0.1 - 0.22	0.21	Yes	1.6	NA	No	BSL
7440-23-5	Sodium	19.3 J	53.9 J	mg/kg	TF5-SB-966-0001	6/11	22.7 - 29.2	53.9	Yes	NA	NA	No	NUT
7440-28-0	Thallium	0.65 J	2.5	mg/kg	TF5-SB-973-0001	11/11	-	2.5	Yes	NA	[10]	No	NTX
7440-62-2	Vanadium	10.9 J	24 J	mg/kg	TF5-SB-968-0001	11/11	-	24	No	180	NA	No	BSL,BKG
7440-66-6	Zinc	18.4 J	69.5	mg/kg	TF5-SB-967-0001	11/11	-	69.5	Yes	680	NA	No	BSL
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	1,930 J	9,650 J	ng/kg	TF5-SB-974-0001	11/11	-	9,650	NA	**870 [14]**	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	1.27 J	32	ng/kg	TF5-SB-970-0001	11/11	-	32	NA	870 [14]	NA	No	BSL
35822-46-9	**1,2,3,4,6,7,8-HPCDD**	26.2	141	ng/kg	TF5-SB-970-0001	11/11	-	141	NA	**26 [14]**	NA	**Yes**	ASL
67562-39-4	1,2,3,4,6,7,8-HPCDF	4.37	12	ng/kg	TF5-SB-970-0001	5/11	0.734 - 1.8	12	NA	26 [14]	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.111 J	0.86 J	ng/kg	TF5-SB-970-0001	6/11	0.0736 - 0.188	0.86	NA	26 [14]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.2 J	1.62 J	ng/kg	TF5-SB-975-0001	10/11	0.194 - 0.194	1.62	NA	2.6 [14]	NA	No	BSL
70648-26-9	**1,2,3,4,7,8-HXCDF**	0.159 J	3.09 J	ng/kg	TF5-SB-975-0001	11/11	-	3.09	NA	**2.6 [14]**	NA	**Yes**	ASL
57653-85-7	**1,2,3,6,7,8-HXCDD**	0.478 J	3.63	ng/kg	TF5-SB-970-0001	11/11	-	3.63	NA	**2.6 [14]**	NA	**Yes**	ASL
57117-44-9	1,2,3,6,7,8-HXCDF	0.0997 J	1.01 J	ng/kg	TF5-SB-975-0001	10/11	0.137 - 0.137	1.01	NA	2.6 [14]	NA	No	BSL
19408-74-3	**1,2,3,7,8,9-HXCDD**	0.411 J	3.64	ng/kg	TF5-SB-975-0001	11/11	-	3.64	NA	**2.6 [14]**	NA	**Yes**	ASL
72918-21-9	1,2,3,7,8,9-HXCDF	0.07 J	0.07 J	ng/kg	TF5-SB-974-0001	1/11	0.0856 - 0.184	0.07	NA	2.6 [14]	NA	No	BSL
40321-76-4	**1,2,3,7,8-PECDD**	0.245 J	0.813 J	ng/kg	TF5-SB-975-0001	8/11	0.0881 - 0.198	0.813	NA	**0.26 [14]**	NA	**Yes**	ASL
57117-41-6	1,2,3,7,8-PECDF	0.0955 J	0.717 J	ng/kg	TF5-SB-975-0001	7/11	0.0865 - 0.155	0.717	NA	8.7 [14]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.143 J	1.35 J	ng/kg	TF5-SB-975-0001	9/11	0.079 - 0.157	1.35	NA	2.6 [14]	NA	No	BSL
57117-31-4	**2,3,4,7,8-PECDF**	0.233 J	0.978 J	ng/kg	TF5-SB-975-0001	5/11	0.082 - 0.154	0.978	NA	**0.87 [14]**	NA	**Yes**	ASL
1746-01-6	2,3,7,8-TCDD	0.107 J	0.107 J	ng/kg	TF5-SB-974-0001	1/11	0.0963 - 0.236	0.107	NA	0.26	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.346 J	0.842 J	ng/kg	TF5-SB-975-0001	6/11	0.0942 - 0.277	0.842	NA	2.6 [14]	NA	No	BSL
- -	2,3,7,8-TCDD Equivalents	1.18	6.04	ng/kg	TF5-SB-975-0001	11/11	-	6.04	NA	NA	NA	No	NTX
Petroleum Hydrocarbons													
- -	Extractable Petroleum Hydrocarbons	16 J	23 J	mg/kg	TF5-SB-966-0001	3/3	-	23	NA	NA	500	No	BSL

TABLE 6-12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Migration from Soil to Groundwater(5)	RIDEM GA Leachability Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
11 - Value is for hexavalent chromium.
14 - Value is MCL based soil screening level.
13 - Value is for mercuric chloride and other mercury salts.
14 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SB-966-0001
TF5-SB-967-0001
TF5-SB-968-0001
TF5-SB-969-0001
TF5-SB-970-0001
TF5-SB-971-0001
TF5-SB-972-0001
TF5-SB-973-0001
TF5-SB-974-0001
TF5-SB-975-0001
TF5-SB-976-0001

Definitions:
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-13
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
67-64-1	Acetone	3.5 J	44 J	ug/kg	TF5-SB-970-0204	11/21	3.4 - 5.2	44	NA	6,100,000 N	7,800,000	No	BSL
75-15-0	Carbon Disulfide	1.9 J	4 J	ug/kg	TF5-SB-974-0204	2/21	3.4 - 5.2	4	NA	82,000 N	NA	No	BSL
108-88-3	Toluene	1 J	1.78 J	ug/kg	TF5-SB-973-0204-AVG	2/21	3.9 - 5.2	1.78	NA	500,000 N	190,000	No	BSL
Semivolatile Organic Compounds													
91-57-6	2-Methylnaphthalene	4.3 J	4.3 J	ug/kg	TF5-SB-969-0204	1/21	3.4 - 4.2	4.3	NA	31,000 N	123,000	No	BSL
106-44-5	4-Methylphenol	4.9 J	4.9 J	ug/kg	TF5-SB-971-0204-AVG	1/21	3.4 - 4.2	4.9	NA	31,000 N	NA	No	BSL
56-55-3	Benzo(a)anthracene	6.1	11.5	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11.5	NA	150 C	900	No	BSL
50-32-8	Benzo(a)pyrene	5.5	11	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11	NA	15 C	400	No	BSL
205-99-2	Benzo(b)fluoranthene	5.2 J	19	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4	19	NA	150 C	900	No	BSL
191-24-2	Benzo(g,h,i)perylene	4.5	8.3	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	8.3	NA	170,000 N[8]	800	No	BSL
207-08-9	Benzo(k)fluoranthene	4.65 J	9.9 J	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	9.9	NA	1,500 C	900	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	52 J	130 J	ug/kg	TF5-SB-971-0204-AVG	2/21	340 - 420	130	NA	35,000 C	46,000	No	BSL
218-01-9	Chrysene	3.8	15.5 J	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	15.5	NA	15,000 C	400	No	BSL
84-74-2	di-n-Butyl Phthalate	280 J	280 J	ug/kg	TF5-SB-971-0204-AVG	1/21	340 - 420	280	NA	610,000 N	NA	No	BSL
206-44-0	Fluoranthene	5.1	21.5	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 3.9	21.5	NA	230,000 N	20,000	No	BSL
193-39-5	Indeno(1,2,3-cd)pyrene	3.1 J	7.25	ug/kg	TF5-SB-971-0204-AVG	3/21	3.4 - 4.2	7.25	NA	150 C	900	No	BSL
91-20-3	Naphthalene	4.7	5.9	ug/kg	TF5-SB-969-0204	3/21	3.4 - 4.2	5.9	NA	3,600 C	54,000	No	BSL
85-01-8	Phenanthrene	4.2	12.5	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	12.5	NA	170,000 N[8]	40,000	No	BSL
129-00-0	Pyrene	3.6	18.5	ug/kg	TF5-SB-971-0204-AVG	8/21	3.5 - 3.9	18.5	NA	170,000 N	13,000	No	BSL
50-32-8	**Benzo(a)pyrene Equivalents**	3.8 J	71.8 J	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 4	71.8	NA	**15 C**	400	**Yes**	ASL
Metals													
7429-90-5	Aluminum	876	14,000	mg/kg	TF5-SB-971-0810	21/21	-	14,000	No	**7,700 N**	NA	No	BKG
7440-38-2	**Arsenic**	3.5 J	67.2	mg/kg	TF5-SB-970-0810	21/21	-	67.2	Yes	**0.39 C**	**7**	**Yes**	ASL
7440-39-3	Barium	1.4 J	20 J	mg/kg	TF5-SB-971-0204-AVG	21/21	-	20	No	1,500 N	5,500	No	BSL,BKG
7440-41-7	Beryllium	0.11 J	0.525 J	mg/kg	TF5-SB-973-0204-AVG	21/21	-	0.525	No	16 N	**0.4**	No	BKG
7440-43-9	Cadmium	0.13 J	0.86	mg/kg	TF5-SB-970-0810	21/21	-	0.86	Yes	7 N	39	No	BSL
7440-70-2	Calcium	72.5 J	2,200 J	mg/kg	TF5-SB-974-0810-AVG	17/21	4.2 - 5.7	2,200	No	NA	NA	No	NUT,BKG
7440-47-3	Chromium	2.3 J	21.7	mg/kg	TF5-SB-971-0810	21/21	-	21.7	No	**0.29 C[9]**	390 [9]	No	BKG
7440-48-4	**Cobalt**	6.3 J	32.8	mg/kg	TF5-SB-970-0810	21/21	-	32.8	Yes	**2.3 N**	NA	**Yes**	ASL
7440-50-8	Copper	4.9 J	35.8	mg/kg	TF5-SB-973-0810	21/21	-	35.8	Yes	310 N	3,100	No	BSL
7439-89-6	**Iron**	18,500	72,100	mg/kg	TF5-SB-966-0406	21/21	-	72,100	Yes	**5,500 N**	NA	**Yes**	ASL
7439-92-1	Lead	1.1 J	15.3 J	mg/kg	TF5-SB-974-0204	21/21	-	15.3	Yes	400	150	No	BSL
7439-95-4	Magnesium	172 J	4,870 J	mg/kg	TF5-SB-971-0810	21/21	-	4,870	No	NA	NA	No	NUT,BKG
7439-96-5	**Manganese**	114	4,220	mg/kg	TF5-SB-970-0810	21/21	-	4,220	Yes	**180 N**	**390**	**Yes**	ASL
7439-97-6	Mercury	0.012 J	0.0148 J	mg/kg	TF5-SB-971-0204-AVG	2/21	0.0053 - 0.031	0.0148	Yes	2.3 N[10]	23	No	BSL
7440-02-0	Nickel	13.2 J	72.5	mg/kg	TF5-SB-970-0810	21/21	-	72.5	Yes	150 N	1,000	No	BSL
7440-09-7	Potassium	43.5 J	374 J	mg/kg	TF5-SB-976-0810	21/21	-	374	No	NA	NA	No	NUT,BKG
7782-49-2	Selenium	2.3	7	mg/kg	TF5-SB-970-0810	14/21	2.2 - 5.5	7	Yes	39 N	390	No	BSL
7440-22-4	Silver	0.081 J	0.65 J	mg/kg	TF5-SB-970-0810	15/21	0.069 - 0.22	0.65	Yes	39 N	200	No	BSL
7440-23-5	Sodium	20.6 J	61.4	mg/kg	TF5-SB-970-0204	8/21	10.7 - 26	61.4	Yes	NA	NA	No	NUT
7440-28-0	**Thallium**	1	7.4	mg/kg	TF5-SB-972-0810	20/21	0.18 - 0.18	7.4	Yes	NA	**5.5**	**Yes**	ASL
7440-62-2	Vanadium	0.45 J	25 J	mg/kg	TF5-SB-971-0810	21/21	-	25	No	39 N	550	No	BSL,BKG
7440-66-6	Zinc	30.2 J	123	mg/kg	TF5-SB-970-0810	21/21	-	123	Yes	2,300 N	6,000	No	BSL

TABLE 6-13
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Residential Soil(5)	RIDEM Residential Direct Exposure Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	24.9	21,200 J	ng/kg	TF5-SB-976-0204	11/11	-	21,200	NA	**15,000 C(11)**	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.333 J	2.7 J	ng/kg	TF5-SB-969-0204	8/11	0.159 - 0.864	2.7	NA	15,000 C(11)	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	13.5	146 J	ng/kg	TF5-SB-975-0204	10/11	0.82 - 0.82	146	NA	450 C(11)	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	1.48 J	1.48 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0676 - 1.24	1.48	NA	450 C(11)	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.183 J	0.183 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0388 - 0.142	0.183	NA	450 C(11)	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.0941 J	0.484 J	ng/kg	TF5-SB-968-0204	10/11	0.0922 - 0.0922	0.484	NA	45 C(11)	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.0983 J	0.351 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0113 - 0.0815	0.351	NA	45 C(11)	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.132 J	0.888 J	ng/kg	TF5-SB-969-0204	10/11	0.0828 - 0.0828	0.888	NA	45 C(11)	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.067 J	0.15 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0108 - 0.077	0.15	NA	45 C(11)	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.213 J	1.21 J	ng/kg	TF5-SB-975-0204	10/11	0.0877 - 0.0877	1.21	NA	45 C(11)	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.0598 J	0.176 J	ng/kg	TF5-SB-974-0204	3/11	0.0622 - 0.139	0.176	NA	4.5 C(11)	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.051 J	0.112 J	ng/kg	TF5-SB-973-0204-AVG	3/11	0.0121 - 0.0978	0.112	NA	45 C(11)	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.175 J	0.175 J	ng/kg	TF5-SB-973-0204-AVG	1/11	0.0594 - 0.224	0.175	NA	45 C(11)	NA	No	BSL
- -	**2,3,7,8-TCDD Equivalents**	0.179	7.57	ng/kg	TF5-SB-976-0204	11/11	-	7.57	NA	**4.5 C**	NA	**Yes**	ASL
Petroleum Hydrocarbons													
- -	Extractable Petroleum Hydrocarbons	35 J	35 J	mg/kg	TF5-SB-967-0204	1/5	13 - 15	35	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for pyrene.
9 - Value is for hexavalent chromium.
10 - Value is for mercuric chloride and other mercury salts.
11 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples

TF5-SB-966-0406	TF5-SB-970-0204	TF5-SB-973-0810
TF5-SB-966-0608	TF5-SB-970-0810	TF5-SB-974-0204
TF5-SB-967-0204	TF5-SB-971-0204-AVG	TF5-SB-974-0810-AVG
TF5-SB-968-0204	TF5-SB-971-0810	TF5-SB-975-0204
TF5-SB-968-0810	TF5-SB-972-0204	TF5-SB-975-0810
TF5-SB-969-0204	TF5-SB-972-0810	TF5-SB-976-0204
TF5-SB-969-0810	TF5-SB-973-0204-AVG	TF5-SB-976-0810

Definitions:
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-14
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
67-64-1	Acetone	3.5 J	44 J	ug/kg	TF5-SB-970-0204	11/21	3.4 - 5.2	44	NA	4,500	NA	No	BSL
75-15-0	Carbon Disulfide	1.9 J	4 J	ug/kg	TF5-SB-974-0204	2/21	3.4 - 5.2	4	NA	310	NA	No	BSL
108-88-3	Toluene	1 J	1.78 J	ug/kg	TF5-SB-973-0204-AVG	2/21	3.9 - 5.2	1.78	NA	1,600	32,000	No	BSL
Semivolatile Organic Compounds													
91-57-6	2-Methylnaphthalene	4.3 J	4.3 J	ug/kg	TF5-SB-969-0204	1/21	3.4 - 4.2	4.3	NA	750	NA	No	BSL
106-44-5	4-Methylphenol	4.9 J	4.9 J	ug/kg	TF5-SB-971-0204-AVG	1/21	3.4 - 4.2	4.9	NA	150	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	6.1	11.5	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11.5	NA	**10**	NA	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	5.5	11	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11	NA	**3.5**	240,000	**Yes**	ASL
205-99-2	Benzo(b)fluoranthene	5.2 J	19	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4	19	NA	35	NA	No	BSL
191-24-2	Benzo(g,h,i)perylene	4.5	8.3	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	8.3	NA	120,000 [8]	NA	No	BSL
207-08-9	Benzo(k)fluoranthene	4.65 J	9.9 J	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	9.9	NA	350	NA	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	52 J	130 J	ug/kg	TF5-SB-971-0204-AVG	2/21	340 - 420	130	NA	1,100	120,000	No	BSL
218-01-9	Chrysene	3.8	15.5 J	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	15.5	NA	1,100	NA	No	BSL
84-74-2	di-n-Butyl Phthalate	280 J	280 J	ug/kg	TF5-SB-971-0204-AVG	1/21	340 - 420	280	NA	9,200	NA	No	BSL
206-44-0	Fluoranthene	5.1	21.5	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 3.9	21.5	NA	160,000	NA	No	BSL
193-39-5	Indeno(1,2,3-cd)pyrene	3.1 J	7.25	ug/kg	TF5-SB-971-0204-AVG	3/21	3.4 - 4.2	7.25	NA	120	NA	No	BSL
91-20-3	**Naphthalene**	4.7	5.9	ug/kg	TF5-SB-969-0204	3/21	3.4 - 4.2	5.9	NA	**0.47**	800	**Yes**	ASL
85-01-8	Phenanthrene	4.2	12.5	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	12.5	NA	120,000 [8]	NA	No	BSL
129-00-0	Pyrene	3.6	18.5	ug/kg	TF5-SB-971-0204-AVG	8/21	3.5 - 3.9	18.5	NA	120,000	NA	No	BSL
50-32-8	Benzo(a)pyrene Equivalents	3.8 J	71.8 J	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 4	71.8	NA	NA	NA	No	BSL
Metals													
7429-90-5	Aluminum	876	14,000	mg/kg	TF5-SB-971-0810	21/21	-	14,000	No	55,000	NA	No	BSL,BKG
7440-38-2	**Arsenic**	3.5 J	67.2	mg/kg	TF5-SB-970-0810	21/21	-	67.2	Yes	**0.0013**	NA	**Yes**	ASL
7440-39-3	Barium	1.4 J	20 J	mg/kg	TF5-SB-971-0204-AVG	21/21	-	20	No	300	[9]	No	BSL,BKG
7440-41-7	Beryllium	0.11 J	0.525 J	mg/kg	TF5-SB-973-0204-AVG	21/21	-	0.525	No	58	[9]	No	BSL,BKG
7440-43-9	Cadmium	0.13 J	0.86	mg/kg	TF5-SB-970-0810	21/21	-	0.86	Yes	1.4	[9]	No	BSL
7440-70-2	Calcium	72.5 J	2,200 J	mg/kg	TF5-SB-974-0810-AVG	17/21	4.2 - 5.7	2,200	No	NA	NA	No	NUT,BKG
7440-47-3	Chromium	2.3 J	21.7	mg/kg	TF5-SB-971-0810	21/21	-	21.7	No	**0.00083** [10]	[16]	No	BKG
7440-48-4	**Cobalt**	6.3 J	32.8	mg/kg	TF5-SB-970-0810	21/21	-	32.8	Yes	**0.49**	NA	**Yes**	ASL
7440-50-8	Copper	4.9 J	35.8	mg/kg	TF5-SB-973-0810	21/21	-	35.8	Yes	51	NA	No	BSL
7439-89-6	**Iron**	18,500	72,100	mg/kg	TF5-SB-966-0406	21/21	-	72,100	Yes	**640**	NA	**Yes**	ASL
7439-92-1	**Lead**	1.1 J	15.3 J	mg/kg	TF5-SB-974-0204	21/21	-	15.3	Yes	**14** [11]	[9]	**Yes**	ASL
7439-95-4	Magnesium	172 J	4,870 J	mg/kg	TF5-SB-971-0810	21/21	-	4,870	No	NA	NA	No	NUT,BKG
7439-96-5	**Manganese**	114	4,220	mg/kg	TF5-SB-970-0810	21/21	-	4,220	Yes	**57**	NA	**Yes**	ASL
7439-97-6	**Mercury**	0.012 J	0.0148 J	mg/kg	TF5-SB-971-0204-AVG	2/21	0.0053 - 0.031	0.0148	Yes	0.57 [12]	[9]	**Yes**	ASL
7440-02-0	**Nickel**	13.2 J	72.5	mg/kg	TF5-SB-970-0810	21/21	-	72.5	Yes	**48**	[9]	**Yes**	ASL
7440-09-7	Potassium	43.5 J	374 J	mg/kg	TF5-SB-976-0810	21/21	-	374	No	NA	NA	No	NUT,BKG
7782-49-2	**Selenium**	2.3	7	mg/kg	TF5-SB-970-0810	14/21	2.2 - 5.5	7	Yes	**0.95**	[9]	**Yes**	ASL
7440-22-4	Silver	0.081 J	0.65 J	mg/kg	TF5-SB-970-0810	15/21	0.069 - 0.22	0.65	Yes	1.6	NA	No	BSL
7440-23-5	Sodium	20.6 J	61.4	mg/kg	TF5-SB-970-0204	8/21	10.7 - 26	61.4	Yes	NA	NA	No	NUT
7440-28-0	Thallium	1	7.4	mg/kg	TF5-SB-972-0810	20/21	0.18 - 0.18	7.4	Yes	NA	[9]	No	NTX
7440-62-2	Vanadium	0.45 J	25 J	mg/kg	TF5-SB-971-0810	21/21	-	25	No	180	NA	No	BSL,BKG
7440-66-6	Zinc	30.2 J	123	mg/kg	TF5-SB-970-0810	21/21	-	123	Yes	680	NA	No	BSL

TABLE 6-14
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Above Background Concentration?(4)	USEPA RSL Migration from Soil to Groundwater(5)	RIDEM GA Leachability Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
Dioxins/Furans													
3268-87-9	**1,2,3,4,6,7,8,9-OCDD**	24.9	21,200 J	ng/kg	TF5-SB-976-0204	11/11	-	21,200	NA	**870** (13)	NA	**Yes**	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.333 J	2.7 J	ng/kg	TF5-SB-969-0204	8/11	0.159 - 0.864	2.7	NA	870 (13)	NA	No	BSL
35822-46-9	**1,2,3,4,6,7,8-HPCDD**	13.5	146 J	ng/kg	TF5-SB-975-0204	10/11	0.82 - 0.82	146	NA	**26** (13)	NA	**Yes**	ASL
67562-39-4	1,2,3,4,6,7,8-HPCDF	1.48 J	1.48 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0676 - 1.24	1.48	NA	26 (13)	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.183 J	0.183 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0388 - 0.142	0.183	NA	26 (13)	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.0941 J	0.484 J	ng/kg	TF5-SB-968-0204	10/11	0.0922 - 0.0922	0.484	NA	2.6 (13)	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.0983 J	0.351 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0113 - 0.0815	0.351	NA	2.6 (13)	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.132 J	0.888 J	ng/kg	TF5-SB-969-0204	10/11	0.0828 - 0.0828	0.888	NA	2.6 (13)	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.067 J	0.15 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0108 - 0.077	0.15	NA	2.6 (13)	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.213 J	1.21 J	ng/kg	TF5-SB-975-0204	10/11	0.0877 - 0.0877	1.21	NA	2.6 (13)	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.0598 J	0.176 J	ng/kg	TF5-SB-974-0204	3/11	0.0622 - 0.139	0.176	NA	0.26 (13)	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.051 J	0.112 J	ng/kg	TF5-SB-973-0204-AVG	3/11	0.0121 - 0.0978	0.112	NA	2.6 (13)	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.175 J	0.175 J	ng/kg	TF5-SB-973-0204-AVG	1/11	0.0594 - 0.224	0.175	NA	2.6 (13)	NA	No	BSL
- -	2,3,7,8-TCDD Equivalents	0.179	7.57	ng/kg	TF5-SB-976-0204	11/11	-	7.57	NA	NA	NA	No	NTX
Petroleum Hydrocarbons													
- -	Extractable Petroleum Hydrocarbons	35 J	35 J	mg/kg	TF5-SB-967-0204	1/5	13 - 15	35	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for pyrene.
9 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
10 - Value is for hexavalent chromium.
11 - Value is MCL based soil screening level.
12 - Value is for mercury, inorganic salts
13 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples

TF5-SB-966-0406	TF5-SB-970-0204	TF5-SB-973-0810
TF5-SB-966-0608	TF5-SB-970-0810	TF5-SB-974-0204
TF5-SB-967-0204	TF5-SB-971-0204-AVG	TF5-SB-974-0810-AVG
TF5-SB-968-0204	TF5-SB-971-0810	TF5-SB-975-0204
TF5-SB-968-0810	TF5-SB-972-0204	TF5-SB-975-0810
TF5-SB-969-0204	TF5-SB-972-0810	TF5-SB-976-0204
TF5-SB-969-0810	TF5-SB-973-0204-AVG	TF5-SB-976-0810

Definitions:
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BKG = Less than Background Concentration
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-15
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Volatile Organic Compounds														
87-61-6	1,2,3-Trichlorobenzene	1.2 J	1.2 J	ug/L	TF5-MW-915-0510	1/4	1 - 1	1.2	NA	2.9 N	NA NA	NA NA	No	BSL
71-43-2	**Benzene**	1.2	1.2	ug/L	TF5-MW-924-051810	1/4	1 - 1	1.2	NA	**0.41 C**	5 5	EPA-MCL RIDEM	**Yes**	ASL
156-59-2	cis-1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	37 N	70 70	EPA-MCL RIDEM	No	BSL
540-59-0	Total 1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	33 N	NA NA	NA NA	No	BSL
Semivolatile Organic Compounds														
105-60-2	Caprolactam	1.7 J	160 J	ug/L	TF5-MW-923-051810	4/4	-	160	NA	1,800 N	NA NA	NA NA	No	BSL
Metals														
7429-90-5	**Aluminum**	1,480	1,480	ug/L	TF5-MW-916-0510	1/4	35.7 - 53.5	1,480	NA	3,700 N	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-38-2	**Arsenic**	0.59 J	8.8	ug/L	TF5-MW-915-0510	4/4	-	8.8	NA	**0.045 C**	10 NA	EPA-MCL NA	**Yes**	ASL
7440-39-3	Barium	6.8	69.3	ug/L	TF5-MW-916-0510	4/4	-	69.3	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
7440-41-7	Beryllium	0.166 J	0.188 J	ug/L	TF5-MW-916-0510	2/4	0.045 - 0.045	0.188	NA	7.3 N	4 4	EPA-MCL RIDEM	No	BSL
7440-43-9	Cadmium	0.074 J	0.183 J	ug/L	TF5-MW-916-0510	2/4	0.054 - 0.054	0.183	NA	1.8 N	5 5	EPA-MCL RIDEM	No	BSL
7440-70-2	Calcium	11,800	28,200	ug/L	TF5-MW-924-0510	4/4	-	28,200	NA	NA	NA NA	NA NA	No	NUT
7440-48-4	**Cobalt**	0.427 J	19	ug/L	TF5-MW-923-0510	4/4	-	19	NA	**1.1 N**	NA NA	NA NA	**Yes**	ASL
7440-50-8	Copper	0.361 J	5.8	ug/L	TF5-MW-916-0510	4/4	-	5.8	NA	150 N	1,300 NA	EPA-MCL[7] NA	No	BSL
7439-89-6	**Iron**	225	24,300	ug/L	TF5-MW-923-0510	4/4	-	24,300	NA	**2,600 N**	**300** NA	**EPA-SMCL** NA	**Yes**	ASL
7439-92-1	Lead	1.7	1.7	ug/L	TF5-MW-916-0510	1/4	0.162 - 0.162	1.7	NA	NA	15 15	EPA-MCL[7] RIDEM	No	BSL
7439-95-4	Magnesium	7,620	19,600	ug/L	TF5-MW-924-0510	4/4	-	19,600	NA	NA	NA NA	NA NA	No	NUT
7439-96-5	**Manganese**	82.4	2,510	ug/L	TF5-MW-923-0510	4/4	-	2,510	NA	**88 N**	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-02-0	Nickel	14.5	57.8	ug/L	TF5-MW-923-0510	4/4	-	57.8	NA	73 N	NA 100	NA RIDEM	No	BSL
7440-09-7	Potassium	520 J	2,440	ug/L	TF5-MW-916-0510	4/4	-	2,440	NA	NA	NA NA	NA NA	No	NUT
7782-49-2	Selenium	0.185 J	0.667 J	ug/L	TF5-MW-916-0510	2/4	0.123 - 0.123	0.667	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
7440-23-5	Sodium	9,520	29,200	ug/L	TF5-MW-916-0510	4/4	-	29,200	NA	NA	NA NA	NA NA	No	NUT

TABLE 6-15
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Metals (Continued)														
7440-62-2	Vanadium	1.2 J	1.2 J	ug/L	TF5-MW-916-0510	1/4	0.331 - 0.331	1.2	NA	18 N	NA NA	NA NA	No	BSL
7440-66-6	Zinc	81.7 J	81.7 J	ug/L	TF5-MW-923-0510	1/4	16.6 - 45	81.7	NA	1,100 N	5,000 NA	EPA-SMCL NA	No	BSL
Dissolved Metals														
7429-90-5	**Aluminum**	446	446	ug/L	TF5-MW-916-0510	1/2	36.7 - 36.7	446	NA	3,700 N	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-38-2	**Arsenic**	0.794 J	0.794 J	ug/L	TF5-MW-923-0510	1/2	0.236 - 0.236	0.794	NA	**0.045 C**	10 NA	EPA-MCL NA	**Yes**	ASL
7440-39-3	Barium	15.1	53.8	ug/L	TF5-MW-916-0510	2/2	-	53.8	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
7440-41-7	Beryllium	0.107 J	0.16 J	ug/L	TF5-MW-923-0510	2/2	-	0.16	NA	7.3 N	4 4	EPA-MCL RIDEM	No	BSL
7440-43-9	Cadmium	0.084 J	0.084 J	ug/L	TF5-MW-916-0510	1/2	0.054 - 0.054	0.084	NA	1.8 N	5 5	EPA-MCL RIDEM	No	BSL
7440-70-2	Calcium	12,700	12,900	ug/L	TF5-MW-923-0510	2/2	-	12,900	NA	NA	NA NA	NA NA	No	NUT
7440-48-4	**Cobalt**	9.3	18.3	ug/L	TF5-MW-923-0510	2/2	-	18.3	NA	**1.1 N**	NA NA	NA NA	**Yes**	ASL
7440-50-8	Copper	0.45 J	3.7	ug/L	TF5-MW-916-0510	2/2	-	3.7	NA	150 N	1,300 NA	EPA-MCL[7] NA	No	BSL
7439-89-6	**Iron**	128 J	23,500	ug/L	TF5-MW-923-0510	2/2	-	23,500	NA	**2,600 N**	**300** NA	**EPA-SMCL** NA	**Yes**	ASL
7439-95-4	Magnesium	8,720	16,800	ug/L	TF5-MW-923-0510	2/2	-	16,800	NA	NA	NA NA	NA NA	No	NUT
7439-96-5	**Manganese**	333	2,520	ug/L	TF5-MW-923-0510	2/2	-	2,520	NA	**88 N**	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-02-0	Nickel	32.3	55.5	ug/L	TF5-MW-923-0510	2/2	-	55.5	NA	73 N	NA 100	NA RIDEM	No	BSL
7440-09-7	Potassium	1,130	2,250	ug/L	TF5-MW-916-0510	2/2	-	2,250	NA	NA	NA NA	NA NA	No	NUT
7782-49-2	Selenium	0.573 J	0.573 J	ug/L	TF5-MW-916-0510	1/2	0.123 - 0.123	0.573	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
7440-23-5	Sodium	11,400	26,700	ug/L	TF5-MW-916-0510	2/2	-	26,700	NA	NA	NA NA	NA NA	No	NUT
7440-66-6	Zinc	78.7	78.7	ug/L	TF5-MW-923-0510	1/2	19.6 - 19.6	78.7	NA	1,100 N	5,000 NA	EPA-SMCL NA	No	BSL

TABLE 6-15
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	Screening Toxicity Value(5)	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), November 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-MW-915-0510
TF5-MW-916-0510
TF5-MW-923-0510
TF5-MW-923-051810
TF5-MW-924-0510
TF5-MW-924-051810

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-16
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - VAPOR INTRUSION (GROUNDWATER TO INDOOR AIR) - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Is Chemical Sufficiently Volatile and Toxic?[5]	USEPA Vapor Intrusion Criteria[6]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds															
87-61-6	1,2,3-Trichlorobenzene	1.2 J	1.2 J	ug/L	TF5-MW-915-0510	1/4	1 - 1	1.2	NA	Yes	3.6 N[8]	NA	NA	No	NTX
71-43-2	Benzene	1.2	1.2	ug/L	TF5-MW-924-051810	1/4	1 - 1	1.2	NA	Yes	1.3 C	NA	NA	No	BSL
156-59-2	cis-1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	Yes	NA	NA	NA	No	NTX
540-59-0	Total 1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	Yes	NA	NA	NA	No	NTX
Semivolatile Organic Compounds															
105-60-2	Caprolactam	1.7 J	160 J	ug/L	TF5-MW-923-051810	4/4	-	160	NA	No	NA	NA	NA	No	NTX
Metals															
7429-90-5	Aluminum	1,480	1,480	ug/L	TF5-MW-916-0510	1/4	35.7 - 53.5	1,480	NA	No	NA	NA	NA	No	NTX
7440-38-2	Arsenic	0.59 J	8.8	ug/L	TF5-MW-915-0510	4/4	-	8.8	NA	No	NA	NA	NA	No	NTX
7440-39-3	Barium	6.8	69.3	ug/L	TF5-MW-916-0510	4/4	-	69.3	NA	No	NA	NA	NA	No	NTX
7440-41-7	Beryllium	0.166 J	0.188 J	ug/L	TF5-MW-916-0510	2/4	0.045 - 0.045	0.188	NA	No	NA	NA	NA	No	NTX
7440-43-9	Cadmium	0.074 J	0.183 J	ug/L	TF5-MW-916-0510	2/4	0.054 - 0.054	0.183	NA	No	NA	NA	NA	No	NTX
7440-70-2	Calcium	11,800	28,200	ug/L	TF5-MW-924-0510	4/4	-	28,200	NA	No	NA	NA	NA	No	NUT
7440-48-4	Cobalt	0.427 J	19	ug/L	TF5-MW-923-0510	4/4	-	19	NA	No	NA	NA	NA	No	NTX
7440-50-8	Copper	0.361 J	5.8	ug/L	TF5-MW-916-0510	4/4	-	5.8	NA	No	NA	NA	NA	No	NTX
7439-89-6	Iron	225	24,300	ug/L	TF5-MW-923-0510	4/4	-	24,300	NA	No	NA	NA	NA	No	NTX
7439-92-1	Lead	1.7	1.7	ug/L	TF5-MW-916-0510	1/4	0.162 - 0.162	1.7	NA	No	NA	NA	NA	No	NTX
7439-95-4	Magnesium	7,620	19,600	ug/L	TF5-MW-924-0510	4/4	-	19,600	NA	No	NA	NA	NA	No	NUT
7439-96-5	Manganese	82.4	2,510	ug/L	TF5-MW-923-0510	4/4	-	2,510	NA	No	NA	NA	NA	No	NTX
7440-02-0	Nickel	14.5	57.8	ug/L	TF5-MW-923-0510	4/4	-	57.8	NA	No	NA	NA	NA	No	NTX
7440-09-7	Potassium	520 J	2,440	ug/L	TF5-MW-916-0510	4/4	-	2,440	NA	No	NA	NA	NA	No	NUT
7782-49-2	Selenium	0.185 J	0.667 J	ug/L	TF5-MW-916-0510	2/4	0.123 - 0.123	0.667	NA	No	NA	NA	NA	No	NTX
7440-23-5	Sodium	9,520	29,200	ug/L	TF5-MW-916-0510	4/4	-	29,200	NA	No	NA	NA	NA	No	NUT
7440-62-2	Vanadium	1.2 J	1.2 J	ug/L	TF5-MW-916-0510	1/4	0.331 - 0.331	1.2	NA	No	NA	NA	NA	No	NTX
7440-66-6	Zinc	81.7 J	81.7 J	ug/L	TF5-MW-923-0510	1/4	16.6 - 45	81.7	NA	No	NA	NA	NA	No	NTX
Dissolved Metals															
7429-90-5	Aluminum	446	446	ug/L	TF5-MW-916-0510	1/2	36.7 - 36.7	446	NA	No	NA	NA	NA	No	NTX
7440-38-2	Arsenic	0.794 J	0.794 J	ug/L	TF5-MW-923-0510	1/2	0.236 - 0.236	0.794	NA	No	NA	NA	NA	No	NTX
7440-39-3	Barium	15.1	53.8	ug/L	TF5-MW-916-0510	2/2	-	53.8	NA	No	NA	NA	NA	No	NTX
7440-41-7	Beryllium	0.107 J	0.16 J	ug/L	TF5-MW-923-0510	2/2	-	0.16	NA	No	NA	NA	NA	No	NTX
7440-43-9	Cadmium	0.084 J	0.084 J	ug/L	TF5-MW-916-0510	1/2	0.054 - 0.054	0.084	NA	No	NA	NA	NA	No	NTX
7440-70-2	Calcium	12,700	12,900	ug/L	TF5-MW-923-0510	2/2	-	12,900	NA	No	NA	NA	NA	No	NUT
7440-48-4	Cobalt	9.3	18.3	ug/L	TF5-MW-923-0510	2/2	-	18.3	NA	No	NA	NA	NA	No	NTX
7440-50-8	Copper	0.45 J	3.7	ug/L	TF5-MW-916-0510	2/2	-	3.7	NA	No	NA	NA	NA	No	NTX
7439-89-6	Iron	128 J	23,500	ug/L	TF5-MW-923-0510	2/2	-	23,500	NA	No	NA	NA	NA	No	NTX
7439-95-4	Magnesium	8,720	16,800	ug/L	TF5-MW-923-0510	2/2	-	16,800	NA	No	NA	NA	NA	No	NUT
7439-96-5	Manganese	333	2,520	ug/L	TF5-MW-923-0510	2/2	-	2,520	NA	No	NA	NA	NA	No	NTX
7440-02-0	Nickel	32.3	55.5	ug/L	TF5-MW-923-0510	2/2	-	55.5	NA	No	NA	NA	NA	No	NTX
7440-09-7	Potassium	1,130	2,250	ug/L	TF5-MW-916-0510	2/2	-	2,250	NA	No	NA	NA	NA	No	NUT
7782-49-2	Selenium	0.573 J	0.573 J	ug/L	TF5-MW-916-0510	1/2	0.123 - 0.123	0.573	NA	No	NA	NA	NA	No	NTX
7440-23-5	Sodium	11,400	26,700	ug/L	TF5-MW-916-0510	2/2	-	26,700	NA	No	NA	NA	NA	No	NUT
7440-66-6	Zinc	78.7	78.7	ug/L	TF5-MW-923-0510	1/2	19.6 - 19.6	78.7	NA	No	NA	NA	NA	No	NTX

TABLE 6-16
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - VAPOR INTRUSION (GROUNDWATER TO INDOOR AIR) - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	Is Chemical Sufficiently Volatile and Toxic?(5)	USEPA Vapor Intrusion Criteria(6)	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - Appendix A of DoD Vapor Intrusion Handbook, January 2009.
6 - Calculated using methodology presented in Appendix D of USEPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002. EPA530-F-02-052. Values correspond to a target cancer risk level of 1E-6 or HI =0.1 and an attenuation factor of 0.001.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
8 - Value is for 1,2,4-trichlorobenzene.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-MW-915-0510
TF5-MW-916-0510
TF5-MW-923-0510
TF5-MW-923-051810
TF5-MW-924-0510
TF5-MW-924-051810

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-17
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Volatile Organic Compounds														
67-66-3	**Chloroform**	1	1	ug/L	TF5-SW-918-0310	1/11	1 - 1	1	NA	**0.19 C**	80 NA	EPA-MCL NA	**Yes**	ASL
Semivolatile Organic Compounds														
91-57-6	2-Methylnaphthalene	0.25	3.3	ug/L	TF5-SW-919-0310	2/11	0.1 - 0.1	3.3	NA	15 N	NA NA	NA NA	No	BSL
83-32-9	Acenaphthene	0.36	0.36	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	0.36	NA	220 N	NA NA	NA NA	No	BSL
208-96-8	Acenaphthylene	0.82	0.82	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	0.82	NA	220 N[7]	NA NA	NA NA	No	BSL
120-12-7	Anthracene	0.11	0.11	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	0.11	NA	1,100 N	NA NA	NA NA	No	BSL
56-55-3	**Benzo(a)anthracene**	0.11 J	0.2 J	ug/L	TF5-SW-917-0310	6/11	0.1 - 0.1	0.2	NA	**0.029 C**	NA NA	NA NA	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	0.13	0.16	ug/L	TF5-SW-918-0310	2/11	0.1 - 0.1	0.16	NA	**0.0029 C**	0.2 0.2	EPA-MCL RIDEM	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	0.11	0.25	ug/L	TF5-SW-918-0310	4/11	0.1 - 0.1	0.25	NA	**0.029 C**	NA NA	NA NA	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	0.13	0.13	ug/L	TF5-SW-918-0310	1/11	0.1 - 0.1	0.13	NA	110 N[8]	NA NA	NA NA	No	BSL
207-08-9	Benzo(k)fluoranthene	0.15	0.15	ug/L	TF5-SW-918-0310	1/11	0.1 - 0.1	0.15	NA	0.29 C	NA NA	NA NA	No	BSL
218-01-9	Chrysene	0.11	0.18	ug/L	TF5-SW-918-0310	4/11	0.1 - 0.1	0.18	NA	2.9 C	NA NA	NA NA	No	BSL
206-44-0	Fluoranthene	0.12	0.36	ug/L	TF5-SW-918-0310	6/11	0.1 - 0.1	0.36	NA	150 N	NA NA	NA NA	No	BSL
86-73-7	Fluorene	1.3	1.3	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	1.3	NA	150 N	NA NA	NA NA	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	0.11	0.11	ug/L	TF5-SW-918-0310	1/11	0.1 - 0.1	0.11	NA	**0.029 C**	NA NA	NA NA	**Yes**	ASL
91-20-3	**Naphthalene**	0.59	1.5	ug/L	TF5-SW-919-0310	2/11	0.1 - 0.1	1.5	NA	**0.14 C**	NA 20	NA RIDEM	**Yes**	ASL
85-01-8	Phenanthrene	0.075	1.1	ug/L	TF5-SW-919-0310	10/11	0.1 - 0.1	1.1	NA	110 N[8]	NA NA	NA NA	No	BSL
129-00-0	Pyrene	0.13	0.3	ug/L	TF5-SW-917-0310	5/11	0.1 - 0.1	0.3	NA	110 N	NA NA	NA NA	No	BSL
50-32-8	**Benzo(a)pyrene Equivalents**	0.41 J	1.08 J	ug/L	TF5-SW-918-0310	6/11	0.1 - 0.1	1.08	NA	**0.0029 C**	**0.2** NA	**EPA-MCL** NA	**Yes**	ASL
Metals														
7429-90-5	**Aluminum**	852	852	ug/L	TF5-SW-918-0310	1/11	55.9 - 281	852	NA	3,700 N	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
7440-38-2	**Arsenic**	0.244 J	0.299 J	ug/L	TF5-SW-919-0310	5/11	0.236 - 0.236	0.299	NA	**0.045 C**	10 NA	EPA-MCL NA	**Yes**	ASL

TABLE 6-17
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	Screening Toxicity Value(5)	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
Metals														
7440-39-3	Barium	7.9	11	ug/L	TF5-SW-918-0310	11/11	-	11	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
7440-70-2	Calcium	11,400	17,700	ug/L	TF5-SW-915-0310	11/11	-	17,700	NA	NA	NA NA	NA NA	No	NUT
7440-48-4	Cobalt	0.274 J	0.564 J	ug/L	TF5-SW-919-0310	11/11	-	0.564	NA	1.1 N	NA NA	NA NA	No	BSL
7440-50-8	Copper	0.9 J	3.3	ug/L	TF5-SW-915-0310	11/11	-	3.3	NA	150 N	1,300 NA	EPA-MCL(9) NA	No	BSL
7439-89-6	**Iron**	215	2,930	ug/L	TF5-SW-918-0310	7/11	174 - 227	2,930	NA	**2,600 N**	**300** NA	**EPA-SMCL** NA	**Yes**	ASL
7439-92-1	Lead	0.193 J	0.533 J	ug/L	TF5-SW-915-0310	11/11	-	0.533	NA	NA	15 15	EPA-MCL(9) RIDEM	No	BSL
7439-95-4	Magnesium	5,250	8,250	ug/L	TF5-SW-915-0310	11/11	-	8,250	NA	NA	NA NA	NA NA	No	NUT
7440-02-0	Nickel	1.6	5.4	ug/L	TF5-SW-918-0310	11/11	-	5.4	NA	73 N	NA 100	NA RIDEM	No	BSL
7440-09-7	Potassium	1,170	2,760	ug/L	TF5-SW-918-0310	11/11	-	2,760	NA	NA	NA NA	NA NA	No	NUT
7782-49-2	Selenium	0.168 J	0.256 J	ug/L	TF5-SW-917-0310	11/11	-	0.256	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
7440-23-5	Sodium	22,500	39,600	ug/L	TF5-SW-915-0310	11/11	-	39,600	NA	NA	NA NA	NA NA	No	NUT

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for surface water.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), November 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - Value is for acenaphthene.
8 - Value is for pyrene.
9 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples

TF5-SW-914-0310	TF5-SW-918-0310	TF5-SW-922-0006
TF5-SW-915-0310	TF5-SW-919-0310	TF5-SW-923-0006-AVG
TF5-SW-916-0310	TF5-SW-920-0310	TF5-SW-924-0006
TF5-SW-917-0310	TF5-SW-921-0006	

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-18
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENTS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Volatile Organic Compounds													
95-50-1	1,2-Dichlorobenzene	1.6 J	1.6 J	ug/kg	TF5-SD-913-0006	1/12	4.3 - 19	1.6	NA	190,000 N	510,000	No	BSL
67-64-1	Acetone	13.4 J	200 J	ug/kg	TF5-SD-918-0006	11/12	6.1 - 6.1	200	NA	6,100,000 N	7,800,000	No	BSL
75-15-0	Carbon Disulfide	3.9 J	3.9 J	ug/kg	TF5-SD-921-0006	1/12	4.3 - 19	3.9	NA	82,000 N	NA	No	BSL
Semivolatile Organic Compounds													
105-67-9	2,4-Dimethylphenol	3.5	3.5	ug/kg	TF5-SD-919-0006	1/12	3.3 - 3.3	3.5	NA	120,000 N	1,400,000	No	BSL
91-57-6	2-Methylnaphthalene	3.6	210	ug/kg	TF5-SD-913-0006	10/12	3.3 - 3.3	210	NA	31,000 N	123,000	No	BSL
95-48-7	2-Methylphenol	3.5	12	ug/kg	TF5-SD-918-0006	2/12	3.3 - 3.3	12	NA	310,000 N	NA	No	BSL
106-44-5	4-Methylphenol	3.8	21	ug/kg	TF5-SD-921-0006	9/12	3.3 - 3.3	21	NA	31,000 N	NA	No	BSL
83-32-9	Acenaphthene	7.2	48	ug/kg	TF5-SD-913-0006	12/12	-	48	NA	340,000 N	43,000	No	BSL
208-96-8	Acenaphthylene	6.6	110	ug/kg	TF5-SD-913-0006	12/12	-	110	NA	340,000 N[8]	23,000	No	BSL
120-12-7	Anthracene	29	150	ug/kg	TF5-SD-922-0006	12/12	-	150	NA	1,700,000 N	35,000	No	BSL
1912-24-9	Atrazine	4.6 J	4.6 J	ug/kg	TF5-SD-918-0006	1/12	3.3 - 3.3	4.6	NA	2,100 C	NA	No	BSL
56-55-3	**Benzo(a)anthracene**	33 J	650	ug/kg	TF5-SD-921-0006	12/12	-	650	NA	**150 C**	900	**Yes**	ASL
50-32-8	**Benzo(a)pyrene**	42	780	ug/kg	TF5-SD-921-0006	12/12	-	780	NA	**15 C**	**400**	**Yes**	ASL
205-99-2	**Benzo(b)fluoranthene**	72 J	1,000	ug/kg	TF5-SD-924-0006	12/12	-	1,000	NA	**150 C**	**900**	**Yes**	ASL
191-24-2	Benzo(g,h,i)perylene	32	630	ug/kg	TF5-SD-924-0006	12/12	-	630	NA	170,000 N[9]	800	No	BSL
207-08-9	Benzo(k)fluoranthene	29 J	860	ug/kg	TF5-SD-921-0006	12/12	-	860	NA	1,500 C	900	No	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	41 J	410	ug/kg	TF5-SD-921-0006	11/12	330 - 330	410	NA	35,000 C	46,000	No	BSL
86-74-8	Carbazole	36 J	100 J	ug/kg	TF5-SD-921-0006, TF5-SD-924-0006	7/12	330 - 330	100	NA	NA	NA	No	NTX
218-01-9	**Chrysene**	51	890	ug/kg	TF5-SD-924-0006	12/12	-	890	NA	15,000 C	**400**	**Yes**	ASL
53-70-3	**Dibenzo(a,h)anthracene**	8.7	180	ug/kg	TF5-SD-921-0006	12/12	-	180	NA	**15 C**	400	**Yes**	ASL
206-44-0	Fluoranthene	100	1,800	ug/kg	TF5-SD-921-0006, TF5-SD-924-0006	12/12	-	1,800	NA	230,000 N	20,000	No	BSL
86-73-7	Fluorene	14	120	ug/kg	TF5-SD-913-0006	12/12	-	120	NA	230,000 N	28,000	No	BSL
193-39-5	**Indeno(1,2,3-cd)pyrene**	29	660	ug/kg	TF5-SD-924-0006	12/12	-	660	NA	**150 C**	900	**Yes**	ASL
91-20-3	Naphthalene	3.92	130	ug/kg	TF5-SD-913-0006	11/12	3.3 - 3.3	130	NA	3,600 C	54,000	No	BSL
87-86-5	Pentachlorophenol	34	34	ug/kg	TF5-SD-919-0006	1/12	33 - 33	34	NA	89 C	5,300	No	BSL
85-01-8	Phenanthrene	130	690	ug/kg	TF5-SD-921-0006	12/12	-	690	NA	170,000 N[9]	40,000	No	BSL
108-95-2	Phenol	2.52	8.7	ug/kg	TF5-SD-921-0006	6/12	3.3 - 3.3	8.7	NA	1,800,000 N	6,000,000	No	BSL
129-00-0	Pyrene	85	1,300	ug/kg	TF5-SD-921-0006, TF5-SD-924-0006	12/12	-	1,300	NA	170,000 N	13,000	No	BSL
50-32-8	**Benzo(a)pyrene Equivalents**	265 J	4,790	ug/kg	TF5-SD-924-0006	12/12	-	4,790	NA	**15 C**	NA	**Yes**	ASL
Pesticides/PCBs													
72-54-8	4,4'-DDD	3.4 J	3.62 J	ug/kg	TF5-SD-923-0006-AVG	2/12	3.3 - 51	3.62	NA	2,000 C	NA	No	BSL
72-55-9	4,4'-DDE	3.9	5.4	ug/kg	TF5-SD-922-0006	4/12	3.3 - 3.3	5.4	NA	1,400 C	NA	No	BSL
50-29-3	4,4'-DDT	3.4	15	ug/kg	TF5-SD-922-0006	3/12	3.3 - 3.3	15	NA	1,700 C	NA	No	BSL
309-00-2	Aldrin	2.6	2.6	ug/kg	TF5-SD-922-0006	1/12	1.7 - 1.7	2.6	NA	29 C	NA	No	BSL
319-84-6	alpha-BHC	2.1	2.1	ug/kg	TF5-SD-922-0006	1/12	1.7 - 1.7	2.1	NA	77 C	NA	No	BSL
11096-82-5	Aroclor-1260	40 J	78 J	ug/kg	TF5-SD-922-0006	5/12	33 - 33	78	NA	220 C	NA	No	BSL
7421-93-4	Endrin Aldehyde	2.92 J	3.5	ug/kg	TF5-SD-924-0006	2/12	3.3 - 3.3	3.5	NA	1,800 N[10]	NA	No	BSL
53494-70-5	Endrin Ketone	2.82	11	ug/kg	TF5-SD-922-0006	3/12	3.3 - 3.3	11	NA	1,800 N[10]	NA	No	BSL
5103-74-2	gamma-Chlordane	4.9 J	4.9 J	ug/kg	TF5-SD-922-0006	1/12	1.7 - 1.7	4.9	NA	1,600 C[11]	NA	No	BSL

TABLE 6-18
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENTS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Metals													
7429-90-5	**Aluminum**	4,500	12,600	mg/kg	TF5-SD-917-0006	12/12	-	12,600	NA	**7,700 N**	NA	**Yes**	ASL
7440-38-2	**Arsenic**	10.5	121	mg/kg	TF5-SD-914-0006	12/12	-	121	NA	**0.39 C**	**7**	**Yes**	ASL
7440-39-3	Barium	12 J	47.2 J	mg/kg	TF5-SD-924-0006	12/12	-	47.2	NA	1,500 N	5,500	No	BSL
7440-41-7	**Beryllium**	0.24 J	1.1 J	mg/kg	TF5-SD-914-0006	12/12	-	1.1	NA	16 N	**0.4**	**Yes**	ASL
7440-43-9	Cadmium	0.25 J	2	mg/kg	TF5-SD-914-0006	12/12	-	2	NA	7 N	39	No	BSL
7440-70-2	Calcium	813 J	3,680 J	mg/kg	TF5-SD-924-0006	11/12	6.6 - 6.6	3,680	NA	NA	NA	No	NUT
7440-47-3	**Chromium**	6.9 J	18.8 J	mg/kg	TF5-SD-914-0006	12/12	-	18.8	NA	**0.29 C[12]**	390[12]	**Yes**	ASL
7440-48-4	**Cobalt**	5.55	95	mg/kg	TF5-SD-914-0006	12/12	-	95	NA	**2.3 N**	NA	**Yes**	ASL
7440-50-8	Copper	4.9	43	mg/kg	TF5-SD-918-0006	12/12	-	43	NA	310 N	3,100	No	BSL
7439-89-6	**Iron**	15,300	166,000	mg/kg	TF5-SD-914-0006	12/12	-	166,000	NA	**5,500 N**	NA	**Yes**	ASL
7439-92-1	Lead	11.5 J	95.8 J	mg/kg	TF5-SD-918-0006	12/12	-	95.8	NA	400	150	No	BSL
7439-95-4	Magnesium	784	3,050	mg/kg	TF5-SD-922-0006	12/12	-	3,050	NA	NA	NA	No	NUT
7439-96-5	**Manganese**	112	982	mg/kg	TF5-SD-914-0006	12/12	-	982	NA	**180 N**	**390**	**Yes**	ASL
7439-97-6	Mercury	0.0145 J	0.19 J	mg/kg	TF5-SD-918-0006	12/12	-	0.19	NA	2.3 N[13]	23	No	BSL
7440-02-0	Nickel	13.4	127	mg/kg	TF5-SD-914-0006	12/12	-	127	NA	150 N	1,000	No	BSL
7440-09-7	Potassium	193 J	546	mg/kg	TF5-SD-924-0006	12/12	-	546	NA	NA	NA	No	NUT
7440-22-4	Silver	0.14 J	0.278 J	mg/kg	TF5-SD-923-0006-AVG	2/12	0.077 - 0.35	0.278	NA	39 N	200	No	BSL
7440-23-5	Sodium	30.2 J	252	mg/kg	TF5-SD-918-0006	12/12	-	252	NA	NA	NA	No	NUT
7440-28-0	Thallium	0.33 J	1.7 J	mg/kg	TF5-SD-924-0006	4/12	0.24 - 1.1	1.7	NA	NA	5.5	No	BSL
7440-62-2	Vanadium	6.6 J	27.3	mg/kg	TF5-SD-918-0006	12/12	-	27.3	NA	39 N	550	No	BSL
7440-66-6	Zinc	63.8	190	mg/kg	TF5-SD-924-0006	12/12	-	190	NA	2,300 N	6,000	No	BSL
Dioxins/Furans													
3268-87-9	1,2,3,4,6,7,8,9-OCDD	951 J	9,160 J	ng/kg	TF5-SD-917-0006	12/12	-	9,160	NA	15,000 C[14]	NA	No	BSL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	5.52 J	147	ng/kg	TF5-SD-924-0006	12/12	-	147	NA	15,000 C[14]	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	25.3	327	ng/kg	TF5-SD-919-0006	12/12	-	327	NA	450 C[14]	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	3.23 J	69.6	ng/kg	TF5-SD-924-0006	12/12	-	69.6	NA	450 C[14]	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.736 J	5.32 J	ng/kg	TF5-SD-924-0006	8/12	0.233 - 1.19	5.32	NA	450 C[14]	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.332 J	5.76 J	ng/kg	TF5-SD-924-0006	12/12	-	5.76	NA	45 C[14]	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	0.368 J	8.63	ng/kg	TF5-SD-917-0006	12/12	-	8.63	NA	45 C[14]	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.739 J	12.1	ng/kg	TF5-SD-919-0006	12/12	-	12.1	NA	45 C[14]	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.268 J	4.49 J	ng/kg	TF5-SD-924-0006	12/12	-	4.49	NA	45 C[14]	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	1.09 J	14.4	ng/kg	TF5-SD-924-0006	12/12	-	14.4	NA	45 C[14]	NA	No	BSL
72918-21-9	1,2,3,7,8,9-HXCDF	0.138 J	0.575 J	ng/kg	TF5-SD-924-0006	3/12	0.0671 - 0.438	0.575	NA	45 C[14]	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.291 J	3.06 J	ng/kg	TF5-SD-924-0006	11/12	0.0503 - 0.0503	3.06	NA	4.5 C[14]	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.0971 J	1.5 J	ng/kg	TF5-SD-917-0006	12/12	-	1.5	NA	150 C[14]	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.322 J	5.96	ng/kg	TF5-SD-917-0006	12/12	-	5.96	NA	45 C[14]	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.139 J	2.1 J	ng/kg	TF5-SD-917-0006	12/12	-	2.1	NA	15 C[14]	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.0846 J	0.48 J	ng/kg	TF5-SD-924-0006	9/12	0.0183 - 0.117	0.48	NA	4.5 C	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.178 J	2.02 J	ng/kg	TF5-SD-917-0006	12/12	-	2.02	NA	45 C[14]	NA	No	BSL
- -	**2,3,7,8-TCDD Equivalents**	1.03	14.7	ng/kg	TF5-SD-924-0006	12/12	-	14.7	NA	**4.5 C**	NA	**Yes**	ASL

TABLE 6-18
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENTS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

CAS Number	Chemical	Minimum Concentration(1)	Maximum Concentration(1)	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects(2)	Concentration Used for Screening(3)	Range of Background Concentrations(4)	USEPA RSL Residential Soil(5)	RIDEM Residential Direct Exposure Criteria(6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for sediment.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Value is for Endrin.
11- Value is for Chlordane.
12 - Value is for hexavalent chromium.
13 - Value is for mercuric chloride and other mercury salts.
14 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SD-913-0006
TF5-SD-914-0006
TF5-SD-915-0006
TF5-SD-916-0006
TF5-SD-917-0006
TF5-SD-918-0006
TF5-SD-919-0006
TF5-SD-920-0006
TF5-SD-921-0006
TF5-SD-922-0006
TF5-SD-923-0006-AVG
TF5-SD-924-0006

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 6-19
CHEMICALS RETAINED AS COPCS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Parameter	Tank Farm 4								Tank Farm 5							
	Surface Soil		Subsurface Soil		Groundwater		Surface Water	Sediment	Surface Soil		Subsurface Soil		Groundwater		Surface Water	Sediment
	Direct Contact	Soil to Groundwater	Direct Contact	Soil to Groundwater	Direct Contact	Vapor Intrusion			Direct Contact	Soil to Groundwater	Direct Contact	Soil to Groundwater	Direct Contact	Vapor Intrusion		
Volatile Organic Compounds																
Benzene				E									E			
Chloroform															E	
Semivolatile Organic Compounds																
Benzo(a)anthracene	E, R	E	E	E			E	E	E	E		E			E	E
Benzo(a)pyrene	E, R	E	E	E				E	E	E		E			E	E, R
Benzo(b)fluoranthene	E, R	E	E	E				E	E	E					E	E, R
Benzo(g,h,i)perylene	R															
Benzo(k)fluoranthene	E, R	E		E												
Chrysene	E, R	E	R													R
Dibenzo(a,h)anthracene	E, R	E	E	E				E	E	E						E
Fluoranthene	R															
Indeno(1,2,3-cd)pyrene	E, R	E		E					E	E					E	E
Naphthalene		E		E	E							E			E	
Pyrene	R															
Benzo(a)pyrene Equivalents	E		E				E	E	E		E				E	E
Pesticides/PCBs																
beta-BHC		E														
delta-BHC		E														
Aroclor-1254				E						E						
Other Aroclors				O						O						
Endrin Aldehyde					E											
gamma-BHC (Lindane)		E														
Toxaphene		E														
Dioxins/Furans																
1,2,3,4,6,7,8,9-OCDD	E	E	E	E						E	E	E				
1,2,3,4,6,7,8-HPCDD		E		E						E		E				
1,2,3,4,7,8-HXCDF										E						
1,2,3,6,7,8-HXCDD										E						
1,2,3,7,8,9-HXCDD				E						E						
1,2,3,7,8-PECDD		E								E						
2,3,4,7,8-PECDF										E						
2,3,7,8-TCDD TEQs	E		E					E	E		E					E
Inorganics																
Aluminum					E			E					E		E	E
Antimony																
Arsenic	E, R	E	E, R	E	E		E	E, R	E, R	E	E, R	E	E		E	E, R
Beryllium	R		R					R	R							R
Chromium								E								E
Cobalt	E	E	E	E	E			E	E	E	E	E	E			E
Iron	E	E	E	E	E		E	E	E	E	E	E	E		E	E
Lead		E		E						E		E				
Manganese	E, R	E	E, R	E	E			E, R	E, R	E	E, R	E	E			E, R
Mercury										E		E				
Nickel				E						E		E				
Selenium		E		E						E		E				
Thallium			R					R			R					
Petroleum Hydrocarbons																
Extractable Petroleum Hydrocarbons	R	R														

Notes
E - Chemical exceeded USEPA screening criteria and was retained as a COPC.
R - Chemical exceeded RIDEM screening criteria and was retained as a COPC.
O - Other aroclors are included in accordance with the Technical Memorandum for Data Summary and Plan for Risk Assessment which states "all aroclors will be accepted as COPCs if at least one aroclor is detected at maximum concentrations exceeding COPC screening levels."
Only aroclor-1254 was actually detected at concentrations exceeding screening levels.

TABLE 6-20
RECEPTORS AND EXPOSURE ROUTES FOR QUANTITATIVE EVALUATION
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptors	Exposure Routes
Industrial Worker (current/future land use)	• Soil incidental ingestion • Soil dermal contact • Inhalation of air/dust emissions
Adolescent Trespassers (7 to 18 years) (current/future land use)	• Soil incidental ingestion • Soil dermal contact • Inhalation of air/dust emissions • Surface water dermal contact • Sediment incidental ingestion • Sediment dermal contact
Small Child (0 to 6 years) and Adult Recreational Users (current/future land use)	• Soil incidental ingestion • Soil dermal contact • Inhalation of air/dust emissions • Surface water dermal contact • Sediment incidental ingestion • Sediment dermal contact
Construction Workers (future land use)	• Soil incidental ingestion • Soil dermal contact • Inhalation of air/dust emissions • Groundwater incidental ingestion (during excavation) • Groundwater dermal contact (during excavation) • Groundwater inhalation of volatile organics (during excavation)
Hypothetical Residents (Children/Adult) (future land use)	• Soil incidental ingestion • Soil dermal contact • Inhalation of air/dust emissions • Direct ingestion of groundwater • Groundwater dermal contact (showering/bathing) • Inhalation of volatiles in groundwater (showering/bathing)

TABLE 6-21
SELECTION OF EXPOSURE PATHWAYS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	Quant Quant	Industrial workers may contact surface soil during normal work activities.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Trespassers may contact surface soil while at the site.
				Recreational Users	Child	Ingestion Dermal	Quant Quant	Recreational users may contact surface soil while at the site.
					Adult	Ingestion Dermal	Quant Quant	
		Air	Tank Farms 4 & 5	Industrial Worker	Adult	Inhalation	Quant	Industrial workers may be exposed to fugitive dust and volatile emissions during work activities.
				Trespassers	Adolescents	Inhalation	Quant	Adolescent trespassers may be exposed to fugitive dust and volatile emissions while at the site.
				Recreational Users	Child	Inhalation	Quant	Recreational users may be exposed to fugitive dust and volatile emissions while at the site.
					Adult	Inhalation	Quant	
	Subsurface Soil	Subsurface Soil	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	Quant Quant	Although exposures to subsurface soil by industrial workers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Although exposures to subsurface soil by adolescent trespassers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Recreational Users	Child	Ingestion Dermal	Quant Quant	Although exposures to subsurface soil by recreational users is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	Quant Quant	
		Air	Tank Farms 4 & 5	Industrial Worker	Adult	Inhalation	Quant	Although exposures to subsurface soil by industrial workers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Trespassers	Adolescents	Inhalation	Quant	Although exposures to subsurface soil by adolescent trespassers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Recreational Users	Child	Inhalation	Quant	Although exposures to subsurface soil by recreational users is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
	Groundwater	Groundwater	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	None None	Industrial workers are not expected to have contact with groundwater.
				Trespassers	Adolescents	Ingestion Dermal	None None	Adolescent trespassers are not expected to be exposed to groundwater.
				Recreational Users	Child	Ingestion Dermal	None None	Recreational users are not expected to be exposed to groundwater.
					Adult	Ingestion Dermal	None None	
		Air	Tank Farms 4 & 5	Industrial Worker	Adult	Inhalation	None	Industrial workers are not expected to be exposed to COPCs that have volatilized from groundwater.
				Trespassers	Adolescents	Inhalation	None	Adolescent Trespassers are not expected to be exposed to COPCs that have volatilized from groundwater.

TABLE 6-21
SELECTION OF EXPOSURE PATHWAYS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Groundwater	Air	Tank Farms 4 & 5	Recreational Users	Child	Inhalation	None	Recreational user are not expected to be exposed to COPCs that have volatilized from groundwater.
					Adult	Inhalation	None	
	`		Vapor Intrusion	Industrial Worker	Adult	Inhalation	None	No COPCs were identified for migration of COPCs from groundwater through building foundations and into indoor air.
	Surface Water	Surface Water	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion	None	Industrial workers are not expected to be exposed to surface water.
						Dermal	None	
				Trespassers	Adolescents	Ingestion	None	Adolescent trespassers may have dermal contact with surface water.
						Dermal	Quant	
				Recreational Users	Child	Ingestion	None	Child recreational users are not expected to ingest surface water while wading.
						Dermal	Quant	Child recreational users are expected to be exposed to surface water while wading.
					Adult	Ingestion	None	Adult recreational users are not expected to ingest surface water while wading.
						Dermal	Quant	Adult recreational users are expected to be exposed to surface water while wading.
	Sediment	Sediment	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion	None	Industrial workers are not expected to be exposed to sediment.
						Dermal	None	
				Trespassers	Adolescents	Ingestion	Quant	Adolescent trespassers may contact sediment.
						Dermal	Quant	
				Recreational Users	Child	Ingestion	Quant	Recreational users may contact sediment.
						Dermal	Quant	
					Adult	Ingestion	Quant	
						Dermal	Quant	
Future	Surface Soil	Surface Soil	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion	Quant	Construction workers may have contact with surface soil during excavation activities.
						Dermal	Quant	
				Residents	Child	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
						Dermal	Quant	
					Adult	Ingestion	Quant	
						Dermal	Quant	
		Air	Tank Farms 4 & 5	Construction Workers	Adult	Inhalation	Quant	Construction workers may be exposed to fugitive dust and volatile emissions during construction activities.
				Residents	Child	Inhalation	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
	Subsurface Soil	Subsurface Soil	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion	Quant	Construction workers may have contact with subsurface soil during excavation activities.
						Dermal	Quant	
				Residents	Child	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
						Dermal	Quant	
					Adult	Ingestion	Quant	
						Dermal	Quant	

TABLE 6-21
SELECTION OF EXPOSURE PATHWAYS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Subsurface Soil	Air	Tank Farms 4 & 5	Construction Workers	Adult	Inhalation	Quant	Construction workers may have contact with subsurface soil during excavation activities.
				Residents	Child	Inhalation	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
	Groundwater	Groundwater	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion	Quant	Construction workers may have contact with ground water during excavation activities.
						Dermal	Quant	
				Residents	Child	Ingestion	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
						Dermal	Quant	
					Adult	Ingestion	Quant	
						Dermal	Quant	
		Air	Tank Farms 4 & 5	Construction Workers	Adult	Inhalation	Quant	Construction workers may be exposed to COPCs that have volatilized from groundwater during excavation activities.
				Residents	Child	Inhalation	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
			Vapor Intrusion	Residents	Child	Inhalation	None	No COPCs were identified for migration of COPCs from groundwater through building foundations and into indoor air.
					Adult	Inhalation	None	
	Surface Water	Surface Water	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion	None	Construction workers are not expected to be exposed to surface water.
						Dermal	None	
				Residents	Child	Ingestion	None	Child and adult residents are not expected to be exposed to surface water at Tank Farms 4 & 5. If they are exposed to surface water then exposures are expected to be similar to those of the child and adult recreational users.
						Dermal	None	
					Adult	Ingestion	None	
						Dermal	None	
	Sediment	Sediment	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion	None	Construction workers are not expected to be exposed to sediment.
						Dermal	None	
				Residents	Child	Ingestion	None	Child and adult residents are not expected to be exposed to sediment at Tank Farms 4 & 5. If they are exposed to sediment then exposures are expected to be similar to those of the child and adult recreational users.
						Dermal	None	
					Adult	Ingestion	None	
						Dermal	None	

Notes:
Quant - Quantitative.

TABLE 6-22
EXPOSURE POINT CONCENTRATIONS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Parameter	Tank Farm 4						Tank Farm 5					
	Surface Soil (0 - 1 feet) (mg/kg)	Surface/ Subsurface (mg/kg)	Groundwater RME (ug/L)	Groundwater CTE (ug/L)	Surface Water (ug/L)	Sediment (mg/kg)	Surface Soil (0 - 1 feet) (mg/kg)	Surface/ Subsurface (mg/kg)	Groundwater RME (ug/L)	Groundwater CTE (ug/L)	Surface Water (ug/L)	Sediment (mg/kg)
Volatile Organic Compounds												
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	1.2[1]	1.2[1]	NA	NA
Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1[1]	NA
Semivolatile Organic Compounds												
Benzo(a)anthracene	24.7[2]	6[3]	NA	NA	0.17[1]	0.01[4]	0.097[4]	0.036[5]	NA	NA	0.151[6]	0.44[4]
Benzo(a)pyrene	11[2]	2.7[3]	NA	NA	NA	0.11[4]	0.119[4]	0.046[5]	NA	NA	0.16[1]	0.54[4]
Benzo(b)fluoranthene	22.4[2]	5.5[3]	NA	NA	NA	0.127[4]	0.204[4]	0.073[5]	NA	NA	0.15[6]	0.57[7]
Benzo(g,h,i)perylene	3.9[2]	0.96[3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	8.7[2]	2.1[3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	2.7[2]	6.6[3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.64[4]
Dibenzo(a,h)anthracene	1.8[2]	0.19[5]	NA	NA	NA	0.028[4]	0.022[5]	0.01[6]	NA	NA	NA	0.12[7]
Fluoranthene	38[2]	9.2[3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	3.9[2]	0.72[8]	NA	NA	NA	NA	0.089[4]	0.03[6]	NA	NA	0.11[1]	0.38[7]
Naphthalene	NA	NA	0.19[1]	0.19[1]	NA	NA	NA	NA	NA	NA	1.5[1]	NA
Pyrene	39.4[2]	9.5[3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs												
Endrin Aldehyde	NA	NA	6.52[1]	6.52[1]	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans												
2,3,7,8-TCDD TEQs	0.0000031[4]	0.0000027[4]	NA	NA	NA	0.0000041[7]	0.0000041[7]	0.0000042[7]	NA	NA	NA	0.000009[7]
Inorganics												
Aluminum	NA	NA	253[1]	253[1]	NA	10,190[7]	NA	NA	1,480[1]	1,480[1]	852[1]	10,660[7]
Arsenic	15.8[7]	19.2[9]	6.3[1]	2.4[10]	0.36[6]	21.5[7]	26.4[4]	29.8[4]	8.8[1]	2.9	0.275[6]	62.5[9]
Beryllium	0.42[7]	0.39[4]	NA	NA	NA	0.52[7]	0.495[7]	NA	NA	NA	NA	0.63[7]
Chromium	NA	NA	NA	NA	NA	18.6[7]	NA	NA	NA	NA	NA	17[7]
Cobalt	13.3[7]	19.1[4]	12.6[1]	9[10]	NA	43.3[9]	10.3[7]	15.4[7]	19[1]	11.1[10]	NA	47.7[9]
Iron	33,452[7]	41,025[7]	17,100[1]	9,133[10]	426[7]	84,620[9]	25,700[7]	37,930[11]	24,300[1]	11,070[10]	1,068[5]	87,800[9]
Manganese	453[7]	1,065[9]	5,030[1]	1,512[10]	NA	2,204[9]	343[7]	1,053[9]	2,510[1]	1,168[10]	NA	437[12]
Thallium	NA	2.2[6]	NA	NA	NA	6.7[8]	NA	2.6[4]	NA	NA	NA	NA

Notes:
NA - Not applicable. Not a COPC for this media.
RME - Reasonable maximum exposures
CTE - Central Tendency exposures

1 - Maximum Detected Concentration
2 - 99% KM (Chebyshev)
3 - 97.5% KM (Chebyshev)
4 - 95% Approximate Gamma
5 - 95% KM (BCA)
6 - 95% KM (t)
7 - 95% Student's-t
8 - 95% KM (Chebyshev)
9 - 95% Chebyshev(Mean, Sd)
10 - Average Concentration
11 - 95% Modified-t
12 - 95% H-UCL

TABLE 6-23
SUMMARY OF EXPOSURE INPUT PARAMETERS
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Exposure Parameter	Construction Worker	Industrial Worker	Adolescent Trespasser	Child Recreational User	Adult Recreational User	Child Resident	Adult Resident
All Exposures							
ED (years)	1[1]	25[2,3]	12[4]	6[2]	24[2]	6[2,3]	24[2,3]
BW (kg)	70[2]	70[2,3]	50[2]	15[2]	70[2]	15[2,3]	70[2,3]
AT_n (days)	365[5]	9,125[3,5]	4,380[5]	2,190[5]	8,760[5]	2,190[3,5]	8,760[3,5]
AT_c (days)	25,550[5]	25,550[3,5]	25,550[5]	25,550[5]	25,550[5]	25,550[3,5]	25,550[3,5]
Incidental Ingestion/Dermal Contact with Soil							
C_{soil} (mg/kg)	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]
IR (mg/day)	330[2]	100[2]	100[2]	200[2]	100[2]	200[2,3]	100[2,3]
EF-Soil (days/year)	130[7]	250[3,8]	48[9]	48[9]	48[9]	350[3,10]	350[3,10]
FI (unitless)	1	1	1	1	1	1	1
SA (cm^2/day)	3,300[8]	3,300[8]	4,050[11]	2,800[8]	5,700[8]	2,800[8]	5,700[8]
AF (mg/cm^2)	0.3[8]	0.2[8]	0.4[8]	0.2[8]	0.07[8]	0.2[8]	0.07[8]
ABS (unitless)	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]
CF (kg/mg)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06
Inhalation Fugitive Dust/Volatile Emissions from Soil							
C_{air} (mg/m^3)	calculated[1]	calculated[1]	calculated[1]	calculated[1]	calculated[1]	calculated[1]	calculated[1]
ET (hours/day)	8[7]	8[12]	8[9]	8[9]	8[9]	24	24
EF-Soil (days/year)	130[7]	250[8]	48[9]	48[9]	48[9]	350[3,10]	350[3,10]
PEF (m^3/kg)	1.4E+06[1]	1.1E+10[13]	1.1E+10[13]	1.1E+10[13]	1.1E+10[13]	1.1E+10[13]	1.1E+10[13]
Ingestion/Dermal Contact with Groundwater							
C_{gw} (µg/L)	Maximun	NA	NA	NA	NA	Maximun	Maximun
IR_{gw} (L/day)	0.05[14]	NA	NA	NA	NA	1.29[2]	2.0[2]
EF (days/year)	130[7]	NA	NA	NA	NA	350[10]	350[10]
ET (hours/day) and t_{event} (hours/event)	8[7]	NA	NA	NA	NA	1.0[8]	0.58[8]
EV (events/day)	1[14]	NA	NA	NA	NA	1[14]	1[14]
A (cm^2/day)	3,300[8]	NA	NA	NA	NA	6,600[8]	18,000[8]
Kp (cm/hour), t* (hour/event), τ (hour), and B (unitless)	chemical-specific[8]	NA	NA	NA	NA	chemical-specific[8]	chemical-specific[8]

TABLE 6-23
SUMMARY OF EXPOSURE INPUT PARAMETERS
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Exposure Parameter	Construction Worker	Industrial Worker	Adolescent Trespasser	Child Recreational User	Adult Recreational User	Child Resident	Adult Resident
Inhalation of Volatile Emissions from Groundwater							
C_{air} (mg/m^3)	calculated[15]	NA	NA	NA	NA	NA	NA
ET (hours/day)	8[7]	NA	NA	NA	NA	NA	NA
EF (days/year)	130[7]	NA	NA	NA	NA	NA	NA
Dermal Contact with Surface Water							
C_{sw} (µg/L)	NA	NA	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	NA	NA
EF (days/year)	NA	NA	48[9]	48[9]	48[9]	NA	NA
ET (hours/day) and t_{event} (hours/event)	NA	NA	1[14]	1[14]	1[14]	NA	NA
EV (events/day)	NA	NA	1[14]	1[14]	1[14]	NA	NA
A (cm^2/day)	NA	NA	4,050[11]	2,800[8]	6,880[16]	NA	NA
K_p (cm/hour)	NA	NA	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	NA	NA
t* (hour/event), τ (hour), and B (unitless)	NA	NA	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	NA	NA
CF (L/cm^3)	NA	NA	1E-03	1E-03	1E-03	NA	NA
Incidental Ingestion/Dermal Contact with Sediment							
C_{sed} (mg/kg)	NA	NA	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	Maximum or 95% UCL[6]	NA	NA
IR (mg/day)	NA	NA	100[2]	200[2]	100[2]	NA	NA
EF-Sediment (days/year)	NA	NA	48[9]	48[9]	48[9]	NA	NA
FI (unitless)	NA	NA	1	1	1	NA	NA
SA (cm^2/day)	NA	NA	4,050[11]	2,800[8]	6,880[16]	NA	NA
AF (mg/cm^2)	NA	NA	1[8]	0.2[8]	0.07[8]	NA	NA
ABS (unitless)	NA	NA	chemical-specific[8]	chemical-specific[8]	chemical-specific[8]	NA	NA
CF (kg/mg)	NA	NA	1E-06	1E-06	1E-06	NA	NA

TABLE 6-23
SUMMARY OF EXPOSURE INPUT PARAMETERS
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Exposure Parameter	Construction Worker	Industrial Worker	Adolescent Trespasser	Child Recreational User	Adult Recreational User	Child Resident	Adult Resident

Notes:

A	Skin surface area available for contact	ED	Exposure duration
ABS	Absorption factor	EF	Exposure frequency
AF	Soil-to-skin adherence factor	ET	Exposure time
AT_c	Averaging time for carcinogenic effects	EV	Event frequency
AT_n	Averaging time for noncarcinogenic effects	FI	Fraction ingested from contaminated source
B	Bunge Model partitioning coefficient	IR	Ingestion rate (soil or groundwater)
BW	Body weight	K_p	Permeability coefficient from water through skin
CF	Conversion factor	SA	Skin surface area available for contact
CR	Contact rate	PEF	Particulate emission factor
$C_{soil/sed}$	Exposure concentration for soil/sediment	τ	Lag time
$C_{gw/sw}$	Exposure concentration for groundwater/surface water	t*	Time it takes to reach steady-state conditions
C_{air}	Exposure concentration for air	t_{event}	Duration of event

1 - USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9365.4-24.
2 - USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
3 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
4 - Adolescent ages 7 to 18 years old.
5 - USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
6 - USEPA, 2002. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.
7 - Assumes a 26 week construction project over a course of one year.
8 - USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. PA/540/R/99/005.
9 - Assumes 4 days a week for 12 weeks.
10 - Although USEPA Region 1 Risk Update No. 2 August 1994 recommends an exposure frequency of 150 days/year, this RI will follow national guidance per USEPA Region I direction September 28, 2006.
11 - Assumes 31 percent of the average total surface area of 1.31 m2 for females and males, ages 7 through 17 years (USEPA, 1997).
12 - Length of a typical work day.
13 - USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.
14 - Professional judgment.
15 - VDEQ September 2004. Virginia Department of Environmental Quality (VDEQ, online -http://www.deq.state.va.us/brownfieldweb/vrp.html).
16 - Assumes 38 percent of the total body surface area.

TABLE 6-24
SUMMARY OF EXPOSURE INPUT PARAMETERS
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Exposure Parameter	Construction Worker	Industrial Worker	Adolescent Trespasser	Child Recreational User	Adult Recreational User	Child Resident	Adult Resident
All Exposures							
ED (years)	1[1]	9[2]	6[2]	2[2]	7[2]	2[2]	7[2]
BW (kg)	70[2]	70[2]	50[2]	15[2]	70[2]	15[2]	70[2]
AT_n (days)	365[3]	3,285[3]	2,190[3]	730[3]	2,555[3]	730[3]	2,555[3]
AT_c (days)	25,550[3]	25,550[3]	25,550[3]	25,550[3]	25,550[3]	25,550[3]	25,550[3]
Incidental Ingestion/Dermal Contact with Soil							
C_{soil} (mg/kg)	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]
IR (mg/day)	330[2]	50[2]	50[2]	100[2]	50[2]	100[2]	50[2]
EF-Soil (days/year)	52[5]	219[6]	24[7]	24[7]	24[7]	234[8]	234[8]
FI (unitless)	1	1	1	1	1	1	1
SA (cm^2/day)	3,300[9]	3,300[9]	4,050[10]	2,800[9]	5,700[9]	2,800[9]	5,700[9]
AF (mg/cm^2)	0.1[9]	0.02[9]	0.04[9]	0.04[9]	0.01[9]	0.01[9]	0.04[9]
ABS (unitless)	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]
CF (kg/mg)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06
Inhalation Fugitive Dust/Volatile Emissions from Soil							
C_{air} (mg/m^3)	calculated[1]	calculated[1]	calculated[1]	calculated[1]	calculated[1]	calculated[1]	calculated[1]
ET (hours/day)	8[5]	8[11]	4[7]	4[7]	4[7]	24	24
EF-Soil (days/year)	52[5]	219[6]	24[7]	24[7]	24[7]	234[8]	234[8]
PEF (m^3/kg)	1.4E+06[1]	1.1E+10[12]	1.1E+10[12]	1.1E+10[12]	1.1E+10[12]	1.1E+10[12]	1.1E+10[12]
Ingestion/Dermal Contact with Groundwater							
C_{gw} (µg/L)	Average	NA	NA	NA	NA	Average	Average
IR_{gw} (L/day)	0.025[13]	NA	NA	NA	NA	0.74[2]	1.4[2]
EF (days/year)	52[5]	NA	NA	NA	NA	234[8]	234[8]
ET (hours/day) and t_{event} (hours/event)	4[5]	NA	NA	NA	NA	0.33[9]	0.25[9]
EV (events/day)	1[13]	NA	NA	NA	NA	1[13]	1[13]
A (cm^2/day)	3,300[9]	NA	NA	NA	NA	6,600[9]	18,000[9]
Kp (cm/hour), t* (hour/event), τ (hour), and B (unitless)	chemical-specific[9]	NA	NA	NA	NA	chemical-specific[9]	chemical-specific[9]

TABLE 6-24
SUMMARY OF EXPOSURE INPUT PARAMETERS
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Exposure Parameter	Construction Worker	Industrial Worker	Adolescent Trespasser	Child Recreational User	Adult Recreational User	Child Resident	Adult Resident
Inhalation of Volatile Emissions from Groundwater							
C_{air} (mg/m^3)	calculated[14]	NA	NA	NA	NA	NA	NA
ET (hours/day)	4[5]	NA	NA	NA	NA	NA	NA
EF (days/year)	52[5]	NA	NA	NA	NA	NA	NA
Dermal Contact with Surface Water							
C_{sw} (µg/L)	NA	NA	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	NA	NA
EF (days/year)	NA	NA	24[7]	24[7]	24[7]	NA	NA
ET (hours/day) and t_{event} (hours/event)	NA	NA	0.5[13]	0.5[13]	0.5[13]	NA	NA
EV (events/day)	NA	NA	1[13]	1[13]	1[13]	NA	NA
A (cm^2/day)	NA	NA	4,050[10]	2,800[9]	6,880[15]	NA	NA
K_p (cm/hour)	NA	NA	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	NA	NA
t* (hour/event), τ (hour), and B (unitless)	NA	NA	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	NA	NA
CF (L/cm^3)	NA	NA	1E-03	1E-03	1E-03	NA	NA
Incidental Ingestion/Dermal Contact with Sediment							
C_{sed} (mg/kg)	NA	NA	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	Maximum or 95% UCL[4]	NA	NA
IR (mg/day)	NA	NA	50[2]	100[2]	50[2]	NA	NA
EF-Sediment (days/year)	NA	NA	24[7]	24[7]	24[7]	NA	NA
FI (unitless)	NA	NA	1	1	1	NA	NA
SA (cm^2/day)	NA	NA	4,050[10]	2,800[9]	6,880[15]	NA	NA
AF (mg/cm^2)	NA	NA	0.2[9]	0.01[9]	0.04[9]	NA	NA
ABS (unitless)	NA	NA	chemical-specific[9]	chemical-specific[9]	chemical-specific[9]	NA	NA
CF (kg/mg)	NA	NA	1E-06	1E-06	1E-06	NA	NA

TABLE 6-24
SUMMARY OF EXPOSURE INPUT PARAMETERS
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Exposure Parameter	Construction Worker	Industrial Worker	Adolescent Trespasser	Child Recreational User	Adult Recreational User	Child Resident	Adult Resident

Notes:

A	Skin surface area available for contact	ED	Exposure duration
ABS	Absorption factor	EF	Exposure frequency
AF	Soil-to-skin adherence factor	ET	Exposure time
AT_c	Averaging time for carcinogenic effects	EV	Event frequency
AT_n	Averaging time for noncarcinogenic effects	FI	Fraction ingested from contaminated source
B	Bunge Model partitioning coefficient	IR	Ingestion rate (soil or groundwater)
BW	Body weight	K_p	Permeability coefficient from water through skin
CF	Conversion factor	SA	Skin surface area available for contact
CR	Contact rate	PEF	Particulate emission factor
$C_{soil/sed}$	Exposure concentration for soil/sediment	τ	Lag time
$C_{gw/sw}$	Exposure concentration for groundwater/surface water	t*	Time it takes to reach steady-state conditions
C_{air}	Exposure concentration for air	t_{event}	Duration of event

1 - USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9365.4-24.
2 - USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
3 - USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
4 - USEPA, 2002. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.
5 - Assumes two days a week over a 26 week construction project.
6 - USEPA November, 1993. Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
7 - Assumes 2 days a week for 12 weeks.
8 - Although USEPA Region 1 Risk Update No. 2 August 1994 recommends an exposure frequency of 150 days/year, this RI will follow national guidance per USEPA Region I direction September 28, 2006.
9 - USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. PA/540/R/99/005.
10 - Assumes 31 percent of the average total surface area of 1.31 m2 for females and males, ages 7 through 17 years (USEPA, 1997).
11 - Length of a typical work day.
12 - USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.
13 - Professional judgment.
14 - VDEQ September 2004. Virginia Department of Environmental Quality (VDEQ, online -http://www.deq.state.va.us/brownfieldweb/vrp.html).
15 - Assumes 38 percent of the total body surface area.

TABLE 6-25
INTERMEDIATE VARIABLES FOR CALCULATING DERMAL ABSORPTION
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
			Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Volatile Organic Compounds												
Benzene	Groundwater	NA	1	1.5E-02	cm/hr	(1)	hr	2.9E-01	hr	7.0E-01	hr	5.1E-02
Chloroform	Surface Water	NA	1	6.8E-03	cm/hr	(1)	hr	5.0E-01	hr	1.2E+00	hr	2.9E-02
Semivolatile Organic Compounds												
Benzo(a)anthracene	Soil, Surface Water, Sediment	0.13	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)
Benzo(a)pyrene	Soil, Surface Water, Sediment	0.13	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)
Benzo(b)fluoranthene	Soil, Surface Water, Sediment	0.13	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)
Benzo(g,h,i)perylene	Soil	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	Soil	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	Soil, Sediment	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	Soil, Sediment	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	Soil	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	Soil, Surface Water, Sediment	0.13	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)	NA(2)
Naphthalene	Groundwater, Surface Water	0.13	1	4.7E-02	cm/hr	(1)	hr	5.6E-01	hr	1.3E+00	hr	2.0E-01
Pyrene	Soil	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs												
Aroclor-1254	Soil	0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	Groundwater	NA	0.8	5.1E-03	cm/hr	(1)	hr	1.4E+01	hr	3.4E+01	hr	3.8E-02
Dioxins/Furans												
2,3,7,8-TCDD Equivalents	Soil, Sediment	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics												
Aluminum	Soil, Groundwater, Surface Water, Sediment	0	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Arsenic	Soil, Groundwater, Surface Water, Sediment	0.03	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Beryllium	Soil, Sediment	0	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Chromium	Soil, Sediment	0	1	2.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Cobalt	Soil, Groundwater, Sediment	0	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Iron	Soil, Groundwater, Surface Water, Sediment	0	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Manganese	Soil, Groundwater, Sediment	0	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA
Thallium	Soil, Sediment	0	1	1.0E-03	cm/hr	NA	NA	NA	NA	NA	NA	NA

TABLE 6-25
INTERMEDIATE VARIABLES FOR CALCULATING DERMAL ABSORPTION
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
			Value	Value	Units	Value	Units	Value	Units	Value	Units	Value

Notes:
All values from EPA's Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, July 2004.
1 - T(event) is 8 hrs for RME and 4 hrs for CTE for the construction worker; 1 hr for RME and 0.33 hrs for hypothetical child residents; and 0.58 hrs for RME and 0.25 hr for CTE for hypothetical adult residents.
2 - RAGS Part E recommends not attempting to quantify risk because contaminants are outside the effective predictive domain of the model.
FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water
T(event) = Event Duration
Tau = Lag Time
T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis
NA = Not applicable.

TABLE 6-26
CHEMICAL PROPERTIES FOR
VOLATILIZATION FROM SOIL/GROUNDWATER TO OUTDOOR AIR MODELS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Molecular Weight (g/mole)	Organic Carbon Partition Coefficient (cm^3/g)	Air Diffusivity (cm^2/sec)	Water Diffusivity (cm^2/sec)	Solubility Limit (mg/L)	Henry's Law Constant	
						(Dimensionless)	($atm\text{-}m^3/mol$)
Benzene	7.81E+01	1.46E+02	9.00E-02	1.00E-05	1.79E+03	2.30E-01	5.55E-03
Chloroform	1.19E+02	3.18E+01	7.70E-02	1.10E-05	7.95E+03	1.50E-01	3.67E-03
Naphthalene	1.28E+02	1.54E+03	6.00E-02	8.40E-06	3.10E+01	1.80E-02	4.40E-04

Source:
USEPA 2010: USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010.

TABLE 6-27
INPUT PARAMETERS FOR CALCULATION OF
THE VOLATILIZATION FROM SOIL TO OUTDOOR AIR MODELS
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Parameter	Definition	Value	Reference
Q/C	Inverse of mean concentration at center of source (g/m^2-s per kg/m^3).	73.95045	USEPA, 2010
T	Exposure interval (seconds).	9.5E+08	USEPA, 2002
pb	Dry soil bulk density (g/cm^3).	1.5	USEPA, 2002
ps	Soil particle density (g/cm^3).	2.65	USEPA, 2002
θw	Water-filled soil porosity (L_{pore}/L_{soil}).	0.15	USEPA, 2002
n	Total soil porosity (L_{pore}/L_{soil}).	0.434	USEPA, 2002
Di	Diffusivity in air (cm^2/sec).	Chemical specific	USEPA, 2002
H'	Dimensionless Henry's Law Constant.	Chemical specific	USEPA, 2002
S	Solubility limit (mg/L)	Chemical specific	USEPA, 2002
Dw	Diffusivity in water (cm^2/sec).	Chemical specific	USEPA, 2002
Koc	Soil organic carbon partition coefficient (cm^3/g).	Chemical specific	USEPA, 2002
foc	Fraction organic carbon in soil (g/g).	0.006	USEPA, 2002

Notes:
Chemical specific values are presented in Table 6-26.
USEPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2010: Soil Screening Guidance calculation Internet site at http://rais.ornl.gov/epa/ssl1.shtml.
Site-specific values for Hartford, Connecticut.

TABLE 6-28
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal[2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds										
Benzene	Chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	Blood	300/1	IRIS	1/14/2011
Chloroform	Chronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	Liver	100/1	IRS	1/14/2011
Semivolatile Organic Compounds										
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene[3]	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	1/14/2011
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	Chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	Liver	3000/1	IRIS	1/14/2011
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Body Weight	3000/1	IRIS	1/14/2011
Pyrene	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	1/14/2011
Pesticides/PCBs										
Aroclor-1254	Chronic	2.0E-05	mg/kg/day	1	2.0E-05	mg/kg/day	Autoimmune	300/1	IRIS	1/14/2011
Endrin Aldehyde[4]	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Liver	100/1	IRIS	1/14/2011
Dioxins/Furans										
2,3,7,8-TCDD	Chronic	1.0E-09	mg/kg/day	1	1.0E-09	mg/kg/day	Developmental	NA	ATSDR	12/1998
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	CNS	100	PPRTV	10/23/2006
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IRIS	1/14/2011
Beryllium	Chronic	2.0E-03	mg/kg/day	0.007	1.4E-05	mg/kg/day	GS	300/1	IRIS	1/14/2011
Hexavalent Chromium	Chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	Fetotoxicity, GS, Bone	300/3	IRIS	1/14/2011
Cobalt	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Blood	NA	PPRTV	8/25/2008
Iron	Chronic	7.0E-01	mg/kg/day	1	7.0E-01	mg/kg/day	GS	1.5	PPRTV	9/11/2006
Manganese (soil)[3]	Chronic	7.0E-02	mg/kg/day	0.04	2.8E-03	mg/kg/day	CNS	1/1	IRIS	1/14/2011
Manganese (water)[3]	Chronic	2.4E-02	mg/kg/day	0.04	9.6E-04	mg/kg/day	CNS	1/3	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1 - U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.
3 - Adjusted IRIS value in accordance with USEPA Region I Risk Update Number 4, November 1996.
4 - Values are for Enrdin.

Definitions:
ATSDR = Agency for Toxic Substances and Disease Registry.
CNS = Central Nervous System
CVS = Cardiovascular system
GS = Gastrointestinal
IRIS = Integrated Risk Information System
NA = Not Available.
PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 6-29
NON-CANCER TOXICITY DATA -- INHALATION
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD[1]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds									
Benzene	Chronic	3.0E-02	mg/m^3	8.6E-03	(mg/kg/day)	Blood	300/1	IRIS	1/14/2011
Chloroform	Chronic	9.8E-02	mg/m^3	2.8E-02	(mg/kg/day)	Liver	NA	ATSDR	9/1997
Semivolatile Organic Compounds									
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	3.0E-03	mg/m^3	8.6E-04	(mg/kg/day)	Nasal	3000/1	IRIS	1/14/2011
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs									
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans									
2,3,7,8-TCDD	Chronic	4.0E-08	mg/m3	1.1E-08	(mg/kg/day)	Liver, Respiratory, Developmental	NA	Cal EPA	9/2009
Inorganics									
Aluminum	Chronic	5.0E-03	mg/m3	1.4E-03	(mg/kg/day)	CNS	300	PPRTV	10/23/2006
Arsenic	Chronic	1.5E-05	mg/m3	4.3E-06	(mg/kg/day)	NA	NA	Cal EPA	9/2009
Beryllium	Chronic	2.0E-05	mg/m3	5.7E-06	(mg/kg/day)	Lungs	10/1	IRIS	1/14/2011
Hexavalent Chromium	Chronic	1.0E-04	mg/m^3	2.9E-05	(mg/kg/day)	Lungs	300/1	IRIS	1/14/2011
Cobalt	Chronic	6.0E-06	mg/m^3	1.7E-06	(mg/kg/day)	Lungs	NA	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	(mg/kg/day)	CNS	1000/1	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1 - Extrapolated RfD = RfC *$20m^3$/day / 70 kg

Definitions:
CNS = Central Nervous System
IRIS = Integrated Risk Information System

NA = Not Applicable
ATSDR = Agency for Toxic Substances and Disease Registry.
Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.
PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 6-30
CANCER TOXICITY DATA -- ORAL/DERMAL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds								
Benzene	5.5E-02	$(mg/kg/day)^{-1}$	1	5.5E-02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Chloroform	3.1E-02	$(mg/kg/day)^{-1}$	1	3.1E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	Cal EPA	9/2009
Semivolatile Organic Compounds								
Benzo(a)anthracene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(a)pyrene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	1/14/2011
Benzo(b)fluoranthene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Benzo(k)fluoranthene[3]	7.3E-02	$(mg/kg/day)^{-1}$	1	7.3E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Chrysene[3]	7.3E-03	$(mg/kg/day)^{-1}$	1	7.3E-03	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Dibenzo(a,h)anthracene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Fluoranthene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Indeno(1,2,3-cd)pyrene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Naphthalene	NA	NA	NA	NA	NA	C / Inadequate data of carcinogenicity in humans	IRIS	1/14/2011
Pyrene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Pesticides/PCBs								
Aroclor-1254	2.0E+00	$(mg/kg/day)^{-1}$	1	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans								
2,3,7,8-TCDD	1.3E+05	$(mg/kg/day)^{-1}$	1	1.3E+05	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	Cal EPA	9/2009
Inorganics								
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	$(mg/kg/day)^{-1}$	1	1.5E+00	$(mg/kg/day)^{-1}$	A	IRIS	1/14/2011
Beryllium	NA	NA	NA	NA	NA	Carcinogenic potential cannot be determined	IRIS	1/14/2011
Hexavalent Chromium[3]	5.0E-01	$(mg/kg/day)^{-1}$	0.025	2.0E+01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	NJDEP	4/8/2009
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	NA	Inadequate information to assess carcinogenic potential	IRIS	1/14/2011

TABLE 6-30
CANCER TOXICITY DATA -- ORAL/DERMAL
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

Notes:
1 - USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted cancer slope factor for dermal = Oral cancer slope factor / Oral Absorption Efficiency for Dermal.
3 - The carcinogenic PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

NJDEP = New Jersey Department of Environmental Protection, Derivation of Ingestion-Based Soil Remediation Criterion for Cr^{+6} Based on the NTP Chronic Bioassay Data for Sodium Dichromate Dihydrate, April 8, 2009.

USEPA(1) = OSWER Directive No.9285.7-75.

USEPA(2) = USEPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

TABLE 6-31
CANCER TOXICITY DATA -- INHALATION
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor[1]		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds							
Benzene	7.8E-06	$(ug/m^3)^{-1}$	2.7E-02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Chloroform	2.3E-05	$(ug/m^3)^{-1}$	8.1E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	1/14/2011
Semivolatile Organic Compounds							
Benzo(a)anthracene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Benzo(a)pyrene[2]	1.1E-03	$(ug/m^3)^{-1}$	3.9E+00	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Benzo(b)fluoranthene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Benzo(g,h,i)perylene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Benzo(k)fluoranthene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Chrysene[2]	1.1E-05	$(ug/m^3)^{-1}$	3.9E-02	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Dibenzo(a,h)anthracene[2]	1.2E-03	$(ug/m^3)^{-1}$	4.2E+00	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Fluoranthene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Indeno(1,2,3-cd)pyrene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Naphthalene	3.4E-05	$(ug/m3)^{-1}$	1.2E-01	$(mg/kg/day)^{-1}$	C/ Possible Human Carcinogen	Cal EPA(2)	8/2004
Pyrene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Pesticides/PCBs							
Aroclor-1254	5.7E-04	$(ug/m^3)^{-1}$	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans							
2,3,7,8-TCDD	3.8E+01	$(ug/m^3)^{-1}$	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	Cal EPA(1)	9/2009
Inorganics							
Aluminum	NA	NA	NA	NA	NA	NA	NA
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	1.5E+01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Beryllium	2.4E-03	$(ug/m^3)^{-1}$	8.4E+00	$(mg/kg/day)^{-1}$	B1 / Probable human carcinogen	IRIS	1/14/2011
Hexavalent Chromium[2]	8.4E-02	$(ug/m^3)^{-1}$	2.9E+02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Cobalt	9.0E-03	$(ug/m^3)^{-1}$	3.2E+01	$(mg/kg/day)^{-1}$	NA	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	Inadequate information to assess carcinogenic potential	IRIS	1/14/2011

TABLE 6-31
CANCER TOXICITY DATA -- INHALATION
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor[1]		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

Notes:
1 - Inhalation CSF = Unit Risk * 70 kg / 20m^3/day.
2 - The carcinogenic PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Definitions:
Cal EPA = California Environmental Protection Agency.
IRIS = Integrated Risk Information System.
NA = Not Available.
USEPA(1) = OSWER Directive No.9285.7-75.
USEPA(2) = USEPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.
Cal EPA(1) = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.
Cal EPA(2) = Adoption of Unit Risk Values for Naphthalene, August 2004.
PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 6-32
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Construction Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	4E-06	--	--	Benzo(a)pyrene	0.3	--
		Dermal Contact	1E-06	--	--	--	0.01	--
		Inhalation	3E-07	--	--	--	1	--
		Total	5E-06	--	--	Benzo(a)pyrene	1	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	1E-06	--	--	--	0.3	--
		Dermal Contact	3E-07	--	--	--	0.01	--
		Inhalation	3E-07	--	--	--	2	Manganese
		Total	2E-06	--	--	--	3	Manganese
	Groundwater	Incidental Ingestion	3E-08	--	--	--	0.1	--
		Dermal Contact	2E-08	--	--	--	0.8	--
		Inhalation	3E-10	--	--	--	0.0002	--
		Total	5E-08	--	--	--	0.8	--
	Total Surface Soil and Groundwater		5E-06				2	
	Total All Soil and Groundwater		2E-06				3	
Industrial Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	5E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.2	--
		Dermal Contact	4E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.01	--
		Inhalation	2E-09	--	--	--	0.0003	--
		Total	1E-04	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	0.2	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	2E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Arsenic	0.2	--
		Dermal Contact	1E-05	--	--	Benzo(a)pyrene, Arsenic	0.02	--
		Inhalation	2E-09	--	--	--	0.0005	--
		Total	3E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Arsenic	0.2	--

TABLE 6-32
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adolescent Trespassers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	0.04	--
		Dermal Contact	4E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	0.008	--
		Inhalation	2E-10	--	--	--	0.00005	--
		Total	6E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.05	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	5E-06	--	--	Benzo(a)pyrene	0.05	--
		Dermal Contact	9E-06	--	--	Benzo(a)pyrene	0.01	--
		Inhalation	2E-10	--	--	--	0.0001	--
		Total	1E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Arsenic	0.07	--
	Surface Water	Dermal Contact	1E-09	--	--	--	0.00002	--
		Total	1E-09	--	--	--	0.00002	--
	Sediment	Incidental Ingestion	2E-06	--	--	--	0.10	--
		Dermal Contact	3E-06	--	--	Arsenic	0.02	--
		Total	5E-06	--	--	Arsenic	0.1	--
	Total Surface Soil, Surface Water, and Sediment		5E-06				0.2	
	Total All Soil, Surface Water, and Sediment		2E-05				0.2	
Child Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-04	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	0.3	--
		Dermal Contact	4E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	0.010	--
		Inhalation	1E-10	--	--	--	0.00005	--
		Total	1E-04	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	0.3	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	0.4	--
		Dermal Contact	9E-06	--	--	Benzo(a)pyrene	0.01	--
		Inhalation	1E-10	--	--	--	0.0001	--
		Total	4E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.4	--
	Surface Water	Dermal Contact	1E-09	--	--	--	0.00004	--
		Total	1E-09	--	--	--	0.00004	--
	Sediment	Incidental Ingestion	7E-06	--	--	Arsenic	0.7	--
		Dermal Contact	7E-07	--	--	--	0.01	--
		Total	8E-06	--	--	Arsenic	0.7	--
	Total Surface Soil, Surface Water, and Sediment		2E-04				0.9	
	Total All Soil, Surface Water, and Sediment		5E-05				1	

TABLE 6-32
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adult Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.03	--
		Dermal Contact	8E-06	--	--	Benzo(a)pyrene	0.001	--
		Inhalation	3E-10	--	--	--	0.00005	--
		Total	3E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.03	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	5E-06	--	--	Benzo(a)pyrene, Arsenic	0.04	--
		Dermal Contact	2E-06	--	--	--	0.002	--
		Inhalation	4E-10	--	--	--	0.0001	--
		Total	8E-06	--	--	Benzo(a)pyrene, Arsenic	0.04	--
	Surface Water	Dermal Contact	2E-09	--	--	--	0.00002	--
		Total	2E-09	--	--	--	0.00002	--
	Sediment	Incidental Ingestion	3E-06	--	--	Arsenic	0.07	--
		Dermal Contact	4E-07	--	--	--	0.002	--
		Total	3E-06	--	--	Arsenic	0.07	--
	Total Surface Soil, Surface Water, and Sediment		3E-05				0.1	
	Total All Soil, Surface Water, and Sediment		1E-05				0.1	
Lifelong Recreational Users (Child and Adults)	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-04	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	NA	- -
		Dermal Contact	5E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	NA	- -
		Inhalation	4E-10	- -	- -	- -	NA	- -
		Total	2E-04	- -	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene, Arsenic	NA	- -
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-05	- -	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	NA	- -
		Dermal Contact	1E-05	- -	- -	Benzo(a)anthracene, Benzo(a)pyrene	NA	- -
		Inhalation	5E-10	- -	- -	- -	NA	- -
		Total	5E-05	- -	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	NA	- -
	Surface Water	Dermal Contact	4E-09	- -	- -	- -	NA	- -
		Total	4E-09	- -	- -	- -	NA	- -
	Sediment	Incidental Ingestion	1E-05	- -	- -	Arsenic, Chromium	NA	- -
		Dermal Contact	1E-06	- -	- -	- -	NA	- -
		Total	1E-05	- -	- -	Arsenic, Chromium	NA	- -
	Total Surface Soil, Surface Water, and Sediment		2E-04				NA	
	Total All Soil, Surface Water, and Sediment		6E-05				NA	

TABLE 6-32
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Child Residents	Surface Soil (0 - 1 Feet)	Ingestion	8E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	Benzo(k)fluoranthene	2	Target Organs HI < 1
		Dermal Contact	3E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene, Arsenic	0.07	--
		Inhalation	2E-09	--	--	--	0.001	--
		Total	1E-03	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	Benzo(k)fluoranthene	2	Target Organs HI < 1
	All Soil (0 - 10 Feet)	Ingestion	2E-04	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Arsenic	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene	3	Target Organs HI < 1
		Dermal Contact	7E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	0.10	--
		Inhalation	2E-09	--	--	--	0.002	--
		Total	3E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene	3	Target Organs HI < 1
	Groundwater	Ingestion	7E-05	--	Arsenic	--	29	Cobalt, Manganese, Arsenic, Iron, Endrin Aldehyde
		Dermal Contact	3E-07	--	--	--	3	Manganese
		Inhalation	0E+00	--	--	--	0.0009	--
		Total	7E-05	--	Arsenic	--	31	Cobalt, Manganese, Arsenic, Iron, Endrin Aldehyde
	Total Surface Soil and Groundwater		1E-03				33	
	Total All Soil and Groundwater		3E-04				34	

TABLE 6-32
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adult Residents	Surface Soil (0 - 1 Feet)	Ingestion	1E-04	--	Benzo(a)anthracene, Benzo(a)pyrene	Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	0.2	--
		Dermal Contact	6E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	0.01	--
		Inhalation	7E-09	--	--	--	0.001	--
		Total	2E-04	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene, Arsenic	0.2	--
	All Soil (0 - 10 Feet)	Ingestion	4E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	0.3	--
		Dermal Contact	2E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Arsenic	0.02	--
		Inhalation	8E-09	--	--	--	0.002	--
		Total	6E-05	--	Benzo(a)pyrene, Arsenic	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	0.3	--
	Groundwater	Ingestion	9E-05	--	Arsenic	--	9	Manganese
		Dermal Contact	5E-07	--	--	--	0.9	--
		Inhalation	0E+00	--	--	--	0.0003	--
		Total	9E-05	--	Arsenic	--	10	Manganese
	Total Surface Soil and Groundwater		3E-04				10	
	Total All Soil and Groundwater		1E-04				10	

TABLE 6-32
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Lifelong Residents (Child and Adults)	Surface Soil (0 - 1 Feet)	Ingestion	9E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	Benzo(k)fluoranthene	NA	- -
		Dermal Contact	3E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene, Arsenic	NA	- -
		Inhalation	9E-09	--	--	--	NA	
		Total	1E-03	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	Benzo(k)fluoranthene	NA	- -
	All Soil (0 - 10 Feet)	Ingestion	2E-04	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Arsenic	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene	NA	- -
		Dermal Contact	8E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Arsenic	NA	- -
		Inhalation	1E-08	--	--	--	NA	- -
		Total	3E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene	NA	- -
	Groundwater	Ingestion	2E-04	Arsenic	--	--	NA	- -
		Dermal Contact	8E-07	--	--	--	NA	- -
		Inhalation	0E+00	--	--	--	NA	- -
		Total	2E-04	Arsenic	--	--	NA	- -
	Total Surface Soil and Groundwater		1E-03				NA	
	Total All Soil and Groundwater		5E-04				NA	

Notes:
NA - Not applicable.
A bolded chemical name indicates that chemical is present at naturally occurring levels.

TABLE 6-33
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Construction Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-06	--	--	--	0.1	--
		Dermal Contact	2E-07	--	--	--	0.001	--
		Inhalation	5E-08	--	--	--	0.2	--
		Total	2E-06	--	--	--	0.3	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	6E-07	--	--	--	0.1	--
		Dermal Contact	5E-08	--	--	--	0.002	--
		Inhalation	6E-08	--	--	--	0.4	--
		Total	7E-07	--	--	--	0.6	--
	Groundwater	Incidental Ingestion	3E-09	--	--	--	0.01	--
		Dermal Contact	4E-09	--	--	--	0.2	--
		Inhalation	6E-11	--	--	--	0.00004	--
		Total	6E-09	--	--	--	0.2	--
	Total Surface Soil and Groundwater		2E-06				0.5	
	Total All Soil and Groundwater		7E-07				0.7	
Industrial Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	9E-06	--	--	Benzo(a)pyrene	0.07	--
		Dermal Contact	1E-06	--	--	--	0.001	--
		Inhalation	5E-10	--	--	--	0.0002	--
		Total	1E-05	--	--	Benzo(a)pyrene	0.07	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-06	--	--	Arsenic	0.09	--
		Dermal Contact	4E-07	--	--	--	0.002	--
		Inhalation	6E-10	--	--	--	0.0005	--
		Total	4E-06	--	--	Arsenic	0.09	--
Adolescent Trespassers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-06	--	--	--	0.01	--
		Dermal Contact	9E-07	--	--	--	0.0004	--
		Inhalation	4E-11	--	--	--	0.00001	--
		Total	3E-06	--	--	Benzo(a)pyrene	0.01	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	7E-07	--	--	--	0.01	--
		Dermal Contact	2E-07	--	--	--	0.0006	--
		Inhalation	5E-11	--	--	--	0.00003	--
		Total	9E-07	--	--	--	0.01	--
	Surface Water	Dermal Contact	1E-10	--	--	--	0.000005	--
		Total	1E-10	--	--	--	0.000005	--
	Sediment	Incidental Ingestion	3E-07	--	--	--	0.02	--
		Dermal Contact	6E-07	--	--	--	0.01	--
		Total	9E-07	--	--	--	0.04	--
	Total Surface Soil, Surface Water, and Sediment		4E-06				0.05	
	Total All Soil, Surface Water, and Sediment		2E-06				0.05	

TABLE 6-33
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Child Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-05	--	--	Benzo(a)pyrene	0.07	--
		Dermal Contact	2E-06	--	--	--	0.0010	--
		Inhalation	9E-12	--	--	--	0.00001	--
		Total	1E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	0.07	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-06	--	--	Benzo(a)pyrene	0.09	--
		Dermal Contact	4E-07	--	--	--	0.001	--
		Inhalation	8E-12	--	--	--	0.00003	--
		Total	3E-06	--	--	Benzo(a)pyrene	0.09	--
	Surface Water	Dermal Contact	9E-11	--	--	--	0.00001	--
		Total	9E-11	--	--	--	0.00001	--
	Sediment	Incidental Ingestion	6E-07	--	--	--	0.2	--
		Dermal Contact	3E-08	--	--	--	0.001	--
		Total	6E-07	--	--	--	0.2	--
	Total Surface Soil, Surface Water, and Sediment		1E-05				0.2	
	Total All Soil, Surface Water, and Sediment		4E-06				0.3	
Adult Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-06	--	--	--	0.007	--
		Dermal Contact	1E-07	--	--	--	0.0001	--
		Inhalation	2E-11	--	--	--	0.00001	--
		Total	1E-06	--	--	--	0.007	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	4E-07	--	--	--	0.01	--
		Dermal Contact	4E-08	--	--	--	0.0001	--
		Inhalation	3E-11	--	--	--	0.00003	--
		Total	4E-07	--	--	--	0.01	--
	Surface Water	Dermal Contact	2E-10	--	--	--	0.000006	--
		Total	2E-10	--	--	--	0.000006	--
	Sediment	Incidental Ingestion	2E-07	--	--	--	0.02	--
		Dermal Contact	3E-08	--	--	--	0.0006	--
		Total	2E-07	--	--	--	0.02	--
	Total Surface Soil, Surface Water, and Sediment		1E-06				0.03	
	Total All Soil, Surface Water, and Sediment		6E-07				0.03	
Lifelong Recreational Users (Child and Adults)	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-05	- -	- -	Benzo(a)anthracene, Benzo(a)pyrene	NA	- -
		Dermal Contact	2E-06	- -	- -	- -	NA	- -
		Inhalation	3E-11				NA	- -
		Total	1E-05	- -	- -	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	NA	- -
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-06	- -	- -	Benzo(a)pyrene	NA	- -
		Dermal Contact	4E-07	- -	- -	- -	NA	- -
		Inhalation	3E-11	- -	- -	- -	NA	- -
		Total	4E-06	- -	- -	Benzo(a)pyrene	NA	- -
	Surface Water	Dermal Contact	3E-10				NA	- -
		Total	3E-10	- -	- -	- -	NA	- -
	Sediment	Incidental Ingestion	8E-07	- -	- -	- -	NA	- -
		Dermal Contact	6E-08	- -	- -	- -	NA	- -
		Total	9E-07	- -	- -	- -	NA	- -
	Total Surface Soil, Surface Water, and Sediment		1E-05				NA	
	Total All Soil, Surface Water, and Sediment		4E-06				NA	

TABLE 6-33
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Child Residents	Surface Soil (0 - 1 Feet)	Ingestion	1E-04	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	0.7	--
		Dermal Contact	2E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	0.009	--
		Inhalation	5E-10	--	--	--	0.0007	--
		Total	1E-04	--	Benzo(a)anthracene, Benzo(a)pyrene	Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	0.7	--
	All Soil (0 - 10 Feet)	Ingestion	3E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	0.9	--
		Dermal Contact	4E-06	--	--	Benzo(a)pyrene	0.01	--
		Inhalation	5E-10	--	--	--	0.002	--
		Total	3E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	0.9	--
	Groundwater	Ingestion	5E-06	--	--	Arsenic	6	Manganese
		Dermal Contact	4E-08	--	--	--	1	--
		Inhalation	0E+00	--	--	--	0.0004	--
		Total	5E-06	--	--	Arsenic	7	Manganese
	Total Surface Soil and Groundwater		1E-04				8	
	Total All Soil and Groundwater		4E-05				8	
Adult Residents	Surface Soil (0 - 1 Feet)	Ingestion	1E-05	--	--	Benzo(a)pyrene	0.07	--
		Dermal Contact	1E-06	--	--	--	0.001	--
		Inhalation	1E-09	--	--	--	0.0007	--
		Total	1E-05	--	--	Benzo(a)pyrene	0.07	--
	All Soil (0 - 10 Feet)	Ingestion	4E-06	--	--	--	0.09	--
		Dermal Contact	4E-07	--	--	--	0.001	--
		Inhalation	2E-09	--	--	--	0.002	--
		Total	4E-06	--	--	Benzo(a)pyrene	0.1	--
	Groundwater	Ingestion	6E-06	--	--	Aroclor-1254	2	Target Organs HI < 1
		Dermal Contact	6E-08	--	--	--	0.4	--
		Inhalation	0E+00	--	--	--	0.0002	--
		Total	6E-06	--	--	Aroclor-1254	3	Target Organs HI < 1
	Total Surface Soil and Groundwater		2E-05				3	
	Total All Soil and Groundwater		1E-05				3	

TABLE 6-33
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 4
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks $> 10^{-4}$	Chemicals with Cancer Risks $> 10^{-5}$ and $\leq 10^{-4}$	Chemicals with Cancer Risks $> 10^{-6}$ and $\leq 10^{-5}$	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Lifelong Residents (Child and Adults)	Surface Soil (0 - 1 Feet)	Ingestion	1E-04	--	Benzo(a)anthracene, Benzo(a)pyrene	Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	NA	- -
		Dermal Contact	2E-05	--	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene	NA	- -
		Inhalation	2E-09	--	--	--	NA	
		Total	1E-04	--	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Arsenic	NA	- -
	All Soil (0 - 10 Feet)	Ingestion	3E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	NA	- -
		Dermal Contact	4E-06	--	--	Benzo(a)pyrene	NA	- -
		Inhalation	2E-09	--	--	--	NA	- -
		Total	4E-05	--	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic	NA	- -
	Groundwater	Ingestion	1E-05	--	--	Arsenic	NA	- -
		Dermal Contact	1E-07	--	--	--	NA	- -
		Inhalation	0E+00	--	--	--	NA	- -
		Total	1E-05	--	--	Arsenic	NA	- -
	Total Surface Soil and Groundwater		1E-04				NA	
	Total All Soil and Groundwater		5E-05				NA	

Notes:
NA - Not applicable.

TABLE 6-34
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 5
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Construction Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-06	--	--	--	0.3	--
		Dermal Contact	1E-07	--	--	--	0.02	--
		Inhalation	3E-07	--	--	--	0.9	--
		Total	1E-06	--	--	--	1	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	1E-06	--	--	--	0.4	--
		Dermal Contact	1E-07	--	--	--	0.02	--
		Inhalation	3E-07	--	--	--	2	Manganese
		Total	2E-06	--	--	--	3	Manganese
	Groundwater	Incidental Ingestion	5E-08	--	--	--	0.06	--
		Dermal Contact	3E-08	--	--	--	0.4	--
		Inhalation	7E-10	--	--	--	0.0002	--
		Total	8E-08	--	--	--	0.4	--
	Total Surface Soil and Groundwater		1E-06				2	
	Total All Soil and Groundwater		2E-06				3	
Industrial Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-05	--	--	Arsenic	0.2	--
		Dermal Contact	3E-06	--	--	Arsenic	0.02	--
		Inhalation	2E-09	--	--	--	0.0002	--
		Total	2E-05	--	Arsenic	--	0.2	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	2E-05	--	Arsenic	--	0.2	--
		Dermal Contact	3E-06	--	--	Arsenic	0.02	--
		Inhalation	2E-09	--	--	--	0.0005	--
		Total	2E-05	--	Arsenic	--	0.2	--
Adolescent Trespassers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-06	--	--	Arsenic	0.04	--
		Dermal Contact	1E-06	--	--	--	0.01	--
		Inhalation	1E-10	--	--	--	0.00004	--
		Total	3E-06	--	--	Arsenic	0.06	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	2E-06	--	--	Arsenic	0.06	--
		Dermal Contact	1E-06	--	--	--	0.01	--
		Inhalation	2E-10	--	--	--	0.0001	--
		Total	3E-06	--	--	Arsenic	0.07	--
	Surface Water	Dermal Contact	2E-09	--	--	--	0.0001	--
		Total	2E-09	--	--	--	0.0001	--
	Sediment	Incidental Ingestion	5E-06	--	--	Arsenic	0.1	--
		Dermal Contact	9E-06	--	--	Benzo(a)pyrene, Arsenic	0.07	--
		Total	1E-05	--	--	Benzo(a)pyrene, Arsenic	0.2	--
	Total Surface Soil, Surface Water, and Sediment		2E-05				0.3	
	Total All Soil, Surface Water, and Sediment		2E-05				0.3	
Child Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	7E-06	--	--	Arsenic	0.3	--
		Dermal Contact	9E-07	--	--	--	0.01	--
		Inhalation	7E-11	--	--	--	0.00004	--
		Total	8E-06	--	--	Arsenic	0.3	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	7E-06	--	--	Arsenic	0.4	--
		Dermal Contact	7E-07	--	--	--	0.02	--
		Inhalation	9E-11	--	--	--	0.0001	--
		Total	8E-06	--	--	Arsenic	0.4	--
	Surface Water	Dermal Contact	2E-09	--	--	--	0.0003	--
		Total	2E-09	--	--	--	0.0003	--
	Sediment	Incidental Ingestion	2E-05	--	--	Benzo(a)pyrene, Arsenic	0.9	--
		Dermal Contact	3E-06	--	--	--	0.03	--
		Total	2E-05	--	Arsenic	Benzo(a)pyrene	0.9	--
	Total Surface Soil, Surface Water, and Sediment		3E-05				1	
	Total All Soil, Surface Water, and Sediment		3E-05				1	

TABLE 6-34
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 5
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adult Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	3E-06	--	--	Arsenic	0.03	--
		Dermal Contact	4E-07	--	--	--	0.002	--
		Inhalation	3E-10	--	--	--	0.00004	--
		Total	3E-06	--	--	Arsenic	0.03	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-06	--	--	Arsenic	0.04	--
		Dermal Contact	4E-07	--	--	--	0.003	--
		Inhalation	4E-10	--	--	--	0.0001	--
		Total	3E-06	--	--	Arsenic	0.04	--
	Surface Water	Dermal Contact	4E-09	--	--	--	0.0002	--
		Total	4E-09	--	--	--	0.0002	--
	Sediment	Incidental Ingestion	7E-06	--	--	Arsenic	0.10	--
		Dermal Contact	1E-06	--	--	--	0.006	--
		Total	9E-06	--	--	Arsenic	0.1	--
	Total Surface Soil, Surface Water, and Sediment		1E-05				0.1	
	Total All Soil, Surface Water, and Sediment		1E-05				0.1	
Lifelong Recreational Users (Child and Adults)	Surface Soil (0 - 1 Feet)	Incidental Ingestion	1E-05	- -	- -	Arsenic	NA	- -
		Dermal Contact	1E-06	- -	- -	- -	NA	- -
		Inhalation	4E-10				NA	- -
		Total	1E-05	- -	- -	Arsenic	NA	- -
	All Soil (0 - 10 Feet)	Incidental Ingestion	1E-05	- -	- -	Arsenic	NA	- -
		Dermal Contact	1E-06	- -	- -	- -	NA	- -
		Inhalation	5E-10	- -	- -	- -	NA	- -
		Total	1E-05	- -	- -	Arsenic	NA	- -
	Surface Water	Dermal Contact	5E-09				NA	- -
		Total	5E-09				NA	- -
	Sediment	Incidental Ingestion	3E-05		Arsenic	Benzo(a)pyrene	NA	- -
		Dermal Contact	4E-06			Arsenic	NA	- -
		Total	3E-05		Arsenic	Benzo(a)pyrene	NA	- -
	Total Surface Soil, Surface Water, and Sediment		4E-05				NA	
	Total All Soil, Surface Water, and Sediment		4E-05				NA	
Child Residents	Surface Soil (0 - 1 Feet)	Ingestion	5E-05	--	Arsenic	Benzo(a)pyrene	2	Target Organs HI < 1
		Dermal Contact	7E-06	--	--	Benzo(a)pyrene, Arsenic	0.1	--
		Inhalation	2E-09	--	--	--	0.0009	--
		Total	6E-05	--	Arsenic	Benzo(a)pyrene	2	Target Organs HI < 1
	All Soil (0 - 10 Feet)	Ingestion	5E-05	--	Arsenic	Benzo(a)pyrene	3	Target Organs HI < 1
		Dermal Contact	5E-06	--	--	Arsenic	0.1	--
		Inhalation	2E-09	--	--	--	0.002	--
		Total	6E-05	--	Arsenic	Benzo(a)pyrene	3	Target Organs HI < 1
	Groundwater	Ingestion	1E-04	--	Arsenic	--	21	Cobalt, Manganese, Arsenic, Iron
		Dermal Contact	5E-07	--	--	--	1	--
		Inhalation	5E-07	--	--	--	0.03	--
		Total	1E-04	--	Arsenic	--	22	Cobalt, Manganese, Arsenic, Iron
	Total Surface Soil and Groundwater		2E-04				24	
	Total All Soil and Groundwater		2E-04				25	

TABLE 6-34
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 5
REASONABLE MAXIMUM EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adult Residents	Surface Soil (0 - 1 Feet)	Ingestion	2E-05	--	Arsenic	--	0.2	--
		Dermal Contact	3E-06	--	--	Arsenic	0.02	--
		Inhalation	6E-09	--	--	--	0.0009	--
		Total	2E-05	--	Arsenic	--	0.2	--
	All Soil (0 - 10 Feet)	Ingestion	2E-05	--	Arsenic	--	0.3	--
		Dermal Contact	3E-06	--	--	Arsenic	0.02	--
		Inhalation	8E-09	--	--	--	0.002	--
		Total	2E-05	--	Arsenic	--	0.3	--
	Groundwater	Ingestion	1E-04	--	Arsenic	--	6	Cobalt, Manganese
		Dermal Contact	7E-07	--	--	--	0.4	--
		Inhalation	6E-07	--	--	--	0.008	--
		Total	1E-04	--	Arsenic	--	7	Cobalt, Manganese
	Total Surface Soil and Groundwater		1E-04				7	
	Total All Soil and Groundwater		2E-04				7	
Lifelong Residents (Child and Adults)	Surface Soil (0 - 1 Feet)	Ingestion	7E-05	--	Arsenic	Benzo(a)pyrene	NA	- -
		Dermal Contact	9E-06	--	--	Benzo(a)pyrene, Arsenic	NA	- -
		Inhalation	8E-09	--	--	--	NA	
		Total	8E-05	--	Arsenic	Benzo(a)pyrene	NA	- -
	All Soil (0 - 10 Feet)	Ingestion	7E-05	--	Arsenic	Benzo(a)pyrene	NA	- -
		Dermal Contact	8E-06	--	--	Arsenic	NA	- -
		Inhalation	1E-08	--	--	--	NA	- -
		Total	8E-05	--	Arsenic	Benzo(a)pyrene	NA	- -
	Groundwater	Ingestion	2E-04	Arsenic	--	--	NA	- -
		Dermal Contact	1E-06	--	--	--	NA	- -
		Inhalation	1E-06	--	--	--	NA	- -
		Total	2E-04	Arsenic	--	--	NA	- -
	Total Surface Soil and Groundwater		3E-04				NA	
	Total All Soil and Groundwater		3E-04				NA	

Notes:
NA - Not applicable.

TABLE 6-35
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 5
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Construction Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	4E-07	--	--	--	0.1	--
		Dermal Contact	1E-08	--	--	--	0.002	--
		Inhalation	5E-08	--	--	--	0.2	--
		Total	5E-07	--	--	--	0.3	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	4E-07	--	--	--	0.1	--
		Dermal Contact	1E-08	--	--	--	0.002	--
		Inhalation	6E-08	--	--	--	0.4	--
		Total	5E-07	--	--	--	0.6	--
	Groundwater	Incidental Ingestion	3E-09	--	--	--	0.006	--
		Dermal Contact	5E-09	--	--	--	0.07	--
		Inhalation	1E-10	--	--	--	0.00004	--
		Total	9E-09	--	--	--	0.08	--
	Total Surface Soil and Groundwater		5E-07				0.4	
	Total All Soil and Groundwater		5E-07				0.7	
Industrial Workers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-06	--	--	Arsenic	0.07	--
		Dermal Contact	1E-07	--	--	--	0.002	--
		Inhalation	5E-10	--	--	--	0.0002	--
		Total	2E-06	--	--	Arsenic	0.07	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-06	--	--	Arsenic	0.09	--
		Dermal Contact	1E-07	--	--	--	0.002	--
		Inhalation	6E-10	--	--	--	0.0005	--
		Total	3E-06	--	--	Arsenic	0.10	--
Adolescent Trespassers	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-07	--	--	--	0.01	--
		Dermal Contact	3E-08	--	--	--	0.0006	--
		Inhalation	4E-11	--	--	--	0.00001	--
		Total	3E-07	--	--	--	0.01	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	3E-07	--	--	--	0.01	--
		Dermal Contact	3E-08	--	--	--	0.0007	--
		Inhalation	5E-11	--	--	--	0.00003	--
		Total	3E-07	--	--	--	0.02	--
	Surface Water	Dermal Contact	2E-10	--	--	--	0.00004	--
		Total	2E-10	--	--	--	0.00004	--
	Sediment	Incidental Ingestion	7E-07	--	--	--	0.03	--
		Dermal Contact	2E-06	--	--	--	0.03	--
		Total	3E-06	--	--	Arsenic	0.07	--
	Total Surface Soil, Surface Water, and Sediment		3E-06				0.08	
	Total All Soil, Surface Water, and Sediment		3E-06				0.08	
Child Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	6E-07	--	--	--	0.07	--
		Dermal Contact	3E-08	--	--	--	0.001	--
		Inhalation	6E-12	--	--	--	0.00001	--
		Total	6E-07	--	--	--	0.08	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	6E-07	--	--	--	0.10	--
		Dermal Contact	3E-08	--	--	--	0.002	--
		Inhalation	8E-12	--	--	--	0.00003	--
		Total	6E-07	--	--	--	0.10	--
	Surface Water	Dermal Contact	2E-10	--	--	--	0.00009	--
		Total	2E-10	--	--	--	0.00009	--
	Sediment	Incidental Ingestion	2E-06	--	--	--	0.2	--
		Dermal Contact	1E-07	--	--	--	0.003	--
		Total	2E-06	--	--	--	0.2	--
	Total Surface Soil, Surface Water, and Sediment		3E-06				0.3	
	Total All Soil, Surface Water, and Sediment		3E-06				0.3	

TABLE 6-35
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 5
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adult Recreational Users	Surface Soil (0 - 1 Feet)	Incidental Ingestion	2E-07	--	--	--	0.008	--
		Dermal Contact	8E-09	--	--	--	0.0002	--
		Inhalation	2E-11	--	--	--	0.00001	--
		Total	2E-07	--	--	--	0.008	--
	All Soil (0 - 10 Feet)	Incidental Ingestion	2E-07	--	--	--	0.01	--
		Dermal Contact	8E-09	--	--	--	0.0002	--
		Inhalation	3E-11	--	--	--	0.00003	--
		Total	2E-07	--	--	--	0.01	--
	Surface Water	Dermal Contact	3E-10	--	--	--	0.00005	--
		Total	3E-10	--	--	--	0.00005	--
	Sediment	Incidental Ingestion	5E-07	--	--	--	0.02	--
		Dermal Contact	1E-07	--	--	--	0.002	--
		Total	6E-07	--	--	--	0.03	--
	Total Surface Soil, Surface Water, and Sediment		8E-07				0.03	
	Total All Soil, Surface Water, and Sediment		9E-07				0.04	
Lifelong Recreational Users (Child and Adults)	Surface Soil (0 - 1 Feet)	Incidental Ingestion	8E-07	- -	- -	- -	NA	- -
		Dermal Contact	4E-08	- -	- -	- -	NA	- -
		Inhalation	3E-11	- -	- -	- -	NA	- -
		Total	8E-07	- -	- -	- -	NA	- -
	All Soil (0 - 10 Feet)	Incidental Ingestion	8E-07	- -	- -	- -	NA	- -
		Dermal Contact	3E-08	- -	- -	- -	NA	- -
		Inhalation	3E-11	- -	- -	- -	NA	- -
		Total	9E-07	- -	- -	- -	NA	- -
	Surface Water	Dermal Contact	5E-10	- -	- -	- -	NA	- -
		Total	5E-10	- -	- -	- -	NA	- -
	Sediment	Incidental Ingestion	2E-06	- -	- -	Arsenic	NA	- -
		Dermal Contact	2E-07	- -	- -	- -	NA	- -
		Total	3E-06	- -	- -	Arsenic	NA	- -
	Total Surface Soil, Surface Water, and Sediment		3E-06				NA	
	Total All Soil, Surface Water, and Sediment		3E-06				NA	
Child Residents	Surface Soil (0 - 1 Feet)	Ingestion	6E-06	--	--	Arsenic	0.7	--
		Dermal Contact	3E-07	--	--	--	0.01	--
		Inhalation	3E-10	--	--	--	0.0006	--
		Total	6E-06	--	--	Arsenic	0.7	--
	All Soil (0 - 10 Feet)	Ingestion	6E-06	--	--	Arsenic	0.9	--
		Dermal Contact	2E-07	--	--	--	0.02	--
		Inhalation	4E-10	--	--	--	0.001	--
		Total	6E-06	--	--	Arsenic	1.0	--
	Groundwater	Ingestion	6E-06	--	--	Arsenic	5	Cobalt, Manganese
		Dermal Contact	6E-08	--	--	--	0.4	--
		Inhalation	9E-08	--	--	--	0.01	--
		Total	6E-06	--	--	Arsenic	6	Cobalt, Manganese
	Total Surface Soil and Groundwater		1E-05				6	
	Total All Soil and Groundwater		1E-05				7	

TABLE 6-35
SUMMARY OF CANCER RISKS AND HAZARD INDICES - TANK FARM 5
CENTRAL TENDENCY EXPOSURES
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10^{-4}	Chemicals with Cancer Risks > 10^{-5} and ≤ 10^{-4}	Chemicals with Cancer Risks > 10^{-6} and ≤ 10^{-5}	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
Adult Residents	Surface Soil (0 - 1 Feet)	Ingestion	2E-06	--	--	Arsenic	0.08	--
		Dermal Contact	8E-08	--	--	--	0.002	--
		Inhalation	1E-09	--	--	--	0.0006	--
		Total	2E-06	--	--	Arsenic	0.08	--
	All Soil (0 - 10 Feet)	Ingestion	2E-06	--	--	Arsenic	0.1	--
		Dermal Contact	8E-08	--	--	--	0.002	--
		Inhalation	2E-09	--	--	--	0.001	--
		Total	2E-06	--	--	Arsenic	0.1	--
	Groundwater	Ingestion	8E-06	--	--	Arsenic	2	Target Organs HI < 1
		Dermal Contact	1E-07	--	--	--	0.2	--
		Inhalation	1E-07	--	--	--	0.005	--
		Total	8E-06	--	--	Arsenic	2	Target Organs HI < 1
	Total Surface Soil and Groundwater		1E-05				2	
	Total All Soil and Groundwater		1E-05				2	
Lifelong Residents (Child and Adults)	Surface Soil (0 - 1 Feet)	Ingestion	8E-06	--	--	Arsenic	NA	- -
		Dermal Contact	4E-07	--	--	--	NA	- -
		Inhalation	2E-09	--	--	--	NA	
		Total	8E-06	--	--	Arsenic	NA	- -
	All Soil (0 - 10 Feet)	Ingestion	8E-06	--	--	Arsenic	NA	- -
		Dermal Contact	3E-07	--	--	--	NA	- -
		Inhalation	2E-09	--	--	--	NA	- -
		Total	8E-06	--	--	Arsenic	NA	- -
	Groundwater	Ingestion	1E-05	--	--	Arsenic	NA	- -
		Dermal Contact	2E-07	--	--	--	NA	- -
		Inhalation	2E-07	--	--	--	NA	- -
		Total	1E-05	--	--	Arsenic	NA	- -
	Total Surface Soil and Groundwater		2E-05				NA	
	Total All Soil and Groundwater		2E-05				NA	

Notes:
NA - Not applicable.

TABLE 6-36
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
CONSTRUCTION WORKERS				
Surface Soil				
Site Risk[1]	5E-06	1	2E-06	0.3
Background Risk[2]	1E-06	0.2	6E-07	0.09
Site + Background Risk[3]	7E-06	1	2E-06	0.4
All Soil				
Site Risk	2E-06	3	7E-07	0.6
Background Risk	1E-06	0.2	6E-07	0.07
Site + Background Risk	4E-06	3	1E-06	0.6
Groundwater	5E-08	0.8	6E-09	0.2
Site Totals				
Total Surface Soil and Groundwater	5E-06	2	2E-06	0.5
Total All Soil and Groundwater	2E-06	4	7E-07	0.8
Site and Background Totals				
Total Surface Soil and Groundwater	7E-06	3	2E-06	0.6
Total All Soil and Groundwater	4E-06	4	1E-06	0.8
INDUSTRIAL WORKERS				
Surface Soil				
Site Risk	1E-04	0.2	1E-05	0.07
Background Risk	2E-06	0.01	4E-07	0.006
Site + Background Risk	1E-04	0.2	1E-05	0.07
All Soil				
Site Risk	3E-05	0.2	4E-06	0.09
Background Risk	2E-06	0.01	4E-07	0.006
Site + Background Risk	3E-05	0.2	4E-06	0.09
ADOLESCENT TRESPASSERS				
Surface Soil				
Site Risk	6E-05	0.05	3E-06	0.01
Background Risk	3E-07	0.004	4E-08	0.001
Site + Background Risk	6E-05	0.05	3E-06	0.01
All Soil				
Site Risk	1E-05	0.07	9E-07	0.01
Background Risk	3E-07	0.003	4E-08	0.0009
Site + Background Risk	1E-05	0.07	9E-07	0.01
Surface Water	1E-09	0.00002	1E-10	0.000005
Sediment	5E-06	0.1	9E-07	0.04
Site Totals				
Total Surface Soil, Surface Water and Sediment	6E-05	0.2	4E-06	0.05
Total All Soil, Surface Water and Sediment	2E-05	0.2	2E-06	0.05
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	6E-05	0.2	4E-06	0.05
Total All Soil, Surface Water and Sediment	2E-05	0.2	2E-06	0.05

TABLE 6-36
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
CHILD RECREATIONAL USERS				
Surface Soil				
Site Risk	1E-04	0.3	1E-05	0.07
Background Risk	1E-06	0.03	8E-08	0.007
Site + Background Risk	1E-04	0.3	1E-05	0.07
All Soil				
Site Risk	4E-05	0.4	3E-06	0.09
Background Risk	1E-06	0.02	8E-08	0.006
Site + Background Risk	4E-05	0.4	3E-06	0.1
Surface Water	1E-09	0.00004	9E-11	0.00001
Sediment	8E-06	0.7	6E-07	0.2
Site Totals				
Total Surface Soil, Surface Water and Sediment	2E-04	0.9	1E-05	0.2
Total All Soil, Surface Water and Sediment	5E-05	1	4E-06	0.3
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	2E-04	1.0	1E-05	0.2
Total All Soil, Surface Water and Sediment	5E-05	1	4E-06	0.3

ADULT RECREATIONAL USERS				
Surface Soil				
Site Risk	3E-05	0.03	1E-06	0.007
Background Risk	4E-07	0.003	3E-08	0.0007
Site + Background Risk	3E-05	0.03	1E-06	0.008
All Soil				
Site Risk	8E-06	0.04	4E-07	0.01
Background Risk	4E-07	0.002	3E-08	0.0006
Site + Background Risk	8E-06	0.04	4E-07	0.01
Surface Water	2E-09	0.00002	2E-10	0.000006
Sediment	3E-06	0.07	2E-07	0.02
Site Totals				
Total Surface Soil, Surface Water and Sediment	3E-05	0.1	1E-06	0.03
Total All Soil, Surface Water and Sediment	1E-05	0.1	6E-07	0.03
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	3E-05	0.1	1E-06	0.03
Total All Soil, Surface Water and Sediment	1E-05	0.1	7E-07	0.03

TABLE 6-36
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
LIFELONG RECREATIONAL USERS				
Surface Soil				
Site Risk	2E-04	NA	1E-05	NA
Background Risk	1E-06	NA	1E-07	NA
Site + Background Risk	2E-04	NA	1E-05	NA
All Soil				
Site Risk	5E-05	NA	4E-06	NA
Background Risk	1E-06	NA	1E-07	NA
Site + Background Risk	5E-05	NA	4E-06	NA
Surface Water	4E-09	NA	3E-10	NA
Sediment	1E-05	NA	9E-07	NA
Site Totals				
Total Surface Soil, Surface Water and Sediment	2E-04	NA	1E-05	NA
Total All Soil, Surface Water and Sediment	6E-05	NA	4E-06	NA
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	2E-04	NA	1E-05	NA
Total All Soil, Surface Water and Sediment	6E-05	NA	5E-06	NA

CHILD RESIDENTS				
Surface Soil				
Site Risk	1E-03	2	1E-04	0.7
Background Risk	7E-06	0.2	8E-07	0.06
Site + Background Risk	1E-03	2	1E-04	0.7
All Soil				
Site Risk	3E-04	3	3E-05	0.9
Background Risk	7E-06	0.2	8E-07	0.06
Site + Background Risk	3E-04	3	3E-05	0.9
Groundwater	7E-05	31	5E-06	6
Site Totals				
Total Surface Soil and Groundwater	1E-03	33	1E-04	7
Total All Soil and Groundwater	4E-04	34	4E-05	7
Site and Background Totals				
Total Surface Soil and Groundwater	1E-03	33	1E-04	7
Total All Soil and Groundwater	4E-04	34	4E-05	7

TABLE 6-36
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
ADULT RESIDENTS				
Surface Soil				
Site Risk	2E-04	0.2	1E-05	0.07
Background Risk	3E-06	0.02	3E-07	0.007
Site + Background Risk	2E-04	0.2	1E-05	0.08
All Soil				
Site Risk	6E-05	0.3	4E-06	0.1
Background Risk	3E-06	0.02	3E-07	0.006
Site + Background Risk	6E-05	0.3	4E-06	0.1
Groundwater	9E-05	10	6E-06	3
Site Totals				
Total Surface Soil and Groundwater	3E-04	10	2E-05	3
Total All Soil and Groundwater	2E-04	10	1E-05	3
Site and Background Totals				
Total Surface Soil and Groundwater	3E-04	10	2E-05	3
Total All Soil and Groundwater	2E-04	10	1E-05	3

LIFELONG RESIDENTS				
Surface Soil				
Site Risk	1E-03	NA	1E-04	NA
Background Risk	1E-05	NA	1E-06	NA
Site + Background Risk	1E-03	NA	1E-04	NA
All Soil				
Site Risk	3E-04	NA	4E-05	NA
Background Risk	1E-05	NA	1E-06	NA
Site + Background Risk	3E-04	NA	4E-05	NA
Groundwater	2E-04	NA	1E-05	NA
Site Totals				
Total Surface Soil and Groundwater	1E-03	NA	2E-04	NA
Total All Soil and Groundwater	5E-04	NA	5E-05	NA
Site and Background Totals				
Total Surface Soil and Groundwater	1E-03	NA	1E-04	NA
Total All Soil and Groundwater	5E-04	NA	5E-05	NA

Notes:
ILCR = Incremental Lifetime Cancer Risk
HI = Hazard Index
1 - Cancer risk or hazard index from only site-related chemicals detected at concentrations exceeding screening levels.
2 - Cancer risk or hazard index from only chemicals present at naturally ocurring levels detected at concentrations exceeding screening levels. Aluminum and chromium were within background levels in surface soil and subsurface soil No background samples are available for groundwater, surface water, and sediment.
3 - Cancer risk or hazard index from all chemicals detected at concentrations exceeding screening levels.

TABLE 6-37
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
CONSTRUCTION WORKERS				
Surface Soil				
Site Risk[1]	1E-06	1	5E-07	0.3
Background Risk[2]	1E-06	0.2	3E-07	0.04
Site + Background Risk[3]	3E-06	1	7E-07	0.3
All Soil				
Site Risk	2E-06	3	5E-07	0.6
Background Risk	1E-06	0.2	3E-07	0.04
Site + Background Risk	3E-06	3	8E-07	0.6
Groundwater	8E-08	0.4	9E-09	0.08
Site Totals				
Total Surface Soil and Groundwater	1E-06	2	5E-07	0.4
Total All Soil and Groundwater	2E-06	3	5E-07	0.7
Site and Background Totals				
Total Surface Soil and Groundwater	3E-06	2	7E-07	0.4
Total All Soil and Groundwater	3E-06	3	8E-07	0.7
INDUSTRIAL WORKERS				
Surface Soil				
Site Risk	2E-05	0.2	2E-06	0.07
Background Risk	2E-06	0.01	3E-07	0.005
Site + Background Risk	2E-05	0.2	3E-06	0.08
All Soil				
Site Risk	2E-05	0.2	3E-06	0.1
Background Risk	2E-06	0.01	3E-07	0.005
Site + Background Risk	2E-05	0.2	3E-06	0.1
ADOLESCENT TRESPASSERS				
Surface Soil				
Site Risk	3E-06	0.06	3E-07	0.01
Background Risk	2E-07	0.003	3E-08	0.0008
Site + Background Risk	3E-06	0.06	3E-07	0.01
All Soil				
Site Risk	3E-06	0.07	3E-07	0.02
Background Risk	3E-07	0.003	3E-08	0.0008
Site + Background Risk	4E-06	0.07	3E-07	0.02
Surface Water	2E-09	0.0001	2E-10	0.00004
Sediment	1E-05	0.2	3E-06	0.07
Site Totals				
Total Surface Soil, Surface Water and Sediment	2E-05	0.3	3E-06	0.08
Total All Soil, Surface Water and Sediment	2E-05	0.3	3E-06	0.08
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	2E-05	0.3	3E-06	0.08
Total All Soil, Surface Water and Sediment	2E-05	0.3	3E-06	0.08

TABLE 6-37
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
CHILD RECREATIONAL USERS				
Surface Soil				
Site Risk	8E-06	0.3	6E-07	0.08
Background Risk	8E-07	0.02	7E-08	0.005
Site + Background Risk	9E-06	0.3	7E-07	0.08
All Soil				
Site Risk	8E-06	0.4	6E-07	0.1
Background Risk	8E-07	0.02	7E-08	0.005
Site + Background Risk	9E-06	0.4	7E-07	0.1
Surface Water	2E-09	0.0003	2E-10	0.00009
Sediment	2E-05	0.9	2E-06	0.2
Site Totals				
Total Surface Soil, Surface Water and Sediment	3E-05	1	3E-06	0.3
Total All Soil, Surface Water and Sediment	3E-05	1	3E-06	0.3
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	3E-05	1	3E-06	0.3
Total All Soil, Surface Water and Sediment	3E-05	1	3E-06	0.3

ADULT RECREATIONAL USERS				
Surface Soil				
Site Risk	3E-06	0.03	2E-07	0.008
Background Risk	3E-07	0.002	3E-08	0.0006
Site + Background Risk	3E-06	0.04	2E-07	0.009
All Soil				
Site Risk	3E-06	0.04	2E-07	0.01
Background Risk	4E-07	0.002	3E-08	0.0005
Site + Background Risk	4E-06	0.05	3E-07	0.01
Surface Water	4E-09	0.0002	3E-10	0.00005
Sediment	9E-06	0.1	6E-07	0.03
Site Totals				
Total Surface Soil, Surface Water and Sediment	1E-05	0.1	8E-07	0.03
Total All Soil, Surface Water and Sediment	1E-05	0.1	9E-07	0.04
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	1E-05	0.1	9E-07	0.03
Total All Soil, Surface Water and Sediment	1E-05	0.1	9E-07	0.04

TABLE 6-37
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
LIFELONG RECREATIONAL USERS				
Surface Soil				
Site Risk	1E-05	NA	8E-07	NA
Background Risk	1E-06	NA	9E-08	NA
Site + Background Risk	1E-05	NA	9E-07	NA
All Soil				
Site Risk	1E-05	NA	9E-07	NA
Background Risk	1E-06	NA	1E-07	NA
Site + Background Risk	1E-05	NA	1E-06	NA
Surface Water	5E-09	NA	5E-10	NA
Sediment	3E-05	NA	3E-06	NA
Site Totals				
Total Surface Soil, Surface Water and Sediment	4E-05	NA	3E-06	NA
Total All Soil, Surface Water and Sediment	4E-05	NA	3E-06	NA
Site and Background Totals				
Total Surface Soil, Surface Water and Sediment	4E-05	NA	3E-06	NA
Total All Soil, Surface Water and Sediment	4E-05	NA	3E-06	NA
CHILD RESIDENTS				
Surface Soil				
Site Risk	6E-05	2	6E-06	0.7
Background Risk	6E-06	0.2	7E-07	0.05
Site + Background Risk	6E-05	2	7E-06	0.8
All Soil				
Site Risk	6E-05	3	6E-06	1
Background Risk	6E-06	0.1	7E-07	0.05
Site + Background Risk	6E-05	3	7E-06	1
Groundwater	1E-04	22	6E-06	6
Site Totals				
Total Surface Soil and Groundwater	2E-04	24	1E-05	6
Total All Soil and Groundwater	2E-04	25	1E-05	7
Site and Background Totals				
Total Surface Soil and Groundwater	2E-04	24	1E-05	7
Total All Soil and Groundwater	2E-04	25	1E-05	7

TABLE 6-37
RISKS ASSOCIATED WITH NATURALLY OCCURRING CHEMICALS - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Receptor	Reasonable Maximum Exposures		Central Tendency Exposure	
	ILCR	HI	ILCR	HI
ADULT RESIDENTS				
Surface Soil				
Site Risk	2E-05	0.2	2E-06	0.08
Background Risk	3E-06	0.02	3E-07	0.006
Site + Background Risk	3E-05	0.3	2E-06	0.08
All Soil				
Site Risk	2E-05	0.3	2E-06	0.1
Background Risk	3E-06	0.02	3E-07	0.005
Site + Background Risk	3E-05	0.3	2E-06	0.1
Groundwater	1E-04	7	8E-06	2
Site Totals				
Total Surface Soil and Groundwater	1E-04	7	1E-05	2
Total All Soil and Groundwater	2E-04	7	1E-05	2
Site and Background Totals				
Total Surface Soil and Groundwater	2E-04	7	1E-05	2
Total All Soil and Groundwater	2E-04	7	1E-05	2

LIFELONG RESIDENTS				
Surface Soil				
Site Risk	8E-05	NA	8E-06	NA
Background Risk	8E-06	NA	9E-07	NA
Site + Background Risk	9E-05	NA	9E-06	NA
All Soil				
Site Risk	8E-05	NA	8E-06	NA
Background Risk	9E-06	NA	9E-07	NA
Site + Background Risk	9E-05	NA	9E-06	NA
Groundwater	2E-04	NA	1E-05	NA
Site Totals				
Total Surface Soil and Groundwater	2E-04	NA	2E-05	NA
Total All Soil and Groundwater	3E-04	NA	2E-05	NA
Site and Background Totals				
Total Surface Soil and Groundwater	3E-04	NA	2E-05	NA
Total All Soil and Groundwater	3E-04	NA	2E-05	NA

Notes:
ILCR = Incremental Lifetime Cancer Risk
HI = Hazard Index
1 - Cancer risk or hazard index from only site-related chemicals detected at concentrations exceeding screening levels.
2 - Cancer risk or hazard index from only chemicals present at naturally ocurring levels detected at concentrations exceeding screening levels. Aluminum and chromium were within background levels in surface soil, and aluminum, beryllium, and chromium were identified as being within background levels in subsurface soil. No background samples are available for groundwater, surface water, and sediment.
3 - Cancer risk or hazard index from all chemicals detected at concentrations exceeding screening levels.

TABLE 6-38
CHEMICALS RETAINED AS CHEMICALS OF CONCERN - TANK FARM 4
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Receptor								
	Construction Workers	Industrial Workers	Adolescent Trespassers	Child Recreational Users	Adult Recreational Users	Lifelong Recreational Users	Child Residents	Adult Residents	Lifelong Residents
Surface Soil									
Carcinogenic PAHs						X	X	X	X
Arsenic							X	X	X
All Soil									
Carcinogenic PAHs							X	X	X
Arsenic							X	X	X
Manganese	X								
Groundwater									
Endrin Aldehyde							X		
Arsenic							X	X	
Cobalt							X		
Iron							X		
Manganese							X	X	
Surface Water									
No COCs identified for surface water.									
Sediment									
No COCs identified for sediment.									

A chemical is retained as a COC if it contributed to a total cancer risk greater than 1×10^{-4} or to a target organ hazard index greater than 1.

TABLE 6-39
CHEMICALS RETAINED AS CHEMICALS OF CONCERN - TANK FARM 5
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Receptor								
	Construction Workers	Industrial Workers	Adolescent Trespassers	Child Recreational Users	Adult Recreational Users	Lifelong Recreational Users	Child Residents	Adult Residents	Lifelong Residents
Surface Soil									
No COCs identified for surface soil.									
All Soil									
Manganese	X								
Groundwater									
Arsenic							X		X
Cobalt							X	X	
Iron							X		
Manganese							X	X	
Surface Water									
No COCs identified for surface water.									
Sediment									
No COCs identified for sediment.									

A chemical is retained as a COC if it contributed to a total cancer risk greater than 1×10^{-4} or to a target organ hazard index greater than 1.

TABLE 7-1
SURFACE SOIL COPC SELECTION
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Concentration(1)	95% UCL	Average of Positive Results(1)	Ecological Effects Quotient(2)				Rationale for Invertebrate/Plant Deletion or Selection	Retain for Food Chain Modeling ?
							Invertebrates(3)	Plants(3)	Avian(4)	Mammals(4)		
Volatile Organics (ug/kg)												
2-BUTANONE	6/24	3 J	150	TF4-SB-927-0001	22	35.1	NA	NA	NA	NA	NSL	YES
ACETONE	15/24	3.5 J	160 J	TF4-SB-928-0001	38	34.8	NA	NA	NA	0.06	NSL	YES
M+P-XYLENES	4/24	1.3 J	2.5 J	TF4-SB-939-0001	2.3	1.9	2.6E-05	2.6E-05	6.8E-07	6.8E-07	BSL	NO
TOLUENE	3/24	1.2 J	2	TF4-SB-923-0001, TF4-SB-926-0001	2	1.73	2.7E-05	2.7E-05	1.4E-06	1.4E-06	BSL	NO
TOTAL XYLENES	7/24	0.87 J	2.6 J	TF4-SB-931-0001	2.3	1.87	2.7E-05	2.7E-05	7.0E-07	7E-07	BSL	NO
Semivolatile Organics (ug/kg)												
2,4-DIMETHYLPHENOL	1/24	39 J	39 J	TF4-SB-934-0001	NA	39	NA	3.9	NA	NA	NSL/ASL	YES
2-CHLOROPHENOL	5/24	5.4	8	TF4-SB-939-0001	6.6	6.58	0.8	0.8	NA	0.03	BSL	YES
2-METHYLNAPHTHALENE	4/24	4.7 J	47	TF4-SB-934-0001	20	18.3	0.002	NA	NA	0.0005	BSL/NSL	YES
2-METHYLPHENOL	2/24	4.5	30	TF4-SB-934-0001	30	17.2	0.6	0.6	NA	0.0007	ASL	YES
4-METHYLPHENOL	3/24	5	81	TF4-SB-934-0001	18	47.3	1.6	1.6	NA	0.0005	ASL	YES
ACENAPHTHENE	5/24	6.2	100	TF4-SB-934-0001	100	25.4	0.003	0.005	NA	0.001	BSL	YES
ACENAPHTHYLENE	15/24	4	2500	TF4-SB-934-0001	773	185	0.09	NA	NA	0.03	BSL/NSL	YES
ANTHRACENE	16/24	4.3	8800	TF4-SB-934-0001	4065	573	0.3	3.52	NA	0.09	BSL/ASL	YES
BENZO(A)ANTHRACENE	21/24	8.2	54000	TF4-SB-934-0001	24740	2640	3	NA	NA	49	ASL/NSL	YES
BENZO(A)PYRENE	21/24	8.5	24000	TF4-SB-934-0001	11016	1210	1.3	1.2	NA	22	ASL	YES
BENZO(B)FLUORANTHENE	22/24	4.3 J	49000	TF4-SB-934-0001	22449	2330	2.7	NA	NA	45	ASL/NSL	YES
BENZO(G,H,I)PERYLENE	21/24	6	8500	TF4-SB-934-0001	3916	456	0.5	NA	NA	7.7	BSL/NSL	YES
BENZO(K)FLUORANTHENE	21/24	7.4 J	19000	TF4-SB-934-0001	8730	974	1.1	NA	NA	17	ASL/NSL	YES
BIS(2-ETHYLHEXYL)PHTHALATE	6/24	36 J	320 J	TF4-SB-931-0001	197	126	3.2	3.2	NA	0.3	ASL	YES
CARBAZOLE	1/24	740 J	740 J	TF4-SB-934-0001	NA	740	NA	NA	NA	NA	NSL	YES
CHRYSENE	21/24	12	59000	TF4-SB-934-0001	27035	2890	3.3	NA	NA	54	ASL/NSL	YES
DI-N-BUTYL PHTHALATE	1/24	78 J	78 J	TF4-SB-925-0001	NA	78	0.78	0.0004	NA	0.5	BSL	YES
DIBENZO(A,H)ANTHRACENE	14/24	3.8	3900 J	TF4-SB-934-0001	1813	300	0.2	NA	NA	3.5	BSL/NSL	YES
FLUORANTHENE	22/24	5.1	83000	TF4-SB-934-0001	37997	3890	2.9	1.66	NA	0.8	ASL	YES
FLUORENE	9/24	6.6	470	TF4-SB-934-0001	85	61.8	0.02	NA	NA	0.005	BSL/NSL	YES
INDENO(1,2,3-CD)PYRENE	21/24	5.7 J	8500	TF4-SB-934-0001	3913	450	0.5	NA	NA	7.7	BSL/NSL	YES
NAPHTHALENE	5/24	4.5	21	TF4-SB-931-0001	7.445	8.7	0.001	NA	NA	0.0002	BSL/NSL	YES
PHENANTHRENE	21/24	5.6	440	TF4-SB-934-0001	182	70	0.02	NA	NA	0.004	BSL/NSL	YES
PHENOL	8/24	7.1	68	TF4-SB-934-0001	31	34.1	0.02	0.02	NA	0.0006	BSL	YES
PYRENE	22/24	4.4	86000	TF4-SB-934-0001	39359	4010	4.8	NA	NA	78	ASL/NSL	YES
TOTAL PAHS	22/24	13.8 J	407000 J	TF4-SB-934-0001	186433	19300	NA	NA	NA	NA	NA	NA
Pesticides (ug/kg)												
4,4'-DDD	4/24	6	49	TF4-SB-934-0001	37	24.1	0.004	0.004	0.5	2.3	BSL	YES
4,4'-DDE	3/24	5.1 J	10 J	TF4-SB-921-0001	6.1	8.33	0.0008	0.0008	0.1	0.5	BSL	NO
4,4'-DDT	1/24	10 J	10 J	TF4-SB-934-0001	NA	10	0.0008	0.0008	0.1	0.5	BSL	NO
BETA-BHC	2/24	6.1 J	14	TF4-SB-931-0001	7.2	10	1.6	3.5	NA	NA	ASL	YES
DELTA-BHC	1/24	3.9	3.9	TF4-SB-942-0001	NA	3.9	0.39	0.39	NA	0.0004	BSL	YES
ENDOSULFAN I	1/24	2.5	2.5	TF4-SB-942-0001	NA	2.5	250	250	NA	0.02	ASL	YES
ENDOSULFAN SULFATE	2/24	4.8 J	22 J	TF4-SB-934-0001	22	13.4	2200	2200	NA	0.6	ASL	YES
ENDRIN	1/24	7.9 J	7.9 J	TF4-SB-934-0001	NA	7.9	198	198	NA	0.8	ASL	YES
ENDRIN ALDEHYDE	1/24	35 J	35 J	TF4-SB-934-0001	NA	35	875	875	NA	3.3	ASL	YES
ENDRIN KETONE	2/24	3.7 J	69	TF4-SB-934-0001	44	36.4	1725	1725	NA	6.8	ASL	YES
GAMMA-BHC (LINDANE)	1/24	3.4 J	3.4 J	TF4-SB-931-0001	NA	3.4	68	0.7	NA	0.03	ASL/BSL	YES
TOTAL DDD/DDE/DDT	6/24	5.1 J	59 J	TF4-SB-934-0001	16	21.9	0.005	0.005	0.6	2.8	BSL	YES
TOXAPHENE	1/24	240 J	240 J	TF4-SB-928-0001	NA	240	NA	NA	NA	2.0	NSL	YES

TABLE 7-1
SURFACE SOIL COPC SELECTION
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Concentration(1)	95% UCL	Average of Positive Results(1)	Ecological Effects Quotient(2)				Rationale for Invertebrate/Plant Deletion or Selection	Retain for Food Chain Modeling ?
							Invertebrates(3)	Plants(3)	Avian(4)	Mammals(4)		
Dioxins (ng/kg)												
TEQ BIRD	24/24	0.301 J	2.76 J	TF5-SB-976-0204	1.6	1.05	NA	NA	NA	NA	NSL	YES
TEQ MAMMAL	24/24	0.842 J	7.18 J	TF5-SB-976-0204	3.0	3.43	NA	NA	NA	NA	NSL	YES
Inorganics (mg/kg)												
ALUMINUM	24/24	4850	15200	TF4-SB-927-0001	10539	9660	NA	pH	NA	NA	NSL/ASL	YES
ARSENIC	24/24	4.2 J	59.5	TF4-SB-943-0001	16	11.8	0.99	3.3	1.4	1.3	BSL/ASL	YES
BARIUM	24/24	13.1	56.7	TF4-SB-927-0001	33	29.6	0.2	0.1	NA	0.03	BSL	YES
BERYLLIUM	24/24	0.096 J	0.7 J	TF4-SB-941-0001	0.42	0.361	0.02	0.07	NA	0.03	BSL	YES
CADMIUM	21/24	0.027 J	0.48	TF4-SB-931-0001	0.23	0.208	0.003	0.02	0.6	1.3	BSL	YES
CALCIUM	21/24	101 J	1900 J	TF4-SB-943-0001	726	599	NA	NA	NA	NA	NUT	NO
CHROMIUM	24/24	8.4 J	20.8	TF4-SB-927-0001	13	12.1	0.3	0.3	0.8	0.6	BSL	NO
COBALT	24/24	4.9 J	20.5 J	TF4-SB-936-0001	13	11.8	NA	1.6	0.2	0.09	NSL/ASL	NO
COPPER	24/24	5.4	25.2	TF4-SB-923-0001	17	14.9	0.3	0.4	0.9	0.5	BSL	NO
IRON	24/24	18000	53200	TF4-SB-936-0001	33452	30200	NA	pH	NA	NA	NSL/BSL	YES
LEAD	24/24	6.9 J	63.5 J	TF4-SB-923-0001	26	21.8	0.04	0.5	5.8	1.1	BSL	YES
MAGNESIUM	24/24	1110 J	3040	TF4-SB-927-0001	2106	1910	NA	NA	NA	NA	NUT	NO
MANGANESE	24/24	144	818	TF4-SB-943-0001	453	391	1.8	3.7	0.2	0.2	ASL	NO
MERCURY	19/24	0.031 J	0.14	TF4-SB-923-0001	0.07	0.063	0.01	0.01	NA	0.09	BSL	YES
NICKEL	24/24	11.5	37.1	TF4-SB-943-0001	25	22.6	0.1	0.98	0.2	0.3	BSL	NO
POTASSIUM	24/24	187 J	545 J	TF4-SB-935-0001	352	318	NA	NA	NA	NA	NUT	NO
SELENIUM	14/24	0.82 J	3.5	TF4-SB-935-0001	1.5	1.39	0.9	6.7	2.9	5.6	BSL/ASL	YES
SILVER	1/24	0.068 J	0.068 J	TF4-SB-935-0001	NA	0.068	NA	0.0001	0.02	0.005	NSL/BSL	NO
SODIUM	21/24	21 J	137 J	TF4-SB-923-0001	57	50.5	NA	NA	NA	NA	NUT	NO
THALLIUM	6/24	2.6	5.3	TF4-SB-943-0001	3.3	3.58	3.8	3.8	NA	93	ASL	YES
VANADIUM	24/24	12.6 J	37.6	TF4-SB-927-0001	23	20.8	0.3	0.3	4.8	0.1	BSL	YES
ZINC	24/24	27.8	125	TF4-SB-936-0001	78	67.6	1.0	0.8	2.7	1.6	ASL/BSL	YES
Miscellaneous Parameters												
pH	1/1	5.1	5.1	TF4-SB-934-0001	NA	5.1	NA	NA	NA	NA	NA	NA

NA = Not Applicable/Value not able to be calculated

1 - Sample and duplicate were averaged for the minimum, maximum, and average concentrations
2 - Ecological effects quotients were calculated by dividing the maximum detected concentration by the COPC screening level. Values are unitless. The screening levels are provided in Appendix I Table titled "Soil Ecological Screening Levels".
3 - Cells are shaded if the chemical was retained as a COPC for that receptor
4 - Shading for wildlife receptors indicates that the chemical was retained for food chain modeling. If a screening level was not available for a wildlife recepto or the chemical was retained for the other wildlife receptor, the chemical was retained for food chain modeling .

Associated Samples:

TF4-SB-920-0001	TF4-SB-928-0001	TF4-SB-936-0001
TF4-SB-921-0001	TF4-SB-929-0001	TF4-SB-937-0001
TF4-SB-922-0001	TF4-SB-930-0001	TF4-SB-938-0001
TF4-SB-923-0001	TF4-SB-931-0001	TF4-SB-939-0001
TF4-SB-924-0001	TF4-SB-932-0001	TF4-SB-940-0001
TF4-SB-925-0001	TF4-SB-933-0001	TF4-SB-941-0001
TF4-SB-926-0001	TF4-SB-934-0001	TF4-SB-942-0001
TF4-SB-927-0001	TF4-SB-935-0001	TF4-SB-943-0001

Rationale Codes
For Selection as a COPC:
ASL = Above COPC screening level
NSL = No screening level
For Elimination as a COPC:
BSL = Below COPC screening level
NUT = Essential nutrient

TABLE 7-2
SURFACE SOIL COPC SELECTION
TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Sample of Maximum Concentration[1]	95% UCL	Average of Positive Results[1]	Ecological Effects Quotient[2]				Rationale for Invertebrate/ Plant Deletion or Selection	Retain for Food Chain Modeling?
							Invertebrates[3]	Plants[3]	Avian[4]	Mammals[4]		
Volatile Organics (ug/kg)												
ACETONE	7/11	6 J	65 J	TF5-SB-968-0001	37.27	33.3	NA	NA	NA	2.6E-02	NSL	YES
ISOPROPYLBENZENE	1/11	6.2	6.2	TF5-SB-969-0001	N/A	6.2	NA	NA	NA	NA	NSL	YES
TOLUENE	1/11	1.8 J	1.8 J	TF5-SB-968-0001	N/A	1.8	2.4E-05	2.4E-05	1.3E-06	1.3E-06	BSL	NO
Semivolatile Organics (ug/kg)												
ACENAPHTHENE	3/11	4.2	7.7	TF5-SB-967-0001	7.7	5.7	2.7E-04	3.9E-04	NA	7.7E-05	BSL	YES
ACENAPHTHYLENE	4/11	7.6	26 J	TF5-SB-970-0001	15.82	14.4	9.0E-04	NA	NA	2.6E-04	BSL/NSL	YES
ANTHRACENE	7/11	4.5	27	TF5-SB-967-0001	14.85	12.9	9.3E-04	NA	NA	2.7E-04	BSL/NSL	YES
BENZALDEHYDE	1/11	73 J	73 J	TF5-SB-975-0001	N/A	73	NA	NA	NA	NA	NSL	YES
BENZO(A)ANTHRACENE	11/11	5.9	230	TF5-SB-967-0001	96.73	46.8	1.3E-02	NA	NA	2.1E-01	BSL/NSL	YES
BENZO(A)PYRENE	11/11	6.4	300	TF5-SB-967-0001	118.5	55.8	1.7E-02	NA	NA	2.7E-01	BSL/NSL	YES
BENZO(B)FLUORANTHENE	11/11	10	530 J	TF5-SB-967-0001	203.6	92.7	2.9E-02	NA	NA	4.8E-01	BSL/NSL	YES
BENZO(G,H,I)PERYLENE	11/11	4.4	270	TF5-SB-967-0001	101.3	48	1.5E-02	NA	NA	2.5E-01	BSL/NSL	YES
BENZO(K)FLUORANTHENE	11/11	4.6 J	200 J	TF5-SB-967-0001	74.33	36.4	1.1E-02	NA	NA	1.8E-01	BSL/NSL	YES
BIS(2-ETHYLHEXYL)PHTHALATE	1/11	58 J	58 J	TF5-SB-970-0001	N/A	58	5.8E-01	5.8E-01	NA	6.3E-02	BSL	YES
CHRYSENE	11/11	8.4	300	TF5-SB-967-0001	122.6	60.3	1.7E-02	NA	NA	2.7E-01	BSL/NSL	YES
DIBENZO(A,H)ANTHRACENE	7/11	4.3	57 J	TF5-SB-967-0001	21.76	17.4	3.2E-03	NA	NA	5.2E-02	BSL/NSL	YES
FLUORANTHENE	11/11	13	600	TF5-SB-967-0001	237.4	112	2.1E-02	NA	NA	6.0E-03	BSL/NSL	YES
FLUORENE	3/11	5.5	11	TF5-SB-967-0001	11	8.7	3.8E-04	NA	NA	1.1E-04	BSL/NSL	YES
INDENO(1,2,3-CD)PYRENE	11/11	4	240 J	TF5-SB-967-0001	89.18	41.4	1.3E-02	NA	NA	2.2E-01	BSL/NSL	YES
PHENANTHRENE	11/11	4.4	200	TF5-SB-967-0001	89.91	44.9	6.9E-03	NA	NA	2.0E-03	BSL/NSL	YES
PYRENE	11/11	11	430	TF5-SB-967-0001	179.8	87.4	2.4E-02	NA	NA	3.9E-01	BSL/NSL	YES
TOTAL PAHS	11/11	72.6 J	3410 J	TF5-SB-967-0001	1373	653	NA	NA	NA	NA	NA	NA
Pesticides/PCBs (ug/kg)												
4,4'-DDD	1/11	5.1	5.1	TF5-SB-967-0001	N/A	5.1	4.3E-04	4.3E-04	5.5E-02	2.4E-01	BSL	NO
4,4'-DDE	2/11	5.5	6.6	TF5-SB-971-0001	6.6	6.1	5.5E-04	5.5E-04	7.1E-02	3.1E-01	BSL	NO
4,4'-DDT	1/11	5.6 J	5.6 J	TF5-SB-971-0001	N/A	5.6	4.7E-04	4.7E-04	6.0E-02	2.7E-01	BSL	NO
AROCLOR-1254	1/11	39	39	TF5-SB-973-0001	N/A	39	1.2E-03	1.2E-03	3.0E+01	3.0E+01	BSL	YES
TOTAL DDD/DDE/DDT	2/11	10.6	12.2 J	TF5-SB-971-0001	12.2	11.4	1.0E-03	1.0E-03	1.3E-01	5.8E-01	BSL	NO
Dioxins (ng/kg)												
TEQ BIRD	11/11	0.324 J	4.62 J	TF5-SB-975-0001	2.451	1.76	NA	NA	NA	NA	NSL	YES
TEQ MAMMAL	11/11	1 J	5.98 J	TF5-SB-975-0001	4.033	3.13	NA	NA	NA	NA	NSL	YES
Inorganics (mg/kg)												
ALUMINUM	11/11	5460	9740	TF5-SB-969-0001	8499	7800	NA	pH	NA	NA	NSL/ASL	YES
ARSENIC	11/11	4.3 J	43.7	TF5-SB-972-0001	26.41	16.4	7.3E-01	2.4E+00	1.0E+00	9.5E-01	BSL/ASL	YES
BARIUM	11/11	9.5 J	23.7	TF5-SB-967-0001	18.36	15.8	7.2E-02	4.7E-02	NA	1.2E-02	BSL	YES
BERYLLIUM	11/11	0.33	0.55 J	TF5-SB-975-0001	0.495	0.45	1.4E-02	5.5E-02	NA	2.6E-02	BSL	YES
CADMIUM	10/11	0.1	0.33	TF5-SB-974-0001	0.232	0.20	2.4E-03	1.0E-02	4.3E-01	9.2E-01	BSL	NO
CALCIUM	11/11	166 J	1710 J	TF5-SB-970-0001	1078	783	NA	NA	NA	NA	NUT	NO
CHROMIUM	11/11	5.6	12.8	TF5-SB-969-0001	10.7	9.5	2.0E-01	2.0E-01	4.9E-01	3.8E-01	BSL	NO
COBALT	11/11	2.2 J	13.2 J	TF5-SB-969-0001	10.3	8.2	NA	1.0E+00	1.1E-01	5.7E-02	NSL/ASL	NO
COPPER	11/11	7.5	24.2	TF5-SB-967-0001	15.51	12.9	3.0E-01	3.5E-01	8.6E-01	4.9E-01	BSL	NO
IRON	11/11	11500	33700	TF5-SB-969-0001	25703	21800	NA	pH	NA	NA	NSL/ASL	YES

TABLE 7-2
SURFACE SOIL COPC SELECTION
TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Concentration(1)	95% UCL	Average of Positive Results(1)	Ecological Effects Quotient(2)				Rationale for Invertebrate/ Plant Deletion or Selection	Retain for Food Chain Modeling?
							Invertebrates (3)	Plants(3)	Avian(4)	Mammals(4)		
LEAD	11/11	9.3 J	33.3 J	TF5-SB-968-0001	26.66	21.7	2.0E-02	2.8E-01	3.0E+00	5.9E-01	BSL	YES
MAGNESIUM	11/11	824 J	2320 J	TF5-SB-969-0001	1876	1600	NA	NA	NA	NA	NUT	NO
MANGANESE	11/11	95.8 J	462	TF5-SB-974-0001	342.7	274	1.0E+00	2.1E+00	1.1E-01	1.2E-01	ASL	NO
MERCURY	2/11	0.019 J	0.12	TF5-SB-968-0001	0.12	0.07	1.0E-02	1.0E-02	NA	7.6E-02	BSL	YES
NICKEL	11/11	6.8 J	22.6	TF5-SB-974-0001	19.02	16	8.1E-02	5.9E-01	1.1E-01	1.7E-01	BSL	NO
POTASSIUM	11/11	142 J	388 J	TF5-SB-966-0001	263.6	226	NA	NA	NA	NA	NUT	NO
SELENIUM	6/11	2.9 J	4.2	TF5-SB-974-0001	3.636	3.6	1.0E+00	8.1E+00	3.5E+00	6.7E+00	ASL	YES
SILVER	8/11	0.095 J	0.21	TF5-SB-968-0001, TF5-SB-972-0001, TF5-SB-974-0001	0.189	0.172	NA	3.8E-04	5.0E-02	1.5E-02	NSL/BSL	NO
SODIUM	6/11	19.3 J	53.9 J	TF5-SB-966-0001	37.44	35.1	NA	NA	NA	NA	NUT	NO
THALLIUM	11/11	0.65 J	2.5	TF5-SB-973-0001	2.065	1.72	1.8E+00	1.8E+00	NA	4.4E+01	ASL	YES
VANADIUM	11/11	10.9 J	24 J	TF5-SB-968-0001	17.42	15.3	1.8E-01	1.8E-01	3.1E+00	8.6E-02	BSL	YES
ZINC	11/11	18.4 J	69.5	TF5-SB-967-0001	50.53	42	5.8E-01	4.3E-01	1.5E+00	8.8E-01	BSL	YES

NA = Not Applicable/Value not able to be calculated

1 - Sample and duplicate were averaged for the minimum, maximum, and average concentrations
2 - Ecological effects quotients were calculated by dividing the maximum detected concentration by the COPC screening level. Values are unitless. The screening levels are provided in Appendix I Table titled "Soil Ecological Screening Levels"
3 - Cells are shaded if the chemical was retained as a COPC for that receptor
4 - Shading for wildlife receptors indicates that the chemical was retained for food chain modeling. If a screening level was not available for a wildlife receptor or the chemical was retained for the other wildlife receptor, the chemical was retained for food chain modeling .

Associated Samples:

TF5-SB-966-0001	TF5-SB-972-0001
TF5-SB-967-0001	TF5-SB-973-0001
TF5-SB-968-0001	TF5-SB-974-0001
TF5-SB-969-0001	TF5-SB-975-0001
TF5-SB-970-0001	TF5-SB-976-0001
TF5-SB-971-0001	

Rationale Codes
For Selection as a COPC:
ASL = Above COPC screening level
NSL = No screening level
For Elimination as a COPC:
BSL = Below COPC screening leve
NUT = Essential nutrient

TABLE 7-3
SEDIMENT COPC SELECTION
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Sample of Maximum Concentration[1]	95% UCL	Average of Positive Results[1]	Ecological Screening Level	Source of Screening Level[2]	Ecological Effects Quotient[3]	Rationale for COPC Selection/ Deletion	Retain for Food Chain Modeling?
Volatile Organics (µg/kg)											
ACETONE	9/12	16	240 J	TF4-SD-907-0006	111	93.4	8.7	SCV[4]	27.6	ASL	YES
CARBON DISULFIDE	2/12	1.9 J	15 J	TF4-SD-912-0006	15	8.45	0.85	SCV	17.6	ASL	YES
Semivolatile Organics (µg/kg)											
2-METHYLNAPHTHALENE	4/12	2.68	10	TF4-SD-903-0006	5.78	5.38	20.2	NOAA[5]	0.5	BSL	YES
2-METHYLPHENOL	2/12	10 J	12 J	TF4-SD-912-0006	10.6	11	12	SCV	1.0	BSL	YES
4-METHYLPHENOL	5/12	3.68	16	TF4-SD-904-0006	8.67	8.12	NA	NA	NA	NSL	YES
ACENAPHTHENE	4/12	5.82 J	19	TF4-SD-905-0006	10.9	10.1	290	NOAA	0.1	BSL	YES
ACENAPHTHYLENE	8/12	4.5	28	TF4-SD-903-0006	11.1	8.54	160	NOAA	0.2	BSL	YES
ANTHRACENE	12/12	6.1	120	TF4-SD-903-0006	52.3	25.3	57.2	TEC	2.1	ASL	YES
BENZALDEHYDE	4/12	64 J	182 J	TF4-SD-911-0006-AVG	178	144	NA	NA	NA	NSL	YES
BENZO(A)ANTHRACENE	12/12	26 J	200 J	TF4-SD-903-0006	99.9	67.5	108	TEC	1.9	ASL	YES
BENZO(A)PYRENE	12/12	23.5 J	210	TF4-SD-903-0006	111	77.5	150	TEC	1.4	ASL	YES
BENZO(B)FLUORANTHENE	12/12	25 J	240 J	TF4-SD-903-0006	127	88.7	1800	NOAA[6]	0.1	BSL	YES
BENZO(G,H,I)PERYLENE	12/12	19.5	150	TF4-SD-903-0006	87.6	61	170	OMOE	0.9	BSL	YES
BENZO(K)FLUORANTHENE	12/12	33 J	200	TF4-SD-903-0006, TF4-SD-907-0006	126	87.6	240	OMOE	0.8	BSL	YES
BIS(2-ETHYLHEXYL)PHTHALATE	8/12	35 J	220 J	TF4-SD-907-0006	171	124	750	NOAA	0.3	BSL	YES
CHRYSENE	12/12	35.5 J	290 J	TF4-SD-903-0006	135	93.1	166	TEC	1.7	ASL	YES
DIBENZO(A,H)ANTHRACENE	12/12	6.6 J	53	TF4-SD-903-0006	27.9	19.4	33	TEC	1.6	ASL	YES
FLUORANTHENE	12/12	49.5 J	330	TF4-SD-903-0006	192	137	423	TEC	0.8	BSL	YES
FLUORENE	8/12	3.9	24	TF4-SD-905-0006	10.1	8.35	77.4	TEC	0.3	BSL	YES
INDENO(1,2,3-CD)PYRENE	12/12	16.5 J	120	TF4-SD-903-0006	72.9	50.9	200	OMOE	0.6	BSL	YES
NAPHTHALENE	8/12	4.1	6	TF4-SD-903-0006	5.2	5.04	176	TEC	0.0	BSL	YES
PHENANTHRENE	12/12	27	190	TF4-SD-905-0006	115	77.8	204	TEC	0.9	BSL	YES
PHENOL	3/12	3.52	15	TF4-SD-905-0006	6.6	7.77	48	NOAA	0.3	BSL	YES
PYRENE	12/12	41.5	260	TF4-SD-903-0006	153	110	195	TEC	1.3	ASL	YES
TOTAL PAHS	12/12	322 J	2400 J	TF4-SD-903-0006	1316	916	1610	TEC	1.5	ASL	YES
Pesticides (ug/kg)											
4,4'-DDD	1/12	3.4	3.4	TF4-SD-910-0006	NA	3.4	4.88	TEC	0.7	BSL	YES
4,4'-DDE	1/12	15 J	15 J	TF4-SD-910-0006	NA	15	3.16	TEC	4.7	ASL	YES
4,4'-DDT	1/12	6.7	6.7	TF4-SD-910-0006	NA	6.7	4.16	TEC	1.6	ASL	YES
ENDRIN ALDEHYDE	1/12	2.72	2.72	TF4-SD-911-0006-AVG	NA	2.72	2.22	TEC	1.2	ASL	YES
ENDRIN KETONE	1/12	20.8 J	20.8 J	TF4-SD-902-0006-AVG	NA	20.8	2.22	TEC	9.4	ASL	YES
TOTAL DDD/DDE/DDT	1/12	25.1 J	25.1 J	TF4-SD-910-0006	NA	25.1	5.28	TEC	4.8	ASL	YES
Dioxins (ng/kg)											
TEQ FISH	12/12	0.376 J	4.26 J	TF4-SD-910-0006	2.68	1.68	NA	NA	NA	NSL	YES
Inorganics (mg/kg)											
ALUMINUM	12/12	4730	12900	TF4-SD-910-0006	10186	8850	25500	NOAA	0.5	BSL	YES
ARSENIC	12/12	9.2	46.6 J	TF4-SD-906-0006	21.1	15.8	9.79	TEC	4.8	ASL	YES
BARIUM	12/12	16.6 J	64.7 J	TF4-SD-906-0006	42.7	33.9	48	NOAA[6]	1.3	ASL	YES
BERYLLIUM	12/12	0.21 J	0.68 J	TF4-SD-910-0006	0.516	0.445	NA	NA	NA	NSL	YES
CADMIUM	12/12	0.13 J	1.2	TF4-SD-906-0006	0.58	0.415	0.99	TEC	1.2	ASL	YES

TABLE 7-3
SEDIMENT COPC SELECTION
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Concentration(1)	95% UCL	Average of Positive Results(1)	Ecological Screening Level	Source of Screening Level(2)	Ecological Effects Quotient(3)	Rationale for COPC Selection/ Deletion	Retain for Food Chain Modeling?
CALCIUM	12/12	494 J	1220 J	TF4-SD-911-0006-AVG	952	811	NA	NA	NA	NUT	NO
CHROMIUM	12/12	7.3 J	29.2 J	TF4-SD-902-0006-AVG	18.6	15.4	43.4	TEC	0.7	BSL	YES
COBALT	12/12	9.4	76.2	TF4-SD-906-0006	43.3	19.2	50	NOAA	1.5	ASL	YES
COPPER	12/12	9.8	24.9	TF4-SD-910-0006	19.3	16.8	31.6	TEC	0.8	BSL	YES
IRON	12/12	21700	145000	TF4-SD-906-0006	84616	42300	20000	OMOE	7.3	ASL	YES
LEAD	12/12	6.3 J	96.2 J	TF4-SD-902-0006-AVG	52.8	39.7	35.8	TEC	2.7	ASL	YES
MAGNESIUM	12/12	1370	4160	TF4-SD-906-0006	2813	2440	NA	NA	NA	NUT	NO
MANGANESE	12/12	171	3440	TF4-SD-903-0006	2204	854	460	OMOE	7.5	ASL	YES
MERCURY	12/12	0.019 J	0.17	TF4-SD-909-0006	0.0905	0.0696	0.18	TEC	0.9	BSL	YES
NICKEL	12/12	16.3	132	TF4-SD-906-0006	73.6	32.6	22.7	TEC	5.8	ASL	YES
POTASSIUM	12/12	155 J	583	TF4-SD-910-0006	357	290	NA	NA	NA	NUT	NO
SILVER	1/12	0.12 J	0.12 J	TF4-SD-903-0006	NA	0.12	0.5	OMOE	0.2	BSL	YES
SODIUM	12/12	23.9 J	558	TF4-SD-911-0006-AVG	379	142	NA	NA	NA	NUT	NO
THALLIUM	10/12	0.45 J	11.5	TF4-SD-903-0006	6.68	2.82	NA	NA	NA	NSL	YES
VANADIUM	12/12	9.6	27.2	TF4-SD-910-0006	20.6	17.6	57	NOAA(6)	0.5	BSL	YES
ZINC	12/12	59	199	TF4-SD-906-0006	121	96.8	121	TEC	1.6	ASL	YES
Miscellaneous Parameters											
PH	12/12	4.9	6.6	TF4-SD-911-0006-AVG	NA	5.81	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	12/12	15000	50000	TF4-SD-912-0006	NA	30900	NA	NA	NA	NA	NA

NA = Not Applicable/Value not able to be calculated

1 - Sample and duplicate were averaged for the minimum, maximum, and average concentrations.
2 - The sources for the ecological screening levels in order of preference is as follows:
TEC- MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Archives of Environmental Contamination and Toxicology. Vol. 39, pp. 20-31.
OMOE - OMOE 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Ministry of Environment and Energy. August.
NOAA - Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration. http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html
SCV - Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision. Oak Ridge National Laboratory. ES/ER/TM-95/R4. November.
3 - Ecological effects quotients were calculated by dividing the maximum detected concentration by the COPC screening level. Values are unitless.
Cells are shaded if the chemical was retained as a COPC.
4 - Polar nonionic chemical for which the secondary chronic value is likely to be conservative.
5 - Saltwater TEL value.
6 - Saltwater AET value.

Associated Samples:

TF4-SD-901-0006	TF4-SD-904-0006	TF4-SD-907-0006	TF4-SD-910-0006
TF4-SD-902-0006-AVG	TF4-SD-905-0006	TF4-SD-908-0006	TF4-SD-911-0006-AVG
TF4-SD-903-0006	TF4-SD-906-0006	TF4-SD-909-0006	TF4-SD-912-0006

Rationale Codes
For Selection as a COPC:
ASL = Above COPC screening level
NSL = No screening level
For Elimination as a COPC:
BSL = Below COPC screening level
NUT = Essential nutrient

TABLE 7-4
SEDIMENT COPC SELECTION
TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Sample of Maximum Concentration[1]	95% UCL	Average of Positive Results[1]	Ecological Screening Level	Source of Screening Level[2]	Ecological Effects Quotient[3]	Rationale for COPC Selection/ Deletion	Retain for Food Chain Modeling?
Volatile Organics (µg/kg)											
1,2-DICHLOROBENZENE	1/12	1.6 J	1.6 J	TF5-SD-913-0006	NA	1.6	340	SQB	0.005	BSL	YES
ACETONE	11/12	13.4 J	200 J	TF5-SD-918-0006	114.8	88	8.7	SCV[4]	23.0	ASL	YES
CARBON DISULFIDE	1/12	3.9 J	3.9 J	TF5-SD-921-0006	NA	3.9	0.85	SCV	4.6	ASL	YES
Semivolatile Organics (µg/kg)											
2,4-DIMETHYLPHENOL	1/12	3.5	3.5	TF5-SD-919-0006	NA	3.5	18	NOAA	0.2	BSL	YES
2-METHYLNAPHTHALENE	10/12	3.6	210	TF5-SD-913-0006	101.2	32	20.2	NOAA[5]	10.4	ASL	YES
2-METHYLPHENOL	2/12	3.5	12	TF5-SD-918-0006	5.931	7.75	12	SCV	1.0	BSL	YES
4-METHYLPHENOL	9/12	3.8	21	TF5-SD-921-0006	9.735	8.31	NA	NA	NA	NSL	YES
ACENAPHTHENE	12/12	7.2	48	TF5-SD-913-0006	29.99	21	290	NOAA	0.2	BSL	YES
ACENAPHTHYLENE	12/12	6.6	110	TF5-SD-913-0006	49.81	32	160	NOAA	0.7	BSL	YES
ANTHRACENE	12/12	29	150	TF5-SD-922-0006	101.5	72.7	57.2	TEC	2.6	ASL	YES
ATRAZINE	1/12	4.6 J	4.6 J	TF5-SD-918-0006	N/A	4.6	NA	NA	NA	NSL	YES
BENZO(A)ANTHRACENE	12/12	33 J	650	TF5-SD-921-0006	443.8	279	108	TEC	6.0	ASL	YES
BENZO(A)PYRENE	12/12	42	780	TF5-SD-921-0006	539.6	348	150	TEC	5.2	ASL	YES
BENZO(B)FLUORANTHENE	12/12	72 J	1000	TF5-SD-924-0006	571	431	1800	NOAA[6]	0.6	BSL	YES
BENZO(G,H,I)PERYLENE	12/12	32	630	TF5-SD-924-0006	387.1	286	170	OMOE	3.7	ASL	YES
BENZO(K)FLUORANTHENE	12/12	29 J	860	TF5-SD-921-0006	477.3	334	240	OMOE	3.6	ASL	YES
BIS(2-ETHYLHEXYL)PHTHALATE	11/12	41 J	410	TF5-SD-921-0006	238.6	182	750	NOAA	0.5	BSL	YES
CARBAZOLE	7/12	36 J	100	TF5-SD-921-0006, TF5-SD-924-0006	84.05	65.1	NA	NA	NA	NSL	YES
CHRYSENE	12/12	51	890	TF5-SD-924-0006	637.2	411	166	TEC	5.4	ASL	YES
DIBENZO(A,H)ANTHRACENE	12/12	8.7	180	TF5-SD-921-0006	121	91.4	33	TEC	5.5	ASL	YES
FLUORANTHENE	12/12	100	1800	TF5-SD-921-0006, TF5-SD-924-0006	1093	780	423	TEC	4.3	ASL	YES
FLUORENE	12/12	14	120	TF5-SD-913-0006	57.77	39.6	77.4	TEC	1.6	ASL	YES
INDENO(1,2,3-CD)PYRENE	12/12	29	660	TF5-SD-924-0006	379.8	276	200	OMOE	3.3	ASL	YES
NAPHTHALENE	11/12	3.92	130	TF5-SD-913-0006	64.63	21.7	176	TEC	0.7	BSL	YES
PENTACHLOROPHENOL	1/12	34	34	TF5-SD-919-0006	NA	34	17	NOAA	2.0	ASL	YES
PHENANTHRENE	12/12	130	690	TF5-SD-921-0006	444.4	344	204	TEC	3.4	ASL	YES
PHENOL	6/12	2.52	8.7	TF5-SD-921-0006	6.975	6.3	48	NOAA	0.2	BSL	YES
PYRENE	12/12	85	1300	TF5-SD-921-0006, TF5-SD-924-0006	815.8	598	195	TEC	6.7	ASL	YES
TOTAL PAHS	12/12	746 J	9290	TF5-SD-921-0006	5916	4390	1610	TEC	5.8	ASL	YES
Pesticides (ug/kg)											
4,4'-DDD	2/12	3.4 J	3.62 J	TF5-SD-923-0006-AVG	3.62	3.51	4.88	TEC	0.7	BSL	YES
4,4'-DDE	4/12	3.9	5.4	TF5-SD-922-0006	4.883	4.7	3.16	TEC	1.7	ASL	YES
4,4'-DDT	3/12	3.4	15	TF5-SD-922-0006	15	7.57	4.16	TEC	3.6	ASL	YES
ALDRIN	1/12	2.6	2.6	TF5-SD-922-0006	NA	2.6	2	OMOE	1.3	ASL	YES
ALPHA-BHC	1/12	2.1	2.1	TF5-SD-922-0006	NA	2.1	6	OMOE	0.4	BSL	YES
AROCLOR-1260	5/12	40 J	78 J	TF5-SD-922-0006	59.32	58	59.8	TEC	1.3	ASL	YES
ENDRIN ALDEHYDE	2/12	2.92 J	3.5	TF5-SD-924-0006	3.086	3.21	2.22	TEC	1.6	ASL	YES
ENDRIN KETONE	3/12	2.82	11	TF5-SD-922-0006	11	5.74	2.22	TEC	5.0	ASL	YES
GAMMA-CHLORDANE	1/12	4.9 J	4.9 J	TF5-SD-922-0006	NA	4.9	3.24	TEC	1.5	ASL	YES
TOTAL DDD/DDE/DDT	6/12	3.4 J	20.4 J	TF5-SD-922-0006	8.438	8.09	5.28	TEC	3.9	ASL	YES
Dioxins (ng/kg)											
TEQ FISH	12/12	0.526 J	10.9 J	TF5-SD-924-0006	6.315	4.55	NA	NA	NA	NSL	YES

TABLE 7-4
SEDIMENT COPC SELECTION
TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Concentration(1)	95% UCL	Average of Positive Results(1)	Ecological Screening Level	Source of Screening Level(2)	Ecological Effects Quotient(3)	Rationale for COPC Selection/ Deletion	Retain for Food Chain Modeling?
Inorganics (mg/kg)											
ALUMINUM	12/12	4500	12600	TF5-SD-917-0006	10657	9360	25500	NOAA	0.5	BSL	YES
ARSENIC	12/12	10.5	121	TF5-SD-914-0006	62.49	23.5	9.79	TEC	12.4	ASL	YES
BARIUM	12/12	12 J	47.2 J	TF5-SD-924-0006	34.36	28.9	48	NOAA(6)	1.0	BSL	YES
BERYLLIUM	12/12	0.24 J	1.1 J	TF5-SD-914-0006	0.627	0.509	NA	NA	NA	NSL	YES
CADMIUM	12/12	0.25 J	2	TF5-SD-914-0006	0.871	0.612	0.99	TEC	2.0	ASL	YES
CALCIUM	11/12	813 J	3680 J	TF5-SD-924-0006	2303	1940	NA	NA	NA	NUT	NO
CHROMIUM	12/12	6.9 J	18.8 J	TF5-SD-914-0006	16.99	15	43.4	TEC	0.4	BSL	YES
COBALT	12/12	5.55	95	TF5-SD-914-0006	47.73	16.4	50	NOAA	1.9	ASL	YES
COPPER	12/12	4.9	43	TF5-SD-918-0006	32.36	26.1	31.6	TEC	1.4	BSL	YES
IRON	12/12	15300	166000	TF5-SD-914-0006	87789	35800	20000	OMOE	8.3	ASL	YES
LEAD	12/12	11.5 J	95.8 J	TF5-SD-918-0006	62.37	49.9	35.8	TEC	2.7	ASL	YES
MAGNESIUM	12/12	784	3050	TF5-SD-922-0006	2655	2290	NA	NA	NA	NUT	NO
MANGANESE	12/12	112	982	TF5-SD-914-0006	437.1	292	460	OMOE	2.1	ASL	YES
MERCURY	12/12	0.0145 J	0.19 J	TF5-SD-918-0006	0.114	0.0877	0.18	TEC	1.1	ASL	YES
NICKEL	12/12	13.4	127	TF5-SD-914-0006	72.14	34.2	22.7	TEC	5.6	ASL	YES
POTASSIUM	12/12	193 J	546	TF5-SD-924-0006	402.1	339	NA	NA	NA	NUT	NO
SILVER	2/12	0.14 J	0.278 J	TF5-SD-923-0006-AVG	0.183	0.209	0.5	OMOE	0.6	BSL	YES
SODIUM	12/12	30.2 J	252	TF5-SD-918-0006	158.9	119	NA	NA	NA	NUT	NO
THALLIUM	4/12	0.33 J	1.7 J	TF5-SD-924-0006	0.887	0.795	NA	NA	NA	NSL	YES
VANADIUM	12/12	6.6 J	27.3	TF5-SD-918-0006	22.08	18.6	57	NOAA(6)	0.5	BSL	YES
ZINC	12/12	63.8	190	TF5-SD-924-0006	132	112	121	TEC	1.6	ASL	YES
Miscellaneous Parameters											
PH (S.U.)	12/12	4.7	6.4	TF5-SD-922-0006	NA	5.62	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON (MG/KG)	12/12	20000	60000	TF5-SD-918-0006	NA	40100	NA	NA	NA	NA	NA

NA = Not Applicable/Value not able to be calculated

1 - Sample and duplicate were averaged for the minimum, maximum, and average concentrations.
2 - The sources for the ecological screening levels in order of preference is as follows:
TEC- MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Archives of Environmental Contamination and Toxicology. Vol. 39, pp. 20-31.
OMOE - OMOE 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Ministry of Environment and Energy. August.
NOAA - Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration. http://response.restoration.noaa.gov/cpr/sediment/squirt/squirt.html
SCV - Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision. Oak Ridge National Laboratory. ES/ER/TM-95/R4. November.
3 - Ecological effects quotients were calculated by dividing the maximum detected concentration by the COPC screening level. Values are unitless.
Cells are shaded if the chemical was retained as a COPC.
4 - Polar nonionic chemical for which the secondary chronic value is likely to be conservative.
5 - Saltwater TEL value.
6 - Saltwater AET value.

Associated Samples:

TF5-SD-913-0006	TF5-SD-916-0006	TF5-SD-919-0006	TF5-SD-922-0006
TF5-SD-914-0006	TF5-SD-917-0006	TF5-SD-920-0006	TF5-SD-923-0006-AVG
TF5-SD-915-0006	TF5-SD-918-0006	TF5-SD-921-0006	TF5-SD-924-0006

Rationale Codes
For Selection as a COPC:
ASL = Above COPC screening level
NSL = No screening level
For Elimination as a COPC:
BSL = Below COPC screening level
NUT = Essential nutrient

TABLE 7-5
SURFACE WATER COPC SELECTION
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration(1)	Maximum Concentration(1)	Sample of Maximum Concentration(1)	Average of Positive Results(1)	Ecological Screening Level	Source of Screening Level(2)	Ecological Effects Quotient(3)	Rationale for COPC Selection/ Deletion
Semivolatile Organics (ug/L)									
BENZO(A)ANTHRACENE	2/10	0.1 J	0.17 J	TF4-SW-903-0310	0.135	0.027	SCV	6.3	ASL
CHRYSENE	1/10	0.11	0.11	TF4-SW-903-0310	0.11	30	NOAA(4)	0.004	BSL
FLUORANTHENE	1/10	0.16	0.16	TF4-SW-903-0310	0.16	4.4	RIDEM	0.04	BSL
PHENANTHRENE	1/10	0.12	0.12	TF4-SW-903-0310	0.12	6.3	SCV	0.02	BSL
PHENOL	1/10	0.1	0.1	TF4-SW-902-0310-AVG	0.1	5.6	RIDEM	0.02	BSL
PYRENE	1/10	0.23	0.23	TF4-SW-903-0310	0.23	0.025	NOAA	9.20	ASL
TOTAL PAHS	2/10	0.1 J	0.79 J	TF4-SW-903-0310	0.445	30	NOAA(4)	0.03	BSL
Inorganics (ug/L)									
ARSENIC	4/10	0.19 J	0.473 J	TF4-SW-901-0310	0.397	150	NRWQC	0.003	BSL
BARIUM	10/10	5.2	10.4	TF4-SW-906-0310	9.28	4	SCV	2.6	ASL
CALCIUM	10/10	10400	15800	TF4-SW-903-0310	14200	NA	NA	NA	NUT
COBALT	10/10	0.297 J	0.931 J	TF4-SW-907-0310	0.453	23	SCV	0.04	BSL
COPPER	10/10	0.807 J	3.7	TF4-SW-901-0310	1.86	9	NRWQC	0.4	BSL
IRON	10/10	270	545	TF4-SW-905-0310	372	1000	NRWQC	0.5	BSL
LEAD	8/10	0.191 J	0.928 J	TF4-SW-907-0310	0.382	2.5	NRWQC	0.4	BSL
MAGNESIUM	10/10	3480	16900	TF4-SW-903-0310	6760	NA	NA	NA	NUT
NICKEL	10/10	1.4	3.5	TF4-SW-907-0310	2.29	52	NRWQC	0.07	BSL
POTASSIUM	10/10	1440	3070	TF4-SW-908-0310	2660	NA	NA	NA	NUT
SELENIUM	9/10	0.154 J	0.231 J	TF4-SW-908-0310	0.199	5	NRWQC	0.05	BSL
SODIUM	10/10	23400	30600	TF4-SW-908-0310	28000	NA	NA	NA	NUT

NA = Not Applicable/Value not able to be calculated
1 - Sample and duplicate were averaged for the minimum, maximum, and average concentrations.
2 - The sources for the ecological screening levels in order of preference is as follows:
NRWQC - USEPA, 2009. National Recommended Water Quality Criteria: 2009. Office of Water.
RIDEM - Rhode Island Deprtment of Environmental Management (RIDEM) 2006. Ambient Water Quality Criteria and Guidelines. Water Resources Division. July.
SCV - Suter, G.W. II. and C.L. Tsao. 1996. Toxicological Benchmarks for Screening Potential Constituents of Concern for Effects on Aquatic Biota:1996 Revision. Environmental Sciences Division, Oak Ridge National Laboratory. ES/ER/TM-96/R2.
NOAA - Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.
3 - Ecological effects quotients were calculated by dividing the maximum detected concentration by the COPC screening level. Values are unitless.
Cells are shaded if the chemical was retained as a COPC.
4 - Value is based on the Acute Saltwater value, which was divided by a factor of ten for a chronic value conversion.

Associated Samples:

TF4-SW-901-0310
TF4-SW-902-0310-AVG
TF4-SW-903-0310
TF4-SW-904-0310
TF4-SW-905-0310
TF4-SW-906-0310
TF4-SW-907-0310
TF4-SW-908-0310
TF4-SW-911-0310-AVG
TF4-SW-912-0310

Rationale Codes
For Selection as a COPC:
ASL = Above COPC screening level
NSL = No screening level
For Elimination as a COPC:
BSL = Below COPC screening level
NUT = Essential nutrient

TABLE 7-6
SURFACE WATER COPC SELECTION TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Frequency of Detection	Minimum Concentration[1]	Maximum Concentration[1]	Sample of Maximum Concentration[1]	Average of Positive Results[1]	Ecological Screening Level	Source of Screening Level[2]	Ecological Effects Quotient[3]	Rationale for COPC Selection/ Deletion
Volatile Organics (µg/L)									
CHLOROFORM	1/11	1	1	TF5-SW-918-0310	1	32	RIDEM	0.03	BSL
Semivolatile Organics (µg/L)									
2-METHYLNAPHTHALENE	2/11	0.25	3.3	TF5-SW-919-0310	1.78	330	NOAA	0.01	BSL
ACENAPHTHENE	1/11	0.36	0.36	TF5-SW-919-0310	0.36	1.9	RIDEM	0.2	BSL
ACENAPHTHYLENE	1/11	0.82	0.82	TF5-SW-919-0310	0.82	5.8	NOAA	0.14	BSL
ANTHRACENE	1/11	0.11	0.11	TF5-SW-919-0310	0.11	0.73	SCV	0.2	BSL
BENZO(A)ANTHRACENE	6/11	0.11 J	0.2 J	TF5-SW-917-0310	0.152	0.027	SCV	7	ASL
BENZO(A)PYRENE	2/11	0.13	0.16	TF5-SW-918-0310	0.145	0.014	SCV	11	ASL
BENZO(B)FLUORANTHENE	4/11	0.11	0.25	TF5-SW-918-0310	0.158	9.07	NOAA	0.03	BSL
BENZO(G,H,I)PERYLENE	1/11	0.13	0.13	TF5-SW-918-0310	0.13	7.64	NOAA	0.02	BSL
BENZO(K)FLUORANTHENE	1/11	0.15	0.15	TF5-SW-918-0310	0.15	30	NOAA[4]	0.01	BSL
CHRYSENE	4/11	0.11	0.18	TF5-SW-918-0310	0.138	30	NOAA[4]	0.01	BSL
FLUORANTHENE	6/11	0.12	0.36	TF5-SW-918-0310	0.24	4.4	RIDEM	0.1	BSL
FLUORENE	1/11	1.3	1.3	TF5-SW-919-0310	1.3	3.9	SCV	0.3	BSL
INDENO(1,2,3-CD)PYRENE	1/11	0.11	0.11	TF5-SW-918-0310	0.11	4.31	NOAA	0.03	BSL
NAPHTHALENE	2/11	0.59	1.5	TF5-SW-919-0310	1.04	2.6	RIDEM	0.6	BSL
PHENANTHRENE	10/11	0.075	1.1	TF5-SW-919-0310	0.25	6.3	SCV	0.2	BSL
PYRENE	5/11	0.13	0.3	TF5-SW-917-0310	0.224	0.025	NOAA	12	ASL
TOTAL PAHS	10/11	0.11	9.26 J	TF5-SW-919-0310	1.6	30	NOAA[4]	0.3	BSL
Inorganics (ug/L)									
ALUMINUM	1/11	852	852	TF5-SW-918-0310	852	87	NRWQC	9.8	ASL
ARSENIC	5/11	0.244 J	0.299 J	TF5-SW-919-0310	0.28	150	NRWQC	0.002	BSL
BARIUM	11/11	7.9	11	TF5-SW-918-0310	9.16	4	SCV	2.8	ASL
CALCIUM	11/11	11400	17700	TF5-SW-915-0310	15000	NA	NA	NA	NUT
COBALT	11/11	0.274 J	0.564 J	TF5-SW-919-0310	0.364	23	SCV	0.02	BSL
COPPER	11/11	0.9 J	3.3	TF5-SW-915-0310	1.8	9	NRWQC	0.4	BSL
IRON	7/11	215	2930	TF5-SW-918-0310	725	1000	NRWQC	2.9	ASL
LEAD	11/11	0.193 J	0.533 J	TF5-SW-915-0310	0.289	2.5	NRWQC	0.2	BSL
MAGNESIUM	11/11	5250	8250	TF5-SW-915-0310	6400	NA	NA	NA	NUT
NICKEL	11/11	1.6	5.4	TF5-SW-918-0310	3.23	52	NRWQC	0.1	BSL
POTASSIUM	11/11	1170	2760	TF5-SW-918-0310	2050	NA	NA	NA	NUT
SELENIUM	11/11	0.168 J	0.256 J	TF5-SW-917-0310	0.21	5	NRWQC	0.05	BSL
SODIUM	11/11	22500	39600	TF5-SW-915-0310	30600	NA	NA	NA	NUT

TABLE 7-6
SURFACE WATER COPC SELECTION TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

NA = Not Applicable/Value not able to be calculated

1 - Sample and duplicate were averaged for the minimum, maximum, and average concentrations.
2 - The sources for the ecological screening levels in order of preference is as follows:
NRWQC - USEPA, 2009. National Recommended Water Quality Criteria: 2009. Office of Water.
RIDEM - Rhode Island Deprtment of Environmental Management (RIDEM) 2006. Ambient Water Quality Criteria and Guidelines. Water Resources Division. July.
SCV - Suter, G.W. II. and C.L. Tsao. 1996. Toxicological Benchmarks for Screening Potential Constituents of Concern for Effects on Aquatic Biota:1996 Revision. Environmental Sciences Division, Oak Ridge National Laboratory. ES/ER/TM-96/R2.
NOAA - Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.
3 - Ecological effects quotients were calculated by dividing the maximum detected concentration by the COPC screening level. Values are unitless. Cells are shaded if the chemical was retained as a COPC.
4 - Value is calculated based on the Acute Saltwater value, which was divided by a factor of ten for a chronic value conversion.

Associated Samples:

TF5-SW-914-0310	TF5-SW-920-0310
TF5-SW-915-0310	TF5-SW-921-0006
TF5-SW-916-0310	TF5-SW-922-0006
TF5-SW-917-0310	TF5-SW-923-0006-AVG
TF5-SW-918-0310	TF5-SW-924-0006
TF5-SW-919-0310	

Rationale Codes
For Selection as a COPC:
ASL = Above COPC screening level
NSL = No screening level
For Elimination as a COPC:
BSL = Below COPC screening level
NUT = Essential nutrient

TABLE 7-7
TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
INVERTIVOROUS AND HERBIVOROUS RECEPTORS - TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	Herbivorous Receptors EEQs				Invertivorous Receptors EEQs			
	Bobwhite Quail		Meadow Vole		American Robin		Short-Tailed Shrew	
Chemical	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**
Volatile Organics								
2-BUTANONE	NV	NV	9.7E-06	3.7E-06	NV	NV	9.3E-06	3.6E-06
ACETONE	4.5E-06	4.5E-07	9.2E-03	1.8E-03	1.5E-06	1.5E-07	1.8E-03	3.5E-04
Semivolatile Organics								
2,4-DIMETHYLPHENOL	NV	NV	1.5E-03	3.1E-04	NV	NV	8.6E-04	1.7E-04
2-CHLOROPHENOL	NV	NV	3.6E-03	3.6E-04	NV	NV	1.8E-03	1.8E-04
2-METHYLNAPHTHALENE	3.9E-03	3.9E-04	1.1E-04	2.1E-05	1.2E-02	1.2E-03	2.3E-04	4.3E-05
2-METHYLPHENOL	NV	NV	2.0E-03	6.7E-04	NV	NV	6.6E-04	2.2E-04
4-METHYLPHENOL	NV	NV	NV	NV	NV	NV	NV	NV
ACENAPHTHENE	2.2E-03	2.2E-04	5.2E-05	9.5E-06	1.3E-02	1.3E-03	2.4E-04	4.5E-05
ACENAPHTHYLENE	5.3E-02	5.3E-03	1.2E-03	2.3E-04	4.7E+00	4.7E-01	9.3E-02	1.7E-02
ANTHRACENE	1.7E-01	1.7E-02	3.9E-03	7.1E-04	1.8E+00	1.8E-01	3.5E-02	6.5E-03
BENZO(A)ANTHRACENE	4.3E-01	4.3E-02	4.4E-01	7.0E-03	7.6E+00	7.6E-01	1.5E+01	2.4E-01
BENZO(A)PYRENE	3.3E-01	3.3E-02	6.4E-01	1.0E-02	2.9E+00	2.9E-01	5.7E+00	9.1E-02
BENZO(B)FLUORANTHENE	1.2E+00	1.2E-01	3.0E+00	4.8E-02	1.1E+01	1.1E+00	2.2E+01	3.6E-01
BENZO(G,H,I)PERYLENE	3.2E-01	3.2E-02	9.4E-01	1.5E-02	2.1E+00	2.1E-01	4.4E+00	7.0E-02
BENZO(K)FLUORANTHENE	2.2E-01	2.2E-02	3.7E-01	5.9E-03	4.2E+00	4.2E-01	8.7E+00	1.4E-01
BIS(2-ETHYLHEXYL)PHTHALATE	5.9E-03	5.9E-04	1.7E-04	1.7E-05	5.4E-02	5.4E-03	1.9E-03	1.9E-04
CARBAZOLE	1.5E-02	1.5E-03	3.4E-04	6.2E-05	7.0E-02	7.0E-03	1.2E-03	2.3E-04
CHRYSENE	4.7E-01	4.7E-02	4.7E-01	7.6E-03	1.2E+01	1.2E+00	2.4E+01	3.8E-01
DI-N-BUTYL PHTHALATE	5.1E-02	5.1E-03	9.1E-06	2.7E-06	1.3E-01	1.3E-02	1.6E-05	4.7E-06
DIBENZO(A,H)ANTHRACENE	5.5E-02	5.5E-03	1.1E-01	1.8E-03	7.8E-01	7.8E-02	1.6E+00	2.5E-02
FLUORANTHENE	2.8E+00	2.8E-01	7.4E-02	1.4E-02	2.1E+01	2.1E+00	4.1E-01	7.6E-02
FLUORENE	3.8E-03	3.8E-04	3.8E-05	6.9E-06	3.7E-01	3.7E-02	7.3E-03	1.4E-03
INDENO(1,2,3-CD)PYRENE	1.1E-01	1.1E-02	2.2E-01	3.5E-03	2.1E+00	2.1E-01	4.3E+00	6.8E-02
NAPHTHALENE	1.4E-02	1.4E-03	4.3E-04	8.0E-05	7.7E-03	7.7E-04	1.5E-04	2.8E-05
PHENANTHRENE	3.0E-02	3.0E-03	8.8E-04	1.6E-04	6.7E-02	6.7E-03	1.3E-03	2.3E-04
PHENOL	NV	NV	4.2E-04	2.5E-04	NV	NV	8.1E-05	4.8E-05
PYRENE	3.9E+00	3.9E-01	1.2E+01	1.9E-01	1.3E+01	1.3E+00	2.7E+01	4.3E-01
Pesticides/PCBs								
4,4'-DDD	7.1E-03	6.0E-04	7.5E-03	2.0E-04	2.8E-01	2.4E-02	2.8E-01	7.5E-03
BETA-BHC	8.4E-04	2.1E-04	8.2E-04	1.6E-04	2.1E-02	5.2E-03	1.9E-02	3.8E-03
DELTA-BHC	7.7E-04	1.9E-04	2.9E-02	2.9E-03	5.8E-03	1.4E-03	1.5E-01	1.5E-02
ENDOSULFAN I	1.2E-05	1.2E-06	6.7E-04	6.7E-05	4.7E-05	4.7E-06	1.8E-03	1.8E-04
ENDOSULFAN SULFATE	1.1E-04	1.1E-05	5.9E-03	5.9E-04	4.1E-04	4.1E-05	1.6E-02	1.6E-03
ENDRIN	1.8E-02	1.8E-03	1.1E-03	1.1E-04	4.6E-01	4.6E-02	3.3E-02	3.3E-03
ENDRIN ALDEHYDE	8.2E-02	8.2E-03	4.8E-03	4.8E-04	2.1E+00	2.1E-01	1.5E-01	1.5E-02
ENDRIN KETONE	1.6E-01	1.6E-02	9.4E-03	9.4E-04	4.2E+00	4.2E-01	2.9E-01	2.9E-02
GAMMA-BHC (LINDANE)	7.4E-05	7.4E-06	1.4E-05	1.4E-06	1.4E-03	1.4E-04	2.3E-04	2.3E-05
TOTAL DDD/DDE/DDT	8.3E-03	7.0E-04	8.7E-03	2.3E-04	4.8E-01	4.0E-02	4.8E-01	1.3E-02
TOXAPHENE	NV	NV	4.9E-04	4.9E-05	NV	NV	3.3E-03	3.3E-04
Dioxins								
TEQ BIRD	3.0E-03	3.0E-04	NV	NV	7.1E-01	7.1E-02	NV	NV
TEQ MAMMAL	NV	NV	2.9E-02	2.9E-03	NV	NV	1.7E+01	1.7E+00
Inorganics								
ALUMINUM	2.1E+00	2.1E-01	3.2E+01	3.2E+00	6.3E+00	6.3E-01	1.2E+02	1.2E+01
ARSENIC	5.0E-01	2.5E-01	4.4E-01	1.0E-01	1.0E+00	5.0E-01	6.3E-01	1.4E-01
BARIUM	8.5E-02	4.2E-02	2.3E-02	1.4E-02	1.1E-01	5.6E-02	1.4E-02	8.9E-03
BERYLLIUM	NV	NV	9.8E-02	7.8E-02	NV	NV	1.1E-02	8.3E-03
CADMIUM	3.5E-02	8.0E-03	6.2E-02	6.9E-03	5.2E-01	1.2E-01	6.4E-01	7.2E-02
COBALT	4.2E-02	1.7E-02	1.2E-02	4.8E-03	1.2E-01	5.2E-02	4.5E-02	1.8E-02
COPPER	2.7E-01	3.2E-02	1.5E-01	1.0E-02	6.8E-01	7.9E-02	2.6E-01	1.8E-02
IRON	8.4E+00	8.4E-01	4.9E+00	4.9E-01	2.1E+01	2.1E+00	1.2E+01	1.2E+00
LEAD	7.5E-01	2.7E-02	1.1E-01	2.8E-03	3.3E+00	1.2E-01	5.6E-01	1.4E-02

TABLE 7-7
TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
INVERTIVOROUS AND HERBIVOROUS RECEPTORS - TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Herbivorous Receptors EEQs				Invertivorous Receptors EEQs			
	Bobwhite Quail		Meadow Vole		American Robin		Short-Tailed Shrew	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
MERCURY	1.2E+01	1.2E+00	2.4E+00	4.9E-01	1.5E+01	1.5E+00	1.9E+00	3.7E-01
NICKEL	1.1E-01	3.9E-02	1.8E-01	2.1E-02	1.1E+00	3.9E-01	2.5E+00	2.9E-01
SELENIUM	9.2E-01	3.2E-01	1.7E+00	3.6E-01	1.6E+00	5.7E-01	1.8E+00	3.9E-01
THALLIUM	NV	NV	2.8E+00	2.8E-01	NV	NV	7.9E+01	7.9E+00
VANADIUM	1.7E+00	3.4E-01	3.7E-02	1.6E-02	3.6E+00	7.4E-01	6.9E-02	3.1E-02
ZINC	1.4E-01	5.4E-02	1.1E-01	2.8E-02	1.1E+00	4.1E-01	6.0E-01	1.5E-01

Cells are shaded if the value is greater than 1.0
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-8
TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
INVERTIVOROUS AND HERBIVOROUS RECEPTORS - TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT - TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	Herbivorous Receptors EEQs				Invertivorous Receptors EEQs			
	Bobwhite Quail		Meadow Vole		American Robin		Short-Tailed Shrew	
Chemical	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**
Volatile Organics								
ACETONE	1.8E-06	1.8E-07	3.8E-03	7.5E-04	6.1E-07	6.1E-08	7.1E-04	1.4E-04
CHLOROFORM	NV	NV	2.9E-05	1.1E-05	NV	NV	1.9E-05	7.0E-06
ISOPROPYLBENZENE	NV	NV	6.4E-05	2.1E-05	NV	NV	6.2E-05	2.1E-05
Semivolatile Organics								
2-METHYLNAPHTHALENE	2.4E-04	2.4E-05	2.2E-05	4.1E-06	2.6E-04	2.6E-05	1.4E-05	2.6E-06
ACENAPHTHENE	1.3E-02	1.3E-03	4.2E-04	7.7E-05	1.0E-03	1.0E-04	2.0E-05	3.7E-06
ACENAPHTHYLENE	1.2E-03	1.2E-04	3.7E-05	6.8E-06	4.8E-02	4.8E-03	9.7E-04	1.8E-04
ANTHRACENE	1.4E-03	1.4E-04	4.0E-05	7.3E-06	5.6E-03	5.6E-04	1.1E-04	2.0E-05
BENZALDEHYDE	NV	NV	7.2E-04	3.6E-04	NV	NV	4.0E-04	2.0E-04
BENZO(A)ANTHRACENE	3.2E-03	3.2E-04	6.5E-03	1.0E-04	3.3E-02	3.3E-03	6.5E-02	1.0E-03
BENZO(A)PYRENE	4.3E-03	4.3E-04	8.9E-03	1.4E-04	3.6E-02	3.6E-03	7.1E-02	1.1E-03
BENZO(B)FLUORANTHENE	1.3E-02	1.3E-03	3.3E-02	5.2E-04	1.2E-01	1.2E-02	2.4E-01	3.9E-03
BENZO(G,H,I)PERYLENE	6.4E-03	6.4E-04	1.7E-02	2.7E-04	6.8E-02	6.8E-03	1.4E-01	2.2E-03
BENZO(K)FLUORANTHENE	3.0E-03	3.0E-04	6.5E-03	1.0E-04	4.5E-02	4.5E-03	9.1E-02	1.5E-03
BIS(2-ETHYLHEXYL)PHTHALATE	1.1E-03	1.1E-04	3.0E-05	3.0E-06	9.8E-03	9.8E-04	3.5E-04	3.5E-05
CHRYSENE	3.9E-03	3.9E-04	7.7E-03	1.2E-04	5.9E-02	5.9E-03	1.2E-01	1.9E-03
DIBENZO(A,H)ANTHRACENE	8.1E-04	8.1E-05	1.7E-03	2.7E-05	1.1E-02	1.1E-03	2.3E-02	3.7E-04
FLUORANTHENE	2.0E-02	2.0E-03	5.4E-04	1.0E-04	1.6E-01	1.6E-02	3.0E-03	5.5E-04
FLUORENE	9.8E-03	9.8E-04	3.2E-04	5.8E-05	8.7E-03	8.7E-04	1.8E-04	3.3E-05
INDENO(1,2,3-CD)PYRENE	3.2E-03	3.2E-04	6.2E-03	9.9E-05	5.9E-02	5.9E-03	1.2E-01	1.9E-03
NAPHTHALENE	1.1E-04	1.1E-05	1.0E-05	1.9E-06	1.2E-04	1.2E-05	6.5E-06	1.2E-06
PHENANTHRENE	1.8E-02	1.8E-03	5.4E-04	1.0E-04	3.0E-02	3.0E-03	5.7E-04	1.1E-04
PYRENE	2.0E-02	2.0E-03	5.8E-02	9.3E-04	6.6E-02	6.6E-03	1.3E-01	2.1E-03
Pesticides/PCBs								
AROCLOR-1254	3.5E-03	3.5E-04	2.9E-03	2.9E-04	5.6E-01	5.6E-02	9.8E-01	9.8E-02
TOTAL AROCLOR	3.3E-03	3.3E-04	2.2E-03	2.2E-04	5.6E-01	5.6E-02	9.8E-01	9.8E-02
Dioxins								
TEQ BIRD	5.0E-03	5.0E-04	NV	NV	1.2E+00	1.2E-01	NV	NV
TEQ MAMMAL	NV	NV	2.4E-02	2.4E-03	NV	NV	1.4E+01	1.4E+00
Inorganics								
ALUMINUM	1.4E+00	1.4E-01	2.1E+01	2.1E+00	4.0E+00	4.0E-01	8.0E+01	8.0E+00
ARSENIC	3.6E-01	1.8E-01	3.2E-01	7.4E-02	7.7E-01	3.8E-01	4.9E-01	1.1E-01
BARIUM	3.6E-02	1.8E-02	9.6E-03	6.0E-03	4.7E-02	2.3E-02	6.0E-03	3.7E-03
BERYLLIUM	NV	NV	8.2E-02	6.5E-02	NV	NV	8.3E-03	6.5E-03
COBALT	2.7E-02	1.1E-02	7.9E-03	3.1E-03	8.0E-02	3.3E-02	2.9E-02	1.1E-02
COPPER	2.7E-01	3.1E-02	1.5E-01	1.0E-02	6.5E-01	7.6E-02	2.5E-01	1.7E-02
IRON	5.3E+00	5.3E-01	3.2E+00	3.2E-01	1.3E+01	1.3E+00	7.8E+00	7.8E-01
LEAD	4.2E-01	1.5E-02	7.0E-02	1.8E-03	1.9E+00	6.9E-02	3.3E-01	8.4E-03
MERCURY	1.0E+01	1.0E+00	2.1E+00	4.2E-01	1.4E+01	1.4E+00	1.8E+00	3.6E-01
NICKEL	6.7E-02	2.4E-02	1.2E-01	1.4E-02	6.7E-01	2.4E-01	1.5E+00	1.8E-01
SELENIUM	1.1E+00	4.0E-01	2.0E+00	4.4E-01	1.9E+00	6.6E-01	2.1E+00	4.5E-01
THALLIUM	NV	NV	1.3E+00	1.3E-01	NV	NV	3.7E+01	3.7E+00
VANADIUM	1.1E+00	2.2E-01	2.3E-02	1.0E-02	2.3E+00	4.7E-01	4.4E-02	2.0E-02
ZINC	9.6E-02	3.7E-02	7.7E-02	2.0E-02	8.7E-01	3.3E-01	4.9E-01	1.2E-01

Cells are shaded if the value is greater than 1.0
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-9
TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO
PISCIVOROUS RECEPTORS
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	Piscivorous Receptor EEQs			
	Green Heron		Mink	
Chemical	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**
Volatile Organics				
ACETONE	8.7E-06	8.7E-07	1.3E-02	2.5E-03
CARBON DISULFIDE	NV	NV	6.2E-04	3.1E-04
Semivolatile Organics				
2-METHYLNAPHTHALENE	3.7E-03	3.7E-04	8.0E-05	1.5E-05
2-METHYLPHENOL	NV	NV	1.3E-03	4.2E-04
4-METHYLPHENOL	NV	NV	NV	NV
ACENAPHTHENE	2.1E-03	2.1E-04	4.6E-05	8.5E-06
ACENAPHTHYLENE	3.0E-03	3.0E-04	6.8E-05	1.3E-05
ANTHRACENE	1.3E-02	1.3E-03	2.9E-04	5.4E-05
BENZALDEHYDE	NV	NV	4.8E-03	2.4E-03
BENZO(A)ANTHRACENE	2.2E-02	2.2E-03	5.2E-02	8.3E-04
BENZO(A)PYRENE	2.3E-02	2.3E-03	5.4E-02	8.7E-04
BENZO(B)FLUORANTHENE	2.6E-02	2.6E-03	6.2E-02	1.0E-03
BENZO(G,H,I)PERYLENE	1.6E-02	1.6E-03	3.9E-02	6.2E-04
BENZO(K)FLUORANTHENE	2.2E-02	2.2E-03	5.2E-02	8.3E-04
BIS(2-ETHYLHEXYL)PHTHALATE	1.4E-01	1.4E-02	6.3E-03	6.3E-04
CHRYSENE	3.2E-02	3.2E-03	7.5E-02	1.2E-03
DIBENZO(A,H)ANTHRACENE	5.8E-03	5.8E-04	1.4E-02	2.2E-04
FLUORANTHENE	3.6E-02	3.6E-03	8.0E-04	1.5E-04
FLUORENE	2.6E-03	2.6E-04	5.8E-05	1.1E-05
INDENO(1,2,3-CD)PYRENE	1.3E-02	1.3E-03	3.1E-02	5.0E-04
NAPHTHALENE	6.5E-04	6.5E-05	1.5E-05	2.7E-06
PHENANTHRENE	2.1E-02	2.1E-03	4.6E-04	8.5E-05
PHENOL	NV	NV	8.5E-05	5.0E-05
PYRENE	2.8E-02	2.8E-03	6.7E-02	1.1E-03
Pesticides/PCBs				
4,4'-DDD	3.1E-03	2.6E-04	3.6E-03	9.4E-05
4,4'-DDE	3.7E-01	3.1E-02	4.0E-01	1.1E-02
4,4'-DDT	3.6E-02	3.0E-03	4.0E-02	1.0E-03
ENDRIN ALDEHYDE	3.6E-01	3.6E-02	2.8E-02	2.8E-03
ENDRIN KETONE	2.7E+00	2.7E-01	2.1E-01	2.1E-02
TOTAL DDD/DDE/DDT	6.2E-01	5.2E-02	6.8E-01	1.8E-02
Dioxins				
TEQ FISH	7.9E-03	7.9E-04	9.9E-02	9.9E-03
Inorganics				
ALUMINUM	1.9E+01	1.9E+00	8.1E+02	8.1E+01
ARSENIC	2.4E+00	1.2E+00	3.9E+00	8.9E-01
BARIUM	5.1E-01	2.5E-01	1.5E-01	9.4E-02
BERYLLIUM	NV	NV	1.5E-01	1.2E-01
CADMIUM	1.0E+00	2.4E-01	1.4E+00	1.6E-01
CHROMIUM	8.8E-01	1.5E-01	7.5E-01	3.1E-02
COBALT	1.6E+00	6.8E-01	1.3E+00	4.9E-01
COPPER	5.1E+00	5.9E-01	2.6E+00	1.8E-01
IRON	2.4E+02	2.4E+01	3.5E+02	3.5E+01
LEAD	6.0E+00	2.2E-01	1.6E+00	4.0E-02
MANGANESE	3.1E+00	1.5E+00	8.1E+00	2.8E+00
MERCURY	1.2E+01	1.2E+00	1.7E+00	3.5E-01
NICKEL	7.2E+00	2.6E+00	2.1E+01	2.4E+00
SILVER	9.7E-03	3.2E-04	2.4E-03	1.2E-04
THALLIUM	NV	NV	1.9E+02	1.9E+01
VANADIUM	1.3E+01	2.6E+00	7.9E-01	3.5E-01
ZINC	3.5E+00	1.4E+00	2.2E+00	5.6E-01

Cells are shaded if the value is greater than 1.0
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-10
TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO PISCIVOROUS RECEPTORS
TANK FARM 5, DU 5-1 DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Piscivorous Receptor EEQs			
	Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organics				
1,2-DICHLOROBENZENE	NV	NV	5.4E-06	5.4E-07
ACETONE	5.6E-06	5.6E-07	8.1E-03	1.6E-03
CHLOROFORM	NV	NV	1.5E-05	5.4E-06
CARBON DISULFIDE	NV	NV	1.3E-04	6.2E-05
Semivolatile Organics				
2,4-DIMETHYLPHENOL	NV	NV	2.8E-04	5.7E-05
2-METHYLNAPHTHALENE	5.9E-02	5.9E-03	1.3E-03	2.4E-04
2-METHYLPHENOL	NV	NV	9.8E-04	3.3E-04
4-METHYLPHENOL	NV	NV	NV	NV
ACENAPHTHENE	4.1E-03	4.1E-04	9.3E-05	1.7E-05
ACENAPHTHYLENE	9.4E-03	9.4E-04	2.1E-04	3.9E-05
ANTHRACENE	1.3E-02	1.3E-03	2.9E-04	5.3E-05
ATRAZINE	NV	NV	5.3E-04	7.5E-05
BENZO(A)ANTHRACENE	5.5E-02	5.5E-03	1.3E-01	2.1E-03
BENZO(A)PYRENE	6.6E-02	6.6E-03	1.6E-01	2.5E-03
BENZO(B)FLUORANTHENE	8.5E-02	8.5E-03	2.0E-01	3.3E-03
BENZO(G,H,I)PERYLENE	5.3E-02	5.3E-03	1.3E-01	2.1E-03
BENZO(K)FLUORANTHENE	7.3E-02	7.3E-03	1.8E-01	2.8E-03
BIS(2-ETHYLHEXYL)PHTHALATE	2.1E-01	2.1E-02	9.1E-03	9.1E-04
CARBAZOLE	8.5E-03	8.5E-04	1.9E-04	3.5E-05
CHRYSENE	7.5E-02	7.5E-03	1.8E-01	2.9E-03
DIBENZO(A,H)ANTHRACENE	1.5E-02	1.5E-03	3.7E-02	5.9E-04
FLUORANTHENE	1.5E-01	1.5E-02	3.4E-03	6.3E-04
FLUORENE	1.0E-02	1.0E-03	2.3E-04	4.3E-05
INDENO(1,2,3-CD)PYRENE	5.6E-02	5.6E-03	1.3E-01	2.2E-03
NAPHTHALENE	1.1E-02	1.1E-03	2.5E-04	4.7E-05
PENTACHLOROPHENOL	2.9E-03	3.7E-04	1.6E-03	6.1E-04
PHENANTHRENE	5.9E-02	5.9E-03	1.3E-03	2.4E-04
PHENOL	NV	NV	3.8E-05	2.3E-05
PYRENE	1.1E-01	1.1E-02	2.6E-01	4.2E-03
Pesticides/PCBs				
4,4'-DDD	2.6E-03	2.2E-04	3.0E-03	7.9E-05
4,4'-DDE	1.0E-01	8.6E-03	1.1E-01	3.0E-03
4,4'-DDT	6.2E-02	5.2E-03	6.9E-02	1.8E-03
ALDRIN	NV	NV	9.4E-03	1.9E-03
ALPHA-BHC	3.8E-03	9.4E-04	1.1E-01	1.1E-02
AROCLOR-1260	4.5E-01	4.5E-02	8.5E-01	8.5E-02
ENDRIN ALDEHYDE	3.5E-01	3.5E-02	2.8E-02	2.8E-03
ENDRIN KETONE	1.1E+00	1.1E-01	8.6E-02	8.6E-03
GAMMA-CHLORDANE	2.8E-03	5.7E-04	9.5E-04	4.8E-04
TOTAL AROCLOR	4.5E-01	4.5E-02	8.5E-01	8.5E-02
TOTAL CHLORDANE	2.8E-03	5.7E-04	9.5E-04	4.8E-04
TOTAL DDD/DDE/DDT	3.9E-01	3.2E-02	4.2E-01	1.1E-02
Dioxins				
TEQ FISH	1.7E-02	1.7E-03	2.2E-01	2.2E-02
Inorganics				
ALUMINUM	1.9E+01	1.9E+00	7.9E+02	7.9E+01
ARSENIC	6.2E+00	3.1E+00	1.0E+01	2.3E+00
BARIUM	3.7E-01	1.8E-01	1.1E-01	6.9E-02
BERYLLIUM	NV	NV	2.5E-01	2.0E-01
CADMIUM	1.7E+00	3.9E-01	2.3E+00	2.6E-01

TABLE 7-10
TERRESTRIAL FOOD CHAIN MODEL - CONSERVATIVE SCENARIO PISCIVOROUS RECEPTORS
TANK FARM 5, DU 5-1 DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Piscivorous Receptor EEQs			
	Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL
CHROMIUM	5.7E-01	9.7E-02	4.9E-01	2.0E-02
COBALT	2.0E+00	8.4E-01	1.6E+00	6.1E-01
COPPER	8.7E+00	1.0E+00	4.5E+00	3.1E-01
IRON	2.7E+02	2.7E+01	4.0E+02	4.0E+01
LEAD	6.0E+00	2.2E-01	1.6E+00	4.0E-02
MANGANESE	8.9E-01	4.3E-01	2.3E+00	8.1E-01
MERCURY	1.3E+01	1.3E+00	1.9E+00	3.9E-01
NICKEL	7.0E+00	2.5E+00	2.0E+01	2.3E+00
SELENIUM	9.7E-05	3.4E-05	3.9E-04	8.5E-05
SILVER	2.2E-02	7.5E-04	5.6E-03	2.8E-04
THALLIUM	NV	NV	2.8E+01	2.8E+00
VANADIUM	1.3E+01	2.6E+00	7.9E-01	3.5E-01
ZINC	3.4E+00	1.3E+00	2.1E+00	5.4E-01

Cells are shaded if the value is greater than 1.0
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-11
TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
INVERTIVOROUS AND HERBIVOROUS RECEPTORS - TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT - TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	Herbivorous Receptors EEQs				Invertivorous Receptors EEQs			
	Bobwhite Quail		Meadow Vole		American Robin		Short-Tailed Shrew	
Chemical	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**
Semivolatile Organics								
ACENAPHTHYLENE	1.2E-02	1.2E-03	2.0E-04	3.7E-05	1.3E+00	1.3E-01	2.4E-02	4.4E-03
ANTHRACENE	5.3E-02	5.3E-03	8.6E-04	1.6E-04	7.5E-01	7.5E-02	1.3E-02	2.5E-03
BENZO(A)ANTHRACENE	7.6E-02	7.6E-03	5.9E-02	9.5E-04	3.0E+00	3.0E-01	5.7E+00	9.2E-02
BENZO(A)PYRENE	7.7E-02	7.7E-03	1.2E-01	1.8E-03	1.1E+00	1.1E-01	2.1E+00	3.4E-02
BENZO(B)FLUORANTHENE	3.2E-01	3.2E-02	5.7E-01	9.2E-03	4.4E+00	4.4E-01	8.5E+00	1.4E-01
BENZO(G,H,I)PERYLENE	8.6E-02	8.6E-03	1.6E-01	2.6E-03	8.7E-01	8.7E-02	1.7E+00	2.7E-02
BENZO(K)FLUORANTHENE	5.0E-02	5.0E-03	6.7E-02	1.1E-03	1.7E+00	1.7E-01	3.3E+00	5.3E-02
CHRYSENE	8.3E-02	8.3E-03	6.3E-02	1.0E-03	4.7E+00	4.7E-01	9.0E+00	1.4E-01
DIBENZO(A,H)ANTHRACENE	1.3E-02	1.3E-03	2.0E-02	3.3E-04	3.2E-01	3.2E-02	6.1E-01	9.7E-03
FLUORANTHENE	8.3E-01	8.3E-02	1.4E-02	2.7E-03	8.7E+00	8.7E-01	1.6E-01	2.9E-02
INDENO(1,2,3-CD)PYRENE	2.6E-02	2.6E-03	3.8E-02	6.1E-04	8.5E-01	8.5E-02	1.6E+00	2.6E-02
PYRENE	1.2E+00	1.2E-01	2.3E+00	3.7E-02	5.3E+00	5.3E-01	1.0E+01	1.6E-01
Pesticides/PCBs								
ENDRIN ALDEHYDE	3.9E-02	3.9E-03	1.7E-03	1.7E-04	1.9E+00	1.9E-01	1.2E-01	1.2E-02
ENDRIN KETONE	4.9E-02	4.9E-03	2.2E-03	2.2E-04	2.4E+00	2.4E-01	1.5E-01	1.5E-02
Dioxins								
TEQ MAMMAL	NV	NV	2.4E-03	2.4E-04	NV	NV	2.9E+00	2.9E-01
Inorganics								
IRON	1.7E+00	1.7E-01	5.3E-01	5.3E-02	4.9E+00	4.9E-01	2.7E+00	2.7E-01
LEAD	1.6E-01	5.7E-03	2.0E-02	5.1E-04	1.2E+00	4.3E-02	2.2E-01	5.5E-03
MERCURY	5.8E-01	5.8E-02	6.8E-02	1.4E-02	1.0E+01	1.0E+00	1.2E+00	2.4E-01
NICKEL	3.2E-02	1.2E-02	4.4E-02	5.0E-03	6.3E-01	2.3E-01	1.4E+00	1.6E-01
SELENIUM	2.4E-01	8.4E-02	2.8E-01	6.0E-02	6.9E-01	2.4E-01	7.9E-01	1.7E-01
THALLIUM	NV	NV	3.5E-01	3.5E-02	NV	NV	4.0E+01	4.0E+00
VANADIUM	3.4E-01	6.9E-02	4.5E-03	2.0E-03	1.0E+00	2.1E-01	2.5E-02	1.1E-02
ZINC	6.9E-02	2.7E-02	3.5E-02	9.0E-03	8.1E-01	3.1E-01	4.2E-01	1.1E-01

Cells are shaded if the value is greater than 1.0
Only chemicals with EEQs > 1.0 in the conservative food chain model are presented in this table.
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-12
TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
INVERTIVOROUS AND HERBIVOROUS RECEPTORS - TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT - TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

	Herbivorous Receptors EEQs				Invertivorous Receptors EEQs			
	Bobwhite Quail		Meadow Vole		American Robin		Short-Tailed Shrew	
Chemical	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**	**NOAEL**	**LOAEL**
Dioxins								
TEQ BIRD	8.9E-04	8.9E-05	NV	NV	2.9E-01	2.9E-02	NV	NV
TEQ MAMMAL	NV	NV	3.2E-03	3.2E-04	NV	NV	4.0E+00	4.0E-01
Inorganics								
IRON	1.3E+00	1.3E-01	4.1E-01	4.1E-02	3.8E+00	3.8E-01	2.1E+00	2.1E-01
LEAD	1.6E-01	5.7E-03	2.1E-02	5.2E-04	1.2E+00	4.3E-02	2.2E-01	5.5E-03
MERCURY	1.0E+00	1.0E-01	1.2E-01	2.4E-02	1.2E+01	1.2E+00	1.5E+00	2.9E-01
NICKEL	2.5E-02	9.0E-03	3.5E-02	4.0E-03	4.7E-01	1.7E-01	1.1E+00	1.2E-01
SELENIUM	6.3E-01	2.2E-01	7.3E-01	1.6E-01	1.3E+00	4.7E-01	1.5E+00	3.3E-01
THALLIUM	NV	NV	2.2E-01	2.2E-02	NV	NV	2.5E+01	2.5E+00
VANADIUM	2.6E-01	5.3E-02	3.4E-03	1.5E-03	7.9E-01	1.6E-01	1.9E-02	8.4E-03
ZINC	5.4E-02	2.1E-02	2.8E-02	7.0E-03	7.0E-01	2.7E-01	3.7E-01	9.3E-02

Cells are shaded if the value is greater than 1.0
Only chemicals with EEQs > 1.0 in the conservative food chain model are presented in this table.
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-13
TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
PISCIVOROUS RECEPTORS
TANK FARM 4, DU 4-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Piscivorous Receptor EEQs			
	Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL
Pesticides/PCBs				
ENDRIN KETONE	2.5E+00	2.5E-01	7.8E-02	7.8E-03
Inorganics				
ALUMINUM	1.4E+01	1.4E+00	2.4E+02	2.4E+01
ARSENIC	2.6E-01	1.3E-01	2.0E-01	4.5E-02
CADMIUM	3.6E-02	8.4E-03	2.1E-02	2.4E-03
COBALT	8.5E-01	3.5E-01	2.6E-01	1.0E-01
COPPER	1.1E+00	1.3E-01	2.3E-01	1.6E-02
IRON	1.3E+02	1.3E+01	7.6E+01	7.6E+00
LEAD	5.5E-01	2.0E-02	7.6E-02	1.9E-03
MANGANESE	1.8E+00	8.7E-01	1.9E+00	6.8E-01
MERCURY	2.4E+00	2.4E-01	1.4E-01	2.8E-02
NICKEL	8.3E-01	3.0E-01	1.0E+00	1.2E-01
THALLIUM	NV	NV	4.0E+01	4.0E+00
VANADIUM	8.9E+00	1.8E+00	2.2E-01	9.7E-02
ZINC	5.1E-01	2.0E-01	1.3E-01	3.4E-02

Cells are shaded if the value is greater than 1.0
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-14
TERRESTRIAL FOOD CHAIN MODEL - AVERAGE SCENARIO
PISCIVOROUS RECEPTORS
TANK FARM 5, DU 5-1
DATA GAPS ASSESSMENT
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Chemical	Piscivorous Receptor EEQs			
	Green Heron		Mink	
	NOAEL	LOAEL	NOAEL	LOAEL
Pesticides/PCBs				
ENDRIN KETONE	1.0E+00	1.0E-01	3.2E-02	3.2E-03
Inorganics				
ALUMINUM	1.4E+01	1.4E+00	2.5E+02	2.5E+01
ARSENIC	7.6E-01	3.8E-01	5.8E-01	1.3E-01
CADMIUM	5.5E-02	1.3E-02	3.2E-02	3.6E-03
CHROMIUM	1.4E-01	2.3E-02	5.6E-02	2.3E-03
COBALT	9.3E-01	3.9E-01	2.9E-01	1.1E-01
COPPER	1.8E+00	2.1E-01	3.9E-01	2.6E-02
IRON	1.3E+02	1.3E+01	7.8E+01	7.8E+00
LEAD	6.6E-01	2.4E-02	8.9E-02	2.3E-03
MANGANESE	3.6E-01	1.7E-01	3.8E-01	1.3E-01
MERCURY	3.0E+00	3.0E-01	1.8E-01	3.6E-02
NICKEL	8.2E-01	2.9E-01	1.0E+00	1.2E-01
THALLIUM	NV	NV	5.4E+00	5.4E-01
VANADIUM	9.5E+00	1.9E+00	2.4E-01	1.0E-01
ZINC	5.6E-01	2.2E-01	1.5E-01	3.7E-02

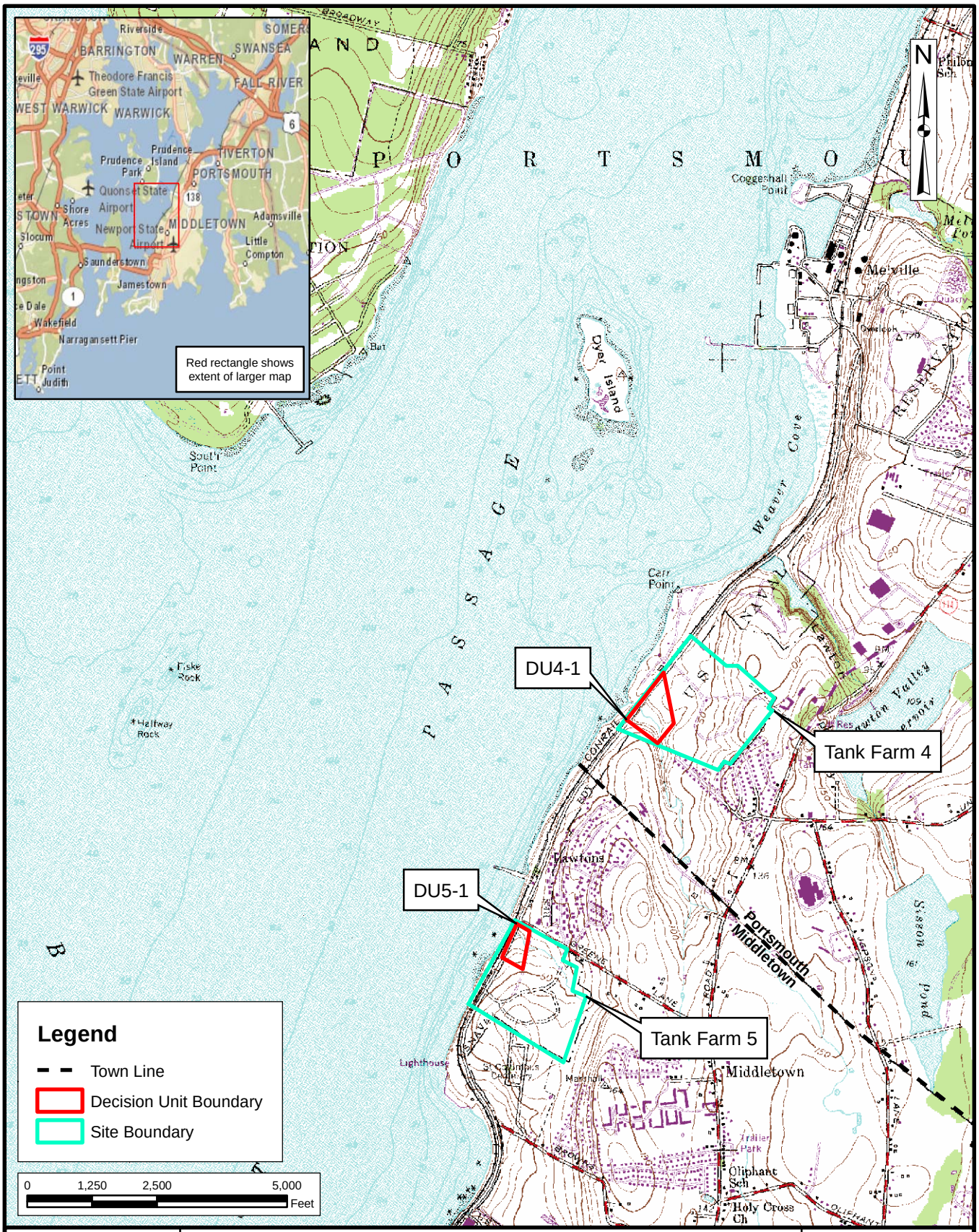
Cells are shaded if the value is greater than 1.0
NV- Value Not Available/Not Able to be Calculated
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQ - Ecological Effects Quotient

TABLE 7-15
SUMMARY OF COPCS FOR ECOLOGICAL RISKS RETAINED AFTER STEP 3A
DATA GAPS ASSESSMENT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Assessment Endpoint	Tank Farm 4	Tank Farm 5
Soil Invertebrates	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene	None
Terrestrial Plants	None	None
Sediment Invertebrates	Manganese	None
Aquatic Organisms	None	None
Herbivorous Mammals	None	None
Herbivorous Birds	None	None
Invertivorous Mammals	benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and pyrene	None
Invertivorous Birds	benzo(b)fluoranthene, chrysene, fluoranthene, and pyrene	None
Piscivorous Mammals	None	None
Piscivorous Birds	None	None

FIGURES

I:\02698\SLD\FIG1-1.MXD GJG/NEC 06/20/12



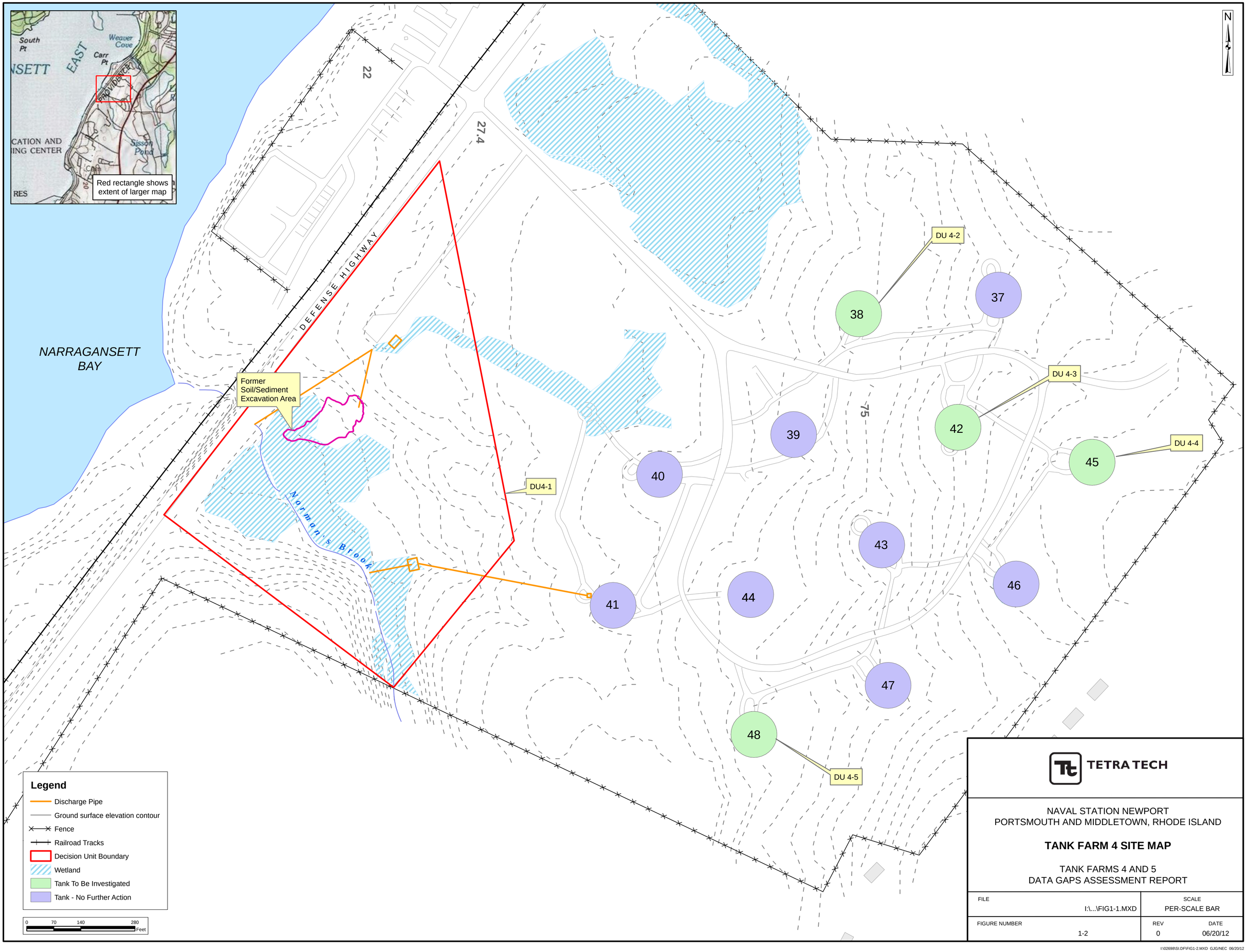
TETRA TECH

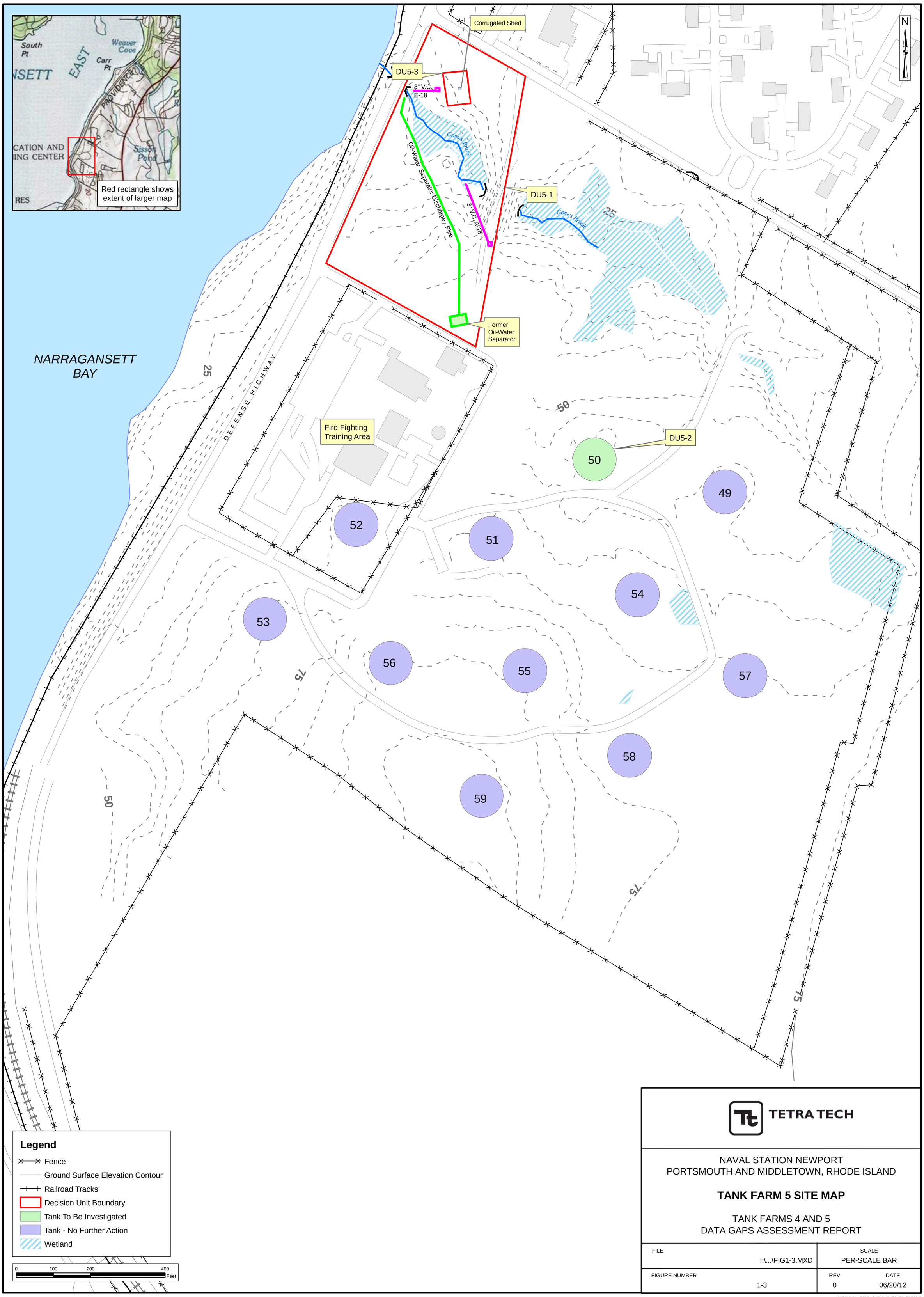
NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND

SITE LOCUS

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

SCALE	
PER-SCALE BAR	
FILE	
I:\...\FIG1-1.MXD	
REV	DATE
0	06/20/12
FIGURE NUMBER	
1-1	


South Pt
Weaver Cove
Carr Pt
EAST
NSETT
Providence
CATION AND
ING CENTER
Sisson Pond
RES
Red rectangle shows extent of larger map
NARRAGANSETT BAY
22
27.4
DEFENSE HIGHWAY
Former Soil/Sediment Excavation Area
Norman's Brook
DU4-1
DU 4-2
DU 4-3
DU 4-4
DU 4-5
75
37
38
39
40
41
42
43
44
45
46
47
48
N
Legend
Discharge Pipe
Ground surface elevation contour
Fence
Railroad Tracks
Decision Unit Boundary
Wetland
Tank To Be Investigated
Tank - No Further Action
0
70
140
280
Feet
TETRA TECH
NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND
TANK FARM 4 SITE MAP
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
FILE
I:\...\FIG1-1.MXD
SCALE
PER-SCALE BAR
FIGURE NUMBER
1-2
REV
0
DATE
06/20/12
I:\02698\SI.DF\FIG1-2.MXD GJG/NEC 06/20/12



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NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND

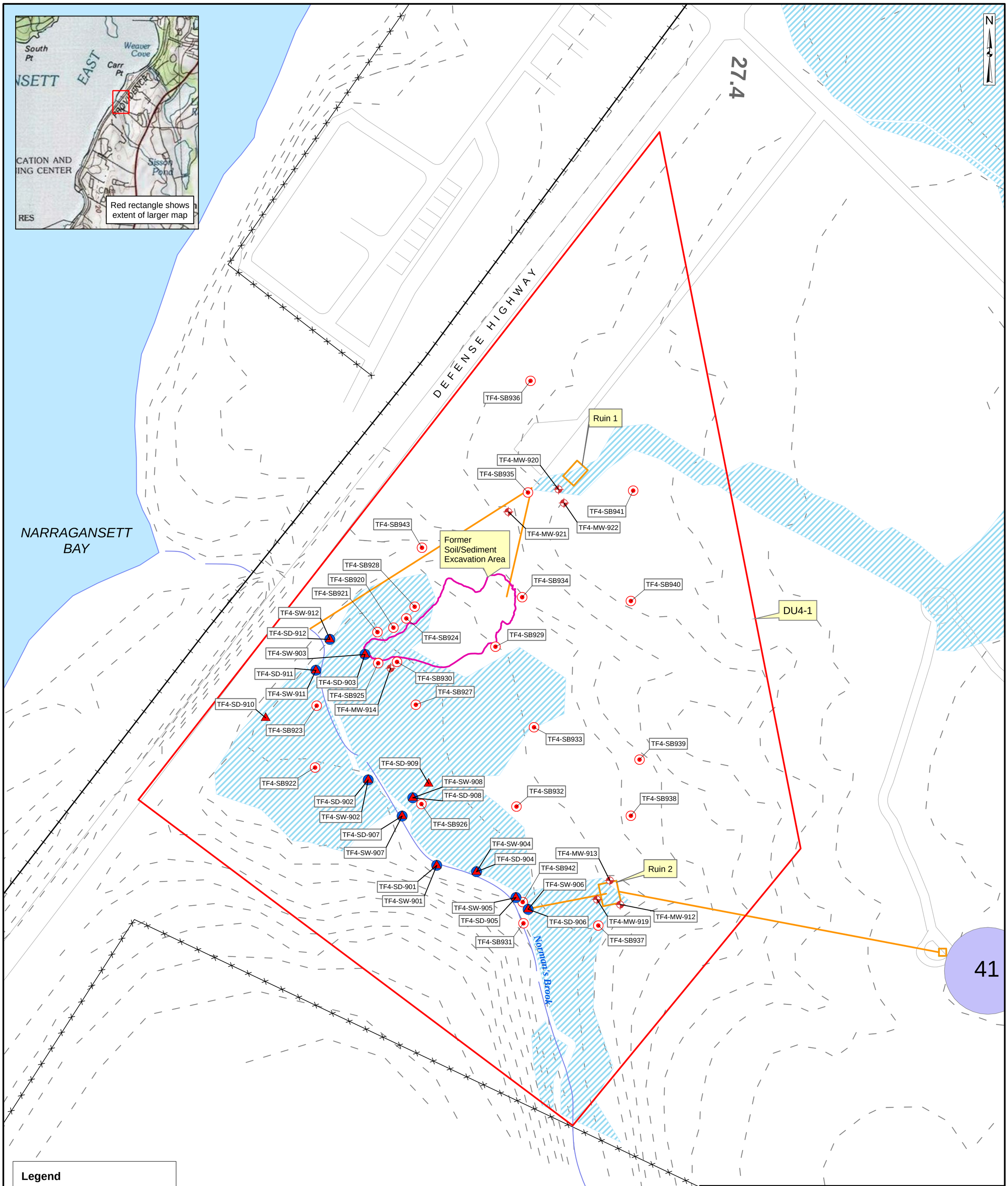
TANK FARM 5 SITE MAP

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE
I:\...\FIG1-3.MXD	PER-SCALE BAR

FIGURE NUMBER	REV	DATE
1-3	0	06/20/12

I:\02698\SI.DF\FIG1-3.MXD GJG/NEC 06/20/12



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NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND

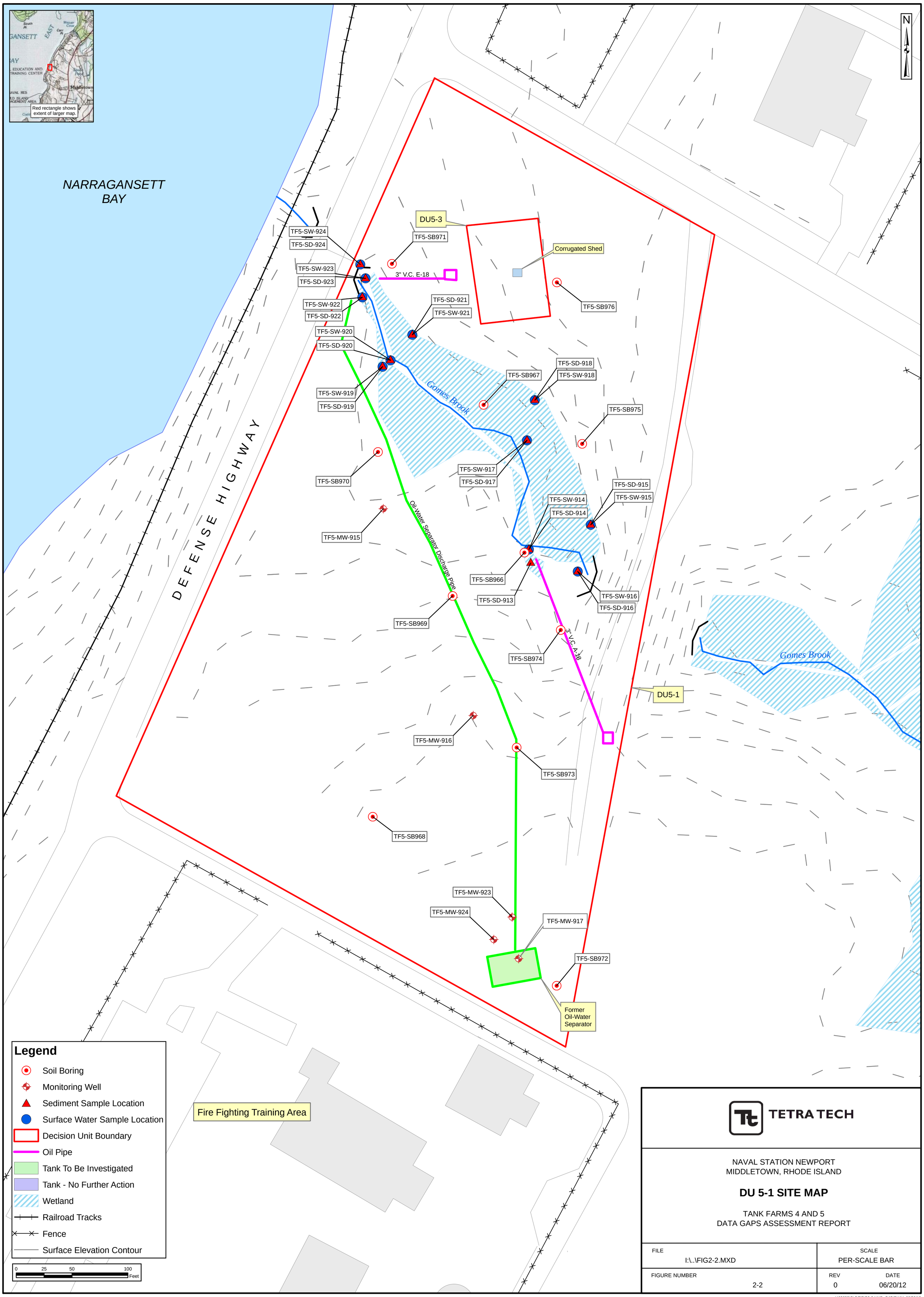
DU 4-1 SITE MAP

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

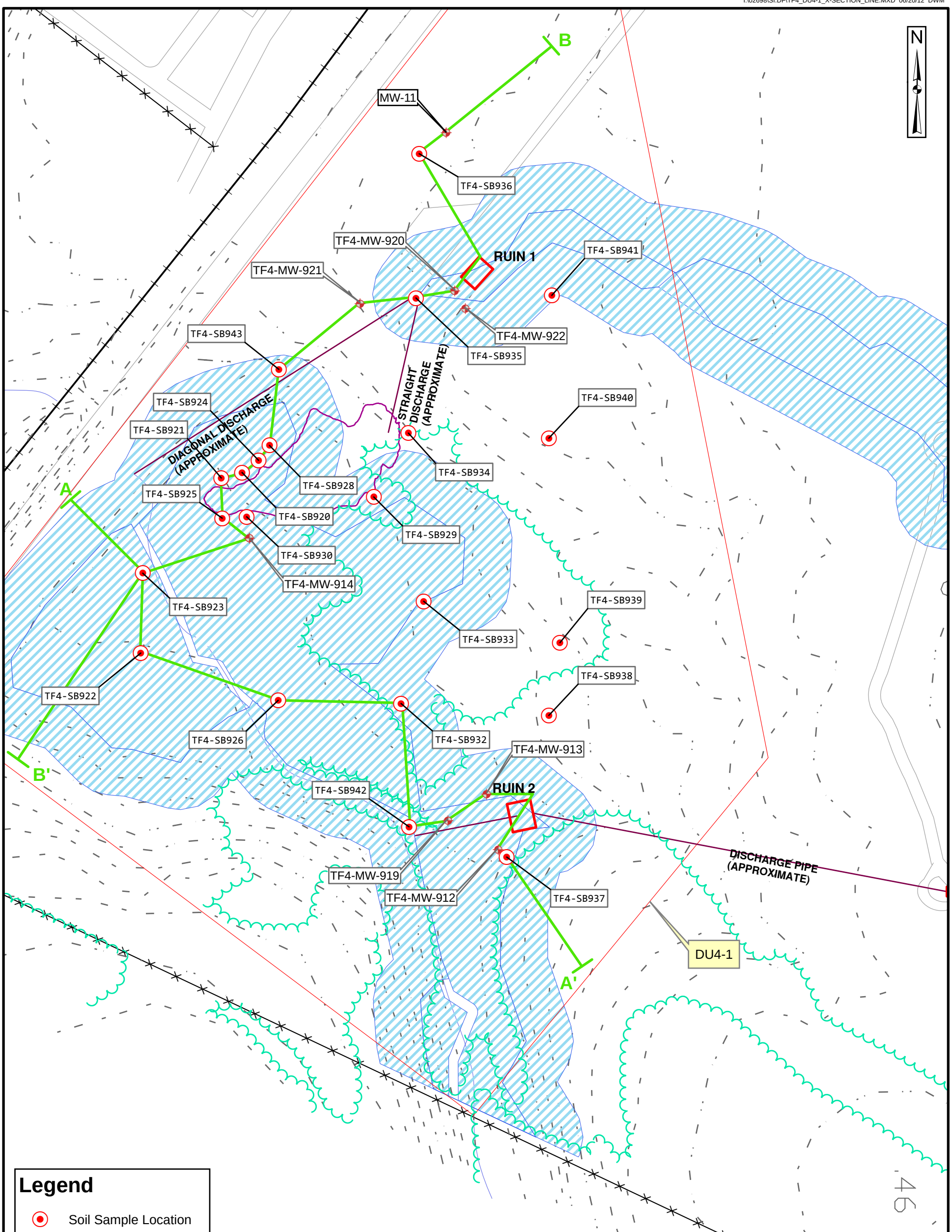
FILE	SCALE
I:\...\FIG2-1.MXD	PER-SCALE BAR

FIGURE NUMBER	REV	DATE
2-1	0	06/20/12

I:\02698\SI.DF\FIG2-1.MXD GJG/NEC 06/20/12


Red rectangle shows extent of larger map.
NARRAGANSETT BAY
DEFENSE HIGHWAY
N
DU5-3
Corrugated Shed
TF5-SB971
TF5-SB976
3" V.C. E-18
TF5-SW-924
TF5-SD-924
TF5-SW-923
TF5-SD-923
TF5-SW-922
TF5-SD-922
TF5-SW-920
TF5-SD-920
TF5-SW-919
TF5-SD-919
TF5-SD-921
TF5-SW-921
TF5-SD-918
TF5-SW-918
TF5-SB967
TF5-SB975
Gomes Brook
TF5-SW-917
TF5-SD-917
TF5-SB970
TF5-MW-915
TF5-SD-915
TF5-SW-915
TF5-SW-914
TF5-SD-914
Oil-Water Separator Discharge Pipe
TF5-SB966
TF5-SD-913
TF5-SW-916
TF5-SD-916
TF5-SB969
3" V.C. A-18
TF5-SB974
DU5-1
Gomes Brook
TF5-MW-916
TF5-SB973
TF5-SB968
TF5-MW-923
TF5-MW-924
TF5-MW-917
TF5-SB972
Former Oil-Water Separator
Fire Fighting Training Area
Legend
Soil Boring
Monitoring Well
Sediment Sample Location
Surface Water Sample Location
Decision Unit Boundary
Oil Pipe
Tank To Be Investigated
Tank - No Further Action
Wetland
Railroad Tracks
Fence
Surface Elevation Contour
0 25 50 100 Feet
TETRA TECH
NAVAL STATION NEWPORT
MIDDLETOWN, RHODE ISLAND
DU 5-1 SITE MAP
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
FILE
I:\..\FIG2-2.MXD
SCALE
PER-SCALE BAR
FIGURE NUMBER
2-2
REV
0
DATE
06/20/12
I:\02698\SI.DF\FIG2-2.MXD GJG/DWM 06/20/12

I:\02698\SI.DF\TF4_DU4-1_X-SECTION_LINE.MXD 06/20/12 DWM



Legend

- Soil Sample Location
- Monitoring Well
- Cross-Section Line
- Decision Unit Boundary
- Wetland
- Ground Contour
- 46 Ground Elevation

0 50 100 200 Feet

TETRA TECH

NAVAL STATION NEWPORT
PORTSMOUTH, RHODE ISLAND

CROSS-SECTION LINE - DU4-1

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE
\..\TF4_DU4-1_X-SECTION_LINE.MXD	AS NOTED
FIGURE NUMBER 3-1	REV 0 / DATE 06/20/12

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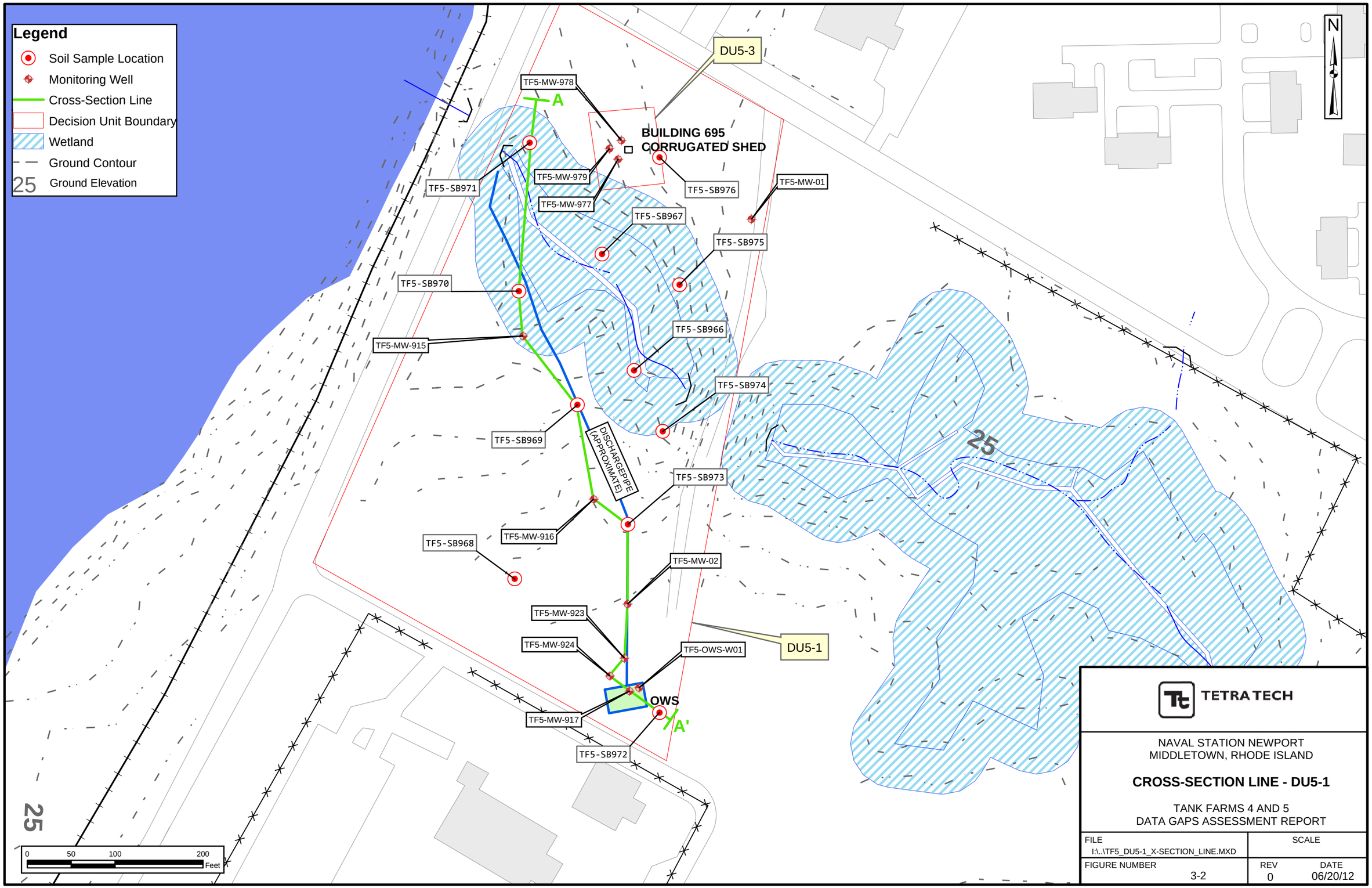

TETRA TECH

NAVAL STATION NEWPORT
MIDDLETOWN, RHODE ISLAND

CROSS-SECTION LINE - DU5-1

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE	
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FIGURE NUMBER	REV	DATE
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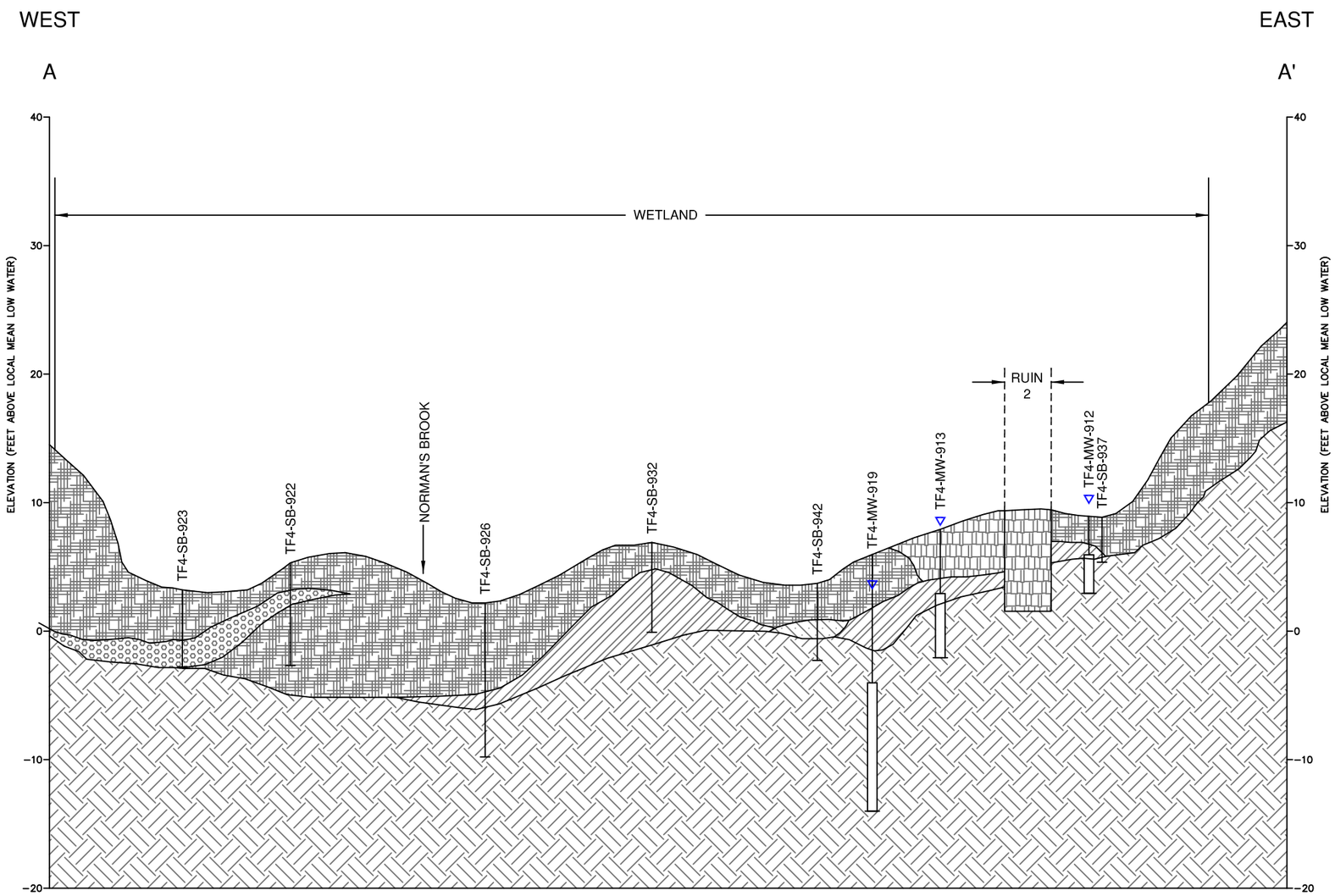

FILL
SANDY SILT
SILTY SAND
SANDY SILT WITH GRAVEL
WEATHERED PHYLLITE
PHYLLITE

LEGEND:

MONITORING WELL OR BORING NUMBER — TF5-MW-909

WATER LEVEL, MAY 2010

TOP OF SCREEN

LITHOLOGIC CONTACT (INFERRED BETWEEN BORINGS)

BOTTOM OF SCREEN

TOTAL DEPTH OF WELL OR BORING

HORIZONTAL SCALE

0' 100' 200'

VERTICAL SCALE

0' 10' 20'

VERTICAL EXAGGERATION = 10X

TETRA TECH

NAVAL STATION NEWPORT
PORTSMOUTH, RHODE ISLAND

CROSS SECTION A-A - DU4-1

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE
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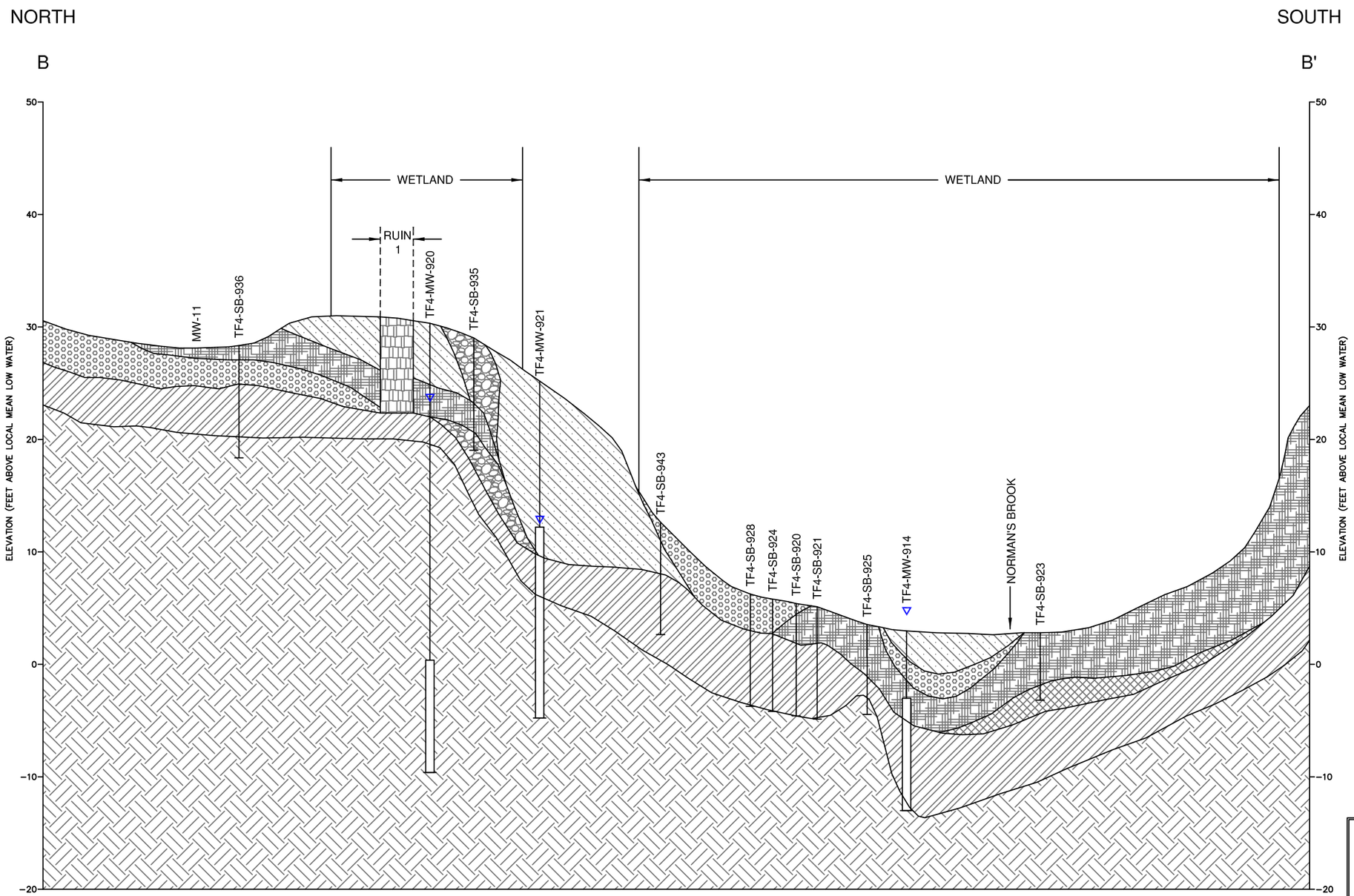
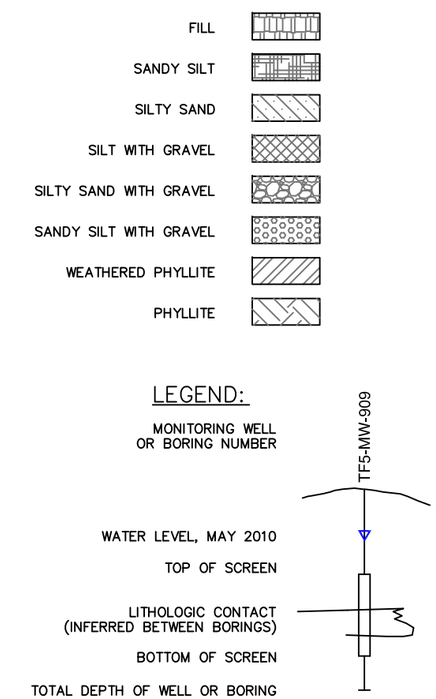
FIGURE NUMBER 3-3	REV 0 / DATE 6/20/12

ACAD:I:\02698\SI.DF\TF4_DU4-1_X-SECTION_B.DWG 6/20/12 DWM





HORIZONTAL SCALE

0' 100' 200'

VERTICAL SCALE

0' 10' 20'

VERTICAL EXAGGERATION = 10X

TETRA TECH

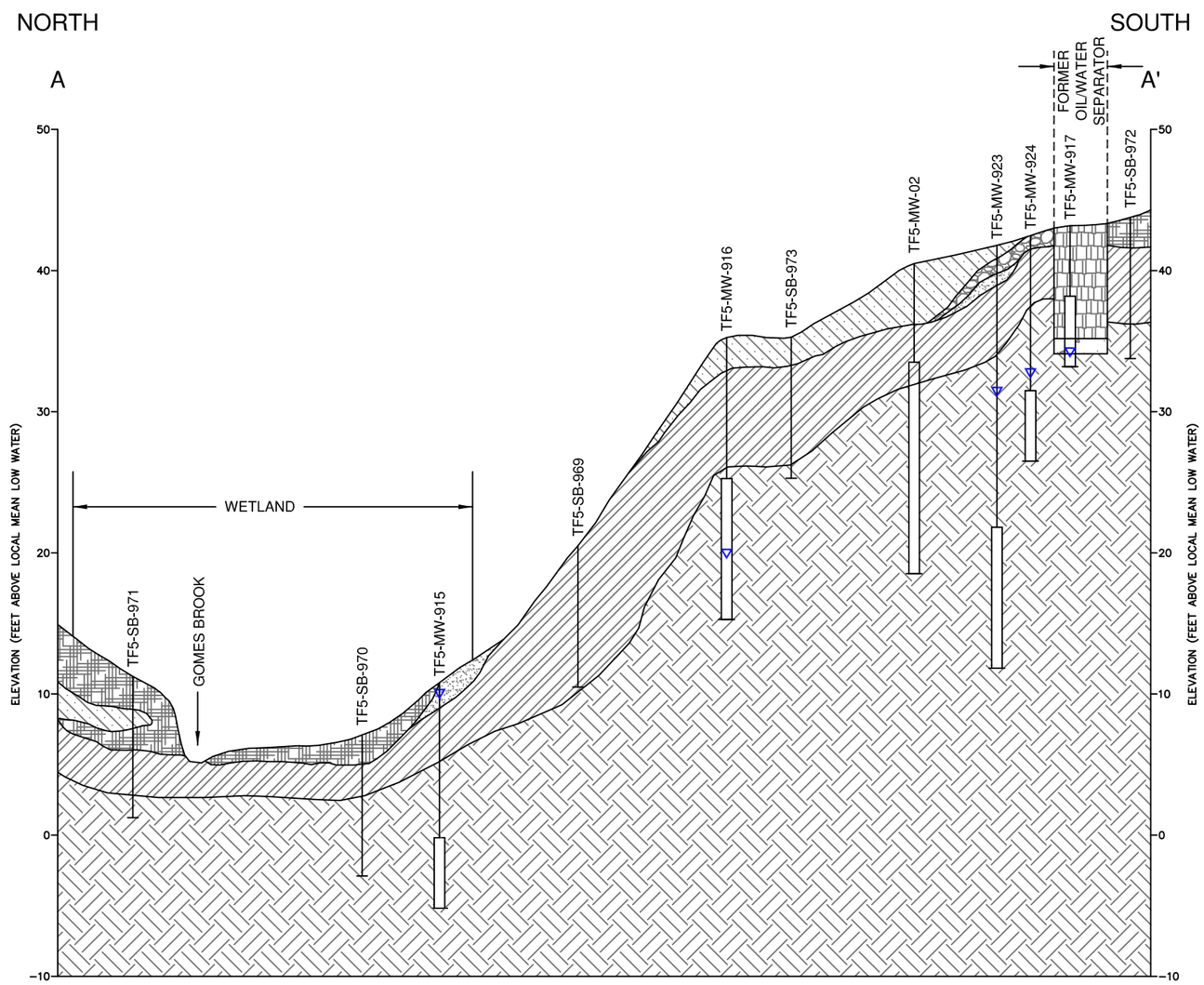
NAVAL STATION NEWPORT
PORTSMOUTH, RHODE ISLAND

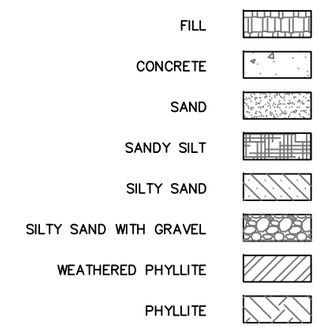
CROSS SECTION B-B' - DU4-1

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

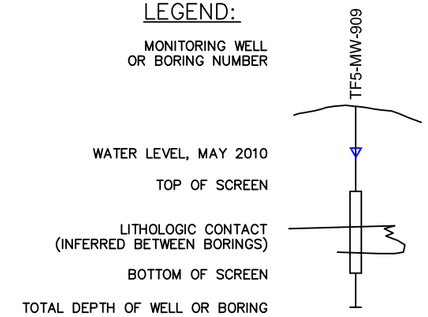
FILE	SCALE
\..\TF4_DU4-1_X-SECTION_B.DWG	PER-SCALE BAR
FIGURE NUMBER 3-4	REV 0 / DATE 6/20/12

ACAD:I:\02698\SI.DF\TF5_DU5-1_X-SECTIONS.DWG 6/20/12 DWM





LEGEND:



HORIZONTAL SCALE

0' 100' 200'

VERTICAL SCALE

0' 10' 20'

VERTICAL EXAGGERATION = 10X

TETRA TECH

NAVAL STATION NEWPORT
MIDDLETOWN, RHODE ISLAND

CROSS SECTION A-A' - DU5-1

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE
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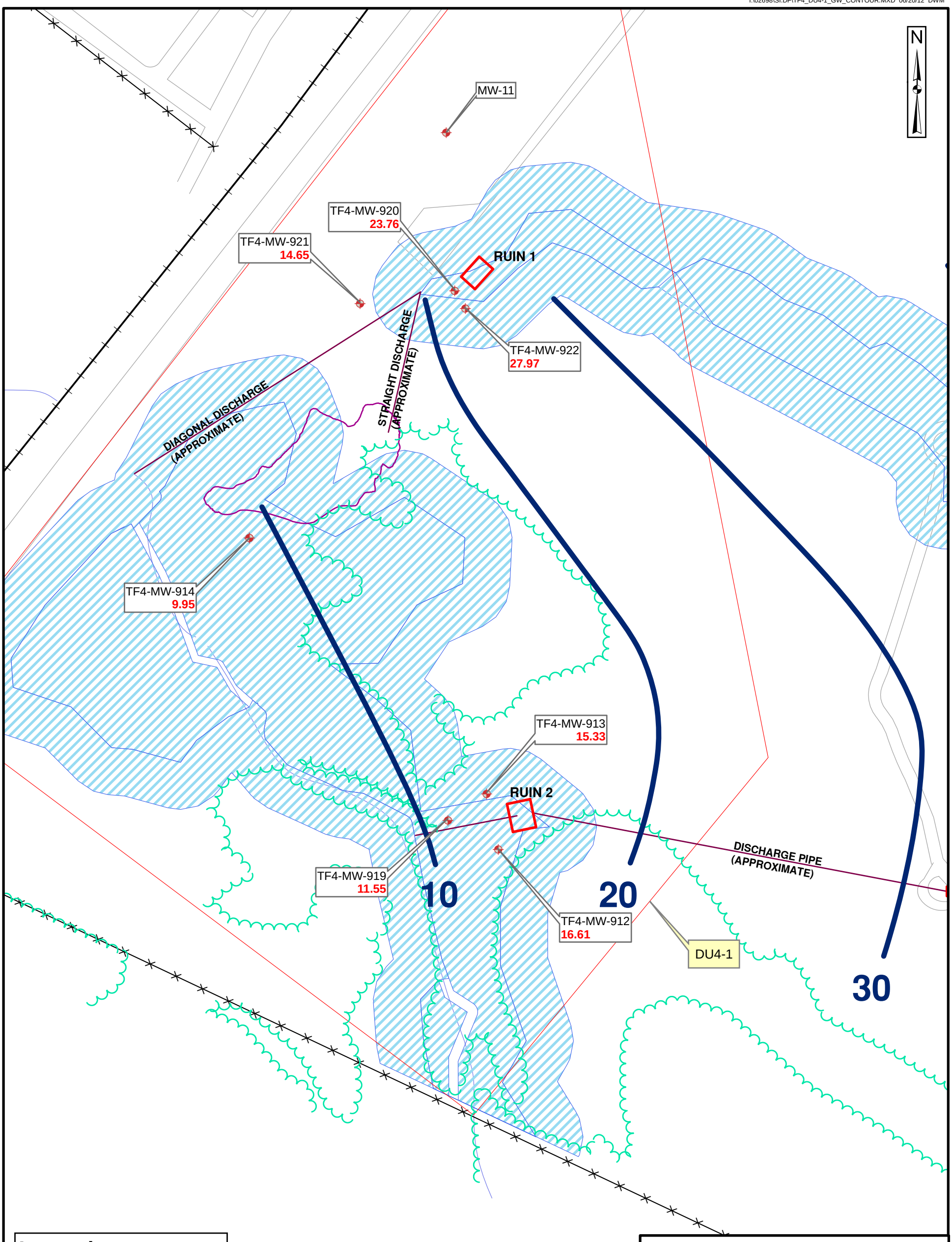
FIGURE NUMBER 3-5	REV 0 / DATE 6/20/12

I:\02698\SI.DF\TF4_DU4-1_GW_CONTOUR.MXD 06/20/12 DWM



Legend

- Monitoring Well
- Groundwater Contour Line
- Decision Unit Boundary
- Wetland
- 16.61 Groundwater Elevation

0 50 100 200 Feet

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NAVAL STATION NEWPORT
PORTSMOUTH, RHODE ISLAND

GROUNDWATER CONTOUR MAP - DU4-1

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE	
\..\TF4_DU4-1_GW_CONTOUR.MXD	PER-SCALE BAR	
FIGURE NUMBER	REV	DATE
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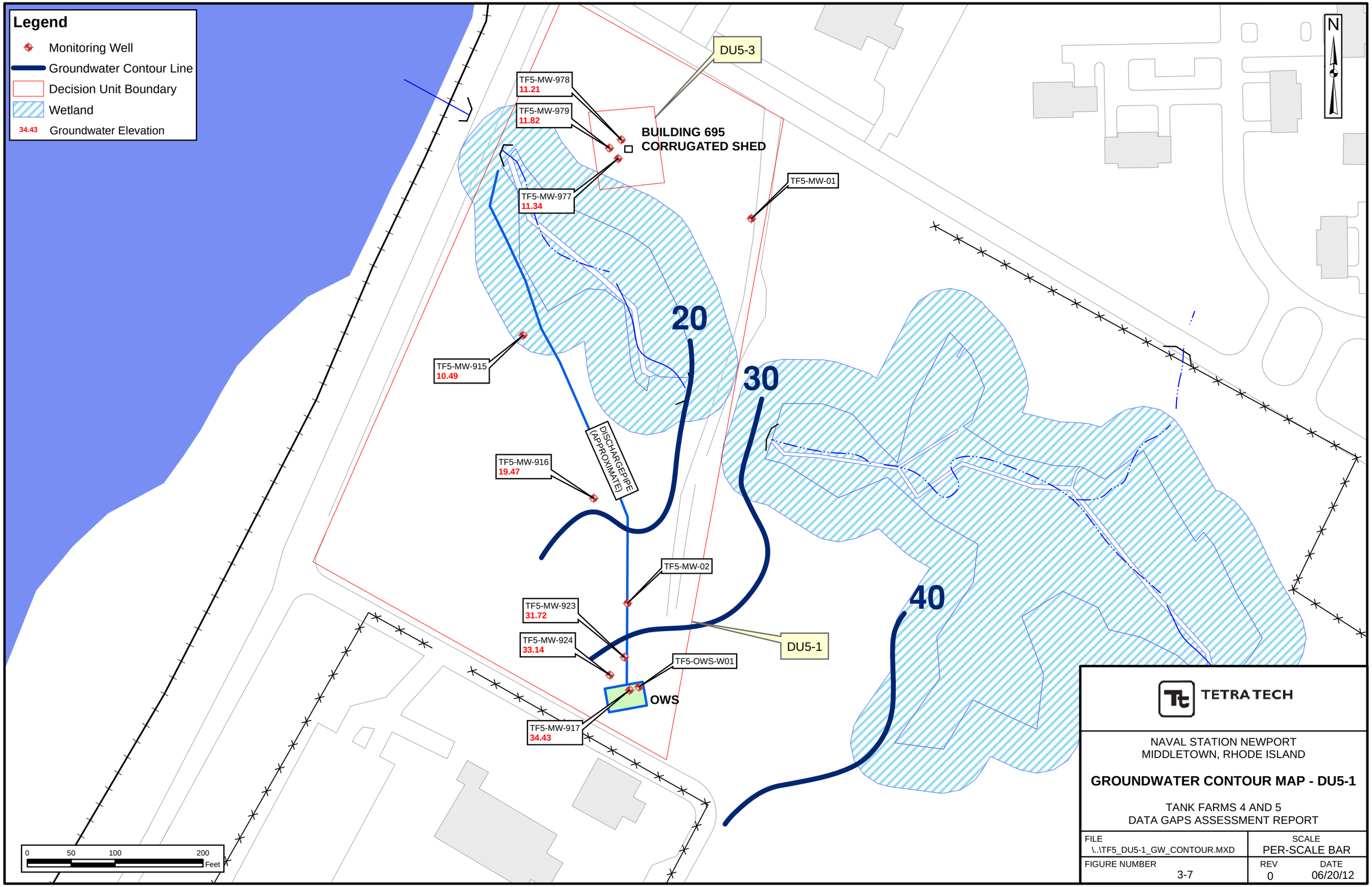
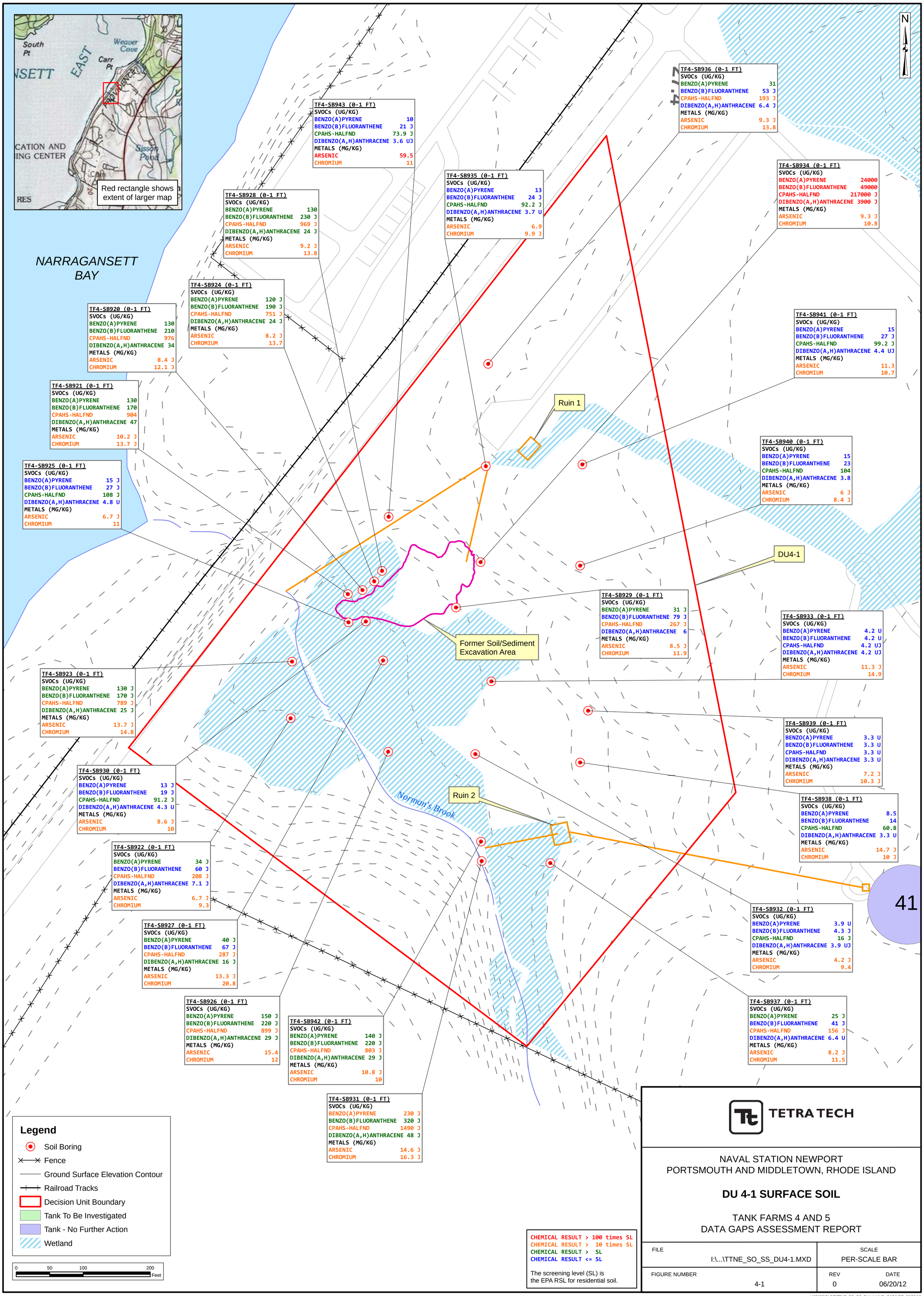
I:\02698\SLDF\TF5_DU5-1_GW_CONTOUR.MXD DWM/GJG 06/20/12




South Pt
Weaver Cove
EAST
Carr Pt
NSETT
PROVIDENCE
CATION AND
ING CENTER
Sisson Pond
RES
Red rectangle shows extent of larger map
NARRAGANSETT BAY
N
Ruin 1
Ruin 2
DU4-1
Former Soil/Sediment Excavation Area
Norman's Brook
41
TF4-SB943 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 10
BENZO(B)FLUORANTHENE 21 J
CPAHS-HALFND 73.9 J
DIBENZO(A,H)ANTHRACENE 3.6 UJ
METALS (MG/KG)
ARSENIC 59.5
CHROMIUM 11
TF4-SB936 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 31
BENZO(B)FLUORANTHENE 53 J
CPAHS-HALFND 193 J
DIBENZO(A,H)ANTHRACENE 6.4 J
METALS (MG/KG)
ARSENIC 9.3 J
CHROMIUM 13.8
TF4-SB935 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 13
BENZO(B)FLUORANTHENE 24 J
CPAHS-HALFND 92.2 J
DIBENZO(A,H)ANTHRACENE 3.7 U
METALS (MG/KG)
ARSENIC 6.9
CHROMIUM 9.9 J
TF4-SB934 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 24000
BENZO(B)FLUORANTHENE 49000
CPAHS-HALFND 217000 J
DIBENZO(A,H)ANTHRACENE 3900 J
METALS (MG/KG)
ARSENIC 9.3 J
CHROMIUM 10.8
TF4-SB928 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 130
BENZO(B)FLUORANTHENE 230 J
CPAHS-HALFND 969 J
DIBENZO(A,H)ANTHRACENE 24 J
METALS (MG/KG)
ARSENIC 9.2 J
CHROMIUM 13.8
TF4-SB924 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 120 J
BENZO(B)FLUORANTHENE 190 J
CPAHS-HALFND 751 J
DIBENZO(A,H)ANTHRACENE 24 J
METALS (MG/KG)
ARSENIC 8.2 J
CHROMIUM 13.7
TF4-SB920 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 130
BENZO(B)FLUORANTHENE 210
CPAHS-HALFND 976
DIBENZO(A,H)ANTHRACENE 34
METALS (MG/KG)
ARSENIC 8.4 J
CHROMIUM 12.1 J
TF4-SB941 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 15
BENZO(B)FLUORANTHENE 27 J
CPAHS-HALFND 99.2 J
DIBENZO(A,H)ANTHRACENE 4.4 UJ
METALS (MG/KG)
ARSENIC 11.3
CHROMIUM 10.7
TF4-SB921 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 130
BENZO(B)FLUORANTHENE 170
CPAHS-HALFND 904
DIBENZO(A,H)ANTHRACENE 47
METALS (MG/KG)
ARSENIC 10.2 J
CHROMIUM 13.7 J
TF4-SB940 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 15
BENZO(B)FLUORANTHENE 23
CPAHS-HALFND 104
DIBENZO(A,H)ANTHRACENE 3.8
METALS (MG/KG)
ARSENIC 6 J
CHROMIUM 8.4 J
TF4-SB925 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 15 J
BENZO(B)FLUORANTHENE 27 J
CPAHS-HALFND 108 J
DIBENZO(A,H)ANTHRACENE 4.8 U
METALS (MG/KG)
ARSENIC 6.7 J
CHROMIUM 11
TF4-SB929 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 31 J
BENZO(B)FLUORANTHENE 79 J
CPAHS-HALFND 267 J
DIBENZO(A,H)ANTHRACENE 6
METALS (MG/KG)
ARSENIC 8.5 J
CHROMIUM 11.9
TF4-SB933 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 4.2 U
BENZO(B)FLUORANTHENE 4.2 U
CPAHS-HALFND 4.2 UJ
DIBENZO(A,H)ANTHRACENE 4.2 UJ
METALS (MG/KG)
ARSENIC 11.3 J
CHROMIUM 14.9
TF4-SB923 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 130 J
BENZO(B)FLUORANTHENE 170 J
CPAHS-HALFND 789 J
DIBENZO(A,H)ANTHRACENE 25 J
METALS (MG/KG)
ARSENIC 13.7 J
CHROMIUM 14.8
TF4-SB939 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 3.3 U
BENZO(B)FLUORANTHENE 3.3 U
CPAHS-HALFND 3.3 U
DIBENZO(A,H)ANTHRACENE 3.3 U
METALS (MG/KG)
ARSENIC 7.2 J
CHROMIUM 10.3 J
TF4-SB930 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 13 J
BENZO(B)FLUORANTHENE 19 J
CPAHS-HALFND 91.2 J
DIBENZO(A,H)ANTHRACENE 4.3 U
METALS (MG/KG)
ARSENIC 8.6 J
CHROMIUM 10
TF4-SB938 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 8.5
BENZO(B)FLUORANTHENE 14
CPAHS-HALFND 60.8
DIBENZO(A,H)ANTHRACENE 3.3 U
METALS (MG/KG)
ARSENIC 14.7 J
CHROMIUM 10 J
TF4-SB922 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 34 J
BENZO(B)FLUORANTHENE 60 J
CPAHS-HALFND 208 J
DIBENZO(A,H)ANTHRACENE 7.1 J
METALS (MG/KG)
ARSENIC 6.7 J
CHROMIUM 9.3
TF4-SB932 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 3.9 U
BENZO(B)FLUORANTHENE 4.3 J
CPAHS-HALFND 16 J
DIBENZO(A,H)ANTHRACENE 3.9 UJ
METALS (MG/KG)
ARSENIC 4.2 J
CHROMIUM 9.4
TF4-SB927 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 40 J
BENZO(B)FLUORANTHENE 67 J
CPAHS-HALFND 287 J
DIBENZO(A,H)ANTHRACENE 16 J
METALS (MG/KG)
ARSENIC 13.3 J
CHROMIUM 20.8
TF4-SB926 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 150 J
BENZO(B)FLUORANTHENE 220 J
CPAHS-HALFND 899 J
DIBENZO(A,H)ANTHRACENE 29 J
METALS (MG/KG)
ARSENIC 15.4
CHROMIUM 12
TF4-SB937 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 25 J
BENZO(B)FLUORANTHENE 41 J
CPAHS-HALFND 156 J
DIBENZO(A,H)ANTHRACENE 6.4 U
METALS (MG/KG)
ARSENIC 8.2 J
CHROMIUM 11.5
TF4-SB942 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 140 J
BENZO(B)FLUORANTHENE 220 J
CPAHS-HALFND 803 J
DIBENZO(A,H)ANTHRACENE 29 J
METALS (MG/KG)
ARSENIC 10.8 J
CHROMIUM 10
TF4-SB931 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 230 J
BENZO(B)FLUORANTHENE 320 J
CPAHS-HALFND 1490 J
DIBENZO(A,H)ANTHRACENE 48 J
METALS (MG/KG)
ARSENIC 14.6 J
CHROMIUM 16.3 J
Legend
Soil Boring
Fence
Ground Surface Elevation Contour
Railroad Tracks
Decision Unit Boundary
Tank To Be Investigated
Tank - No Further Action
Wetland
0 50 100 200 Feet
CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL
The screening level (SL) is the EPA RSL for residential soil.
TETRA TECH
NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND
DU 4-1 SURFACE SOIL
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
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SCALE PER-SCALE BAR
FIGURE NUMBER 4-1
REV 0
DATE 06/20/12
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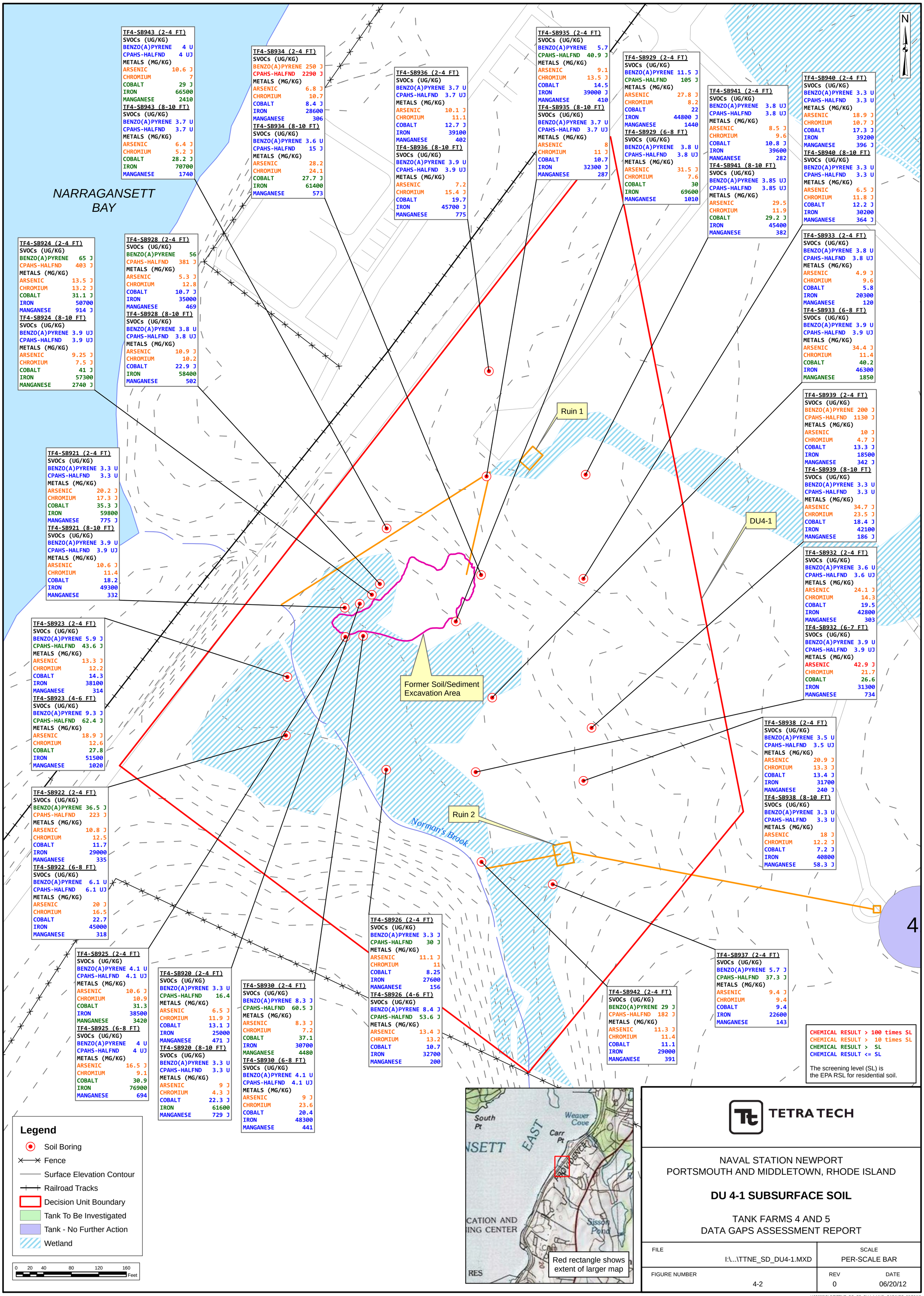

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NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND

DU 4-1 SUBSURFACE SOIL

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE
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FIGURE NUMBER	REV	DATE
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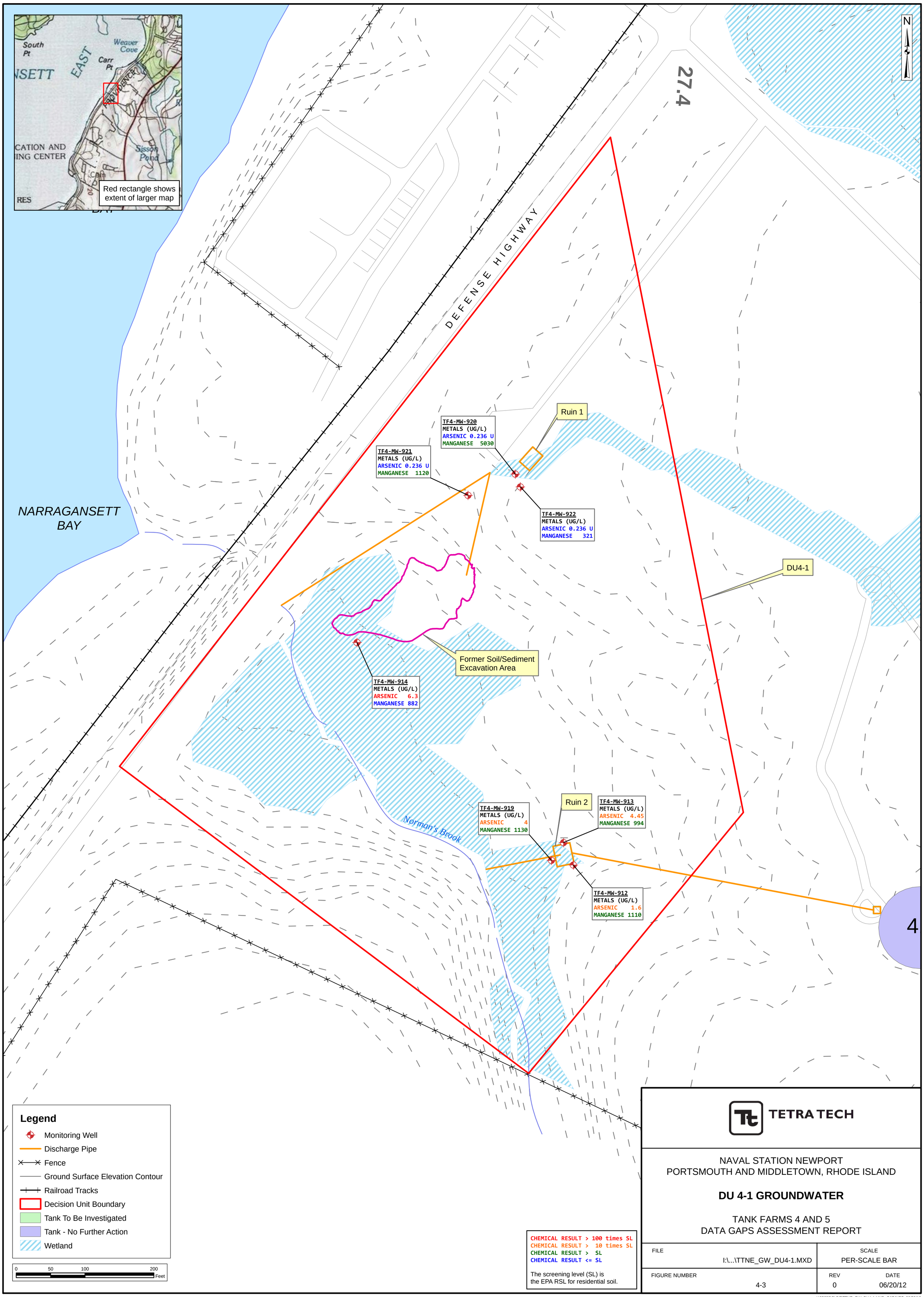
South Pt
Weaver Cove
Carr Pt
EAST
NSETT
PROVIDENCE
CATION AND
ING CENTER
Sisson Pond
RES
Red rectangle shows extent of larger map
N
27.4
DEFENSE HIGHWAY
NARRAGANSETT BAY
Ruin 1
TF4-MW-920
METALS (UG/L)
ARSENIC 0.236 U
MANGANESE 5030
TF4-MW-921
METALS (UG/L)
ARSENIC 0.236 U
MANGANESE 1120
TF4-MW-922
METALS (UG/L)
ARSENIC 0.236 U
MANGANESE 321
DU4-1
Former Soil/Sediment Excavation Area
TF4-MW-914
METALS (UG/L)
ARSENIC 6.3
MANGANESE 882
Norman's Brook
Ruin 2
TF4-MW-919
METALS (UG/L)
ARSENIC 4
MANGANESE 1130
TF4-MW-913
METALS (UG/L)
ARSENIC 4.45
MANGANESE 994
TF4-MW-912
METALS (UG/L)
ARSENIC 1.6
MANGANESE 1110
4
Legend
Monitoring Well
Discharge Pipe
Fence
Ground Surface Elevation Contour
Railroad Tracks
Decision Unit Boundary
Tank To Be Investigated
Tank - No Further Action
Wetland
0 50 100 200 Feet
CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL
The screening level (SL) is the EPA RSL for residential soil.
TETRA TECH
NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND
DU 4-1 GROUNDWATER
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
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SCALE
PER-SCALE BAR
FIGURE NUMBER
4-3
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DATE
06/20/12
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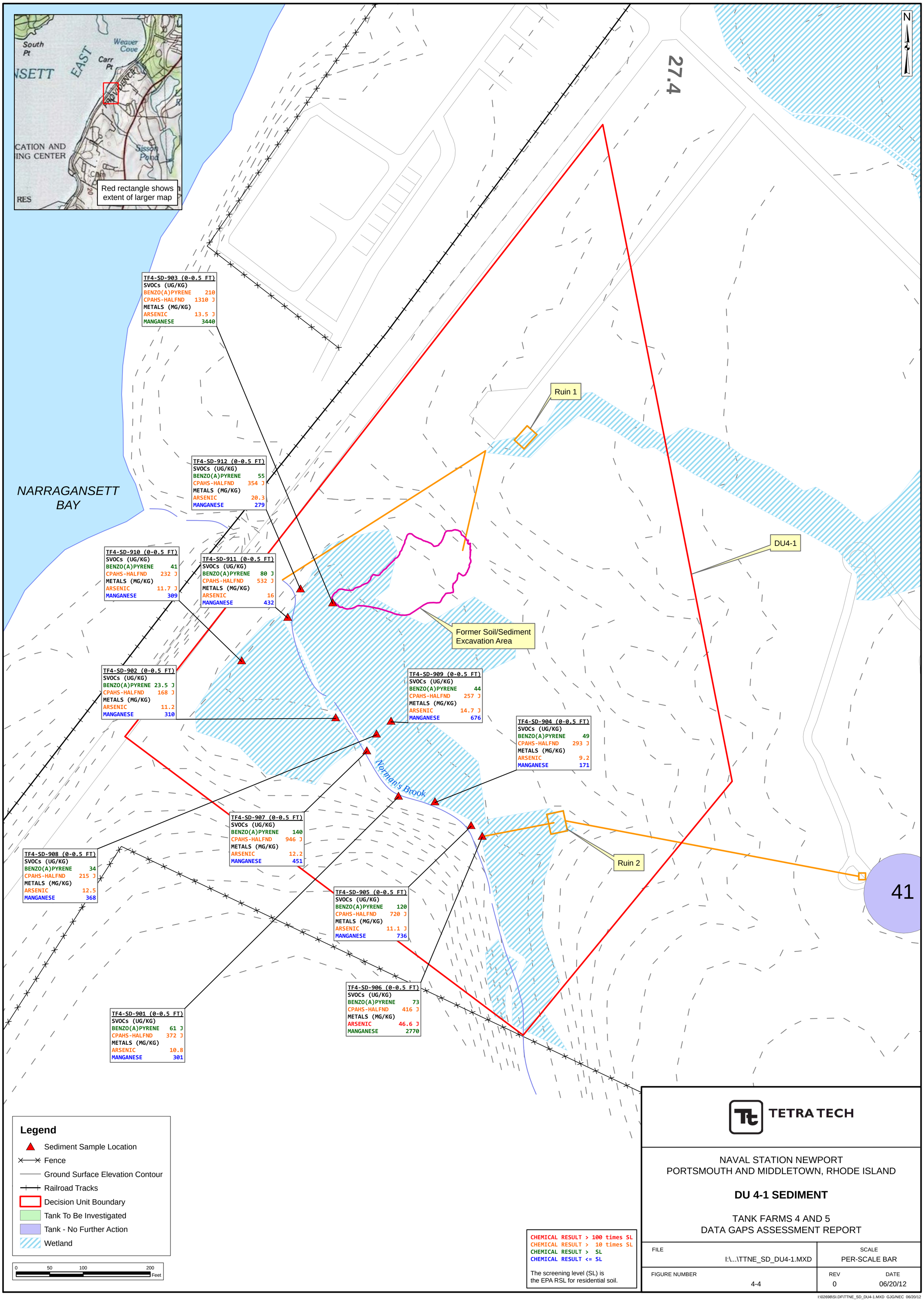
South Pt
Weaver Cove
EAST
Carr Pt
NSETT
PROVIDENCE
CATION AND
ING CENTER
Sisson Pond
RES
Red rectangle shows extent of larger map
N
27.4
NARRAGANSETT BAY
Ruin 1
DU4-1
Former Soil/Sediment Excavation Area
Norman's Brook
Ruin 2
41
TF4-SD-903 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 210
CPAHS-HALFND 1310 J
METALS (MG/KG)
ARSENIC 13.5 J
MANGANESE 3440
TF4-SD-912 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 55
CPAHS-HALFND 354 J
METALS (MG/KG)
ARSENIC 20.3
MANGANESE 279
TF4-SD-910 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 41
CPAHS-HALFND 232 J
METALS (MG/KG)
ARSENIC 11.7 J
MANGANESE 309
TF4-SD-911 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 80 J
CPAHS-HALFND 532 J
METALS (MG/KG)
ARSENIC 16
MANGANESE 432
TF4-SD-902 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 23.5 J
CPAHS-HALFND 168 J
METALS (MG/KG)
ARSENIC 11.2
MANGANESE 310
TF4-SD-909 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 44
CPAHS-HALFND 257 J
METALS (MG/KG)
ARSENIC 14.7 J
MANGANESE 676
TF4-SD-904 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 49
CPAHS-HALFND 293 J
METALS (MG/KG)
ARSENIC 9.2
MANGANESE 171
TF4-SD-907 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 140
CPAHS-HALFND 946 J
METALS (MG/KG)
ARSENIC 12.2
MANGANESE 451
TF4-SD-908 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 34
CPAHS-HALFND 215 J
METALS (MG/KG)
ARSENIC 12.5
MANGANESE 368
TF4-SD-905 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 120
CPAHS-HALFND 720 J
METALS (MG/KG)
ARSENIC 11.1 J
MANGANESE 736
TF4-SD-906 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 73
CPAHS-HALFND 416 J
METALS (MG/KG)
ARSENIC 46.6 J
MANGANESE 2770
TF4-SD-901 (0-0.5 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 61 J
CPAHS-HALFND 372 J
METALS (MG/KG)
ARSENIC 10.8
MANGANESE 301
Legend
Sediment Sample Location
Fence
Ground Surface Elevation Contour
Railroad Tracks
Decision Unit Boundary
Tank To Be Investigated
Tank - No Further Action
Wetland
0 50 100 200 Feet
CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL
The screening level (SL) is the EPA RSL for residential soil.
TETRA TECH
NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND
DU 4-1 SEDIMENT
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
FILE
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SCALE
PER-SCALE BAR
FIGURE NUMBER
4-4
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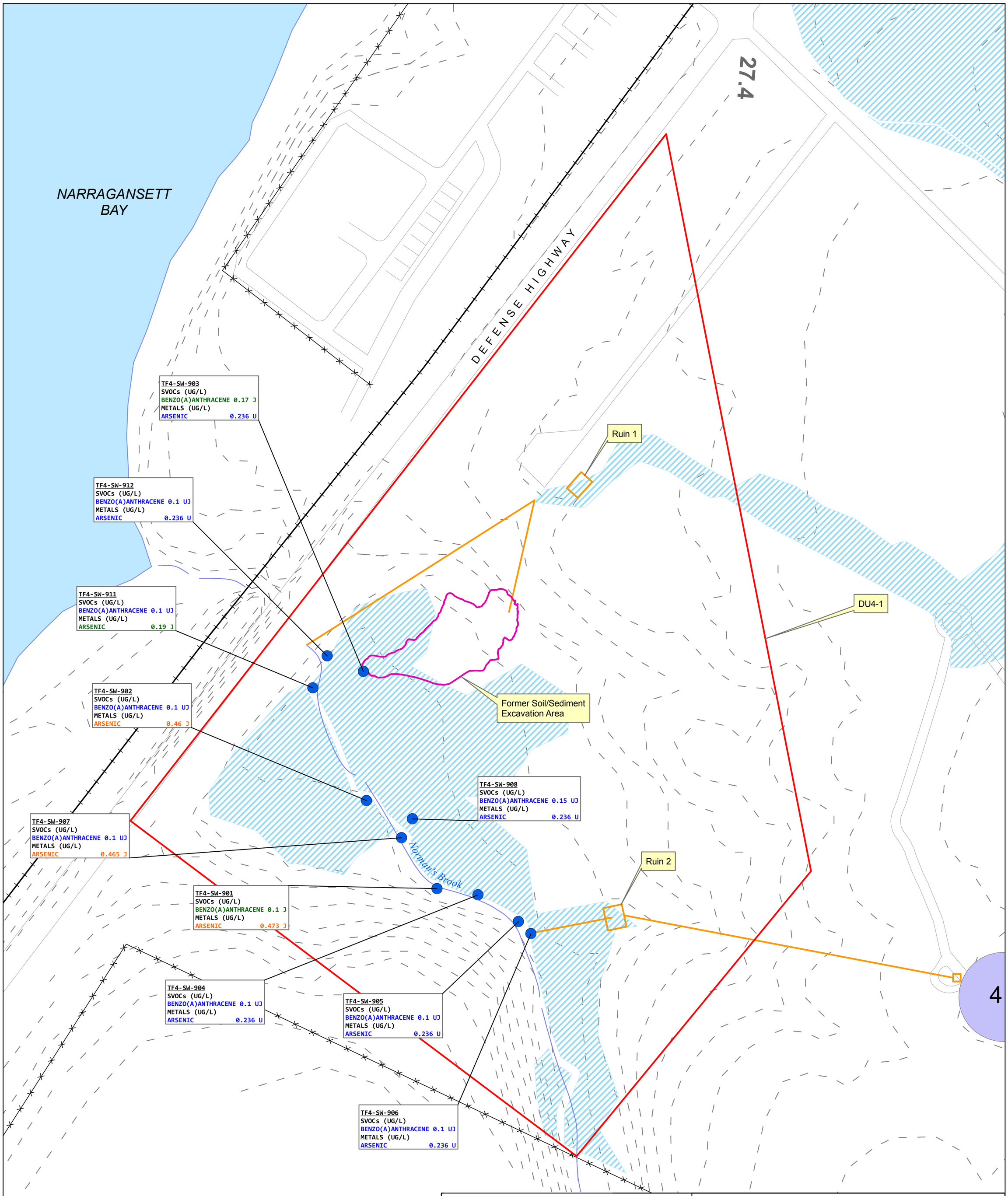


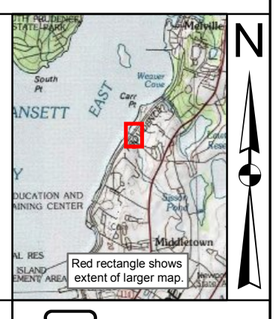
Surface Water Sample Location
Decision Unit Boundary
Discharge Pipe
Tank To Be Investigated
Tank - No Further Action
Wetland
Ground Surface Elevation Contour
Railroad Tracks
Fence

CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL

The screening level (SL) is the minimum of the EPA tapwater RSL and MCL.

0 50 100 150 200 250 300 Feet

FIGURE 4-5
DU 4-1 SURFACE WATER
TANK FARMS 4 AND 5
DATA GAPS INVESTIGATION
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND



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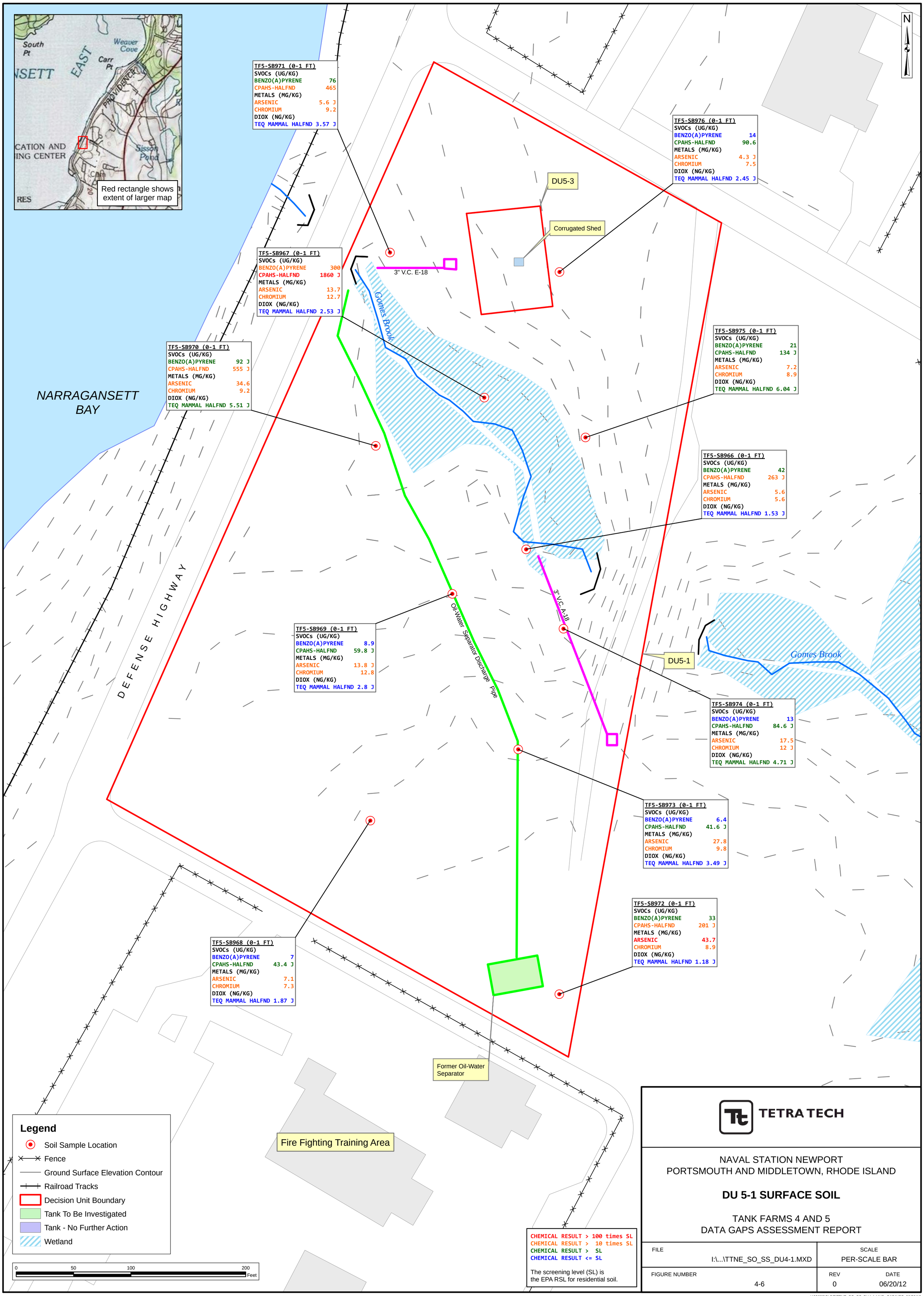
TETRA TECH


Red rectangle shows extent of larger map
NARRAGANSETT BAY
DEFENSE HIGHWAY
Gomes Brook
Oil-Water Separator Discharge Pipe
3" V.C. E-18
3" V.C. A-18
DU5-3
DU5-1
Corrugated Shed
Former Oil-Water Separator
Fire Fighting Training Area
TF5-SB971 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 76
CPAHS-HALFND 465
METALS (MG/KG)
ARSENIC 5.6 J
CHROMIUM 9.2
DIOX (NG/KG)
TEQ MAMMAL HALFND 3.57 J
TF5-SB976 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 14
CPAHS-HALFND 90.6
METALS (MG/KG)
ARSENIC 4.3 J
CHROMIUM 7.5
DIOX (NG/KG)
TEQ MAMMAL HALFND 2.45 J
TF5-SB967 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 300
CPAHS-HALFND 1860 J
METALS (MG/KG)
ARSENIC 13.7
CHROMIUM 12.7
DIOX (NG/KG)
TEQ MAMMAL HALFND 2.53 J
TF5-SB975 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 21
CPAHS-HALFND 134 J
METALS (MG/KG)
ARSENIC 7.2
CHROMIUM 8.9
DIOX (NG/KG)
TEQ MAMMAL HALFND 6.04 J
TF5-SB970 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 92 J
CPAHS-HALFND 555 J
METALS (MG/KG)
ARSENIC 34.6
CHROMIUM 9.2
DIOX (NG/KG)
TEQ MAMMAL HALFND 5.51 J
TF5-SB966 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 42
CPAHS-HALFND 263 J
METALS (MG/KG)
ARSENIC 5.6
CHROMIUM 5.6
DIOX (NG/KG)
TEQ MAMMAL HALFND 1.53 J
TF5-SB969 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 8.9
CPAHS-HALFND 59.8 J
METALS (MG/KG)
ARSENIC 13.8 J
CHROMIUM 12.8
DIOX (NG/KG)
TEQ MAMMAL HALFND 2.8 J
TF5-SB974 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 13
CPAHS-HALFND 84.6 J
METALS (MG/KG)
ARSENIC 17.5
CHROMIUM 12 J
DIOX (NG/KG)
TEQ MAMMAL HALFND 4.71 J
TF5-SB973 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 6.4
CPAHS-HALFND 41.6 J
METALS (MG/KG)
ARSENIC 27.8
CHROMIUM 9.8
DIOX (NG/KG)
TEQ MAMMAL HALFND 3.49 J
TF5-SB972 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 33
CPAHS-HALFND 201 J
METALS (MG/KG)
ARSENIC 43.7
CHROMIUM 8.9
DIOX (NG/KG)
TEQ MAMMAL HALFND 1.18 J
TF5-SB968 (0-1 FT)
SVOCs (UG/KG)
BENZO(A)PYRENE 7
CPAHS-HALFND 43.4 J
METALS (MG/KG)
ARSENIC 7.1
CHROMIUM 7.3
DIOX (NG/KG)
TEQ MAMMAL HALFND 1.87 J
Legend
Soil Sample Location
Fence
Ground Surface Elevation Contour
Railroad Tracks
Decision Unit Boundary
Tank To Be Investigated
Tank - No Further Action
Wetland
0 50 100 200 Feet
CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL
The screening level (SL) is the EPA RSL for residential soil.
TETRA TECH
NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND
DU 5-1 SURFACE SOIL
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
FILE I:\...\TTNE_SO_SS_DU4-1.MXD
SCALE PER-SCALE BAR
FIGURE NUMBER 4-6
REV 0
DATE 06/20/12
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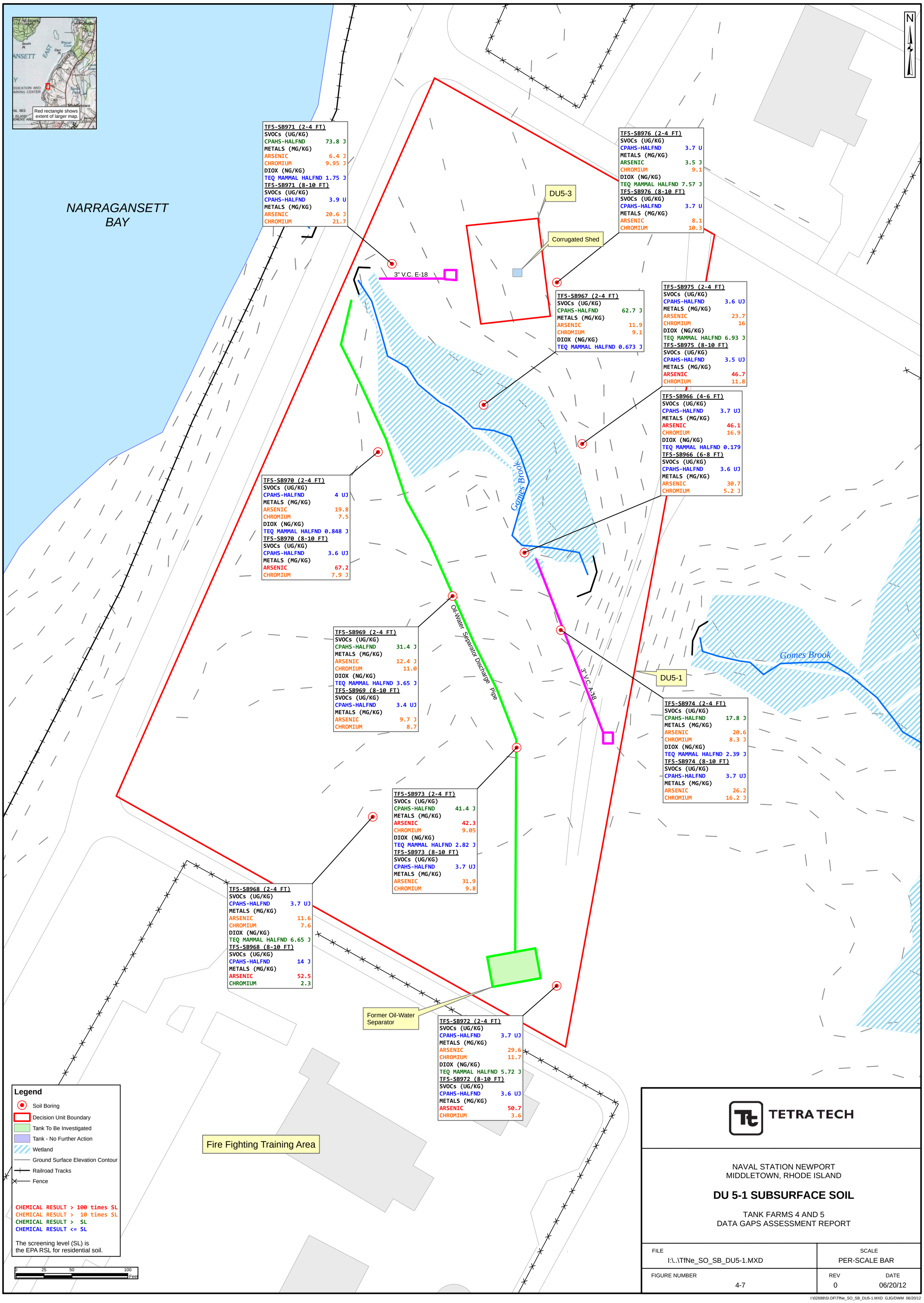
Red rectangle shows extent of larger map.
NARRAGANSETT BAY
N
TF5-SB971 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 73.8 J
METALS (MG/KG)
ARSENIC 6.4 J
CHROMIUM 9.95 J
DIOX (NG/KG)
TEQ MAMMAL HALFND 1.75 J
TF5-SB971 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.9 U
METALS (MG/KG)
ARSENIC 20.6 J
CHROMIUM 21.7
TF5-SB976 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 U
METALS (MG/KG)
ARSENIC 3.5 J
CHROMIUM 9.1
DIOX (NG/KG)
TEQ MAMMAL HALFND 7.57 J
TF5-SB976 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 U
METALS (MG/KG)
ARSENIC 8.1
CHROMIUM 10.3
DU5-3
Corrugated Shed
3" V.C. E-18
TF5-SB967 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 62.7 J
METALS (MG/KG)
ARSENIC 11.9
CHROMIUM 9.1
DIOX (NG/KG)
TEQ MAMMAL HALFND 0.673 J
TF5-SB975 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.6 UJ
METALS (MG/KG)
ARSENIC 23.7
CHROMIUM 16
DIOX (NG/KG)
TEQ MAMMAL HALFND 6.93 J
TF5-SB975 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.5 UJ
METALS (MG/KG)
ARSENIC 46.7
CHROMIUM 11.8
TF5-SB966 (4-6 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 UJ
METALS (MG/KG)
ARSENIC 46.1
CHROMIUM 16.9
DIOX (NG/KG)
TEQ MAMMAL HALFND 0.179
TF5-SB966 (6-8 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.6 UJ
METALS (MG/KG)
ARSENIC 30.7
CHROMIUM 5.2 J
TF5-SB970 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 4 UJ
METALS (MG/KG)
ARSENIC 19.8
CHROMIUM 7.5
DIOX (NG/KG)
TEQ MAMMAL HALFND 0.848 J
TF5-SB970 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.6 UJ
METALS (MG/KG)
ARSENIC 67.2
CHROMIUM 7.9 J
Gomes Brook
Oil-Water Separator Discharge Pipe
TF5-SB969 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 31.4 J
METALS (MG/KG)
ARSENIC 12.4 J
CHROMIUM 11.0
DIOX (NG/KG)
TEQ MAMMAL HALFND 3.65 J
TF5-SB969 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.4 UJ
METALS (MG/KG)
ARSENIC 9.7 J
CHROMIUM 8.7
3" V.C. A-18
DU5-1
Gomes Brook
TF5-SB974 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 17.8 J
METALS (MG/KG)
ARSENIC 20.6
CHROMIUM 8.3 J
DIOX (NG/KG)
TEQ MAMMAL HALFND 2.39 J
TF5-SB974 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 UJ
METALS (MG/KG)
ARSENIC 26.2
CHROMIUM 16.2 J
TF5-SB973 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 41.4 J
METALS (MG/KG)
ARSENIC 42.3
CHROMIUM 9.05
DIOX (NG/KG)
TEQ MAMMAL HALFND 2.82 J
TF5-SB973 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 UJ
METALS (MG/KG)
ARSENIC 31.9
CHROMIUM 9.8
TF5-SB968 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 UJ
METALS (MG/KG)
ARSENIC 11.6
CHROMIUM 7.6
DIOX (NG/KG)
TEQ MAMMAL HALFND 6.65 J
TF5-SB968 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 14 J
METALS (MG/KG)
ARSENIC 52.5
CHROMIUM 2.3
Former Oil-Water Separator
TF5-SB972 (2-4 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.7 UJ
METALS (MG/KG)
ARSENIC 29.6
CHROMIUM 11.7
DIOX (NG/KG)
TEQ MAMMAL HALFND 5.72 J
TF5-SB972 (8-10 FT)
SVOCs (UG/KG)
CPAHS-HALFND 3.6 UJ
METALS (MG/KG)
ARSENIC 50.7
CHROMIUM 3.6
Fire Fighting Training Area
Legend
Soil Boring
Decision Unit Boundary
Tank To Be Investigated
Tank - No Further Action
Wetland
Ground Surface Elevation Contour
Railroad Tracks
Fence
CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL
The screening level (SL) is the EPA RSL for residential soil.
0 25 50 100 Feet
TETRA TECH
NAVAL STATION NEWPORT
MIDDLETOWN, RHODE ISLAND
DU 5-1 SUBSURFACE SOIL
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
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DATE
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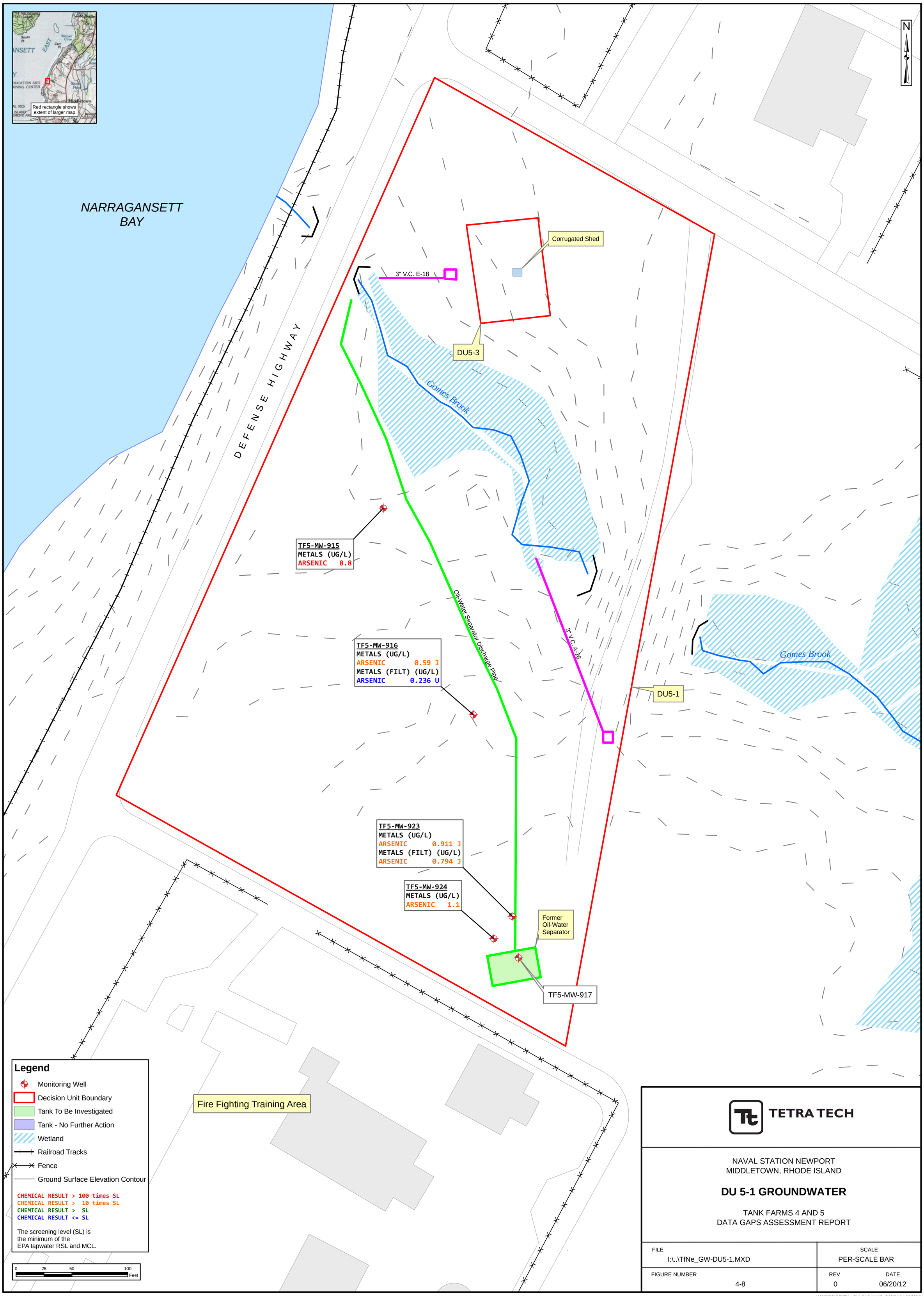
Red rectangle shows extent of larger map.
NARRAGANSETT BAY
DEFENSE HIGHWAY
Corrugated Shed
3" V.C. E-18
DU5-3
Gomes Brook
TF5-MW-915
METALS (UG/L)
ARSENIC 8.8
Oil-Water Separator Discharge Pipe
3" V.C. A-18
TF5-MW-916
METALS (UG/L)
ARSENIC 0.59 J
METALS (FILT) (UG/L)
ARSENIC 0.236 U
DU5-1
Gomes Brook
TF5-MW-923
METALS (UG/L)
ARSENIC 0.911 J
METALS (FILT) (UG/L)
ARSENIC 0.794 J
TF5-MW-924
METALS (UG/L)
ARSENIC 1.1
Former Oil-Water Separator
TF5-MW-917
Fire Fighting Training Area
N
Legend
Monitoring Well
Decision Unit Boundary
Tank To Be Investigated
Tank - No Further Action
Wetland
Railroad Tracks
Fence
Ground Surface Elevation Contour
CHEMICAL RESULT > 100 times SL
CHEMICAL RESULT > 10 times SL
CHEMICAL RESULT > SL
CHEMICAL RESULT <= SL
The screening level (SL) is the minimum of the EPA tapwater RSL and MCL.
0 25 50 100 Feet
TETRA TECH
NAVAL STATION NEWPORT
MIDDLETOWN, RHODE ISLAND
DU 5-1 GROUNDWATER
TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT
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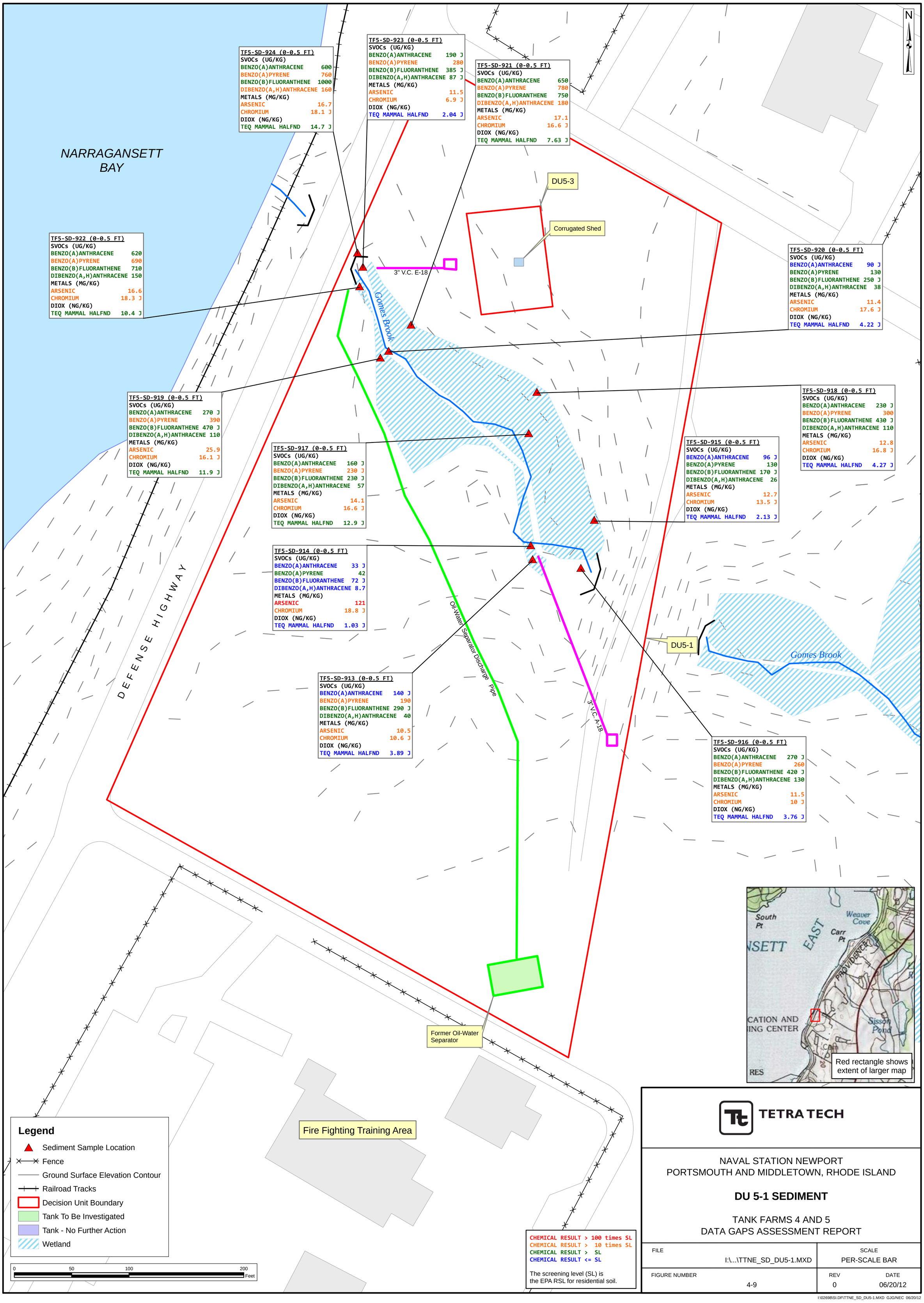

TETRA TECH

NAVAL STATION NEWPORT
PORTSMOUTH AND MIDDLETOWN, RHODE ISLAND

DU 5-1 SEDIMENT

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

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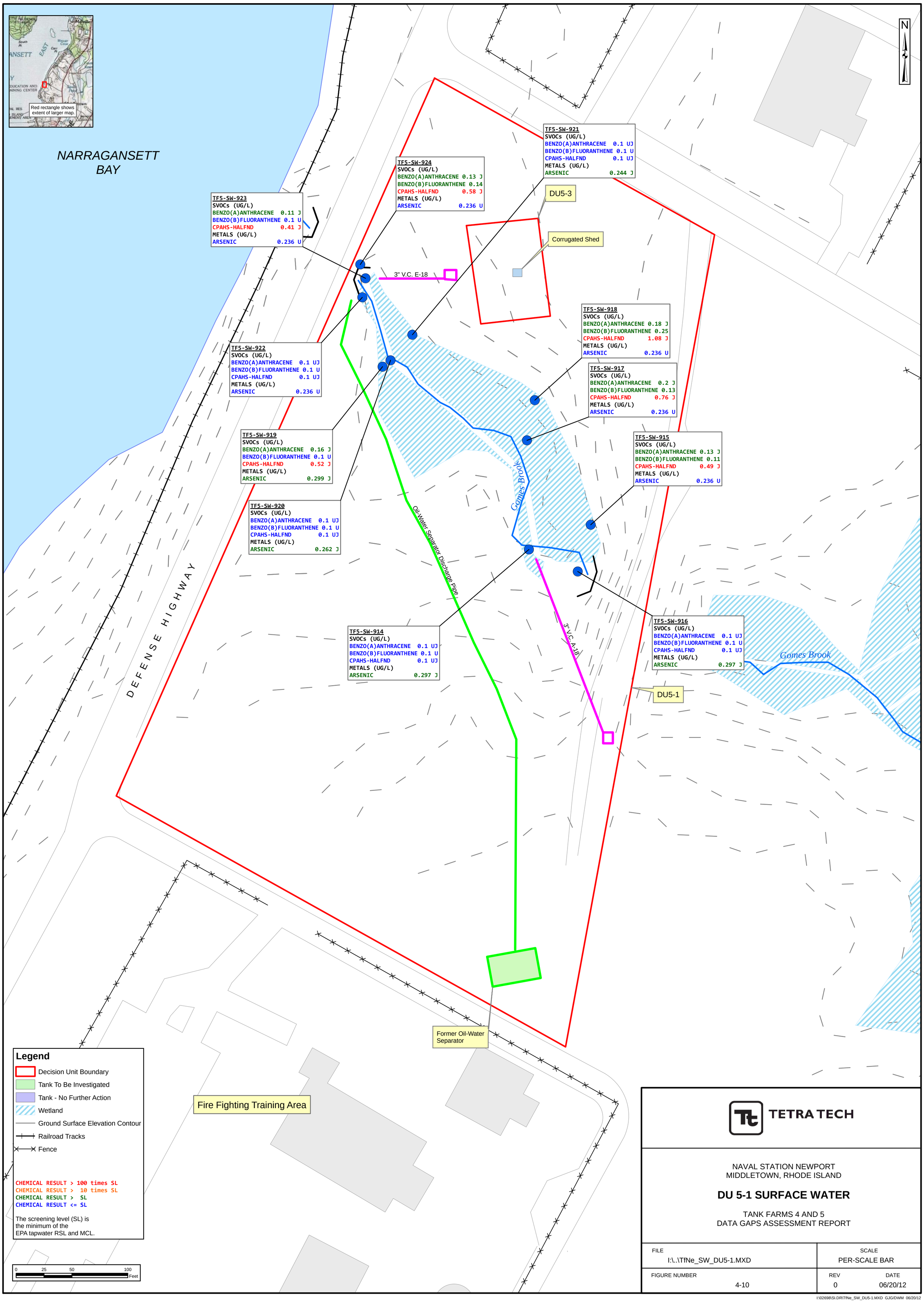

TETRA TECH

NAVAL STATION NEWPORT
MIDDLETOWN, RHODE ISLAND

DU 5-1 SURFACE WATER

TANK FARMS 4 AND 5
DATA GAPS ASSESSMENT REPORT

FILE	SCALE	
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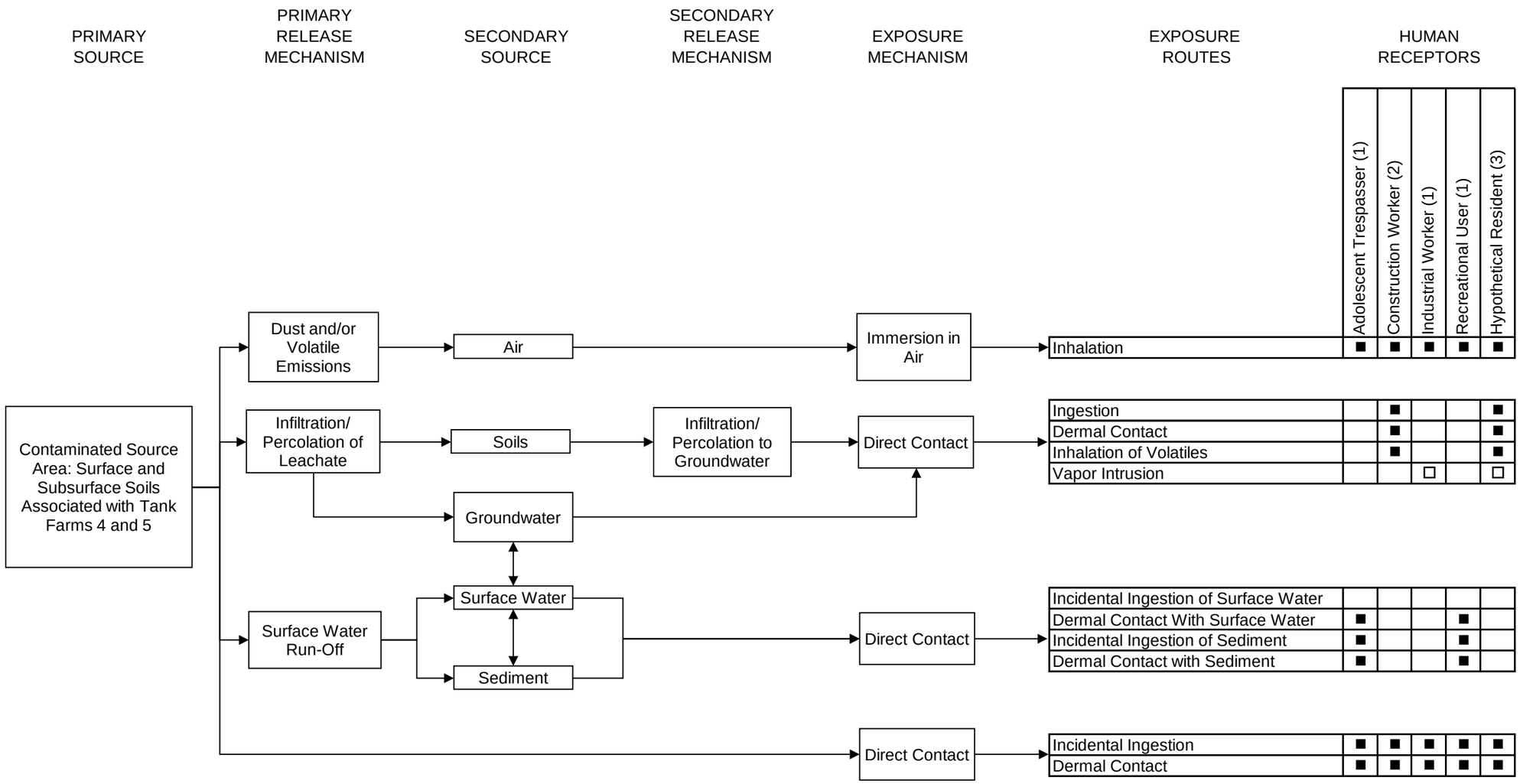


LEGEND

■ Exposure Pathway To Be Quantitatively Evaluated In The Risk Assessment

□ Incomplete, no COPCs were identified from this exposure pathway.

(1) Potential Receptor Under Current Or Future Land Use

(2) Potential Receptor Under Future Land Use

(3) Potential (But Unlikely) Receptor Under Future Land Use. Evaluated For Decision-Making Purposes.

FIGURE 6-1

HUMAN HEALTH CONCEPTUAL SITE MODEL
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

FIGURE 6-2
SUMMARY OF HAZARD INDICES - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAP INVESTIGATIONS
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

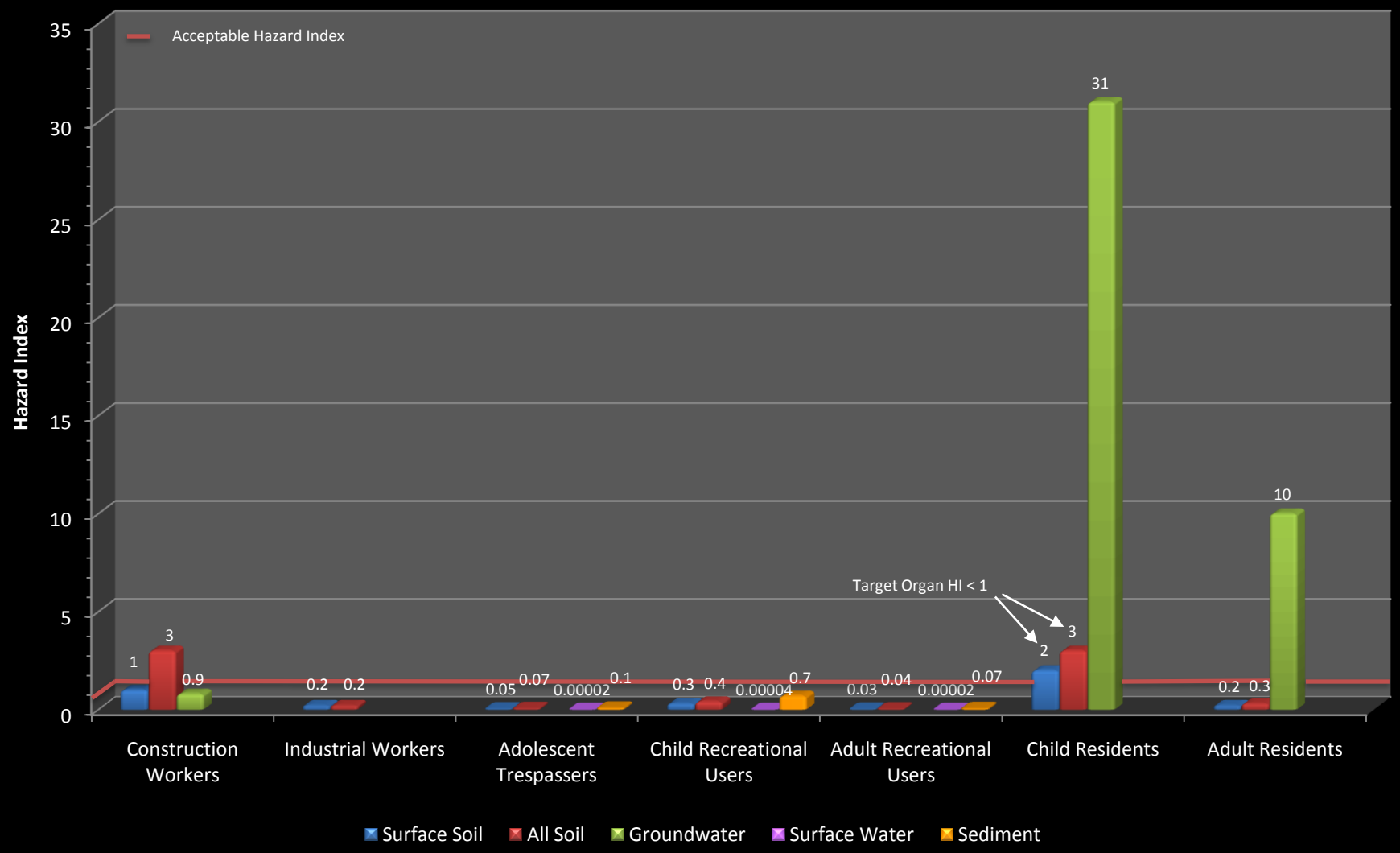


FIGURE 6-3
SUMMARY OF HAZARD INDEX - TANK FARM 4
CENTRAL TENDENCY EXPOSURES
DATA GAP INVESTIGATIONS
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

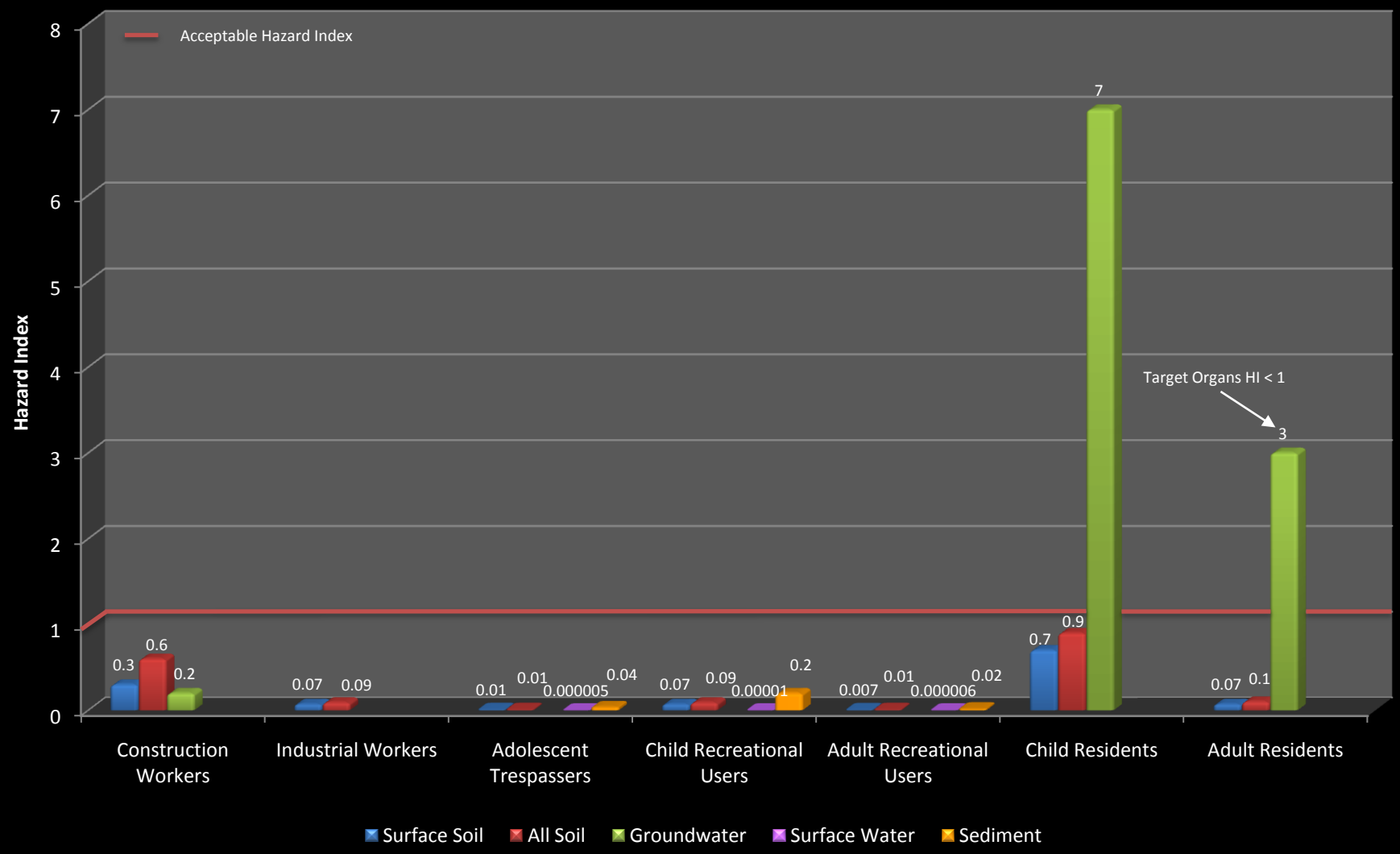


FIGURE 6-4
SUMMARY OF CANCER RISKS - TANK FARM 4
REASONABLE MAXIMUM EXPOSURES
DATA GAP INVESTIGATION REPORT
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

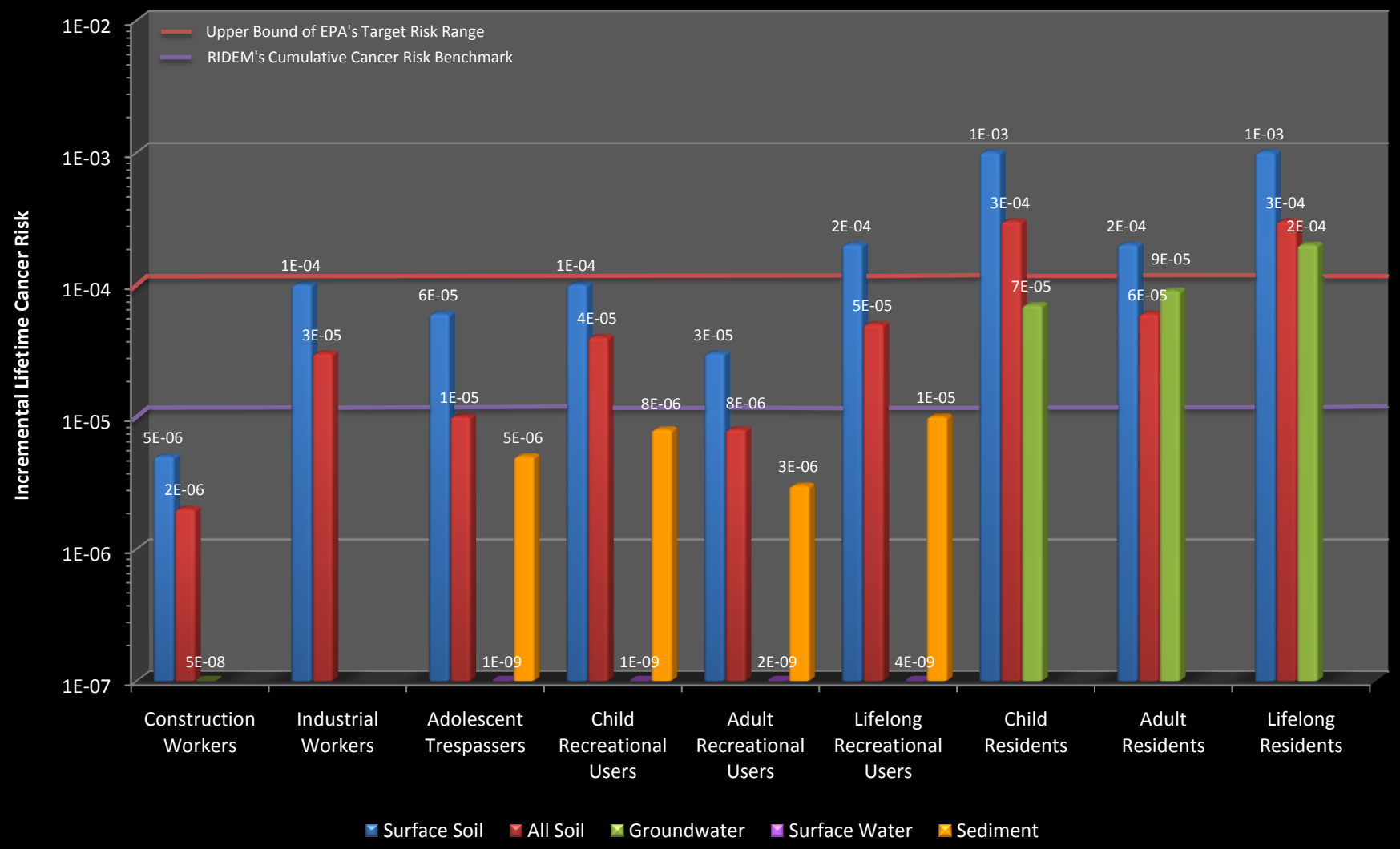


FIGURE 6-5
SUMMARY OF CANCER RISKS - TANK FARM 4
CENTRAL TENDENCY EXPOSURES
DATA GAPS INVESTIGATION
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

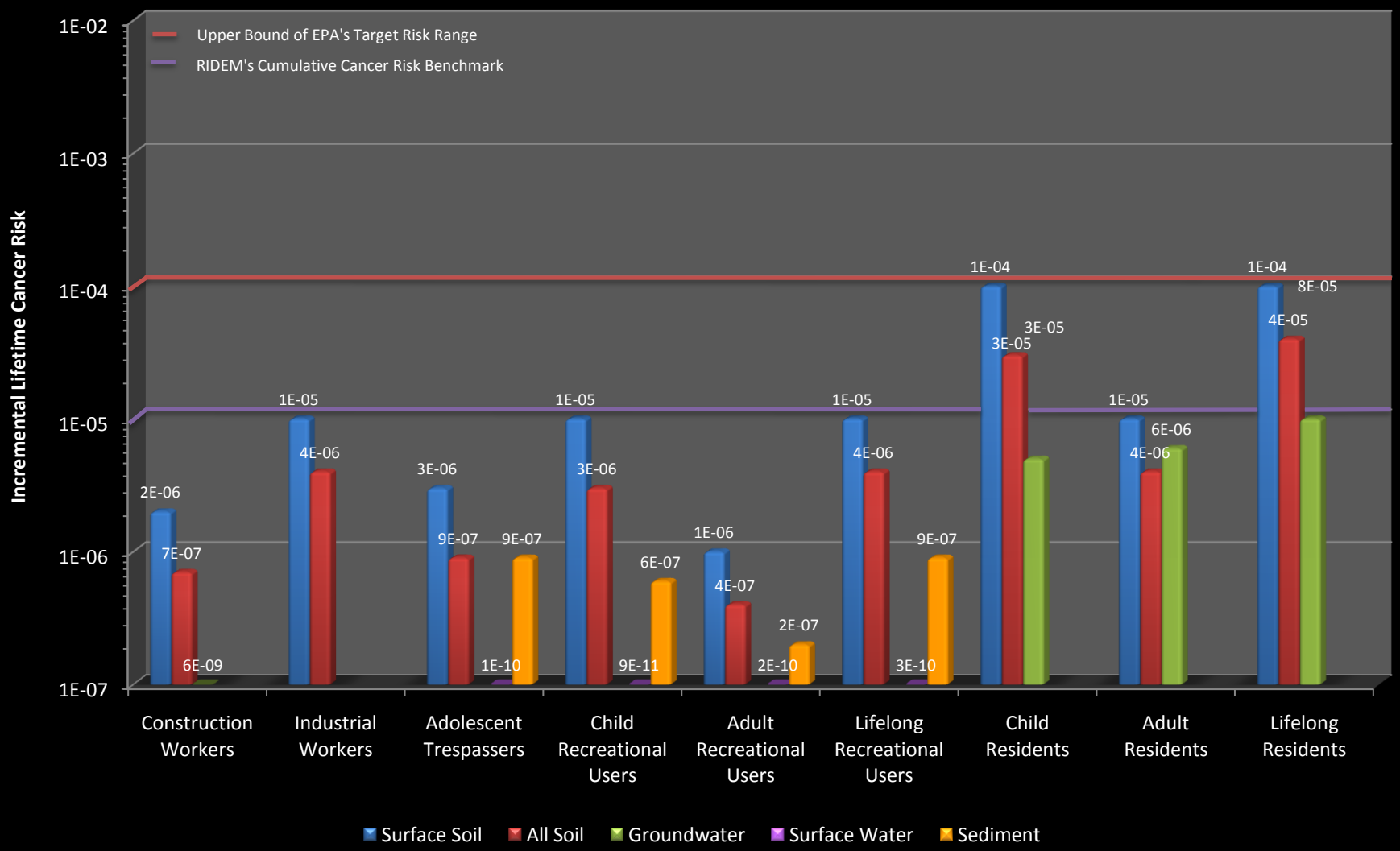


FIGURE 6-6
SUMMARY OF HAZARD INDICES - TANK FARM 5
REASONABLE MAXIMUM EXPOSURES
DATA GAPS INVESTIGATION
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

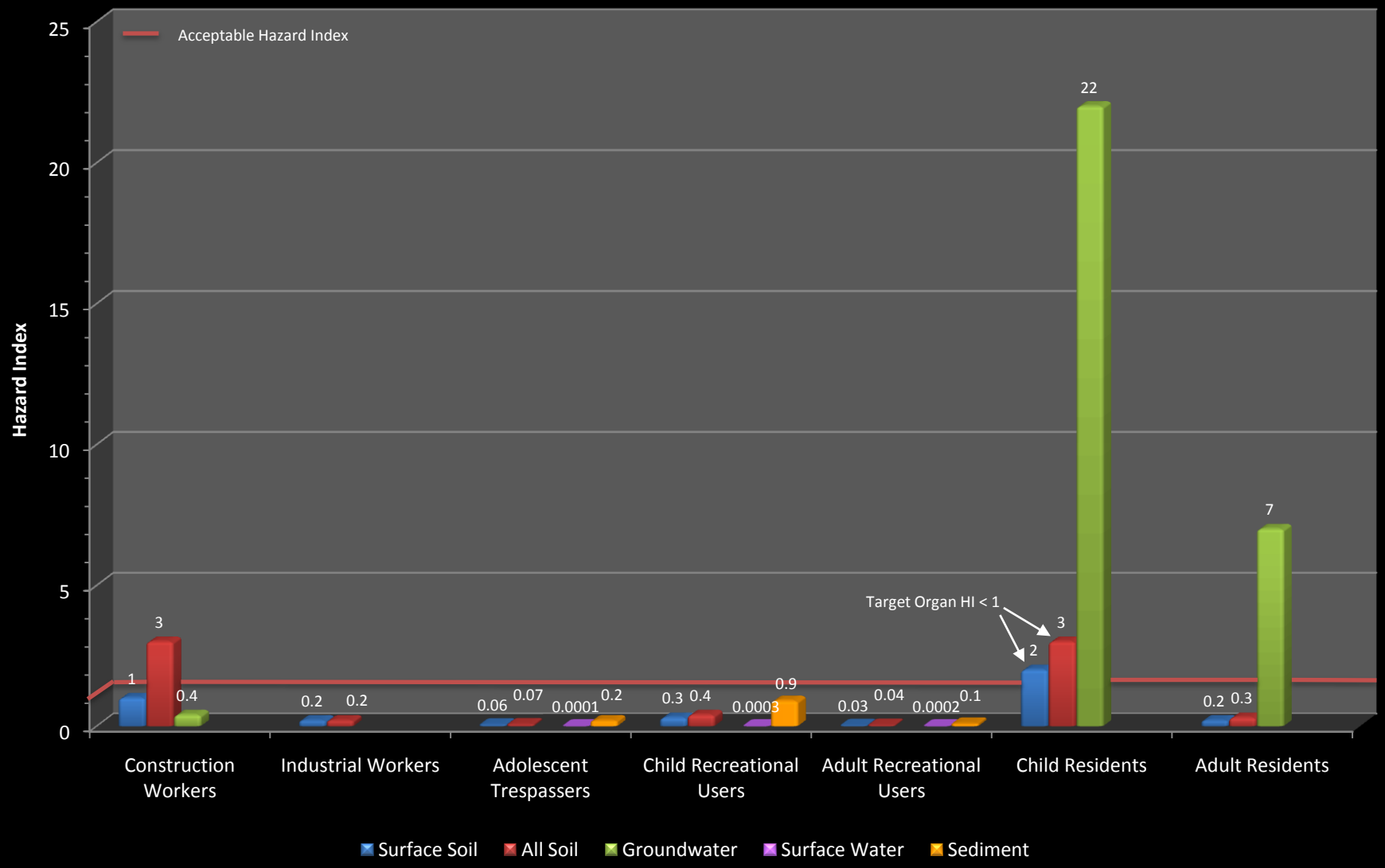


FIGURE 6-7
SUMMARY OF HAZARD INDICES - TANK FARM 5
CENTRAL TENDENCY EXPOSURES
DATA GAPS INVESTIGATION
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

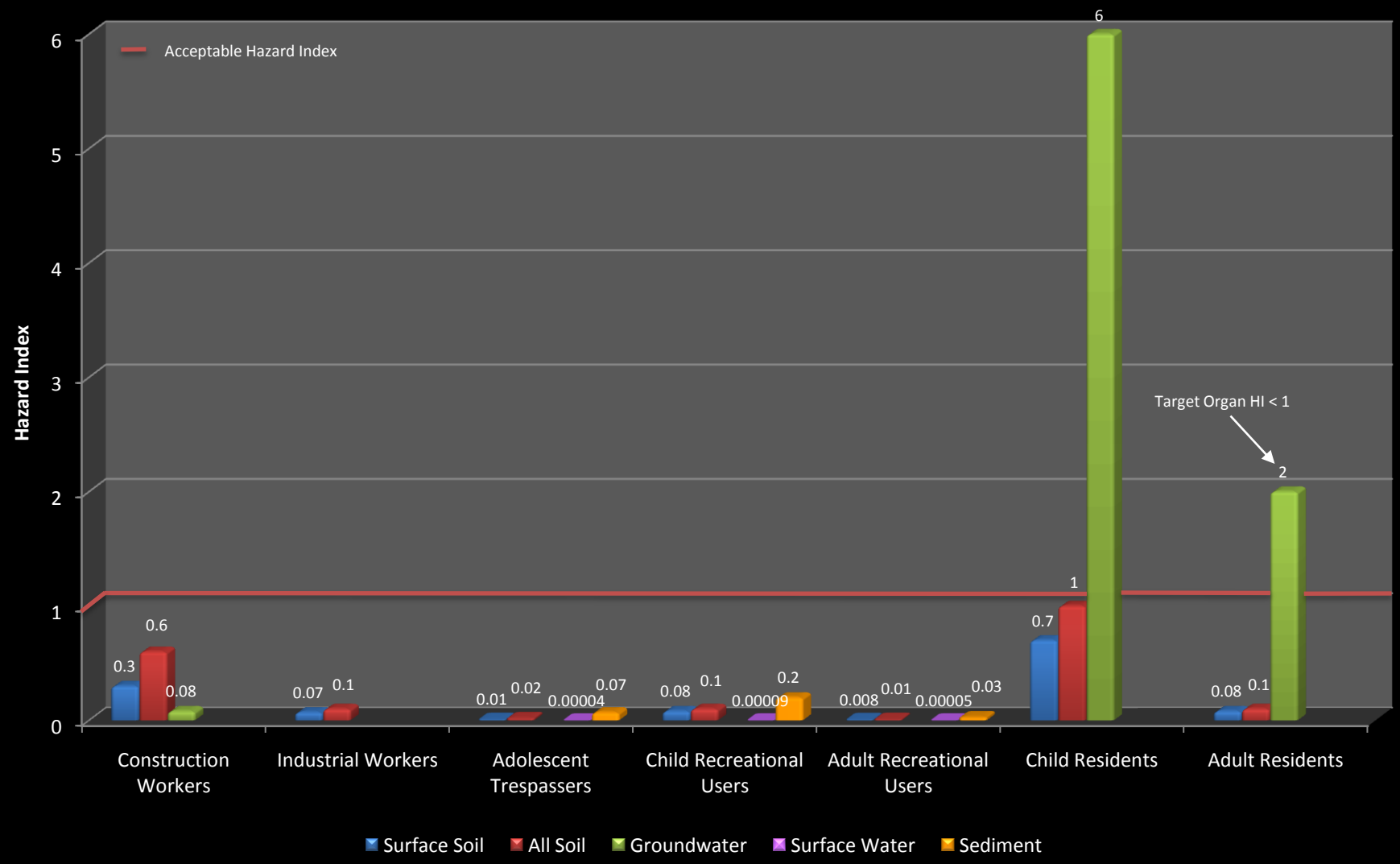


FIGURE 6-8
SUMMARY OF CANCER RISKS - TANK FARM 5
REASONABLE MAXIMUM EXPOSURES
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

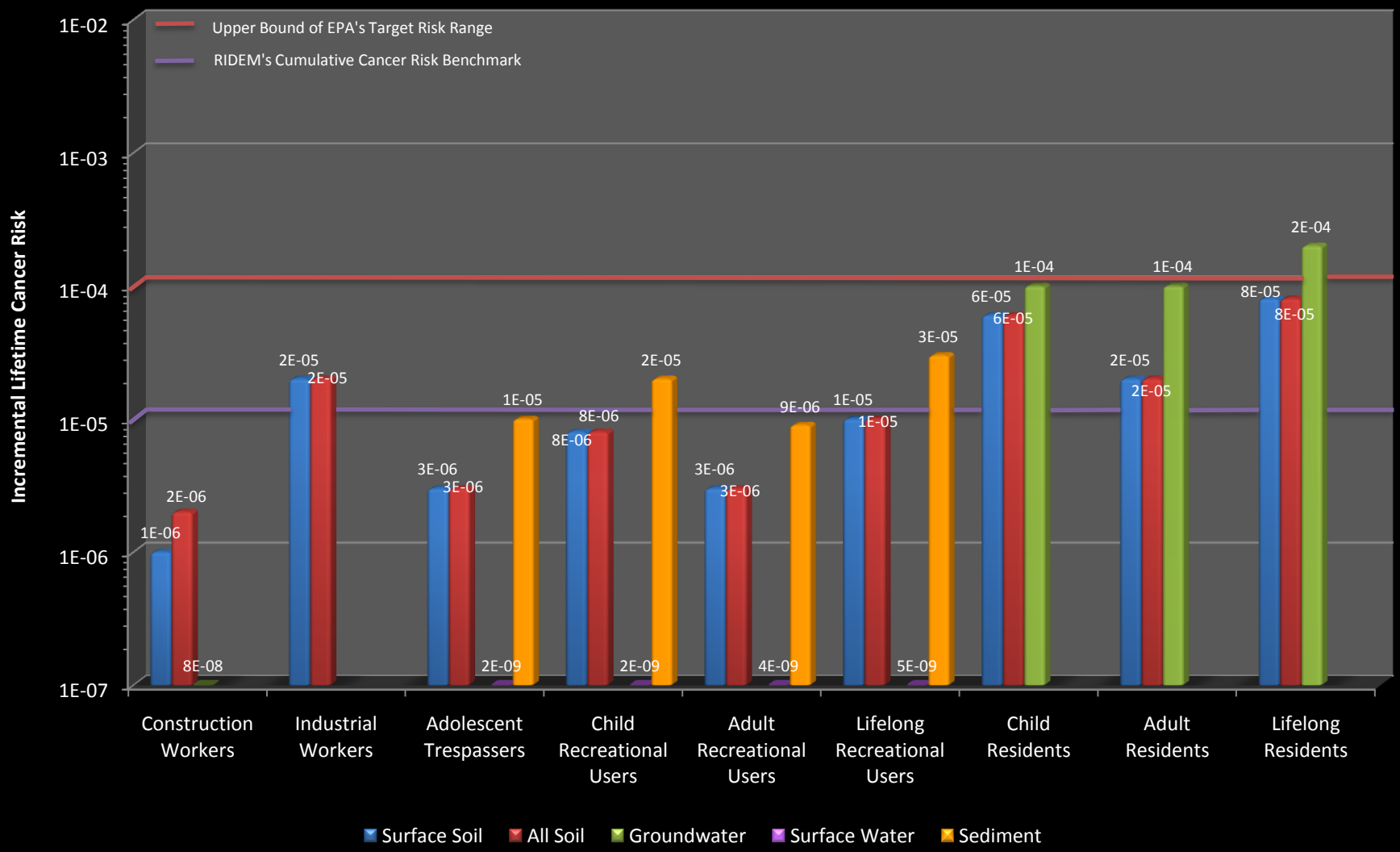
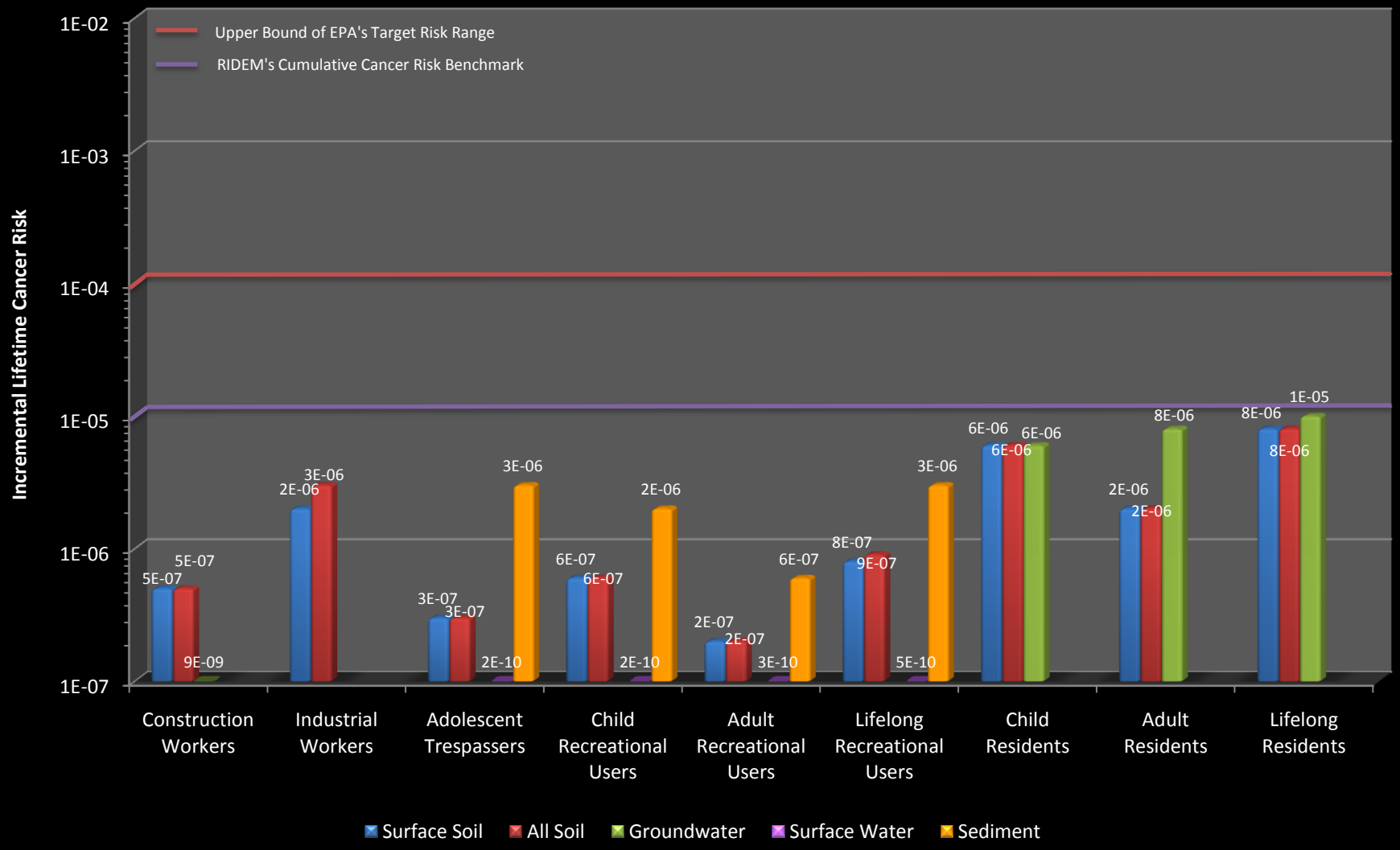


FIGURE 6-9
SUMMARY OF CANCER RISKS - TANK FARM 5
CENTRAL TENDENCY EXPOSURES
DATA GAPS INVESTIGATION
TANKS FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND



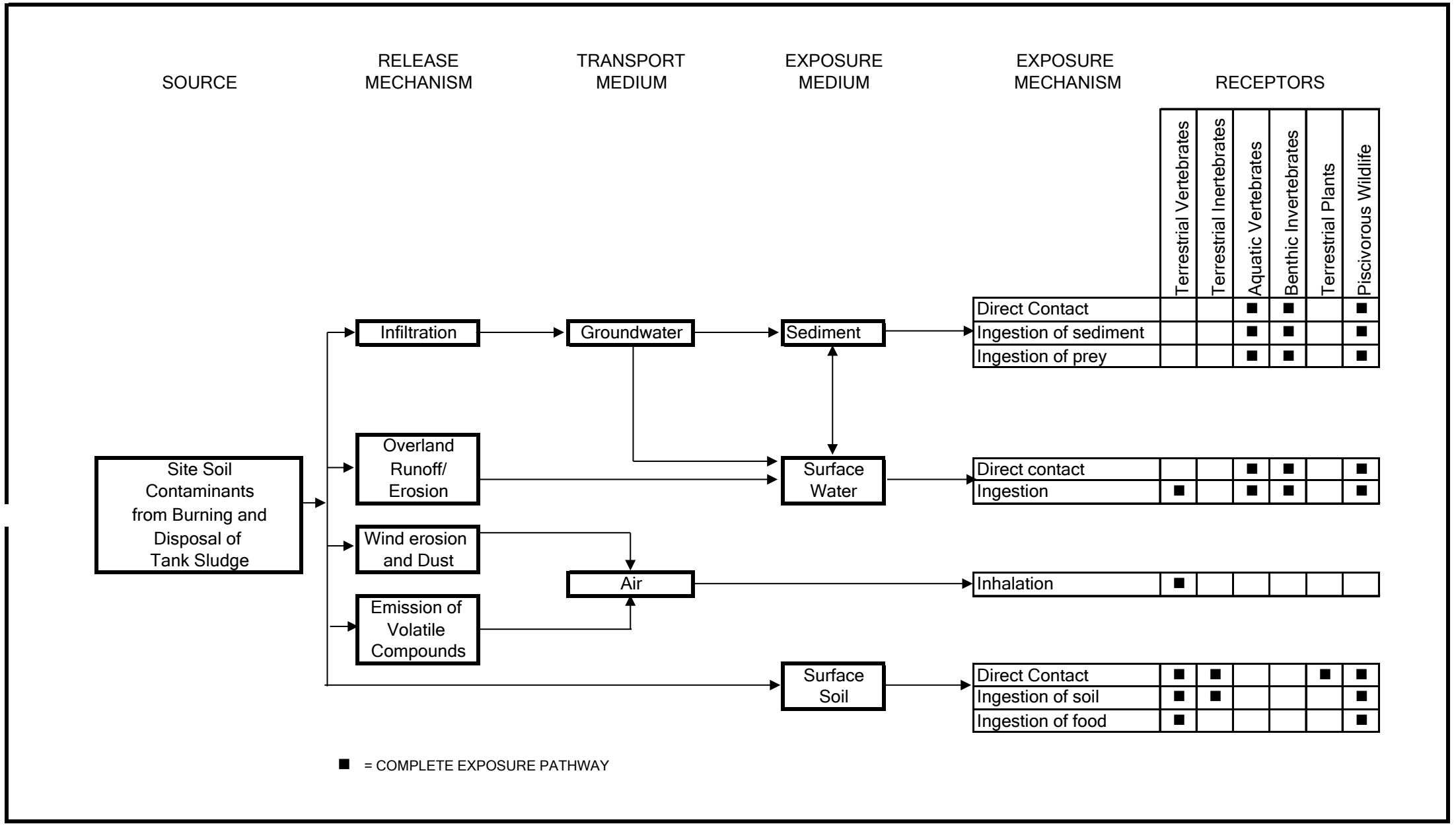


FIGURE 7-1

ECOLOGICAL CONCEPTUAL SITE MODEL
TANK FARM 4 UNIT 1 AND TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

REFERENCES

REFERENCES

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APPENDIX A

SUMMARY OF AOCS AT TANK FARMS 4 AND 5

FIGURE 6
<u>CATEGORY 1</u> AREAS OF CONCERN: ASIGNMENT OF DECISION UNITS
TANK FARMS 4 AND 5, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND
PAGE 1 OF 2

AREA/ AOC	HISTORY	AVAILABLE LABORATORY DATA	NEXT STEPS	DECISION UNIT
TF 4, Ruin 1	Former oil-water separator. Accepted BSW fluids from tanks, discharged to Normans Brook. Ruin was demolished in 2004.	25 soil samples analyzed for TPH, three soil samples for SVOCs and TCDDs. One showed 4.2 ng/kg TEQ TCDD (>3.9 ng/kg Reg IX PRG)	USEPA and RIDEM requested a RA to evaluate the remaining concentrations of TCDD and PAHs.	**DECISION UNIT NO. 4-1**
TF 4, Ruin 1 Straight Discharge Pipe	Pipe found during ruin demo. Pipe plugged at end. Pipe is in place in 2007.	TCDD 4.2 ng/kg in pipe residue.	ELUR or remove pipe.	
TF 4, Ruin 1 Discharge Outfall Area (wetland)	Large removal action conducted within the wetland during 2004 and 2005. A layer of silt and sand approximately 6 inches thick was found in wetland impacted with petroleum.	Various samples show TPH, PAHs > RIDEM Direct Exposure Criteria.	Collect samples to include in the RA.	
TF 4, Ruin 1 Diagonal Discharge Pipe	Pipe found during ruin demo. Sediment observed within pipe, pipe was capped in place. Pipe is in place in 2007.	No laboratory samples collected.	ELUR or remove pipe.	
TF 4, Ruin 2 Discharge Pipe	Pipe found during ruin demo. No sludge observed, pipe capped at both ends. Pipe is in place in 2007.	No laboratory samples collected.	ELUR or remove pipe.	
Tank Farm 4, Ruin 2	Former oil-water separator. Ruin was demolished 2004. Samples > RIDEM DECs were within the footprint of Ruin 2.	25 soil samples were collected for TPH, four soil samples for SVOCs. Two showed TPH and PAHs >RIDEM DECs	No addl sampling required. USEPA and RIDEM requested a RA to evaluate the remaining concentrations of TCDD and PAHs.	
TF 4, Ruin 2 Discharge Outfall	Area investigated as part of the Closure Assessment	TPH < 100 mg/kg	No Further Action.	Not Applicable
TF 4, Ruin 1 Diagonal Discharge Outfall	Area investigated as part of the Closure Assessment	TPH < 100 mg/kg	No Further Action.	
TF 4, Drainage Swale	Area investigated as part of the Closure Assessment	TPH <100 mg/kg	No Further Action.	

NOTE: The “Next Steps” described in this figure represent status prior to DGA investigation.

FIGURE 6
<u>CATEGORY 1</u> AREAS OF CONCERN: ASIGNMENT OF DECISION UNITS
TANK FARMS 4 AND 5, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

AREA/ AOC	HISTORY	AVAILABLE LABORATORY DATA	NEXT STEPS	DECISION UNIT
Tank Farm 5, Oil-Water Separator Ruins	Presumed to have collected Bottom Sediment Water from tanks prior to discharge to Gomes Brook. Ruins were demolished and confirmation samples collected. Area backfilled and graded.	Four soil samples analyzed for VOCs, SVOCs, metals, PCBs, 2 soil samples for TCDDs. TCDDs exceeded EPA Region IX PRG, arsenic and manganese > RIDEM DECs. VOCs, SVOCs and PCBs were ND.	USEPA and RIDEM requested risk assessment to evaluate exposures and identify risks.	**DECISION UNIT NO. 5-1**
TF 5 Oil-Water Separator discharge	Discharge pipe transferred water to Gomes Brook. Pipe removed.	Three samples collected, all exceeded criteria for SVOCs, metals and TCDDs	USEPA and RIDEM requested risk assessment to evaluate exposures and identify risks.	
Tanks 53 and 56 Tank 53 was grouped with Tank 56 for a Groundwater Operable Unit under CERCLA, completed 2006.	53 contained waste oil, tank leaked. Soil removal action conducted 15 feet out from perimeter and 40 feet deep. Tank emptied, cleaned and demolished. 56 contained waste oil, no evidence of release. Tank emptied, cleaned and demolished.	Soil at 53 addressed through large removal action. Groundwater addressed through a pump and treat system 1995-2006. No evidence of any release at Tank 56.	Site ROD will close out Groundwater OU. Wells in this area to be properly abandoned. No Further Action.	

FIGURE 7
<u>CATEGORY 2</u> AREAS OF CONCERN AND ASSIGNMENT OF DECISION UNITS
TANK FARMS 4 AND 5, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND
PAGE 1 OF 2

AREA/ AOC	HISTORY	AVAILABLE DATA	OTHER INFORMATION	NEXT STEPS / DECISION UNIT
TF 4, Tank 37	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 38	Tank emptied, cleaned, demolished. Interim action conducted with demolition.	One groundwater round, reported 10/1998 detected petroleum in groundwater	SSI calls for 3 semi annual GW monitoring rounds at multiple wells and ICs to prevent GW access.	Final groundwater monitoring round. **Decision Unit 4-2**
TF 4, Tank 39	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 40	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 41	Tank emptied, cleaned, demolished. Reported to be Slop tank for Tank Farm 4.	Separate groundwater bypass system was present to direct groundwater to Ruin 2.	No recommendations for additional work.	No Further Action.
TF 4, Tank 42	Tank emptied, cleaned, demolished. Interim action conducted with demolition.	One groundwater round, 1 well, reported 10/1998 detected petroleum in groundwater	SSI and CAP calls for 3 semi annual GW monitoring rounds from multiple wells.	Final groundwater monitoring round. **Decision Unit 4-3**
TF 4, Tank 43	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 44	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 45	Tank emptied, cleaned, demolished. Interim action conducted with demolition.	One groundwater round, 1 well, reported 10/1998 detected petroleum in groundwater.	SSI and CAP calls for 3 semi annual GW monitoring rounds at multiple wells and ICs to prevent GW access.	Final groundwater monitoring round, **Decision Unit 4-4**
TF 4, Tank 46	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 47	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work	No Further Action.
TF 4, Tank 48	Tank emptied, cleaned, demolished. Interim action conducted with demolition.	One groundwater round, 1 well, reported 10/1998 detected petroleum in groundwater.	SSI and CAP calls for 3 semi annual GW monitoring rounds at multiple wells and ICs to prevent GW access.	Final groundwater monitoring round, **Decision Unit 4-5**

NOTE: The “Next Steps” for TF4, Tank 41 represent status prior to DGA investigation.

FIGURE 7
CATEGORY 2 AREAS OF CONCERN AND ASSIGNMENT OF DECISION UNITS
TANK FARMS 4 AND 5, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

AREA	HISTORY	AVAILABLE DATA	OTHER INFORMATION	NEXT STEPS / DECISION UNIT
TF 5, Tank 49	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work.	No Further Action.
TF 5, Tank 50	Reported to be a slop tank for Tank Farm 5. Found to have leaked. Extraction wells in place.	Post Pilot Study Report (FW, 10/3/97) states that in situ remediation is not likely to succeed.	Post pilot study report notes groundwater contamination present, but petroleum is not likely to migrate in groundwater. No CAP prepared.	Sample groundwater to determine if contaminants in groundwater are migrating. **Decision Unit 5-2**
TF 5, Tank 51	Stained soil found. Tank emptied, cleaned, demolished.	TtNUS groundwater data -six rounds, one well.	CAP approved by RIDEM: prevent access to GW, monitor groundwater. Monitoring conducted for 6 rounds, then terminated.	No Further Action.
TF 5, Tank 52	Stained soil found. Tank emptied, cleaned, demolished.	TtNUS groundwater data -six rounds, one well.	CAP approved by RIDEM: prevent access to GW, monitor groundwater. Monitoring conducted for 6 rounds, then terminated.	No Further Action.
TF 5, Tank 54	Stained soil found. Tank emptied, cleaned, demolished.	TtNUS groundwater data -six rounds, one well.	CAP approved by RIDEM: prevent access to GW, monitor groundwater. Monitoring conducted for 6 rounds, then terminated.	No Further Action.
TF 5, Tank 55	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work.	No Further Action.
TF 5, Tank 57	Stained soil found. Tank emptied, cleaned, demolished.	TtNUS groundwater data -six rounds, one well.	CAP approved by RIDEM: prevent access to GW, monitor groundwater. Monitoring conducted for 6 rounds, then terminated.	No Further Action.
TF 5, Tank 58	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work.	No Further Action.
TF 5, Tank 59	Tank emptied, cleaned, demolished.	No evidence of any release.	No recommendations for additional work.	No Further Action.

FIGURE 8
<u>CATEGORY 3</u> AREAS AND ASSIGNMENT OF DECISION UNITS
TANK FARMS 4 AND 5, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

AREA/ AOC	HISTORY	AVAILABLE LABORATORY DATA	NEXT STEPS/ DECISION UNIT
Tank Farm 4, Transformer Vault	Used for electrical distribution. Building is standing in 2007.	4 soil samples, one concrete sample for PCBs, and chlorinated benzenes. PCB found 4.3 mg/kg in concrete sample. No chlorobenzenes found.	Demolish building, dispose of properly.
Tank Farm 4, Substation	Used for electrical distribution. Batteries found inside, prompted lead sampling around building as part of closure assessment. Buildings were demolished in 2005.	Soil and concrete samples analyzed for chlorinated benzenes, PCBs. Soil samples analyzed for lead, hot spot removal conducted for lead. Confirmation samples were clean.	No Further Action.
Tank Farm 4, Storage Sheds	Several storage sheds with varied uses, including storage of buoys and other material. Sheds demolished. Floor foundations remain as of 2007	Two samples collected from each shed area, analyzed for lead in soil. Results < RIDEM DEC for lead.	No Further Action.
Tank Farm 5, Transformer Vault	Used for electrical distribution to pump houses at tanks. Building demolished.	Four soil samples, one concrete sample analyzed for PCBs (all <1 mg/kg), chlorinated benzenes (all ND)	No Further Action
Tank Farm 5, Substation	Used for electrical distribution. Batteries found inside, prompted lead sampling around building. Buildings demolished 2005.	Soil and concrete samples analyzed for chlorinated benzenes, PCBs, soil samples analyzed for lead, hot spot removal conducted for lead. Post removal soils were clean.	No Further Action
Tank Farm 5, Corrugated Shed	Purpose unknown. So-called “non vegetated area” adjacent to shed. Shed is still standing in 2007.	One sample for PAHS, results > RIDEM DECs. Four samples for metals, also > RIDEM DECs.	USEPA and RIDEM requested further investigation and possible risk assessment. **Decision Unit 5-3**

A-1 PRE-2010 DATA COMPARISON

COMPARISON OF PRE-2010 SOIL DATA TO 2010 SOIL DATA
DU4-1 AND DU5-1, TANK FARMS 4 AND 5
NAVSTA NEWPORT, RI

INTRODUCTION

On October 27, 2011 EPA provided their fourth round of comments on the Draft Data Gaps Assessment Report for Tank Farms 4 and 5 Category 1 Areas at Naval Station Newport. On December 20, 2011 the EPA, EPAs contractor (Mabbett & Associates), the Navy and Tetra Tech had a conference call that discussed these comments. During this conference call, the Mabbett & Associates representative (G. Kemp) indicated that they still believe that there may be other areas that have contaminants that are not included in the Data Gaps Assessment risk assessments for DU4-1 and DU5-1. During this conference call it was noted that this requirement by EPA is in contradiction to the decision that was taken during the July 20, 2011 RPM meeting. A portion of the RPM meeting notes from that meeting are reproduced here:

> *D. Seiken explained the basis for the Navy's recommendation not to utilize old data for the Data Gaps Assessment Report and Risk Assessment. Groundwater, surface water and sediment and some soil data were determined unusable, as documented in "Technical Memorandum for Data Summary and Plan for Risk Assessment" (TtNUS, 2008). Again in the UFP SAP for the data gaps assessment, it was agreed by stakeholders that these data would not be used. Remaining soil data were not used because a thorough review of the data indicated that it was either 1) outside the limits of the Category 1 DUs or 2) there was no depth associated for the soil sample. K. Keckler agreed that there is no data gap and that the use of the older data was not required.*

Despite the previous agreement by the EPA, documented above, that the pre-2010 data did not need to be used in the data gaps assessment, Navy agreed to present a comparison of the pre-2010 soil data to the data gaps assessment soil data, and agreed to put pre-2010 soil sample locations on the same figures as 2010 soil sample locations for the EPAs use. Tetra Tech performed this comparison and produced the figures. The results are described herein.

METHODOLOGY

During the Data Gaps Assessment preparation, the pre-2010 soil data was screened using three steps:

1) The Technical Memorandum (Tetra Tech, 2008) was used to identify soil samples that were "not usable for risk assessment" based on data quality, analytes or because they had been excavated and no longer represented current conditions;
2) The locations of all samples were reviewed to identify samples that fell outside the physical boundaries of the two decision units (DU4-1 and DU5-1);
3) The remaining soil samples were considered, and all were found to be unusable for risk assessment because no associated sample depth could be identified.

Soil samples that were not excluded in the first two steps of the process described above were put into two pre-2010 datasets: one for DU 4-1 and one for DU5-1.

The pre-2010 DU4-1 dataset contains 171 soil samples and the analytical results (detected parameters) are provided as Table 1. The pre-2010 DU5-1 dataset contains 14 samples and the analytical results (detected parameters) are provided as Table 2. Soil samples in the pre-2010 datasets had been analyzed for all or a combination of the following: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, poly-chlorinated biphenyls (PCBs), dioxins, total petroleum hydrocarbons (TPH) and metals.

Because the depths of the pre-2010 data are unknown, the 2010 surface and subsurface soil datasets from DU4-1 were combined to make an all-depths dataset which was compared with the pre-2010 DU4-1 soil dataset. The 2010 surface and subsurface soil datasets from DU5-1 were combined to make an all-depths dataset which was compared with the pre-2010 DU5-1 soil dataset.

Figure 1 and Figure 2 provide the locations of the pre-2010 soil samples and the 2010 soil samples collected within DU4-1. Figure 3 provides the locations of the pre-2010 soil samples and the 2010 soil samples within DU5-1.

Compounds detected in the pre-2010 soil datasets were compared to the concentrations of the same compounds detected in the 2010 datasets using basic statistics.

RESULTS

The basic statistics for the comparison for DU4-1 is presented in the attached Table 3. The basic statistics for the comparison for DU5-1 is presented in the attached Table 4.

TABLE 3
STATISTICS FOR SOIL SAMPLES
COLLECTED FROM DU 4-1
TANK FARM 4
DATA GAPS INVESTIGATION
NAVSTA NEWPORT, NEWPORT RI

Decision Unit 4-1 Soil Comparison																			
Pre-2010 soil data											2010 soil data								
PARAMETER	Units	FREQ of Detects	MIN Detection		MAX Detection		AVG DET	LOCATION OF MAX DETECTION	EPA RSL RES	EPA RSL IND	FREQ of Detects	MIN Detection		MAX Detection		AVG DET	LOCATION OF MAX DETECTION	Is 2010 Max > Pre-2010 Max.?	Is Pre 2010 Max > EPA Residential RSL?
ACENAPHTHENE	UG/KG	1/142	173	J	173	J	173	TF4-C-STRAIGHTDIS-G5	3400000	33000000	8/66	4.5		100		22.9	TF4-SB-934-0001	N	N
ANTHRACENE	UG/KG	3/142	178	J	521		365	TF4-L-R2-SW10	17000000	170000000	24/66	4.3		8800		393	TF4-SB-934-0001	Y	N
BENZO(A)ANTHRACENE	UG/KG	8/142	150	J	1230		509	TF4-C-STRAIGHTDIS-G5	150	2100	36/66	3.9		54000		1560	TF4-SB-934-0001	Y	Y
BENZO(A)PYRENE	UG/KG	8/142	153	J	1030		424	TF4-C-STRAIGHTDIS-G5	15	210	35/66	3.3	J	24000		746	TF4-SB-934-0001	Y	Y
BENZO(B)FLUORANTHENE	UG/KG	7/142	190	J	1070		441	TF4-C-STRAIGHTDIS-G5	150	2100	37/66	4.2	J	49000		1420	TF4-SB-934-0001	Y	Y
BENZO(G,H,I)PERYLENE	UG/KG	2/142	364		367		366	TF4-C-STRAIGHTDIS-G5	1700000	17000000	33/66	4.2		8500		304	TF4-SB-934-0001	Y	N
BENZO(K)FLUORANTHENE	UG/KG	7/142	179	J	911		411	TF4-C-STRAIGHTDIS-G5	1500	21000	34/66	4.8		19000		625	TF4-SB-934-0001	Y	N
CHRYSENE	UG/KG	11/142	166	J	1230		425	TF4-C-STRAIGHTDIS-G5	15000	210000	36/66	4.3		59000		1710	TF4-SB-934-0001	Y	N
FLUORANTHENE	UG/KG	13/142	170		2290		745	TF4-C-STRAIGHTDIS-G5	2300000	22000000	38/66	3.9		83000		2280	TF4-SB-934-0001	Y	N
FLUORENE	UG/KG	1/142	176	J	176	J	176	TF4-C-STRAIGHTDIS-G5	2300000	22000000	16/66	3.35		470		42.6	TF4-SB-934-0001	Y	N
INDENO(1,2,3-CD)PYRENE	UG/KG	5/142	153	J	485		358	TF4-C-STRAIGHTDIS-G5	150	2100	32/66	3.3	J	8500		309	TF4-SB-934-0001	Y	Y
PHENANTHRENE	UG/KG	7/142	203	J	1430		550	TF4-C-STRAIGHTDIS-G5	1700000	17000000	32/66	4.5		440		61.8	TF4-SB-934-0001	N	N
PYRENE	UG/KG	14/142	162	J	1790		644	TF4-L-R2-SW10	1700000	17000000	37/66	4.4		86000		2410	TF4-SB-934-0001	Y	N
Dioxins/Furans TEQ	NG/KG	4/4	0.65		4.84		2.74	TF4-C-STRAIGHTDIS-D3-A	4.5	18	47/47	0.22	J	9.6	J	2.16	TF4-SB-923-0406	Y	Y
TPH	MG/KG	75/125	23		2520		174	TF4-C-STRAIGHTDIS-52	NA	NA	22/48	18		540		107	TF4-SB-921-0001	N	NA

Compounds detected in the 2010 DU 4-1 samples but not found in the pre - 2010 samples: 2-butanone, acetone, benzene, carbon disulfide, MTBE, M + P-xylenes, toluene, 2,4-dichlorophenol, 2,4-dimethylphenol, 2-chlorophenol, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, acenaphthylene, phenol, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Aroclor-1254, Beta-BHC, Delta-BHC, Endofulfan I, Endofulfan Sulfate, Endrin, Endrin Aldehyde, Endrin Ketone, Gamma-BHC (Lindane), Toxaphene, Aluminum, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc

Abbreviations:
UG/KG = micrograms per kilogram
NG/KG = nanograms per kilogram
MG/KG = milligrams per kilogram
J = quantitation approximate
B = detected in blank
TEQ = Toxic Equivalent
NA = Not applicable
EPA = Environmental Protection Agency
RSL = Regional Screening Level
RES = Residential
IND = Industrial

TABLE 4
STATISTICS FOR SOIL SAMPLES
COLLECTED FROM DU 5-1
TANK FARM 5
DATA GAPS INVESTIGATION
NAVSTA NEWPORT, NEWPORT RI

Decision Unit 5-1 Soil Comparison																			
Pre-2010 soil data											2010 soil data								
PARAMETER	**Units**	**FREQ of Detects**	**MIN Detection**		**MAX Detection**		**AVG Detecction**	**LOCATION OF MAX DETECTION**	**EPA RSL RES**	**EPA RSL IND**	**FREQ of Detects**	**MIN Detection**		**MAX Detection**		**AVG Detecction**	**LOCATION OF MAX DETECTION**	Is 2010 Max > Pre-2010 Max.?	Is Pre 2010 Max > EPA Residential RSL?
ACETONE	UG/KG	6/6	21		140		72.8	L-TF5-OW-B4	61000000	630000000	18/32	3.5	J	65	J	21.8	TF5-SB-968-0001	N	N
2-BUTANONE	UG/KG	6/6	3.3	J	20		10.8	L-TF5-OW-B4	28000000	200000000	0/32	NA		NA		NA	NA	N	N
ANTHRACENE	UG/KG	1/6	164	J	164	J	164	TF-OW-DISCHARGE 1	17000000	170000000	7/32	4.5		27		12.9	TF5-SB-967-0001	N	N
BENZO(A)ANTHRACENE	UG/KG	2/6	415		537		476	TF-OW-DISCHARGE 1	150	2100	15/32	5.9		230		36.5	TF5-SB-967-0001	N	Y
BENZO(A)PYRENE	UG/KG	2/6	430		461		446	TF-OW-DISCHARGE 1	15	210	15/32	5.5		300		43	TF5-SB-967-0001	N	Y
BENZO(B)FLUORANTHENE	UG/KG	2/6	409		434		422	TF-OW-DISCHARGE 1	150	2100	16/32	5.2	J	530	J	67.1	TF5-SB-967-0001	Y	Y
BENZO(G,H,I)PERYLENE	UG/KG	1/6	262	J	262	J	262	TF-OW-DISCHARGE 1	1700000	17000000	14/32	4.4		270		39.2	TF5-SB-967-0001	Y	N
BENZO(K)FLUORANTHENE	UG/KG	2/6	356		359		358	TF-OW-DISCHARGE 1	1500	21000	14/32	4.6	J	200	J	30.2	TF5-SB-967-0001	N	N
CHRYSENE	UG/KG	2/6	447		547		497	TF-OW-DISCHARGE 1	15000	210000	16/32	3.8		300		44.5	TF5-SB-967-0001	N	N
FLUORANTHENE	UG/KG	3/6	187	J	1320		734	TF-OW-DISCHARGE 1	2300000	22000000	17/32	5.1		600		76.9	TF5-SB-967-0001	N	N
INDENO(1,2,3-CD)PYRENE	UG/KG	2/6	182	J	304	J	243	TF-OW-DISCHARGE 1	150	2100	14/32	3.1		240	J	33.7	TF5-SB-967-0001	N	Y
PHENANTHRENE	UG/KG	2/6	316	J	879		598	TF-OW-DISCHARGE 1	1700000	17000000	16/32	4.2		200		33.1	TF5-SB-967-0001	N	N
PYRENE	UG/KG	3/6	141	J	1090		586	TF-OW-DISCHARGE 1	1700000	17000000	19/32	3.6		430		54.4	TF5-SB-967-0001	N	N
TOTAL PCB	UG/KG	2/7	16	J	23		19.5	TF5-OW-DISCHARGE15	220	740	1/32	39		39		39	TF5-SB-973-0001	Y	N
ANTIMONY	MG/KG	2/6	0.55	B	0.73	B	0.64	TF5-OW-DISCHARGE15	31	410	0/32	NA		NA		NA	NA	N	N
ARSENIC	MG/KG	6/6	8.5		37.1		20.5	L-TF5-OW-SW5	0.39	1.6	32/32	3.5	J	67.2		23.5	TF5-SB-970-0810	Y	Y
BARIUM	MG/KG	6/6	15.2	B	27.2		21.9	L-TF5-OW-B1-AVG	15000	190000	32/32	1.4	J	23.7		11.7	TF5-SB-967-0001	N	N
BERYLLIUM	MG/KG	6/6	0.29	B	0.45	B	0.352	TF5-OW-DISCHARGE15	160	2000	32/32	0.11	J	0.55	J	0.38	TF5-SB-975-0001	Y	N
CADMIUM	MG/KG	6/6	0.38	B	1.5		0.945	L-TF5-OW-SW5	70	800	31/32	0.1		0.86		0.297	TF5-SB-970-0810	N	N
CHROMIUM	MG/KG	6/6	7.5		14		11.7	L-TF5-OW-B1-AVG	0.29	5.6	32/32	2.3		21.7		9.92	TF5-SB-971-0810	Y	Y
COPPER	MG/KG	6/6	12.6		23.6		17.8	L-TF5-OW-SW5	3100	41000	32/32	4.9		35.8		15.4	TF5-SB-973-0810	Y	N
LEAD	MG/KG	6/6	17.6		57.8		31.2	TF5-OW-DISCHARGE15	400	800	32/32	1.1		33.3	J	11.8	TF5-SB-968-0001	N	N
MANGANESE	MG/KG	6/6	314		433		361	L-TF5-OW-SW5	1800	23000	32/32	95.8	J	4220		486	TF5-SB-970-0810	Y	N
MERCURY	MG/KG	4/6	0.02	B	0.066		0.042	L-TF5-OW-SW9	10	43	4/32	0.012	J	0.12		0.0414	TF5-SB-968-0001	Y	N
NICKEL	MG/KG	6/6	11.6		23.2		19	L-TF5-OW-SW5	1500	20000	32/32	6.8	J	72.5		25.1	TF5-SB-970-0810	Y	N
SELENIUM	MG/KG	3/6	0.32	B	0.4	B	0.36	L-TF5-OW-B1-AVG	390	5100	20/32	2.3		7		3.68	TF5-SB-970-0810	N	N
VANADIUM	MG/KG	6/6	11.9		17.5		14	TF5-OW-DISCHARGE15	390	5200	32/32	0.45	J	25	J	12.1	TF5-SB-971-0810	Y	N
ZINC	MG/KG	6/6	44.1		106		65.6	TF5-OW-DISCHARGE15	23000	310000	32/32	18.4	J	123		55.1	TF5-SB-970-0810	Y	N
TPH	MG/KG	9/9	86		737		227	L-TF5-OW-DISCHARGE-RX	NA	NA	4/8	16	J	35	J	24	TF5-SB-967-0204	N	NA
Dioxins/Furans TEQ	NG/KG	3/3	3.77	J	6.26	J	5.2	L-TF5-OW-B1-AVG	4.5	18	22/22	0.00747		7.54	J	3.28	TF5-SB-976-0204	Y	Y

Notes:
Compounds detected in the 2010 DU 4-1 samples but not found in the pre - 2010 samples: carbon disulfide, isopropylbenzene, toluene, 2-methylnaphthalene, 4-methylphenol, acenaphthene, acenaphthylene, benzaldehyde, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, dibenzo(a,h)anthracene, fluorene, naphthalene, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, Aroclor-1254, aluminum, calcium, cobalt, iron, magnesium, potassium, silver, sodium, thallium.

Abbreviations: UG/KG = micrograms per kilogram, NG/KG = nanograms per kilogram, MG/KG = milligrams per kilogram, J = quantitation approximate, B = detected in blank, TEQ = Toxic Equivalent, NA = Not applicable, EPA = Environmental Protection Agency, RSL = Regional Screening Level, RES = Residential, IND = Industrial.

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF4-R1-B1	L-TF4-R1-B4	L-TF4-R1-B2	L-TF4-R1-B3	L-TF4-R1-B5	L-TF4-R1-B6	L-TF4-R1-B7	L-TF4-R1-B8	L-TF4-R1-B9-RX	L-TF4-R1-B1-D	L-TF4-R1-B1-AVG	L-TF4-R1-B4-AVG	L-TF4-R1-DISCHARGE	L-TF4-R1-DISCHARGE-AVG	L-TF4-R1-SW13	TF4-C-STRAIGHTDIS-47	TF4-C-STRAIGHTDIS-48	TF4-C-STRAIGHTDIS-49	TF4-C-STRAIGHTDIS-50
SAMPLE DATE			12/16/04	12/20/04	12/16/04	12/16/04	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04	12/16/04	12/16/04	12/20/04	01/10/05	01/10/05	12/15/04	01/05/06	01/05/06	01/05/06	01/05/06
TOP DEPTH																					
BOTTOM DEPTH																					
SACODE			ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	DUP	AVG	AVG	ORIG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																					
ACENAPHTHENE	3400000	33000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
ANTHRACENE	17000000	170000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(A)ANTHRACENE	150	2100	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(A)PYRENE	15	210	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(B)FLUORANTHENE	150	2100	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(G,H,I)PERYLENE	1700000	17000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(K)FLUORANTHENE	1500	21000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
CHRYSENE	15000	210000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
FLUORANTHENE	2300000	22000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
FLUORENE	2300000	22000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
HIGH MOLECULAR WEIGHT PAHS			290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
INDENO(1,2,3-CD)PYRENE	150	2100	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
LOW MOLECULAR WEIGHT PAHS			290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
PHENANTHRENE	1700000	17000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
PYRENE	1700000	17000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
DIOXINS/FURANS (NG/KG)																					
1,2,3,4,6,7,8,9-OCDD	15000	60000	11000 E	2700	NA	NA	NA	NA	NA	NA	NA	NA	11000 E	2700	1300	1300	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	110	25	NA	NA	NA	NA	NA	NA	NA	NA	110	25	26	26	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	0.79 U	0.22 U	NA	NA	NA	NA	NA	NA	NA	NA	0.79 U	0.22 U	2.9 U	2.9 U	NA	NA	NA	NA	NA
TEQ	4.5	18	4.4	1.06	NA	NA	NA	NA	NA	NA	NA	NA	4.4	1.06	0.65	0.65	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																					
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			266	145	24 U	68	45	42	32	22 U	22 U	24 U	139	145	176	176	199	26 U	24 U	24 U	26 U

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-51	TF4-C-STRAIGHTDIS-52	TF4-C-STRAIGHTDIS-53	TF4-C-STRAIGHTDIS-55	TF4-C-STRAIGHTDIS-B3	TF4-C-STRAIGHTDIS-B4	TF4-C-STRAIGHTDIS-B7	TF4-C-STRAIGHTDIS-C2	TF4-C-STRAIGHTDIS-C4	TF4-C-STRAIGHTDIS-C5	TF4-C-STRAIGHTDIS-C8	TF4-C-STRAIGHTDIS-D1	TF4-C-STRAIGHTDIS-D2	TF4-C-STRAIGHTDIS-D4	TF4-C-STRAIGHTDIS-D5	TF4-C-STRAIGHTDIS-D6	TF4-C-STRAIGHTDIS-D8	TF4-C-STRAIGHTDIS-D9	TF4-C-STRAIGHTDIS-E2	TF4-C-STRAIGHTDIS-E3	TF4-C-STRAIGHTDIS-E4	TF4-C-STRAIGHTDIS-E5	TF4-C-STRAIGHTDIS-E6
SAMPLE DATE			01/05/06	01/05/06	01/05/06	01/09/06	09/08/05	09/08/05	09/13/05	09/08/05	09/12/05	09/13/05	09/13/05	09/08/05	09/12/05	09/13/05	09/14/05	09/14/05	02/23/06	02/23/06	09/21/05	09/14/05	09/14/05	09/14/05	09/22/05
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
ANTHRACENE	17000000	170000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(A)ANTHRACENE	150	2100	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(A)PYRENE	15	210	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(B)FLUORANTHENE	150	2100	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(G,H,I)PERYLENE	1700000	17000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(K)FLUORANTHENE	1500	21000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
CHRYSENE	15000	210000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
FLUORANTHENE	2300000	22000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
FLUORENE	2300000	22000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
HIGH MOLECULAR WEIGHT PAHS			350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
INDENO(1,2,3-CD)PYRENE	150	2100	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
LOW MOLECULAR WEIGHT PAHS			350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
PHENANTHRENE	1700000	17000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
PYRENE	1700000	17000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			60	2520	632	209	NA	279	107	24 U	159	109	24 U	22 U	24 U	394	26 U	34	59	37	NA	351	24 U	27	NA

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-E8	TF4-C-STRAIGHTDIS-E9	TF4-C-STRAIGHTDIS-F2	TF4-C-STRAIGHTDIS-F3	TF4-C-STRAIGHTDIS-F3-D	TF4-C-STRAIGHTDIS-F3-AVG	TF4-C-STRAIGHTDIS-F4	TF4-C-STRAIGHTDIS-F5	TF4-C-STRAIGHTDIS-F6	TF4-C-STRAIGHTDIS-F7	TF4-C-STRAIGHTDIS-F8	TF4-C-STRAIGHTDIS-F9	TF4-C-STRAIGHTDIS-G4	TF4-C-STRAIGHTDIS-G5	TF4-C-STRAIGHTDIS-G6	TF4-C-STRAIGHTDIS-G7	TF4-C-STRAIGHTDIS-G8	TF4-C-STRAIGHTDIS-G9	TF4-C-STRAIGHTDIS-H5	TF4-C-STRAIGHTDIS-H6	TF4-C-STRAIGHTDIS-H7	TF4-C-STRAIGHTDIS-H8	TF4-C-STRAIGHTDIS-H9
SAMPLE DATE			02/17/06	02/17/06	09/21/05	09/21/05	09/21/05	09/21/05	09/21/05	09/21/05	09/22/05	09/22/05	02/09/06	02/09/06	09/21/05	09/21/05	09/21/05	09/21/05	09/22/05	02/09/06	09/21/05	09/21/05	09/21/05	09/22/05	12/19/05
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	173 J	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
ANTHRACENE	17000000	170000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	397	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(A)ANTHRACENE	150	2100	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1230	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(A)PYRENE	15	210	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1030	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(B)FLUORANTHENE	150	2100	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1070	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(G,H,I)PERYLENE	1700000	17000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	367	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(K)FLUORANTHENE	1500	21000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	911	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
CHRYSENE	15000	210000	300 U	310 U	320 U	310 U	176 J	166 J	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1230	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
FLUORANTHENE	2300000	22000000	300 U	310 U	320 U	310 U	184 J	170 J	310 U	300 U	310 U	170 J	300 U	300 U	320 U	2290	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
FLUORENE	2300000	22000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	176 J	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
HIGH MOLECULAR WEIGHT PAHS			300 U	310 U	320 U	164 J	632 J	398 J	310 U	300 U	310 U	332 J	300 U	300 U	320 U	10400	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
INDENO(1,2,3-CD)PYRENE	150	2100	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	485	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
LOW MOLECULAR WEIGHT PAHS			300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	2180 J	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
PHENANTHRENE	1700000	17000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1430	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
PYRENE	1700000	17000000	300 U	310 U	320 U	164 J	272 J	218 J	310 U	300 U	310 U	162 J	300 U	300 U	320 U	1780	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			30	24 U	NA	NA	NA	NA	NA	NA	NA	NA	29	24	NA	NA	NA	NA	NA	26	NA	NA	NA	NA	26 U

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-I5	TF4-C-STRAIGHTDIS-I6	TF4-C-STRAIGHTDIS-I7	TF4-C-STRAIGHTDIS-I9	TF4-C-STRAIGHTDIS-J5	TF4-C-STRAIGHTDIS-J5-D	TF4-C-STRAIGHTDIS-J5-AVG	TF4-C-STRAIGHTDIS-J6	TF4-C-STRAIGHTDIS-J7	TF4-C-STRAIGHTDIS-J8	TF4-C-STRAIGHTDIS-J9	TF4-C-STRAIGHTDIS-K5	TF4-C-STRAIGHTDIS-K6	TF4-C-STRAIGHTDIS-K7	TF4-C-STRAIGHTDIS-K8	TF4-C-STRAIGHTDIS-K9	TF4-C-STRAIGTDIS-54	TF4-C-STRAIGHTDIS-B5-1	TF4-C-STRAIGHTDIS-B5-S	TF4-C-STRAIGHTDIS-C11	TF4-C-STRAIGHTDIS-C2-S	TF4-C-STRAIGHTDIS-C3-1	TF4-C-STRAIGHTDIS-C6-1
SAMPLE DATE			09/22/05	09/21/05	09/21/05	09/28/05	09/22/05	09/22/05	09/22/05	09/21/05	09/21/05	09/22/05	09/28/05	09/22/05	09/21/05	09/21/05	09/29/05	09/28/05	01/05/06	11/02/05	09/08/05	01/19/06	09/08/05	11/02/05	11/02/05
TOP DEPTH																										
BOTTOM DEPTH																										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																										
ACENAPHTHENE	3400000	33000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
ANTHRACENE	17000000	170000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(A)ANTHRACENE	150	2100	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	150 J	330 U	300 U	280 U	280 U
BENZO(A)PYRENE	15	210	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(B)FLUORANTHENE	150	2100	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(G,H,I)PERYLENE	1700000	17000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(K)FLUORANTHENE	1500	21000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
CHRYSENE	15000	210000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	190 J	330 U	300 U	280 U	280 U
FLUORANTHENE	2300000	22000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	252 J	330 U	300 U	280 U	280 U
FLUORENE	2300000	22000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
HIGH MOLECULAR WEIGHT PAHS			290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	899 J	330 U	300 U	280 U	280 U
INDENO(1,2,3-CD)PYRENE	150	2100	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
LOW MOLECULAR WEIGHT PAHS			290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
PHENANTHRENE	1700000	17000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
PYRENE	1700000	17000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	307	330 U	300 U	280 U	280 U
DIOXINS/FURANS (NG/KG)																										
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																										
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			NA	NA	NA	211	NA	NA	NA	NA	NA	NA	84	NA	NA	NA	24 U	264	907	22 U	119	28 U	95	22 U	22 U

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-C7-1	TF4-C-STRAIGHTDIS-C7-1-D	TF4-C-STRAIGHTDIS-C7-1-AVG	TF4-C-STRAIGHTDIS-D10	TF4-C-STRAIGHTDIS-D11	TF4-C-STRAIGHTDIS-D12	TF4-C-STRAIGHTDIS-D1-S	TF4-C-STRAIGHTDIS-D3-1	TF4-C-STRAIGHTDIS-D3-A	TF4-C-STRAIGHTDIS-E10	TF4-C-STRAIGHTDIS-E11	TF4-C-STRAIGHTDIS-E12	TF4-C-STRAIGHTDIS-E13	TF4-C-STRAIGHTDIS-F10	TF4-C-STRAIGHTDIS-F11	TF4-C-STRAIGHTDIS-F12	TF4-C-STRAIGHTDIS-F13	TF4-C-STRAIGHTDIS-F14	TF4-C-STRAIGHTDIS-F15	TF4-C-STRAIGHTDIS-F2-S	TF4-C-STRAIGHTDIS-G10	TF4-C-STRAIGHTDIS-G11	TF4-C-STRAIGHTDIS-G12
SAMPLE DATE			11/02/05	11/02/05	11/02/05	02/23/06	01/19/06	01/19/06	09/08/05	11/02/05	09/13/05	02/17/06	02/17/06	01/19/06	01/12/06	02/09/06	02/17/06	01/19/06	01/12/06	01/12/06	01/17/06	09/27/05	02/09/06	02/09/06	02/09/06
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
ANTHRACENE	17000000	170000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
BENZO(A)ANTHRACENE	150	2100	290 U	280 U	285 U	280 U	375	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	221 J	310 U	290 U	310 U
BENZO(A)PYRENE	15	210	290 U	280 U	285 U	280 U	157 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	182 J	310 U	290 U	310 U
BENZO(B)FLUORANTHENE	150	2100	290 U	280 U	285 U	280 U	283 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	195 J	310 U	290 U	310 U
BENZO(G,H,I)PERYLENE	1700000	17000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
BENZO(K)FLUORANTHENE	1500	21000	290 U	280 U	285 U	280 U	267 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	197 J	310 U	290 U	310 U
CHRYSENE	15000	210000	290 U	280 U	285 U	280 U	497	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	254 J	310 U	290 U	310 U
FLUORANTHENE	2300000	22000000	290 U	280 U	285 U	280 U	801	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	385	310 U	290 U	310 U
FLUORENE	2300000	22000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
HIGH MOLECULAR WEIGHT PAHS			290 U	280 U	285 U	280 U	3160 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	1920 J	310 U	290 U	310 U
INDENO(1,2,3-CD)PYRENE	150	2100	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	153 J	310 U	290 U	310 U
LOW MOLECULAR WEIGHT PAHS			290 U	280 U	285 U	280 U	237 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
PHENANTHRENE	1700000	17000000	290 U	280 U	285 U	280 U	237 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
PYRENE	1700000	17000000	290 U	280 U	285 U	280 U	782	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	333	310 U	290 U	310 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	13000 E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	1.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	4.84	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			22 U	22 U	22 U	167	187	43	40	22 U	40	24 U	33	26 U	24 U	26	22 U	26 U	24 U	851	24 U	31	26	27	45

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-G13	TF4-C-STRAIGHTDIS-G14	TF4-C-STRAIGHTDIS-G15	TF4-C-STRAIGHTDIS-G15-D	TF4-C-STRAIGHTDIS-G15-AVG	TF4-C-STRAIGHTDIS-G3-S	TF4-C-STRAIGHTDIS-G5-1	TF4-C-STRAIGHTDIS-H10	TF4-C-STRAIGHTDIS-H11	TF4-C-STRAIGHTDIS-H11-D	TF4-C-STRAIGHTDIS-H11-AVG	TF4-C-STRAIGHTDIS-H12	TF4-C-STRAIGHTDIS-H13	TF4-C-STRAIGHTDIS-H14	TF4-C-STRAIGHTDIS-H15	TF4-C-STRAIGHTDIS-H16	TF4-C-STRAIGHTDIS-I10	TF4-C-STRAIGHTDIS-I11	TF4-C-STRAIGHTDIS-I12	TF4-C-STRAIGHTDIS-I13	TF4-C-STRAIGHTDIS-I14	TF4-C-STRAIGHTDIS-I15	TF4-C-STRAIGHTDIS-I16
SAMPLE DATE			01/12/06	01/12/06	01/12/06	01/17/06	01/12/06	09/27/05	11/02/05	12/19/05	12/19/05	12/19/05	12/19/05	12/19/05	12/19/05	01/12/06	01/12/06	01/17/06	12/19/05	12/19/05	12/19/05	12/19/05	01/12/06	01/12/06	01/17/06
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	FD	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
ANTHRACENE	17000000	170000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(A)ANTHRACENE	150	2100	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(A)PYRENE	15	210	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(B)FLUORANTHENE	150	2100	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(G,H,I)PERYLENE	1700000	17000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(K)FLUORANTHENE	1500	21000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
CHRYSENE	15000	210000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
FLUORANTHENE	2300000	22000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
FLUORENE	2300000	22000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
HIGH MOLECULAR WEIGHT PAHS			310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
INDENO(1,2,3-CD)PYRENE	150	2100	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
LOW MOLECULAR WEIGHT PAHS			310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
PHENANTHRENE	1700000	17000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
PYRENE	1700000	17000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			24 U	24 U	26 U	24 U	25 U	22 U	20 U	26 U	33	26 U	23	24 U	28 U	24 U	37	54	24 U	26 U	50	29	26 U	54	134

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-I8-1	TF4-C-STRAIGHTDIS-J10	TF4-C-STRAIGHTDIS-J10-D	TF4-C-STRAIGHTDIS-J10-AVG	TF4-C-STRAIGHTDIS-J11	TF4-C-STRAIGHTDIS-J12	TF4-C-STRAIGHTDIS-J13	TF4-C-STRAIGHTDIS-J13-S	TF4-C-STRAIGHTDIS-J14	TF4-C-STRAIGHTDIS-J15	TF4-C-STRAIGHTDIS-J16	TF4-C-STRAIGHTDIS-K10	TF4-C-STRAIGHTDIS-K11	TF4-C-STRAIGHTDIS-K12	TF4-C-STRAIGHTDIS-K13	TF4-C-STRAIGHTDIS-K14	TF4-C-STRAIGHTDIS-K15-S	TF4-C-STRAIGHTDIS-K16	TF4-C-STRAIGHTDIS-K17-B1	TF4-C-STRAIGHTDIS-K7-S	TF4-C-STRAIGHTDIS-K9-S	TF4-C-STRAIGHTDIS-L11-S	TF4-C-STRAIGHTDIS-L17
SAMPLE DATE			11/02/05	09/28/05	09/28/05	09/28/05	09/28/05	09/28/05	09/28/05	09/29/05	01/12/06	01/12/06	01/17/06	09/28/05	09/28/05	09/28/05	09/28/05	09/29/05	09/29/05	01/19/06	02/14/06	11/07/05	09/28/05	09/29/05	01/19/06
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
ANTHRACENE	17000000	170000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(A)ANTHRACENE	150	2100	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(A)PYRENE	15	210	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(B)FLUORANTHENE	150	2100	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(G,H,I)PERYLENE	1700000	17000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(K)FLUORANTHENE	1500	21000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
CHRYSENE	15000	210000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
FLUORANTHENE	2300000	22000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
FLUORENE	2300000	22000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
HIGH MOLECULAR WEIGHT PAHS			280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
INDENO(1,2,3-CD)PYRENE	150	2100	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
LOW MOLECULAR WEIGHT PAHS			280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
PHENANTHRENE	1700000	17000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
PYRENE	1700000	17000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			20 U	70	29	49.5	38	28 U	28	42	34	24 U	85	24 U	24 U	30 U	81	120	26 U	322	24 U	144	127	483	68

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-M13-S	TF4-C-STRAIGHTDIS-M-14-S	TF4-L-R2-B2	TF4-L-R2-B8	TF4-L-R2-B9	TF4-L-R2-SW10	TF4-L-R2-SW9	TF4-L-STRAIGHTDIS-32	TF4-L-STRAIGHTDIS-34	TF4-L-STRAIGHTDIS-36	TF4-L-STRAIGHTDIS-37	TF4-L-STRAIGHTDIS-41	TF4-L-STRAIGHTDIS-44	TF4-L-STRAIGHTDIS-46
SAMPLE DATE			09/29/05	09/29/05	03/23/05	03/23/05	03/23/05	03/23/05	03/23/05	10/31/05	10/31/05	10/31/05	10/31/05	10/31/05	10/31/05	12/21/05
TOP DEPTH																
BOTTOM DEPTH																
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																
ACENAPHTHENE	3400000	33000000	390 U	330 U	300 U	300 U	320 U	280 U	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
ANTHRACENE	17000000	170000000	390 U	330 U	300 U	178 J	320 U	521	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
BENZO(A)ANTHRACENE	150	2100	390 U	330 U	300 U	239 J	320 U	703	NA	618	340 U	380 U	350 U	534 J	NA	480 U
BENZO(A)PYRENE	15	210	390 U	330 U	153 J	233 J	320 U	626	NA	531 J	340 U	380 U	350 U	478 J	NA	480 U
BENZO(B)FLUORANTHENE	150	2100	390 U	330 U	300 U	190 J	320 U	523	NA	450 J	340 U	380 U	350 U	378 J	NA	480 U
BENZO(G,H,I)PERYLENE	1700000	17000000	390 U	330 U	300 U	300 U	320 U	364	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
BENZO(K)FLUORANTHENE	1500	21000	390 U	330 U	300 U	179 J	320 U	503	NA	438 J	340 U	380 U	350 U	383 J	NA	480 U
CHRYSENE	15000	210000	390 U	330 U	172 J	253 J	169 J	693	NA	561	340 U	380 U	350 U	492 J	NA	480 U
FLUORANTHENE	2300000	22000000	390 U	330 U	252 J	523	257 J	1960	NA	1340	271 J	380 U	350 U	1010	NA	480 U
FLUORENE	2300000	22000000	390 U	330 U	300 U	300 U	320 U	280 U	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
HIGH MOLECULAR WEIGHT PAHS			390 U	330 U	840 J	2100 J	697 J	7560	NA	5440 J	524 J	380 U	350 U	4610 J	NA	290 J
INDENO(1,2,3-CD)PYRENE	150	2100	390 U	330 U	300 U	300 U	320 U	398	NA	376 J	340 U	380 U	350 U	377 J	NA	480 U
LOW MOLECULAR WEIGHT PAHS			390 U	330 U	204 J	639 J	203 J	521	NA	763	340 U	380 U	350 U	554 J	NA	480 U
PHENANTHRENE	1700000	17000000	390 U	330 U	204 J	461	203 J	280 U	NA	763	340 U	380 U	350 U	554 J	NA	480 U
PYRENE	1700000	17000000	390 U	330 U	263 J	482	271 J	1790	NA	1130	253 J	380 U	350 U	959	NA	290 J
DIOXINS/FURANS (NG/KG)																
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	218
TPH (C08-C40)			423	NA	110	218	214	155	24 U	181	123	171	108	154	91	NA

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 2
DU 5-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF5-OW-B1	L-TF5-OW-B1-AVG	L-TF5-OW-B4	L-TF5-OW-DISCHARGE-RX	TF5-OW-DISCHARGE 1	TF5-OW-DISCHARGE 2	TF5-OW-DISCHARGE13-RX	TF-OW-DISCHARGE 1	L-TF5-OW-SW5	L-TF5-OW-SW9	TF5-OW-DISCHARGE14	TF5-OW-DISCHARGE15
SAMPLE DATE			12/03/04	12/03/04	12/03/04	01/12/05	01/31/05	01/31/05	02/17/05	01/31/05	12/03/04	12/03/04	02/17/05	02/23/05
TOP DEPTH														
BOTTOM DEPTH														
SACODE			ORIG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)														
2-BUTANONE	28000000	200000000	16	16	20	NA	NA	NA	NA	NA	9.5	3.3 J	5.7	10
ACETONE	61000000	630000000	130	130	140	NA	NA	NA	NA	NA	62	21	29	55
SEMIVOLATILES (UG/KG)														
ANTHRACENE	17000000	170000000	300 U	300 U	300 U	NA	NA	NA	NA	164 J	290 U	280 U	NA	340 U
BENZO(A)ANTHRACENE	150	2100	300 U	300 U	300 U	NA	NA	NA	NA	537	290 U	280 U	NA	415
BENZO(A)PYRENE	15	210	300 U	300 U	300 U	NA	NA	NA	NA	461	290 U	280 U	NA	430
BENZO(B)FLUORANTHENE	150	2100	300 U	300 U	300 U	NA	NA	NA	NA	434	290 U	280 U	NA	409
BENZO(G,H,I)PERYLENE	1700000	17000000	300 U	300 U	300 U	NA	NA	NA	NA	262 J	290 U	280 U	NA	340 U
BENZO(K)FLUORANTHENE	1500	21000	300 U	300 U	300 U	NA	NA	NA	NA	359	290 U	280 U	NA	356
CHRYSENE	15000	210000	300 U	300 U	300 U	NA	NA	NA	NA	547	290 U	280 U	NA	447
FLUORANTHENE	2300000	22000000	300 U	300 U	300 U	NA	NA	NA	NA	1320	290 U	187 J	NA	695
HIGH MOLECULAR WEIGHT PAHS			300 U	300 U	300 U	NA	NA	NA	NA	5310 J	290 U	328 J	NA	3460 J
INDENO(1,2,3-CD)PYRENE	150	2100	300 U	300 U	300 U	NA	NA	NA	NA	304 J	290 U	280 U	NA	182 J
LOW MOLECULAR WEIGHT PAHS			300 U	300 U	300 U	NA	NA	NA	NA	1040 J	290 U	280 U	NA	316 J
PHENANTHRENE	1700000	17000000	300 U	300 U	300 U	NA	NA	NA	NA	879	290 U	280 U	NA	316 J
PYRENE	1700000	17000000	300 U	300 U	300 U	NA	NA	NA	NA	1090	290 U	141 J	NA	526
PESTICIDES/PCBS (UG/KG)														
TOTAL PCBs			16 J	16 J	18 U	NA	NA	NA	NA	18 U	18 U	17 U	17 U	23
METALS (MG/KG)														
ANTIMONY	31	410	0.43 U	0.43 U	0.43 U	NA	NA	NA	NA	NA	0.48 U	0.45 U	0.55 B	0.73 B
ARSENIC	0.39	1.6	22.2	22.2	18.3	NA	NA	NA	NA	NA	37.1	8.5	19.4	17.7
BARIUM	15000	190000	27.2	27.2	23.7	NA	NA	NA	NA	NA	18.8 B	21.4 B	15.2 B	24.9 B
BERYLLIUM	160	2000	0.29 B	0.29 B	0.35 B	NA	NA	NA	NA	NA	0.36 B	0.3 B	0.36 B	0.45 B
CADMIUM	70	800	1.1	1.1	1.2	NA	NA	NA	NA	NA	1.5	0.88	0.38 B	0.61 B
CHROMIUM	0.29	5.6	14	14	11	NA	NA	NA	NA	NA	11	7.5	13.1	13.5
COPPER	3100	41000	12.6	12.6	15.1	NA	NA	NA	NA	NA	23.6	14.7	20.8	20.2
LEAD	400	800	19.3	19.3	18	NA	NA	NA	NA	NA	17.6	50.7	23.5	57.8
MANGANESE	1800	23000	362	362	338	NA	NA	NA	NA	NA	433	331	386	314
MERCURY	10	43	0.018 U	0.018 U	0.02 B	NA	NA	NA	NA	NA	0.05	0.066	0.022 U	0.032 B
NICKEL	1500	20000	19.9	19.9	15.4	NA	NA	NA	NA	NA	23.2	11.6	21.7	22.4
SELENIUM	390	5100	0.4 B	0.4 B	0.32 B	NA	NA	NA	NA	NA	0.36 B	0.33 U	0.6 U	0.62 U
VANADIUM	390	5200	12.1	12.1	14.7	NA	NA	NA	NA	NA	13.9	11.9	14.1	17.5
ZINC	23000	310000	55.5	55.5	65	NA	NA	NA	NA	NA	62	44.1	61.2	106

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 2
DU 5-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF5-OW-B1	L-TF5-OW-B1-AVG	L-TF5-OW-B4	L-TF5-OW-DISCHARGE-RX	TF5-OW-DISCHARGE 1	TF5-OW-DISCHARGE 2	TF5-OW-DISCHARGE13-RX	TF-OW-DISCHARGE 1	L-TF5-OW-SW5	L-TF5-OW-SW9	TF5-OW-DISCHARGE14	TF5-OW-DISCHARGE15
SAMPLE DATE			12/03/04	12/03/04	12/03/04	01/12/05	01/31/05	01/31/05	02/17/05	01/31/05	12/03/04	12/03/04	02/17/05	02/23/05
TOP DEPTH														
BOTTOM DEPTH														
SACODE			ORIG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DIOXINS/FURANS (NG/KG)														
1,2,3,4,6,7,8,9-OCDD	15000	60000	6600 E	6600 E	7300 E	NA	NA	NA	NA	NA	NA	NA	NA	7100 E
1,2,3,4,6,7,8,9-OCDF	15000	60000	6.1 U	6.1 U	2.3 U	NA	NA	NA	NA	NA	NA	NA	NA	58
1,2,3,4,6,7,8-HPCDD	450	1800	71	71	82	NA	NA	NA	NA	NA	NA	NA	NA	180
1,2,3,4,6,7,8-HPCDF	450	1800	4.1 J	4.1 J	1.3 U	NA	NA	NA	NA	NA	NA	NA	NA	33
1,2,3,6,7,8-HXCDD	45	180	0.82 U	0.82 U	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	6.9 J
1,2,3,7,8,9-HXCDD	45	180	2 U	2 U	2.9 U	NA	NA	NA	NA	NA	NA	NA	NA	4.9 J
2,3,7,8-TCDD	4.5	18	3.4	3.4	0.76 J JA	NA	NA	NA	NA	NA	NA	NA	NA	0.33 U
2,3,7,8-TCDF	45	180	1.3 CON	1.3 CON	0.55 U	NA	NA	NA	NA	NA	NA	NA	NA	1 J CON
TEQ	4.5	18	6.26 J	6.26 J	3.77 J	NA	NA	NA	NA	NA	NA	NA	NA	5.56 J
PETROLEUM HYDROCARBONS (MG/KG)														
TPH (C08-C40)			126	126	137	737	185	90	86	NA	102	254	NA	327

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE
ANALYTICAL RESULTS
TANK FARM
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

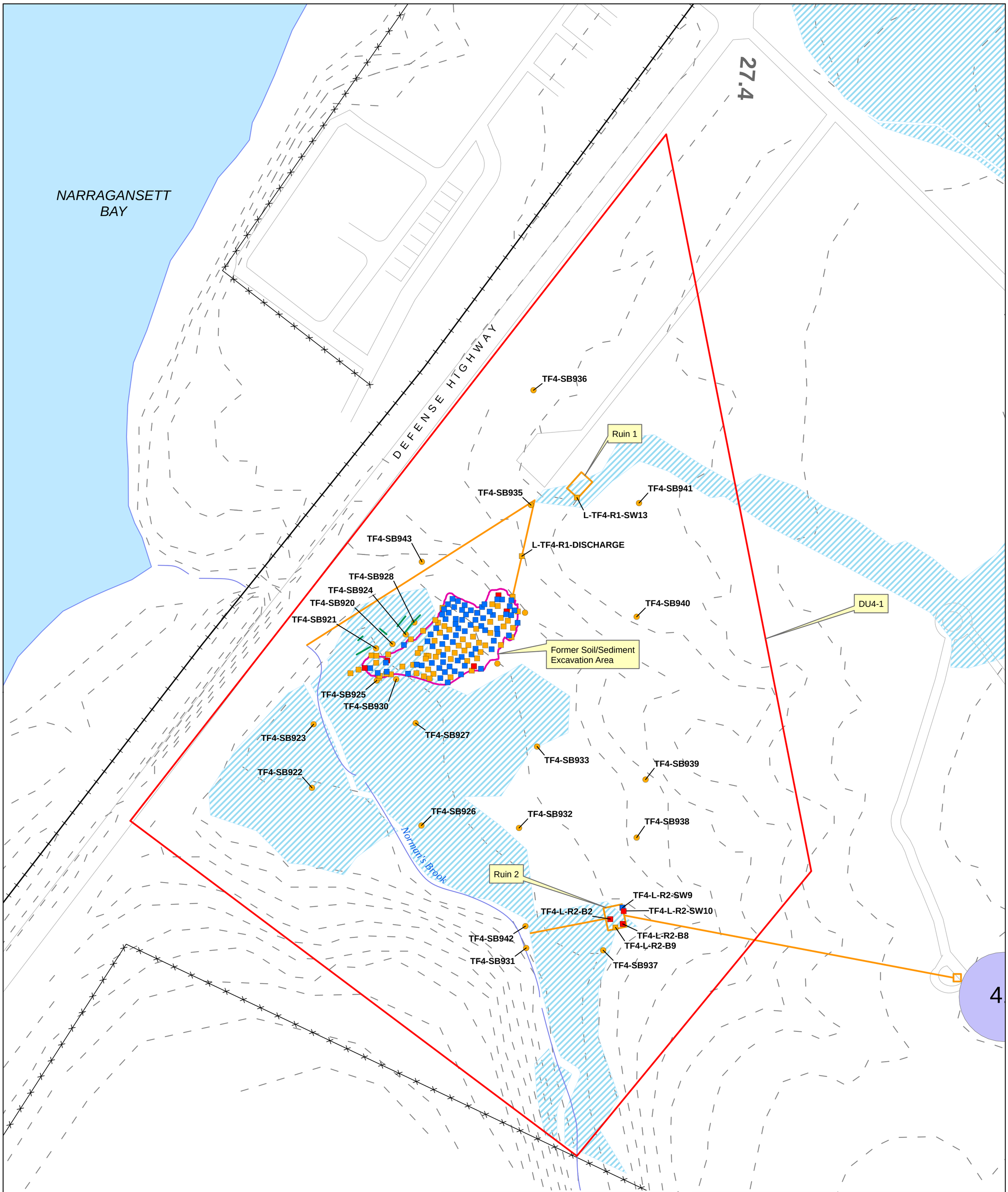
SAMPLE ID			TF4-C-STRAIGHTDIS-G5	TF4-C-STRAIGHTDIS-D11	TF4-C-STRAIGHTDIS-D3-A	TF4-C-STRAIGHTDIS-F2-S	TF4-L-R2-B2	TF4-L-R2-B8	TF4-L-R2-SW10	TF4-L-STRAIGHTDIS-32	TF4-L-STRAIGHTDIS-41
LOCATION ID			TF4-C-STRAIGHTDIS-G5	TF4-C-STRTDIS-D11	TF4-C-STRTDIS-D3-A	TF4-C-STRTDIS-F2-S	TF4-L-R2-B2	TF4-L-R2-B8	TF4-L-R2-SW9/SW10	TF4-L-STRAIGHTDIS-32	TF4-L-STRAIGHTDIS-41
SAMPLE DATE			09/21/05	01/19/06	09/13/05	09/27/05	03/23/05	03/23/05	03/23/05	10/31/05	10/31/05
TOP DEPTH											
BOTTOM DEPTH											
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)ANTHRACENE	150	2100	1230	375	300 U	221 J	300 U	239 J	703	618	534 J
BENZO(A)PYRENE	15	210	1030	157 J	300 U	182 J	153 J	233 J	626	531 J	478 J
BENZO(B)FLUORANTHENE	150	2100	1070	283 J	300 U	195 J	300 U	190 J	523	450 J	378 J
INDENO(1,2,3-CD)PYRENE	150	2100	485	310 U	300 U	153 J	300 U	300 U	398	376 J	377 J
TEQ	4.5	18	NA	NA	4.84	NA	NA	NA	NA	NA	NA

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE
ANALYTICAL RESULTS
TANK FARM
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF5-OW-B1-AVG	L-TF5-OW-B4	TF-OW-DISCHARGE 1	L-TF5-OW-SW5	L-TF5-OW-SW9	TF5-OW-DISCHARGE14	TF5-OW-DISCHARGE15
LOCATION ID			L-TF5-OW-B1	L-TF5-OW-B4	L-TF5-OW-DISCHARGE	L-TF5-OW-SW5	L-TF5-OW-SW9	TF5-OW-DISCHARGE14	TF5-OW-Discharge15
SAMPLE DATE			12/03/04	12/03/04	01/31/05	12/03/04	12/03/04	02/17/05	02/23/05
TOP DEPTH									
BOTTOM DEPTH									
SACODE			AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM
BENZO(A)ANTHRACENE	150	2100	300 U	300 U	537	290 U	280 U	NA	415
BENZO(A)PYRENE	15	210	300 U	300 U	461	290 U	280 U	NA	430
BENZO(B)FLUORANTHENE	150	2100	300 U	300 U	434	290 U	280 U	NA	409
INDENO(1,2,3-CD)PYRENE	150	2100	300 U	300 U	304 J	290 U	280 U	NA	182 J
ARSENIC	0.39	1.6	22.2	18.3	NA	37.1	8.5	19.4	17.7
CHROMIUM	0.29	5.6	14	11	NA	11	7.5	13.1	13.5
TEQ	4.5	18	6.26 J	3.77 J	NA	NA	NA	NA	5.56 J

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

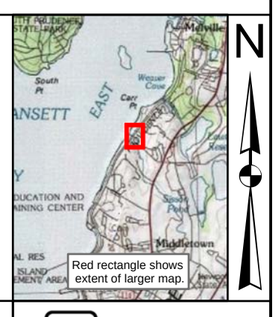


- 2010 Soil Boring
- Pre 2010 Soil Boring Sample Location (With Detection)
- Pre 2010 Soil Boring Sample Location (Exceeding RSL)
- Pre 2010 Soil Boring Sample Location (Non-Detect)
- Pre 2010 Test Pit Location
- Discharge Pipe
- Ground Surface Elevation Contour
- Railroad Tracks
- Fence
- Decision Unit Boundary
- Wetland
- Tank - No Further Action

Note: The locations of the following data points were not surveyed, but approximated using historical site figures: L-TF4-RI-E1 through L-TF4-RI-B9.

0 50 100 150 200 250 300 Feet

FIGURE 1
DU 4-1 SOIL SAMPLE LOCATIONS
TANK FARM 4
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND



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Author: GJG/NEC

TETRA TECH

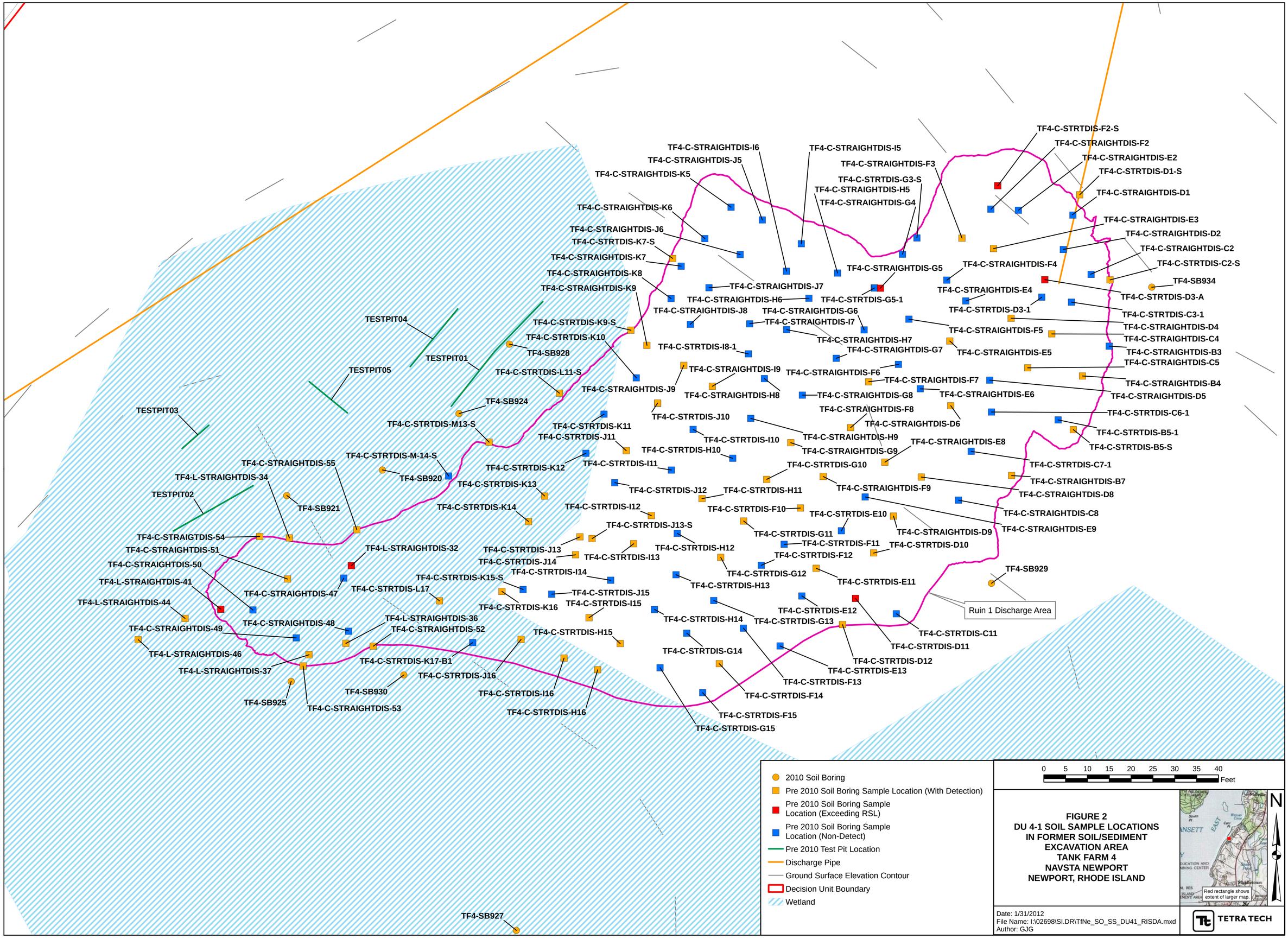

FIGURE 2
DU 4-1 SOIL SAMPLE LOCATIONS
IN FORMER SOIL/SEDIMENT
EXCAVATION AREA
TANK FARM 4
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Date: 1/31/2012
File Name: I:\02698\SI.DR\TfNe_SO_SS_DU41_RISDA.mxd
Author: GJG

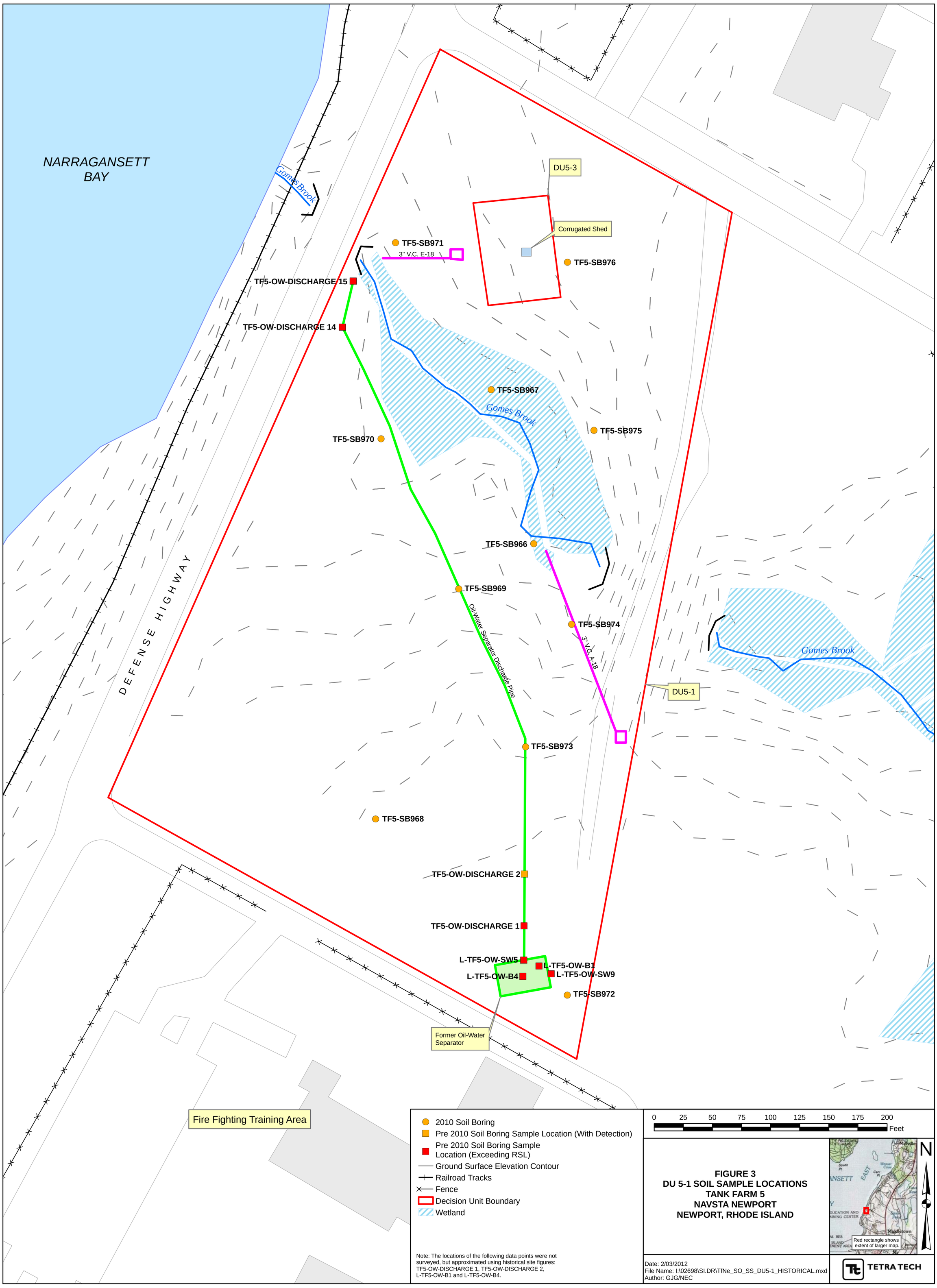

FIGURE 3
DU 5-1 SOIL SAMPLE LOCATIONS
TANK FARM 5
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Date: 2/03/2012
File Name: I:\02698\SI.DR\TfNe_SO_SS_DU5-1_HISTORICAL.mxd
Author: GJG/NEC

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF4-R1-B1	L-TF4-R1-B4	L-TF4-R1-B2	L-TF4-R1-B3	L-TF4-R1-B5	L-TF4-R1-B6	L-TF4-R1-B7	L-TF4-R1-B8	L-TF4-R1-B9-RX	L-TF4-R1-B1-D	L-TF4-R1-B1-AVG	L-TF4-R1-B4-AVG	L-TF4-R1-DISCHARGE	L-TF4-R1-DISCHARGE-AVG	L-TF4-R1-SW13	TF4-C-STRAIGHTDIS-47	TF4-C-STRAIGHTDIS-48	TF4-C-STRAIGHTDIS-49	TF4-C-STRAIGHTDIS-50
SAMPLE DATE			12/16/04	12/20/04	12/16/04	12/16/04	12/20/04	12/20/04	12/20/04	12/20/04	12/20/04	12/16/04	12/16/04	12/20/04	01/10/05	01/10/05	12/15/04	01/05/06	01/05/06	01/05/06	01/05/06
TOP DEPTH																					
BOTTOM DEPTH																					
SACODE			ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	DUP	AVG	AVG	ORIG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																					
ACENAPHTHENE	3400000	33000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
ANTHRACENE	17000000	170000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(A)ANTHRACENE	150	2100	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(A)PYRENE	15	210	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(B)FLUORANTHENE	150	2100	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(G,H,I)PERYLENE	1700000	17000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
BENZO(K)FLUORANTHENE	1500	21000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
CHRYSENE	15000	210000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
FLUORANTHENE	2300000	22000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
FLUORENE	2300000	22000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
HIGH MOLECULAR WEIGHT PAHS			290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
INDENO(1,2,3-CD)PYRENE	150	2100	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
LOW MOLECULAR WEIGHT PAHS			290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
PHENANTHRENE	1700000	17000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
PYRENE	1700000	17000000	290 U	280 U	NA	NA	NA	NA	NA	NA	NA	NA	290 U	280 U	400 U	400 U	310 U	340 U	320 U	300 U	340 U
DIOXINS/FURANS (NG/KG)																					
1,2,3,4,6,7,8,9-OCDD	15000	60000	11000 E	2700	NA	NA	NA	NA	NA	NA	NA	NA	11000 E	2700	1300	1300	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	110	25	NA	NA	NA	NA	NA	NA	NA	NA	110	25	26	26	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	0.79 U	0.22 U	NA	NA	NA	NA	NA	NA	NA	NA	0.79 U	0.22 U	2.9 U	2.9 U	NA	NA	NA	NA	NA
TEQ	4.5	18	4.4	1.06	NA	NA	NA	NA	NA	NA	NA	NA	4.4	1.06	0.65	0.65	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																					
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			266	145	24 U	68	45	42	32	22 U	22 U	24 U	139	145	176	176	199	26 U	24 U	24 U	26 U

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-51	TF4-C-STRAIGHTDIS-52	TF4-C-STRAIGHTDIS-53	TF4-C-STRAIGHTDIS-55	TF4-C-STRAIGHTDIS-B3	TF4-C-STRAIGHTDIS-B4	TF4-C-STRAIGHTDIS-B7	TF4-C-STRAIGHTDIS-C2	TF4-C-STRAIGHTDIS-C4	TF4-C-STRAIGHTDIS-C5	TF4-C-STRAIGHTDIS-C8	TF4-C-STRAIGHTDIS-D1	TF4-C-STRAIGHTDIS-D2	TF4-C-STRAIGHTDIS-D4	TF4-C-STRAIGHTDIS-D5	TF4-C-STRAIGHTDIS-D6	TF4-C-STRAIGHTDIS-D8	TF4-C-STRAIGHTDIS-D9	TF4-C-STRAIGHTDIS-E2	TF4-C-STRAIGHTDIS-E3	TF4-C-STRAIGHTDIS-E4	TF4-C-STRAIGHTDIS-E5	TF4-C-STRAIGHTDIS-E6
SAMPLE DATE			01/05/06	01/05/06	01/05/06	01/09/06	09/08/05	09/08/05	09/13/05	09/08/05	09/12/05	09/13/05	09/13/05	09/08/05	09/12/05	09/13/05	09/14/05	09/14/05	02/23/06	02/23/06	09/21/05	09/14/05	09/14/05	09/14/05	09/22/05
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
ANTHRACENE	17000000	170000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(A)ANTHRACENE	150	2100	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(A)PYRENE	15	210	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(B)FLUORANTHENE	150	2100	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(G,H,I)PERYLENE	1700000	17000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
BENZO(K)FLUORANTHENE	1500	21000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
CHRYSENE	15000	210000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
FLUORANTHENE	2300000	22000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
FLUORENE	2300000	22000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
HIGH MOLECULAR WEIGHT PAHS			350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
INDENO(1,2,3-CD)PYRENE	150	2100	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
LOW MOLECULAR WEIGHT PAHS			350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
PHENANTHRENE	1700000	17000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
PYRENE	1700000	17000000	350 U	NA	NA	430 U	280 U	310 U	290 U	300 U	330 U	340 U	310 U	290 U	310 U	320 U	320 U	310 U	330 U	270 U	290 U	300 U	290 U	310 U	320 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			60	2520	632	209	NA	279	107	24 U	159	109	24 U	22 U	24 U	394	26 U	34	59	37	NA	351	24 U	27	NA

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-E8	TF4-C-STRAIGHTDIS-E9	TF4-C-STRAIGHTDIS-F2	TF4-C-STRAIGHTDIS-F3	TF4-C-STRAIGHTDIS-F3-D	TF4-C-STRAIGHTDIS-F3-AVG	TF4-C-STRAIGHTDIS-F4	TF4-C-STRAIGHTDIS-F5	TF4-C-STRAIGHTDIS-F6	TF4-C-STRAIGHTDIS-F7	TF4-C-STRAIGHTDIS-F8	TF4-C-STRAIGHTDIS-F9	TF4-C-STRAIGHTDIS-G4	TF4-C-STRAIGHTDIS-G5	TF4-C-STRAIGHTDIS-G6	TF4-C-STRAIGHTDIS-G7	TF4-C-STRAIGHTDIS-G8	TF4-C-STRAIGHTDIS-G9	TF4-C-STRAIGHTDIS-H5	TF4-C-STRAIGHTDIS-H6	TF4-C-STRAIGHTDIS-H7	TF4-C-STRAIGHTDIS-H8	TF4-C-STRAIGHTDIS-H9
SAMPLE DATE			02/17/06	02/17/06	09/21/05	09/21/05	09/21/05	09/21/05	09/21/05	09/21/05	09/22/05	09/22/05	02/09/06	02/09/06	09/21/05	09/21/05	09/21/05	09/21/05	09/22/05	02/09/06	09/21/05	09/21/05	09/21/05	09/22/05	12/19/05
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	173 J	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
ANTHRACENE	17000000	170000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	397	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(A)ANTHRACENE	150	2100	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1230	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(A)PYRENE	15	210	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1030	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(B)FLUORANTHENE	150	2100	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1070	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(G,H,I)PERYLENE	1700000	17000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	367	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
BENZO(K)FLUORANTHENE	1500	21000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	911	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
CHRYSENE	15000	210000	300 U	310 U	320 U	310 U	176 J	166 J	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1230	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
FLUORANTHENE	2300000	22000000	300 U	310 U	320 U	310 U	184 J	170 J	310 U	300 U	310 U	170 J	300 U	300 U	320 U	2290	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
FLUORENE	2300000	22000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	176 J	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
HIGH MOLECULAR WEIGHT PAHS			300 U	310 U	320 U	164 J	632 J	398 J	310 U	300 U	310 U	332 J	300 U	300 U	320 U	10400	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
INDENO(1,2,3-CD)PYRENE	150	2100	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	485	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
LOW MOLECULAR WEIGHT PAHS			300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	2180 J	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
PHENANTHRENE	1700000	17000000	300 U	310 U	320 U	310 U	300 U	305 U	310 U	300 U	310 U	320 U	300 U	300 U	320 U	1430	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
PYRENE	1700000	17000000	300 U	310 U	320 U	164 J	272 J	218 J	310 U	300 U	310 U	162 J	300 U	300 U	320 U	1780	310 U	320 U	320 U	290 U	320 U	310 U	320 U	290 U	300 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			30	24 U	NA	NA	NA	NA	NA	NA	NA	NA	29	24	NA	NA	NA	NA	NA	26	NA	NA	NA	NA	26 U

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-I5	TF4-C-STRAIGHTDIS-I6	TF4-C-STRAIGHTDIS-I7	TF4-C-STRAIGHTDIS-I9	TF4-C-STRAIGHTDIS-J5	TF4-C-STRAIGHTDIS-J5-D	TF4-C-STRAIGHTDIS-J5-AVG	TF4-C-STRAIGHTDIS-J6	TF4-C-STRAIGHTDIS-J7	TF4-C-STRAIGHTDIS-J8	TF4-C-STRAIGHTDIS-J9	TF4-C-STRAIGHTDIS-K5	TF4-C-STRAIGHTDIS-K6	TF4-C-STRAIGHTDIS-K7	TF4-C-STRAIGHTDIS-K8	TF4-C-STRAIGHTDIS-K9	TF4-C-STRAIGTDIS-54	TF4-C-STRAIGHTDIS-B5-1	TF4-C-STRAIGHTDIS-B5-S	TF4-C-STRAIGHTDIS-C11	TF4-C-STRAIGHTDIS-C2-S	TF4-C-STRAIGHTDIS-C3-1	TF4-C-STRAIGHTDIS-C6-1
SAMPLE DATE			09/22/05	09/21/05	09/21/05	09/28/05	09/22/05	09/22/05	09/22/05	09/21/05	09/21/05	09/22/05	09/28/05	09/22/05	09/21/05	09/21/05	09/29/05	09/28/05	01/05/06	11/02/05	09/08/05	01/19/06	09/08/05	11/02/05	11/02/05
TOP DEPTH																										
BOTTOM DEPTH																										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																										
ACENAPHTHENE	3400000	33000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
ANTHRACENE	17000000	170000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(A)ANTHRACENE	150	2100	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	150 J	330 U	300 U	280 U	280 U
BENZO(A)PYRENE	15	210	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(B)FLUORANTHENE	150	2100	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(G,H,I)PERYLENE	1700000	17000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
BENZO(K)FLUORANTHENE	1500	21000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
CHRYSENE	15000	210000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	190 J	330 U	300 U	280 U	280 U
FLUORANTHENE	2300000	22000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	252 J	330 U	300 U	280 U	280 U
FLUORENE	2300000	22000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
HIGH MOLECULAR WEIGHT PAHS			290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	899 J	330 U	300 U	280 U	280 U
INDENO(1,2,3-CD)PYRENE	150	2100	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
LOW MOLECULAR WEIGHT PAHS			290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
PHENANTHRENE	1700000	17000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	300 U	330 U	300 U	280 U	280 U
PYRENE	1700000	17000000	290 U	330 U	320 U	300 U	300 U	290 U	295 U	300 U	290 U	290 U	300 U	290 U	280 U	290 U	290 U	300 U	NA	290 U	307	330 U	300 U	280 U	280 U
DIOXINS/FURANS (NG/KG)																										
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																										
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			NA	NA	NA	211	NA	NA	NA	NA	NA	NA	84	NA	NA	NA	24 U	264	907	22 U	119	28 U	95	22 U	22 U

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-C7-1	TF4-C-STRAIGHTDIS-C7-1-D	TF4-C-STRAIGHTDIS-C7-1-AVG	TF4-C-STRAIGHTDIS-D10	TF4-C-STRAIGHTDIS-D11	TF4-C-STRAIGHTDIS-D12	TF4-C-STRAIGHTDIS-D1-S	TF4-C-STRAIGHTDIS-D3-1	TF4-C-STRAIGHTDIS-D3-A	TF4-C-STRAIGHTDIS-E10	TF4-C-STRAIGHTDIS-E11	TF4-C-STRAIGHTDIS-E12	TF4-C-STRAIGHTDIS-E13	TF4-C-STRAIGHTDIS-F10	TF4-C-STRAIGHTDIS-F11	TF4-C-STRAIGHTDIS-F12	TF4-C-STRAIGHTDIS-F13	TF4-C-STRAIGHTDIS-F14	TF4-C-STRAIGHTDIS-F15	TF4-C-STRAIGHTDIS-F2-S	TF4-C-STRAIGHTDIS-G10	TF4-C-STRAIGHTDIS-G11	TF4-C-STRAIGHTDIS-G12
SAMPLE DATE			11/02/05	11/02/05	11/02/05	02/23/06	01/19/06	01/19/06	09/08/05	11/02/05	09/13/05	02/17/06	02/17/06	01/19/06	01/12/06	02/09/06	02/17/06	01/19/06	01/12/06	01/12/06	01/17/06	09/27/05	02/09/06	02/09/06	02/09/06
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
ANTHRACENE	17000000	170000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
BENZO(A)ANTHRACENE	150	2100	290 U	280 U	285 U	280 U	375	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	221 J	310 U	290 U	310 U
BENZO(A)PYRENE	15	210	290 U	280 U	285 U	280 U	157 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	182 J	310 U	290 U	310 U
BENZO(B)FLUORANTHENE	150	2100	290 U	280 U	285 U	280 U	283 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	195 J	310 U	290 U	310 U
BENZO(G,H,I)PERYLENE	1700000	17000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
BENZO(K)FLUORANTHENE	1500	21000	290 U	280 U	285 U	280 U	267 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	197 J	310 U	290 U	310 U
CHRYSENE	15000	210000	290 U	280 U	285 U	280 U	497	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	254 J	310 U	290 U	310 U
FLUORANTHENE	2300000	22000000	290 U	280 U	285 U	280 U	801	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	385	310 U	290 U	310 U
FLUORENE	2300000	22000000	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
HIGH MOLECULAR WEIGHT PAHS			290 U	280 U	285 U	280 U	3160 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	1920 J	310 U	290 U	310 U
INDENO(1,2,3-CD)PYRENE	150	2100	290 U	280 U	285 U	280 U	310 U	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	153 J	310 U	290 U	310 U
LOW MOLECULAR WEIGHT PAHS			290 U	280 U	285 U	280 U	237 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
PHENANTHRENE	1700000	17000000	290 U	280 U	285 U	280 U	237 J	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	300 U	310 U	290 U	310 U
PYRENE	1700000	17000000	290 U	280 U	285 U	280 U	782	350 U	280 U	300 U	300 U	310 U	280 U	300 U	350 U	300 U	290 U	330 U	320 U	NA	300 U	333	310 U	290 U	310 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	13000 E	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	1.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	4.84	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			22 U	22 U	22 U	167	187	43	40	22 U	40	24 U	33	26 U	24 U	26	22 U	26 U	24 U	851	24 U	31	26	27	45

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-G13	TF4-C-STRAIGHTDIS-G14	TF4-C-STRAIGHTDIS-G15	TF4-C-STRAIGHTDIS-G15-D	TF4-C-STRAIGHTDIS-G15-AVG	TF4-C-STRAIGHTDIS-G3-S	TF4-C-STRAIGHTDIS-G5-1	TF4-C-STRAIGHTDIS-H10	TF4-C-STRAIGHTDIS-H11	TF4-C-STRAIGHTDIS-H11-D	TF4-C-STRAIGHTDIS-H11-AVG	TF4-C-STRAIGHTDIS-H12	TF4-C-STRAIGHTDIS-H13	TF4-C-STRAIGHTDIS-H14	TF4-C-STRAIGHTDIS-H15	TF4-C-STRAIGHTDIS-H16	TF4-C-STRAIGHTDIS-I10	TF4-C-STRAIGHTDIS-I11	TF4-C-STRAIGHTDIS-I12	TF4-C-STRAIGHTDIS-I13	TF4-C-STRAIGHTDIS-I14	TF4-C-STRAIGHTDIS-I15	TF4-C-STRAIGHTDIS-I16
SAMPLE DATE			01/12/06	01/12/06	01/12/06	01/17/06	01/12/06	09/27/05	11/02/05	12/19/05	12/19/05	12/19/05	12/19/05	12/19/05	12/19/05	01/12/06	01/12/06	01/17/06	12/19/05	12/19/05	12/19/05	12/19/05	01/12/06	01/12/06	01/17/06
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	FD	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
ANTHRACENE	17000000	170000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(A)ANTHRACENE	150	2100	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(A)PYRENE	15	210	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(B)FLUORANTHENE	150	2100	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(G,H,I)PERYLENE	1700000	17000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
BENZO(K)FLUORANTHENE	1500	21000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
CHRYSENE	15000	210000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
FLUORANTHENE	2300000	22000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
FLUORENE	2300000	22000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
HIGH MOLECULAR WEIGHT PAHS			310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
INDENO(1,2,3-CD)PYRENE	150	2100	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
LOW MOLECULAR WEIGHT PAHS			310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
PHENANTHRENE	1700000	17000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
PYRENE	1700000	17000000	310 U	310 U	310 U	310 U	310 U	280 U	300 U	320 U	330 U	350 U	340 U	300 U	360 U	290 U	320 U	370 U	310 U	330 U	350 U	310 U	330 U	390 U	430 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			24 U	24 U	26 U	24 U	25 U	22 U	20 U	26 U	33	26 U	23	24 U	28 U	24 U	37	54	24 U	26 U	50	29	26 U	54	134

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-I8-1	TF4-C-STRAIGHTDIS-J10	TF4-C-STRAIGHTDIS-J10-D	TF4-C-STRAIGHTDIS-J10-AVG	TF4-C-STRAIGHTDIS-J11	TF4-C-STRAIGHTDIS-J12	TF4-C-STRAIGHTDIS-J13	TF4-C-STRAIGHTDIS-J13-S	TF4-C-STRAIGHTDIS-J14	TF4-C-STRAIGHTDIS-J15	TF4-C-STRAIGHTDIS-J16	TF4-C-STRAIGHTDIS-K10	TF4-C-STRAIGHTDIS-K11	TF4-C-STRAIGHTDIS-K12	TF4-C-STRAIGHTDIS-K13	TF4-C-STRAIGHTDIS-K14	TF4-C-STRAIGHTDIS-K15-S	TF4-C-STRAIGHTDIS-K16	TF4-C-STRAIGHTDIS-K17-B1	TF4-C-STRAIGHTDIS-K7-S	TF4-C-STRAIGHTDIS-K9-S	TF4-C-STRAIGHTDIS-L11-S	TF4-C-STRAIGHTDIS-L17
SAMPLE DATE			11/02/05	09/28/05	09/28/05	09/28/05	09/28/05	09/28/05	09/28/05	09/29/05	01/12/06	01/12/06	01/17/06	09/28/05	09/28/05	09/28/05	09/28/05	09/29/05	09/29/05	01/19/06	02/14/06	11/07/05	09/28/05	09/29/05	01/19/06
TOP DEPTH																									
BOTTOM DEPTH																									
SACODE			NORMAL	ORIG	DUP	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																									
ACENAPHTHENE	3400000	33000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
ANTHRACENE	17000000	170000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(A)ANTHRACENE	150	2100	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(A)PYRENE	15	210	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(B)FLUORANTHENE	150	2100	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(G,H,I)PERYLENE	1700000	17000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
BENZO(K)FLUORANTHENE	1500	21000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
CHRYSENE	15000	210000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
FLUORANTHENE	2300000	22000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
FLUORENE	2300000	22000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
HIGH MOLECULAR WEIGHT PAHS			280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
INDENO(1,2,3-CD)PYRENE	150	2100	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
LOW MOLECULAR WEIGHT PAHS			280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
PHENANTHRENE	1700000	17000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
PYRENE	1700000	17000000	280 U	290 U	NA	290 U	300 U	340 U	340 U	310 U	330 U	300 U	450 U	290 U	300 U	370 U	330 U	300 U	320 U	410 U	290 U	310 U	300 U	390 U	410 U
DIOXINS/FURANS (NG/KG)																									
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																									
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (C08-C40)			20 U	70	29	49.5	38	28 U	28	42	34	24 U	85	24 U	24 U	30 U	81	120	26 U	322	24 U	144	127	483	68

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 1
DU 4-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-C-STRAIGHTDIS-M13-S	TF4-C-STRAIGHTDIS-M-14-S	TF4-L-R2-B2	TF4-L-R2-B8	TF4-L-R2-B9	TF4-L-R2-SW10	TF4-L-R2-SW9	TF4-L-STRAIGHTDIS-32	TF4-L-STRAIGHTDIS-34	TF4-L-STRAIGHTDIS-36	TF4-L-STRAIGHTDIS-37	TF4-L-STRAIGHTDIS-41	TF4-L-STRAIGHTDIS-44	TF4-L-STRAIGHTDIS-46
SAMPLE DATE			09/29/05	09/29/05	03/23/05	03/23/05	03/23/05	03/23/05	03/23/05	10/31/05	10/31/05	10/31/05	10/31/05	10/31/05	10/31/05	12/21/05
TOP DEPTH																
BOTTOM DEPTH																
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																
ACENAPHTHENE	3400000	33000000	390 U	330 U	300 U	300 U	320 U	280 U	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
ANTHRACENE	17000000	170000000	390 U	330 U	300 U	178 J	320 U	521	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
BENZO(A)ANTHRACENE	150	2100	390 U	330 U	300 U	239 J	320 U	703	NA	618	340 U	380 U	350 U	534 J	NA	480 U
BENZO(A)PYRENE	15	210	390 U	330 U	153 J	233 J	320 U	626	NA	531 J	340 U	380 U	350 U	478 J	NA	480 U
BENZO(B)FLUORANTHENE	150	2100	390 U	330 U	300 U	190 J	320 U	523	NA	450 J	340 U	380 U	350 U	378 J	NA	480 U
BENZO(G,H,I)PERYLENE	1700000	17000000	390 U	330 U	300 U	300 U	320 U	364	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
BENZO(K)FLUORANTHENE	1500	21000	390 U	330 U	300 U	179 J	320 U	503	NA	438 J	340 U	380 U	350 U	383 J	NA	480 U
CHRYSENE	15000	210000	390 U	330 U	172 J	253 J	169 J	693	NA	561	340 U	380 U	350 U	492 J	NA	480 U
FLUORANTHENE	2300000	22000000	390 U	330 U	252 J	523	257 J	1960	NA	1340	271 J	380 U	350 U	1010	NA	480 U
FLUORENE	2300000	22000000	390 U	330 U	300 U	300 U	320 U	280 U	NA	540 U	340 U	380 U	350 U	640 U	NA	480 U
HIGH MOLECULAR WEIGHT PAHS			390 U	330 U	840 J	2100 J	697 J	7560	NA	5440 J	524 J	380 U	350 U	4610 J	NA	290 J
INDENO(1,2,3-CD)PYRENE	150	2100	390 U	330 U	300 U	300 U	320 U	398	NA	376 J	340 U	380 U	350 U	377 J	NA	480 U
LOW MOLECULAR WEIGHT PAHS			390 U	330 U	204 J	639 J	203 J	521	NA	763	340 U	380 U	350 U	554 J	NA	480 U
PHENANTHRENE	1700000	17000000	390 U	330 U	204 J	461	203 J	280 U	NA	763	340 U	380 U	350 U	554 J	NA	480 U
PYRENE	1700000	17000000	390 U	330 U	263 J	482	271 J	1790	NA	1130	253 J	380 U	350 U	959	NA	290 J
DIOXINS/FURANS (NG/KG)																
1,2,3,4,6,7,8,9-OCDD	15000	60000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDD	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	1800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TEQ	4.5	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)																
TPH (C06-C35)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	218
TPH (C08-C40)			423	NA	110	218	214	155	24 U	181	123	171	108	154	91	NA

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 2
DU 5-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF5-OW-B1	L-TF5-OW-B1-AVG	L-TF5-OW-B4	L-TF5-OW-DISCHARGE-RX	TF5-OW-DISCHARGE 1	TF5-OW-DISCHARGE 2	TF5-OW-DISCHARGE13-RX	TF-OW-DISCHARGE 1	L-TF5-OW-SW5	L-TF5-OW-SW9	TF5-OW-DISCHARGE14	TF5-OW-DISCHARGE15
SAMPLE DATE			12/03/04	12/03/04	12/03/04	01/12/05	01/31/05	01/31/05	02/17/05	01/31/05	12/03/04	12/03/04	02/17/05	02/23/05
TOP DEPTH														
BOTTOM DEPTH														
SACODE			ORIG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)														
2-BUTANONE	28000000	200000000	16	16	20	NA	NA	NA	NA	NA	9.5	3.3 J	5.7	10
ACETONE	61000000	630000000	130	130	140	NA	NA	NA	NA	NA	62	21	29	55
SEMIVOLATILES (UG/KG)														
ANTHRACENE	17000000	170000000	300 U	300 U	300 U	NA	NA	NA	NA	164 J	290 U	280 U	NA	340 U
BENZO(A)ANTHRACENE	150	2100	300 U	300 U	300 U	NA	NA	NA	NA	537	290 U	280 U	NA	415
BENZO(A)PYRENE	15	210	300 U	300 U	300 U	NA	NA	NA	NA	461	290 U	280 U	NA	430
BENZO(B)FLUORANTHENE	150	2100	300 U	300 U	300 U	NA	NA	NA	NA	434	290 U	280 U	NA	409
BENZO(G,H,I)PERYLENE	1700000	17000000	300 U	300 U	300 U	NA	NA	NA	NA	262 J	290 U	280 U	NA	340 U
BENZO(K)FLUORANTHENE	1500	21000	300 U	300 U	300 U	NA	NA	NA	NA	359	290 U	280 U	NA	356
CHRYSENE	15000	210000	300 U	300 U	300 U	NA	NA	NA	NA	547	290 U	280 U	NA	447
FLUORANTHENE	2300000	22000000	300 U	300 U	300 U	NA	NA	NA	NA	1320	290 U	187 J	NA	695
HIGH MOLECULAR WEIGHT PAHS			300 U	300 U	300 U	NA	NA	NA	NA	5310 J	290 U	328 J	NA	3460 J
INDENO(1,2,3-CD)PYRENE	150	2100	300 U	300 U	300 U	NA	NA	NA	NA	304 J	290 U	280 U	NA	182 J
LOW MOLECULAR WEIGHT PAHS			300 U	300 U	300 U	NA	NA	NA	NA	1040 J	290 U	280 U	NA	316 J
PHENANTHRENE	1700000	17000000	300 U	300 U	300 U	NA	NA	NA	NA	879	290 U	280 U	NA	316 J
PYRENE	1700000	17000000	300 U	300 U	300 U	NA	NA	NA	NA	1090	290 U	141 J	NA	526
PESTICIDES/PCBS (UG/KG)														
TOTAL PCBs			16 J	16 J	18 U	NA	NA	NA	NA	18 U	18 U	17 U	17 U	23
METALS (MG/KG)														
ANTIMONY	31	410	0.43 U	0.43 U	0.43 U	NA	NA	NA	NA	NA	0.48 U	0.45 U	0.55 B	0.73 B
ARSENIC	0.39	1.6	22.2	22.2	18.3	NA	NA	NA	NA	NA	37.1	8.5	19.4	17.7
BARIUM	15000	190000	27.2	27.2	23.7	NA	NA	NA	NA	NA	18.8 B	21.4 B	15.2 B	24.9 B
BERYLLIUM	160	2000	0.29 B	0.29 B	0.35 B	NA	NA	NA	NA	NA	0.36 B	0.3 B	0.36 B	0.45 B
CADMIUM	70	800	1.1	1.1	1.2	NA	NA	NA	NA	NA	1.5	0.88	0.38 B	0.61 B
CHROMIUM	0.29	5.6	14	14	11	NA	NA	NA	NA	NA	11	7.5	13.1	13.5
COPPER	3100	41000	12.6	12.6	15.1	NA	NA	NA	NA	NA	23.6	14.7	20.8	20.2
LEAD	400	800	19.3	19.3	18	NA	NA	NA	NA	NA	17.6	50.7	23.5	57.8
MANGANESE	1800	23000	362	362	338	NA	NA	NA	NA	NA	433	331	386	314
MERCURY	10	43	0.018 U	0.018 U	0.02 B	NA	NA	NA	NA	NA	0.05	0.066	0.022 U	0.032 B
NICKEL	1500	20000	19.9	19.9	15.4	NA	NA	NA	NA	NA	23.2	11.6	21.7	22.4
SELENIUM	390	5100	0.4 B	0.4 B	0.32 B	NA	NA	NA	NA	NA	0.36 B	0.33 U	0.6 U	0.62 U
VANADIUM	390	5200	12.1	12.1	14.7	NA	NA	NA	NA	NA	13.9	11.9	14.1	17.5
ZINC	23000	310000	55.5	55.5	65	NA	NA	NA	NA	NA	62	44.1	61.2	106

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
J - Quantitation is approximate; R - Rejected; NA - Not Analyzed

TABLE 2
DU 5-1 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS
TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

SAMPLE ID			L-TF5-OW-B1	L-TF5-OW-B1-AVG	L-TF5-OW-B4	L-TF5-OW-DISCHARGE-RX	TF5-OW-DISCHARGE 1	TF5-OW-DISCHARGE 2	TF5-OW-DISCHARGE13-RX	TF-OW-DISCHARGE 1	L-TF5-OW-SW5	L-TF5-OW-SW9	TF5-OW-DISCHARGE14	TF5-OW-DISCHARGE15
SAMPLE DATE			12/03/04	12/03/04	12/03/04	01/12/05	01/31/05	01/31/05	02/17/05	01/31/05	12/03/04	12/03/04	02/17/05	02/23/05
TOP DEPTH														
BOTTOM DEPTH														
SACODE			ORIG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DIOXINS/FURANS (NG/KG)														
1,2,3,4,6,7,8,9-OCDD	15000	60000	6600 E	6600 E	7300 E	NA	NA	NA	NA	NA	NA	NA	NA	7100 E
1,2,3,4,6,7,8,9-OCDF	15000	60000	6.1 U	6.1 U	2.3 U	NA	NA	NA	NA	NA	NA	NA	NA	58
1,2,3,4,6,7,8-HPCDD	450	1800	71	71	82	NA	NA	NA	NA	NA	NA	NA	NA	180
1,2,3,4,6,7,8-HPCDF	450	1800	4.1 J	4.1 J	1.3 U	NA	NA	NA	NA	NA	NA	NA	NA	33
1,2,3,6,7,8-HXCDD	45	180	0.82 U	0.82 U	1.6 U	NA	NA	NA	NA	NA	NA	NA	NA	6.9 J
1,2,3,7,8,9-HXCDD	45	180	2 U	2 U	2.9 U	NA	NA	NA	NA	NA	NA	NA	NA	4.9 J
2,3,7,8-TCDD	4.5	18	3.4	3.4	0.76 J JA	NA	NA	NA	NA	NA	NA	NA	NA	0.33 U
2,3,7,8-TCDF	45	180	1.3 CON	1.3 CON	0.55 U	NA	NA	NA	NA	NA	NA	NA	NA	1 J CON
TEQ	4.5	18	6.26 J	6.26 J	3.77 J	NA	NA	NA	NA	NA	NA	NA	NA	5.56 J
PETROLEUM HYDROCARBONS (MG/KG)														
TPH (C08-C40)			126	126	137	737	185	90	86	NA	102	254	NA	327

Dark Shading - Criterion Exceeded; Light Shading - Detected; U - Not Detected;
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TABLE 3
STATISTICS FOR SOIL SAMPLES
COLLECTED FROM DU 4-1
TANK FARM 4
DATA GAPS INVESTIGATION
NAVSTA NEWPORT, NEWPORT RI

Decision Unit 4-1 Soil Comparison

		Pre-2010 soil data									2010 soil data								
PARAMETER	**Units**	**FREQ of Detects**	**MIN Detection**		**MAX Detection**		**AVG DET**	**LOCATION OF MAX DETECTION**	**EPA RSL RES**	**EPA RSL IND**	**FREQ of Detects**	**MIN Detection**		**MAX Detection**		**AVG DET**	**LOCATION OF MAX DETECTION**	Is 2010 Max > Pre-2010 Max.?	Is Pre 2010 Max > EPA Residential RSL?
ACENAPHTHENE	UG/KG	1/142	173	J	173	J	173	TF4-C-STRAIGHTDIS-G5	3400000	33000000	8/66	4.5		100		22.9	TF4-SB-934-0001	N	N
ANTHRACENE	UG/KG	3/142	178	J	521		365	TF4-L-R2-SW10	17000000	170000000	24/66	4.3		8800		393	TF4-SB-934-0001	Y	N
BENZO(A)ANTHRACENE	UG/KG	8/142	150	J	1230		509	TF4-C-STRAIGHTDIS-G5	150	2100	36/66	3.9		54000		1560	TF4-SB-934-0001	Y	Y
BENZO(A)PYRENE	UG/KG	8/142	153	J	1030		424	TF4-C-STRAIGHTDIS-G5	15	210	35/66	3.3	J	24000		746	TF4-SB-934-0001	Y	Y
BENZO(B)FLUORANTHENE	UG/KG	7/142	190	J	1070		441	TF4-C-STRAIGHTDIS-G5	150	2100	37/66	4.2	J	49000		1420	TF4-SB-934-0001	Y	Y
BENZO(G,H,I)PERYLENE	UG/KG	2/142	364		367		366	TF4-C-STRAIGHTDIS-G5	1700000	17000000	33/66	4.2		8500		304	TF4-SB-934-0001	Y	N
BENZO(K)FLUORANTHENE	UG/KG	7/142	179	J	911		411	TF4-C-STRAIGHTDIS-G5	1500	21000	34/66	4.8		19000		625	TF4-SB-934-0001	Y	N
CHRYSENE	UG/KG	11/142	166	J	1230		425	TF4-C-STRAIGHTDIS-G5	15000	210000	36/66	4.3		59000		1710	TF4-SB-934-0001	Y	N
FLUORANTHENE	UG/KG	13/142	170		2290		745	TF4-C-STRAIGHTDIS-G5	2300000	22000000	38/66	3.9		83000		2280	TF4-SB-934-0001	Y	N
FLUORENE	UG/KG	1/142	176	J	176	J	176	TF4-C-STRAIGHTDIS-G5	2300000	22000000	16/66	3.35		470		42.6	TF4-SB-934-0001	Y	N
INDENO(1,2,3-CD)PYRENE	UG/KG	5/142	153	J	485		358	TF4-C-STRAIGHTDIS-G5	150	2100	32/66	3.3	J	8500		309	TF4-SB-934-0001	Y	Y
PHENANTHRENE	UG/KG	7/142	203	J	1430		550	TF4-C-STRAIGHTDIS-G5	1700000	17000000	32/66	4.5		440		61.8	TF4-SB-934-0001	N	N
PYRENE	UG/KG	14/142	162	J	1790		644	TF4-L-R2-SW10	1700000	17000000	37/66	4.4		86000		2410	TF4-SB-934-0001	Y	N
Dioxins/Furans TEQ	NG/KG	4/4	0.65		4.84		2.74	TF4-C-STRAIGHTDIS-D3-A	4.5	18	47/47	0.22	J	9.6	J	2.16	TF4-SB-923-0406	Y	Y
TPH	MG/KG	75/125	23		2520		174	TF4-C-STRAIGHTDIS-52	NA	NA	22/48	18		540		107	TF4-SB-921-0001	N	NA

Compounds detected in the 2010 DU 4-1 samples but not found in the pre - 2010 samples: 2-butanone, acetone, benzene, carbon disulfide, MTBE, M + P-xylenes, toluene,
2,4-dichlorophenol, 2,4-dimethylphenol, 2-chlorophenol, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, acenaphthylene, phenol, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Aroclor-1254, Beta-BHC, Delta-BHC, Endofulfan I, Endofulfan Sulfate, Endrin, Endrin Aldehyde,
Endrin Ketone, Gamma-BHC (Lindane), Toxaphene, Aluminum, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc

Abbreviations:
UG/KG = micrograms per kilogram
NG/KG = nanograms per kilogram
MG/KG = milligrams per kilogram
J = quantitation approximate
B = detected in blank
TEQ = Toxic Equivalent
NA = Not applicable
EPA = Environmental Protection Agency
RSL = Regional Screening Level
RES = Residential
IND = Industrial

TABLE 4
STATISTICS FOR SOIL SAMPLES
COLLECTED FROM DU 5-1
TANK FARM 5
DATA GAPS INVESTIGATION
NAVSTA NEWPORT, NEWPORT RI

Decision Unit 5-1 Soil Comparison																			
Pre-2010 soil data											2010 soil data								
PARAMETER	**Units**	**FREQ of Detects**	**MIN Detection**		**MAX Detection**		**AVG Detecction**	**LOCATION OF MAX DETECTION**	**EPA RSL RES**	**EPA RSL IND**	**FREQ of Detects**	**MIN Detection**		**MAX Detection**		**AVG Detecction**	**LOCATION OF MAX DETECTION**	Is 2010 Max > Pre-2010 Max.?	Is Pre 2010 Max > EPA Residential RSL?
ACETONE	UG/KG	6/6	21		140		72.8	L-TF5-OW-B4	61000000	630000000	18/32	3.5	J	65	J	21.8	TF5-SB-968-0001	N	N
2-BUTANONE	UG/KG	6/6	3.3	J	20		10.8	L-TF5-OW-B4	28000000	200000000	0/32	NA		NA		NA	NA	N	N
ANTHRACENE	UG/KG	1/6	164	J	164	J	164	TF-OW-DISCHARGE 1	17000000	170000000	7/32	4.5		27		12.9	TF5-SB-967-0001	N	N
BENZO(A)ANTHRACENE	UG/KG	2/6	415		537		476	TF-OW-DISCHARGE 1	150	2100	15/32	5.9		230		36.5	TF5-SB-967-0001	N	Y
BENZO(A)PYRENE	UG/KG	2/6	430		461		446	TF-OW-DISCHARGE 1	15	210	15/32	5.5		300		43	TF5-SB-967-0001	N	Y
BENZO(B)FLUORANTHENE	UG/KG	2/6	409		434		422	TF-OW-DISCHARGE 1	150	2100	16/32	5.2	J	530	J	67.1	TF5-SB-967-0001	Y	Y
BENZO(G,H,I)PERYLENE	UG/KG	1/6	262	J	262	J	262	TF-OW-DISCHARGE 1	1700000	17000000	14/32	4.4		270		39.2	TF5-SB-967-0001	Y	N
BENZO(K)FLUORANTHENE	UG/KG	2/6	356		359		358	TF-OW-DISCHARGE 1	1500	21000	14/32	4.6	J	200	J	30.2	TF5-SB-967-0001	N	N
CHRYSENE	UG/KG	2/6	447		547		497	TF-OW-DISCHARGE 1	15000	210000	16/32	3.8		300		44.5	TF5-SB-967-0001	N	N
FLUORANTHENE	UG/KG	3/6	187	J	1320		734	TF-OW-DISCHARGE 1	2300000	22000000	17/32	5.1		600		76.9	TF5-SB-967-0001	N	N
INDENO(1,2,3-CD)PYRENE	UG/KG	2/6	182	J	304	J	243	TF-OW-DISCHARGE 1	150	2100	14/32	3.1		240	J	33.7	TF5-SB-967-0001	N	Y
PHENANTHRENE	UG/KG	2/6	316	J	879		598	TF-OW-DISCHARGE 1	1700000	17000000	16/32	4.2		200		33.1	TF5-SB-967-0001	N	N
PYRENE	UG/KG	3/6	141	J	1090		586	TF-OW-DISCHARGE 1	1700000	17000000	19/32	3.6		430		54.4	TF5-SB-967-0001	N	N
TOTAL PCB	UG/KG	2/7	16	J	23		19.5	TF5-OW-DISCHARGE15	220	740	1/32	39		39		39	TF5-SB-973-0001	Y	N
ANTIMONY	MG/KG	2/6	0.55	B	0.73	B	0.64	TF5-OW-DISCHARGE15	31	410	0/32	NA		NA		NA	NA	N	N
ARSENIC	MG/KG	6/6	8.5		37.1		20.5	L-TF5-OW-SW5	0.39	1.6	32/32	3.5	J	67.2		23.5	TF5-SB-970-0810	Y	Y
BARIUM	MG/KG	6/6	15.2	B	27.2		21.9	L-TF5-OW-B1-AVG	15000	190000	32/32	1.4	J	23.7		11.7	TF5-SB-967-0001	N	N
BERYLLIUM	MG/KG	6/6	0.29	B	0.45	B	0.352	TF5-OW-DISCHARGE15	160	2000	32/32	0.11	J	0.55	J	0.38	TF5-SB-975-0001	Y	N
CADMIUM	MG/KG	6/6	0.38	B	1.5		0.945	L-TF5-OW-SW5	70	800	31/32	0.1		0.86		0.297	TF5-SB-970-0810	N	N
CHROMIUM	MG/KG	6/6	7.5		14		11.7	L-TF5-OW-B1-AVG	0.29	5.6	32/32	2.3		21.7		9.92	TF5-SB-971-0810	Y	Y
COPPER	MG/KG	6/6	12.6		23.6		17.8	L-TF5-OW-SW5	3100	41000	32/32	4.9		35.8		15.4	TF5-SB-973-0810	Y	N
LEAD	MG/KG	6/6	17.6		57.8		31.2	TF5-OW-DISCHARGE15	400	800	32/32	1.1		33.3	J	11.8	TF5-SB-968-0001	N	N
MANGANESE	MG/KG	6/6	314		433		361	L-TF5-OW-SW5	1800	23000	32/32	95.8	J	4220		486	TF5-SB-970-0810	Y	N
MERCURY	MG/KG	4/6	0.02	B	0.066		0.042	L-TF5-OW-SW9	10	43	4/32	0.012	J	0.12		0.0414	TF5-SB-968-0001	Y	N
NICKEL	MG/KG	6/6	11.6		23.2		19	L-TF5-OW-SW5	1500	20000	32/32	6.8	J	72.5		25.1	TF5-SB-970-0810	Y	N
SELENIUM	MG/KG	3/6	0.32	B	0.4	B	0.36	L-TF5-OW-B1-AVG	390	5100	20/32	2.3		7		3.68	TF5-SB-970-0810	N	N
VANADIUM	MG/KG	6/6	11.9		17.5		14	TF5-OW-DISCHARGE15	390	5200	32/32	0.45	J	25	J	12.1	TF5-SB-971-0810	Y	N
ZINC	MG/KG	6/6	44.1		106		65.6	TF5-OW-DISCHARGE15	23000	310000	32/32	18.4	J	123		55.1	TF5-SB-970-0810	Y	N
TPH	MG/KG	9/9	86		737		227	L-TF5-OW-DISCHARGE-RX	NA	NA	4/8	16	J	35	J	24	TF5-SB-967-0204	N	NA
Dioxins/Furans TEQ	NG/KG	3/3	3.77	J	6.26	J	5.2	L-TF5-OW-B1-AVG	4.5	18	22/22	0.00747		7.54	J	3.28	TF5-SB-976-0204	Y	Y

Notes:
Compounds detected in the 2010 DU 4-1 samples but not found in the pre - 2010 samples: carbon disulfide, isopropylbenzene, toluene, 2-methylnaphthalene, 4-methylphenol, acenaphthene, acenaphthylene, benzaldehyde, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, dibenzo(a,h)anthracene, fluorene, naphthalene, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, Aroclor-1254, aluminum, calcium, cobalt, iron, magnesium, potassium, silver, sodium, thallium.

Abbreviations: UG/KG = micrograms per kilogram, NG/KG = nanograms per kilogram, MG/KG = milligrams per kilogram, J = quantitation approximate, B = detected in blank, TEQ = Toxic Equivalent, NA = Not applicable, EPA = Environmental Protection Agency, RSL = Regional Screening Level, RES = Residential, IND = Industrial.

APPENDIX B

FIELD DOCUMENTATION FORMS

B-1 GROUNDWATER LOG SHEETS DU 4-1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW912
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-27-10
Dev. Method: Surge + Purge
Pump Type: Waterra w/ foot valve

Depth to Bottom (ft.): 7.85'
Static Water Level Before (ft.): 1.10
Static Water Level After (ft.): 1.10
Screen Length (ft.): 3'-6'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: P. Seward
Drilling Co.: Crawford
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

measured WL @ 1301 = 1.18' btoc

Time	~~Estimated Sediment Thickness (Ft.)~~ Flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/m~~ mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0950			1.10'	TD = 7.90 to TOR		began well surge		
1010		discontinued well surge - began purging						
1020	1100		1.70	9.21	7.74	0.400	80	dev 4.5'-6' interval; pw = light tan
1032	1100	10	1.85	9.34	5.87	0.390	29	dev 4.5'-6' interval; pw = clear-colorless
1037	1100	12	1.89	9.34	5.81	0.392	20	dev 4.5'-6' interval; pw = clear-colorless
1044	1100	14	1.90	9.36	5.78	0.390	35	dev 4.5'-6' interval; pw = ~~tan (light)~~ clear
1049	1100	16	1.81	9.37	5.80	0.391	25	dev 4.5'-6' interval; pw = clear-colorless
1057	1100	18.5	1.84	9.38	5.77	0.390	45	dev 3'-4.5' interval; pw = clear-colorless
1102	1100	21.0	1.83	9.41	5.79	0.390	21	dev 3'-4.5' interval; pw = clear-colorless
1107	1100	23.5	1.88	9.41	5.77	0.390	12	dev 3'-4.5' interval; pw = clear-colorless
1112	1100	26	1.88	9.42	5.79	0.390	10	dev 3'-4.5' interval; pw = clear-colorless
			Development complete					

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TF4-MW-913
Site: Tank Farms 4 & 5
Date Installed: 4/20/10
Date Developed: 4/27/10
Dev. Method: Surge + Purge
Pump Type: Waterra

Depth to Bottom (ft.): 12.2'
Static Water Level Before (ft.): 1.99
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Chuck Meyer
Drilling Co.:
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1015		0	1.99	10:36	6.67	0.396	> 2000	
1025		10	6.12	10.18	5.69	0.404	> 2000	
1035		20	6.15	10.16	5.69	0.395	> 2000	
	Disposed purge water							
1110		20	2.5	10.25	5.69	0.400	300	Turned pump down to 1000
1120		22.5	3.47	10.26	5.70	0.400	79.2	
1130		25.0	3.09	10.37	5.80	0.401	31.5	
1140		27.5	3.00	10.61	5.86	0.401	14.0	Moved to mid screen
1150		30.0	3.00	10.54	5.84	0.401	56.4	
1200		32.5	3.00	10.26	5.77	0.401	70.0	
1210		35.0	3.00	10.24	5.78	0.400	58.7	
1220		37.5	3.00	10.24	5.77	0.399	35.2	Moved to upper screen
1230		40.0	3.00	10.26	5.77	0.399	26.8	
1240		42.5	3.00	10.26	5.78	0.399	13.2	Moved back to mid screen
1250		45.0	3.00	10.34	5.79	0.399	47.0	
1300		47.5	3.01	10.35	5.79	0.399	45.7	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW914
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-26-10
Dev. Method: ~~bo~~ Surge & Purge
Pump Type: Waterra

Depth to Bottom (ft.): 18.27'
Static Water Level Before (ft.): 0.85 btoc
Static Water Level After (ft.):
Screen Length (ft.): 6-16
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: P. Seward
Drilling Co.: Crawford
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1025	begun well surge							
1055	completed surging - started well purge/developing							
1100	1600		0.85	9.34	10.49	0.282	offscale	brn ; dev. 14'-16' interval
1105	1600	5 gal	0.85	9.26	5.57	0.283	offscale	brn ; dev 14'-16' interval
1110	1600	10	0.95	9.23	5.68	0.282	140	gray ; dev 14'-16' interval
1115	1600	15	0.95	9.19	5.73	0.281	85	light-gray ; dev 14'-16' interval
1120	1600	20	0.95	9.22	5.77	0.281	85	light gray ; dev 14'-16' interval
	stopped developing to empty purge water.							
1215	1200	resumed well purging						
1225	1200	25	0.85	9.29	5.73	0.278	95	light-gray ; dev. 12-14' interval
1235	1200	30	0.85	9.27	5.83	0.277	32	clear-colorless; dev 12'-14' interval
1245	1000	35	0.85	9.26	5.85	0.277	20	clear-colorless; dev 12'-14' interval
1300	1000	40	0.85	9.36	5.93	0.277	19	clear-colorless; dev. 10'-12' interval
1310	1000	43	0.85	9.36	5.92	0.277	12	clear-colorless; dev 10'-12' interval
1320	1800	50	0.95	9.44	5.94	0.277	13	clear-colorless; dev 10'-12' interval
	stopped developing to empty purge water							
1513	1100	~~begin~~ is resumed developing						
1518	1600	52.5	0.85	9.51	5.99	0.273	85	light-gray ; dev 8'-10' interval
1523	1500	55	0.85	9.43	5.94	0.273	45	clear-colorless ; dev 8-10' interval
1528	1500	57.5	0.85	9.42	5.92	0.273	23	clear-colorless ; dev 8'-10' interval
1533	1500	60	0.85	9.34	5.86	0.273	280	gray ; dev. 6'-8' interval
1543	1500	65	0.85	9.38	5.89	0.273	70	gray ; dev 6'-8' interval
1549	1500	67.5	0.85	9.35	5.89	0.273	28	gray ; dev 6'-8' interval
1554	1500	70	0.85	9.34	5.93	0.273	17	gray ; dev 6'-8' interval
1602	1500	resumed	developing					

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW 914
Site: Tank Farms 4 & 5
Date Installed:
Date Developed:
Dev. Method:
Pump Type:

Depth to Bottom (ft.):
Static Water Level Before (ft.):
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel:
Drilling Co.:
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ Flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1606	1000	72	0.85	9.15	5.92	0.274	65	colorless-cloudy; dev 4'-6' interval
1613	1200	75	0.85	9.11	5.82	0.273	47	clear-colorless; dev 4'-6' interval
1618	1200	77.5	0.85	9.13	5.87	0.273	33	clear-colorless; dev 4'-6' interval

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TF4-MW919
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-27-10
Dev. Method: Surge & Purge
Pump Type: Waterra w/foot valve

Depth to Bottom (ft.): 22.26'
Static Water Level Before (ft.): 5.45
Static Water Level After (ft.):
Screen Length (ft.): 10-20
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: R. Seward
Drilling Co.: Crawford
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated ~~Sediment Thickness (Ft.)~~ Flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1305			5.45	began well surge				
1340				completed well survey				
1347	~800		5.64					
1352	~800		5.88	9.99	6.01	0.304	offscale	dev. 18'-20' interval; pw = gray
1411	~800	~4	5.90	9.92	5.90	0.309	offscale	" ; "
1418	1400		6.11	9.80	5.83	0.309	"	" ; "
1423	1100	7	6.10	9.82	5.81	0.309	"	" ; "
1429	1200	~18.5	6.40	9.75	5.71	0.310	"	" ; "
	lot of "fines" in purge water - will increase flow rate to attempt to remove them							
1444	~2400	20	6.99	9.66	5.77	310	offscale	dev. 18'-20' interval; pw = grey
		stopped to empty purge water						
1525		resumed purge						
1530	~800			9.77	5.71	0.309	400	dev. 18'-20' interval; pw = grey
1535	~1000	23.5	6.15	9.75	5.64	0.309	186	" ; "
1540	1000	25	6.20	9.77	5.69	0.309	75	dev. 18'-20' interval; pw = colorless-turbid
1545	1000	26.5	6.20	9.73	5.69	0.310	60	" ; "
1550	1000	28	6.15	9.68	5.68	0.310	370	dev. 16'-18' interval; pw = grey-turbid
1555	1000	30	6.20	9.71	5.66	0.309	200	" ; "
1600	1000	31.5	6.20	9.75	5.70	0.309	100	" ; pw = colorless-turbid
1605	900	32.5	6.20	9.74	5.75	0.310	51.8	" ; pw = clear-colorless
1610	700	33	6.20	9.73	5.75	0.310	81.5	dev. 14'-16' interval; pw = grey turbid
1615	500	34	6.00	9.70	5.74	0.310	582	" ; grey turbid
1620	1000	35	6.10	9.71	5.73	0.310	279	" ; pw = colorless-turbid
1635	1000	38	6.19	9.78	5.72	0.310	81.5	" ; "
1640	1000	39	6.20	9.72	5.75	0.311	47.1	" ; pw = clear-colorless

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TF-919
Site: Tank Farms 4 & 5
Date Installed:
Date Developed:
Dev. Method:
Pump Type:

Depth to Bottom (ft.):
Static Water Level Before (ft.):
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel:
Drilling Co.:
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ Flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1645	1000	40	6.20	9.78	5.73	0.311	30	dev. 14'-16'; pw = ~~30~~ clear-colorless
1650	"		"	9.75	5.73	0.310	362	dev. 12'-14'; pw = grey turbid
1655	"		"	9.77	5.76	0.310	239	" ; "
1700	"	45	"	9.79	5.77	0.310	113	" ; colorless - turbid
1705	"		"	9.74	5.76	0.311	15.1	" ; clear
1715	"		"	9.79	5.73	0.310	378	dev. 10'-12 interval; grey turbid
1720	"		"	9.77	5.73	0.310	104	" ; grey
1730	"		"	9.76	5.73	0.310	58.1	" ; light grey
1740	"		"	9.77	5.73	0.311	27.8	" ; clear colorless

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW920
Site: Tank Farms 4 & 5
Date Installed: 4/5/10
Date Developed: 4/9/10
Dev. Method: Pump & Surge
Pump Type: Waterra

Depth to Bottom (ft.): 41.72 (Top of PVC)
Static Water Level Before (ft.): 7.97 (Top of PVC)
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: M. Horton
Drilling Co.: Crawford Drilling Services
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated ~~Sediment Thickness (Ft.)~~ ml/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0812	- Begin surge at bottom of screen							
0822	- Pull tubing up 2' to surge							
0832	- Pull tubing up 2' to surge							
0842	- Pull tubing up 2' to surge							
0852	- Pull tubing up 2' to surge							
0904	- Begin purge at Bottom of screen							
0911	250	1.5	15.2	11.08	7.25	455	off scale	
0928		2.5	16.3	10.92	6.49	378	off scale	
0950		3	15.9	11.19	6.52	368	600	Pump stop to fuel up generator
1011		4	16.6	11.48	6.45	404	320	
1033		5	16.6	11.24	6.32	436	130	
1055		6	16.5	11.33	6.23	443	60	
1113		7	18.1	11.29	6.23	440	55	
1125		8	18.1	11.45	6.32	443	50	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW921
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-21-10
Dev. Method: Waterra w/ foot valve
Pump Type: Waterra

Depth to Bottom (ft.): 30.02'
Static Water Level Before (ft.): 14.61
Static Water Level After (ft.): 14.89
Screen Length (ft.): 13.28
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: P. Seward
Drilling Co.: Crawford Drilling
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

fw = foot valve
pw = purge water

Time	~~Estimated Sediment Thickness (Ft.)~~ flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1030	- began well surge							
1050	completed well surge & began pumping							
1050	560		14.90					
1055	~~560~~ 1200	3 gal	~~16~~ 15.80	11.16	5.57	0.247	offscale	fw=6" off bottom; pw=brown
1105	560	5 gal	15.95	11.38	5.32	0.251	700	fw=6" off bottom; pw=~~brown~~ tan
1115	560	6 gal	15.99	11.34	5.54	0.255	600	fw=6" off bottom; pw=tan
1125	560	8 gal	16.08	11.38	5.69	0.258	360	fw=6" off bottom pw=tan
1135	560	10	16.08	11.36	5.42	0.259	360	fw=6" off bottom pw=grey
1145	600	12	16.06	11.42	5.66	0.262	320	fw=6" off bottom pw=grey
1155	600	13	16.06	11.30	6.30	0.262	240	fw=6" off bottom pw=grey
1205	600	15	16.08	11.45	6.45	0.264	260	fw=6" off bottom pw=grey
1215	600	16	16.08	11.69	6.97	0.260	950	fw=2' off bottom pw=tan
1225	600	17	15.90	11.74	6.14	0.263	450	fw=2' off bottom pw=grey
1235	560	18	15.92	11.42	5.07	0.263	290	fw=2' off bottom pw=grey
1245	600	~~19~~ 20	16.08	11.47	5.04	0.265	130	fw=2' off bottom pw=grey
1255	600	22	16.08	11.57	5.89	0.266	120	fw=2' off bottom pw=grey
1305	600	23	16.10	11.51	5.39	0.267	80	fw=2' off bottom pw=clear
1315	600	26	16.10	11.38	5.38	0.267	50	fw=2' off bottom pw=clear
1325	600	~~28~~ 27	16.00	11.69	7.14	0.261	900	fw=4' off bottom pw=tan
1335	600	28	16.06	11.74	6.47	0.263	250	fw=4' off bottom pw=grey
1345	600	30	16.05	11.52	7.08	0.269	130	fw=4' off bottom pw=grey
1405	600	37	16.10	11.27	5.24	0.263	150	fw=6' off bottom pw=grey
1420	600	40	16.10	11.63	5.30	0.255	400	fw=6' off bottom pw=tan
				development complete				

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW922
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-16-10
Dev. Method: ~~4 to 10~~ 85 waterra w/ck valve
Pump Type: waterra

Depth to Bottom (ft.): 30.17
Static Water Level Before (ft.): 5.55
Static Water Level After (ft.): 5.55
Screen Length (ft.): 13-28
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Peter Seward
Drilling Co.: Crawford Drilling Services
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated ~~Sediment Thickness (Ft.)~~ flow rate: mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0910			5.55	initiated well surge				
0935	300		5.55	initiated well purge				
0940	280		7.00	9.13	7.45	0.303	offscale	dark brn.; fv ~ 0.5' off bottom
0950	280		7.60	9.09	6.12	0.303	"	" ; "
1000	280		8.15	9.15	6.02	0.302	"	" ; "
1010	280	0.5	8.31	9.13	5.91	0.300	"	" ; "
1020	280		8.31	9.39	5.75	0.299	"	" ; "
1030	280		8.43	9.53	5.80	0.298	"	" ; "
1040	350		9.20	9.22	5.86	0.297	"	" ; "
1050	280	~1.5	8.61	10.26	5.75	0.297	"	" ; "
1100	280		8.63	10.21	5.90	0.295	"	" ; "
1110	800		11.14	9.89	5.96	0.293	700	tan ; fv ~ 5' "
1120	800	~2.5	11.88	10.04	5.33	0.293	650	" ; "
	shut off pump to allow recharge - recharge rate = 1ft/13min							
1145	1200		6.95					
1148	1200	~4.0	12.00	9.96	6.29	0.290	160	light tan ; fv ~0.5' off bottom
~~1250~~ 1150	300	~5.5	10.50	10.57	5.62	0.336	390	tan ; fv ~2' off bottom
1200	300		11.00	9.92	5.62	0.290	340	tan ; fv ~2' off bottom
1210	300		11.42	9.77	5.60	0.290	330	tan ; fv ~4' off bottom
1220	300		11.80	9.63	5.42	0.289	310	tan ; fv ~4' off bottom
1230	300		11.44	9.78	5.71	0.288	340	tan ; fv ~4' off bottom
		purge complete > 4 hrs						

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	Tank Farms 4 & 5	Project No.:	112G02698 FI.WS
Location:	Naval Station Newport Newport, RI	Personnel:	P. Seward, C. Meyer
Weather Conditions:	Cloudy with rain showers	Measuring Device:	Heron Interface Probe
Tidally Influenced:	Yes ____ No _ X__	Remarks:	May/3/2010

Well Number	Date	Time (hrs)	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)* MP=TOR	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
TF4-MW-914	5/3/10	0950			0.92'			
TF4-MW-921	5/3/10	0955			15.24			
TF4-MW-922	5/3/10	0957			8.70			
TF4-MW-920	5/3/10	1000			9.50			
TF4-MW-913	5/3/10	1010			2.48			
TF4-MW-912	5/3/10	1013			1.19			
TF4-MW-919	5/3/10	1015			5.36			
TF4-48-MW-422	5/3/10	1125			18.45			
TF4-48-MW-409	5/3/10	1127			14.39			
TF4-48-MW-805	5/3/10	1132			16.30			
TF4-48-MW-408	5/3/10	1135			20.34			
TF4-48-MW-910	5/3/10	1138			21.88			
TF4-45-MW-808	5/3/10	1144			21.51			
TF4-45-MW-122	5/3/10	1146			15.93			WL taken from Top of PVC Case
TF4-45-MW-802	5/3/10	1152			21.00			
TF4-45-MW-330	5/3/10	1155			21.00			
TF4-45-MW-050	5/3/10	1200			26.12			
TF4-42-MW-909	5/3/10	1205			24.83			
TF4-42-MW-908	5/3/10	1208			30.30			
TF4-42-MW-907	5/3/10	1210			30.03			
TF4-42-MW-906	5/3/10	1213			30.45			
TF4-42/MW-801	5/3/10	1216			20.04			
TF4-38-MW-418	5/3/10	1221			16.35			
TF4-38-MW-905	5/3/10	1224			19.03			
TF4-38-MW-904	5/3/10	1227			13.89			
TF4-38-MW-605	5/3/10	1230			11.10			
TF4-38-MW-903	5/3/10	1233			10.62			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name:	Tank Farms 4 & 5	Project No.:	112G02698 FI.WS
Location:	Naval Station Newport Newport, RI	Personnel:	P. Seward, C. Meyer
Weather Conditions:	Cloudy cool Low 50's	Measuring Device:	Heron H.O.L
Tidally Influenced:	Yes ____ No _X__	Remarks:	May/3/2010

Well Number	Date	Time (hrs)	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)* MP=TOR	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
TF5-MW-977	5/12/10	1550			14.36			
TF5-MW-979	5/12/10	1552			14.30			
TF5-MW-978	5/12/10	1554			14.87			
TF5-MW-915	5/12/10	1558			4.42			
TF5-MW-916	5/12/10	1601			18.06			
TF5-MW-923	5/12/10	1603			13.06			
TF5-MW-917	5/12/10	1605			11.89			
TF5-MW-924	5/12/10	1607			12.74			
TF5-MW-911	5/12/10	1611			12.14			
TF5-MW-108	5/12/10	1617			9.45			
TF5-MW-200	5/12/10	1619			8.33			
TF5-MW-918	5/12/10	1622			9.61			
TF5-MW-207B	5/12/10	1624			12.45			

* All measurements to the nearest 0.01 foot

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW-912-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of ___
QC: MS/MSD collected here (If applicable)

Sample Method: Bladder Pump Sample Pro
Depth Sampled: 6.35 ft bgs Screen Int. Depth 3-6' ft bgs
Sample Date & Time: 05/12/2010 _____hours _____(Dup Time)
Sampler(s):

Field Instrument Group A / (B) / C / D (refer to site logbook for details)

Sample Analyses:
1. VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0825	1.39	CPM 4	1000	Initiate purge; check drawdown; adjust flow rate							
0830	1.50	CPM 4	200	Fill flow-through cell / monitor parameter readings							
0835	1.50	CPM 4	200	10.00	10.35	0.385	6.12	-23.5	3.90	5.27	yellow TINT No odor or sheen
0840	1.50	CPM 4	200	0.25	10.34	0.384	6.13	-24.1	0.97	2.58	clear no odor or sheen
0845	1.50	CPM 4	200	0.50	10.34	0.384	6.13	-26.9	0.56	2.22	clear no odor or sheen
0850	1.50	CPM 4	200	0.75	10.35	0.383	6.13	-26.9	0.34	1.93	clear no odor or sheen
0855	1.50	CPM 4	200	1.00	10.34	0.386	6.14	-32.0	0.31	5.24	clear no odor or sheen
0900	1.50	CPM 4	200	1.25	10.33	0.386	6.14	-32.7	0.28	2.13	clear no odor or sheen
0905	1.50	CPM 4	200	1.50	10.31	0.386	6.14	-32.9	0.26	1.66	clear no odor or sheen
0910	1.50	CPM 4	200	1.75	10.30	0.386	6.14	-34.3	0.24	1.54	clear no odor or sheen
0915	1.50	CPM 4	200	2.00	10.28	0.385	6.14	-36.5	0.21	2.29	clear no odor or sheen
0920	1.50	CPM 4	200	2.25		0.385	6.14	-38.2	0.17	1.67	
0925	1.50	CPM 4	200	2.50	10.30	0.385	6.14	-39.6	0.15	1.53	
0930	1.50	CPM 4	200	2.75	10.31	0.385	6.15	-40.6	0.13	1.22	
0935	1.50	CPM 4	200	3.00	10.29	0.385	6.15	-41.8	0.13	0.75	
0940	1.50	CPM	200	3.25	10.30	0.385	6.15	-42.8	0.12	0.58	
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: TANK FARMS 4 & 5, CTO 464
Sample ID: TF4-~~060~~ MW913-0510

Tetra Tech NUS Charge No. 112G00963 Page 1 of
QC: DUP02 (If applicable)

Sample Method: Low Stress (flow) with Bladder Pump
Depth Sampled: 9.5 ft bgs Screen Int. Depth 12-7 ft bgs
Sample Date & Time: 5 / 12 /2010 0905 hours 0910 (Dup Time)
Sampler(s): M. Horton
Data Recorded By: M. Horton Signature:
Well Diameter/Total Depth 2" / 12.79 (ft below TOR); Stickup;
Visual Evidence of Sheen (Yes/No);
Olfactory Evidence of Odor (Yes/No);
Weather: Cloudy 50°

PID BZ= 0.0 / W= 0.0 / PW= 0.0 PPM. Field Instrument Group A/B/C/D
Pre-pump insertion WL 2.79 ft btor; Post pump insertion WL 2.73 ft btor
Pump dropped into well 5/12/10 (date) 0815 (time)

Lab Analyses (Circle Applicable):

1. VOC
2. SVOCs
3. PAHs
4. Pesticides/PCBs
5. ExTPH
6. Metals (filtered)
7. Metals (unfiltered)

BZ=Breathing Zone, W=Well, PW=Purge Water

Clock Time 24hr	Water Depth (ft below TOR)	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C 3%	S. Cond. 2 mS/cm 3%	DO mg/L 10% if >2.0	pH (S.U.) +or- 0.5	ORP mV +or- 10	Salinity (ppth)	Turbitity (NTU) +or- 10%	Comments
0827	2.98	CPM4 12/3	200		11.18	423	5.48	6.04	16.2		10	
0832	2.96	PSI ~~20~~ 20	200	0.5	11.14	424	2.17	6.00	14.3		6.9	
0837	3.00				11.13	423	1.14	5.99	13.9		5.8	
0842	3.02			1	11.10	423	0.94	5.98	13.7		4.5	
0847	3.02				11.10	423	0.87	5.98	13.4		2.7	Changed Air Tank
0852	3.00				11.10	424	0.76	5.97	13.7		3.4	
0857	2.96			2.5	11.07	423	0.69	5.97	13.5		3.1	
End Purge Stabilization achieved in accordance w/ work Plan												

TtNUS Form 0009 (modified)

Saturated Screen Volume (gallons)_____. 2in Screen Volume = 0.163 gal/ft or 616 ml per foot.

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW-914-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 1
QC: NA (If applicable)

Sample Method: Sample Pro Bladder Pump
Depth Sampled: 13 ft bgs Screen Int. Depth 5 - 18 ft bgs
Sample Date & Time: 05/11/2010 1055 hours NA (Dup Time)
Sampler(s): P. Seward / C. Meyer

Field Instrument Group (A) B / C / D (refer to site logbook for details)

Sample Analyses:
1. ~~VOC~~ PB (Also refer to separate sample logsheet for gw)

PID = well headspace = 0.0 ppm breathing zone = 0.0 ppm purge water = 0.0 ppm

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 ~~uS/cm~~ mS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0935	1.19	CPM 4	250	Initiate purge; check drawdown; adjust flow rate							
				Fill flow-through cell / monitor parameter readings							
0948	1.21	4CPM	150	~~0.5~~ PB ~1.0	9.96	0.298	6.04	92.4	0.73	47.2	~~cloudy~~ little turbid - colorless
0955	1.21	4CPM	150		10.12	0.291	6.04	89.7	0.61	42.5	colorless - slightly turbid
1000	1.21	4CPM	150		10.14	0.291	6.07	90.2	0.74	33.2	clear - colorless
1005	1.21	4CPM	150		9.99	0.291	6.03	90.3	0.62	31.3	" "
1010	1.21	4CPM	150	~ 2.0	10.03	0.289	6.01	91.7	0.40	28.1	" "
1015	1.21	4CPM	150		10.18	0.290	6.06	89.4	0.38	26.4	" "
1025	1.21	4CPM	150		10.19	0.290	6.06	88.4	0.35	21.4	" "
1030	1.21	4CPM	~~150~~ 175	~ 3.0	10.23	0.289	6.06	89.6	0.31	19	" "
1035	1.21	4CPM	175		10.29	0.289	6.07	88.6	0.28	13	" "
1040	1.21	4CPM	150		10.35	0.289	6.07	88.2	0.28	10	" "
1045	1.21	4CPM	150		10.46	0.289	6.09	87.0	0.27	9.5	" "
1050	1.21	4CPM	150	~4.0	10.49	0.289	6.11	86.3	0.29	8.6	" "
				purge complete							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

- No sheen observed on purge water.
- No olfactory evidence of cont amination.

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 1.63 = 1 screen volume (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: TANK FARMS 4 & 5, CTO 464
Sample ID: _____. TF4-MW919-0510

Tetra Tech NUS Charge No. 112G00963 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Bladder Pump
Depth Sampled: ~~17.5~~ 16 ft bgs Screen Int. Depth ~~12-22~~ 11-21 ft bgs
Sample Date & Time: 5 / 12 /2010 1250 hours _____(Dup Time)
Sampler(s): M. Horton
Data Recorded By: M. Horton Signature: [signature].
Well Diameter/Total Depth 2" / 22.48 (ft below TOR); Stickup_____;
Visual Evidence of Sheen (Yes/No) _____;
Olfactory Evidence of Odor (Yes/No)_____;
Weather: Cloudy 50°

PID BZ= 0.0 / W= 0.0 / PW= 0.0 PPM. Field Instrument Group A/B/C/D
Pre-pump insertion WL 5.48 ft btor; Post pump insertion WL 5.50 ft btor
Pump dropped into well 5/12/10 (date) 1030 (time)

Lab Analyses (Circle Applicable):

1. VOC
2. SVOCs
3. PAHs
4. Pesticides/PCBs
5. ExTPH
6. Metals (filtered)
7. Metals (unfiltered)

BZ=Breathing Zone, W=Well, PW=Purge Water

Clock Time 24hr	Water Depth (ft below TOR)	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C 3%	S. Cond. 2 mS/cm 3%	DO mg/L 10% if >2.0	pH (S.U.) +or- 0.5	ORP mV +or- 10	Salinity (ppth)	Turbitity (NTU) +or- 10%	Comments
1040	5.62	CPM 4 11/4	220		10.86	309	7.45	5.96	38.0		500	
1050	5.53	PSI 50	220		10.41	308	1.14	5.84	33.6		370	
1103	5.63			1.5	10.34	307	0.62	5.83	29.7		270	
1115	5.54		160	2	10.35	307	0.52	5.84	27.0		190	
1127	5.52			2.5	10.37	306	0.42	5.85	26.0		120	
1135	5.60				10.36	306	0.39	5.86	24.9		85	
1145	5.59			3	10.29	305	0.37	5.85	25.2		55	
1155	5.59				10.30	304	0.36	5.85	26.0		40	
1200	5.60				10.31	304	0.35	5.85	25.9		35	
1205	5.60				10.30	304	0.34	5.86	25.8		27	
1210	5.60			4.5	10.35	304	0.34	5.86	26.0		21	
1215	5.61				10.40	304	0.31	5.86	26.3		22	
1220	5.60			5	10.48	303	0.30	5.86	26.7		18	
1225	5.58				10.52	303	0.29	5.87	25.7		16	

TtNUS Form 0009 (modified)

Saturated Screen Volume (gallons)_____. 2in Screen Volume = 0.163 gal/ft or 616 ml per foot.

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: _____

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of ___
QC: _____ (If applicable)

Sample Method: Sample Pro Bladder Pump
Depth Sampled: 37 ft bgs Screen Int. Depth 32-42 ft bgs
Sample Date & Time: 05/11/2010 1205 hours _____(Dup Time)
Sampler(s):

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1.VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1000	10.05	CPM 4	100	Initiate purge; check drawdown; adjust flow rate							
1005	12.05	CPM 4	100	Fill flow-through cell / monitor parameter readings							
1010	12.15	CPM 4	100	0	11.67	0.438	6.19	86.1	2.53	97.3	Lt Brown No odor or sheen
1015	12.15	CPM 4	100		11.72	0.437	6.20	80.7	1.46	75.4	Lt Brown No odor or sheen
1020	12.65	CPM 4	100	0.25	11.61	0.437	6.22	74.6	1.50	63.6	Lt Brown No odor or sheen
1025	12.87	CPM 4	100		11.42	0.437	6.22	72.4	1.41	56.9	Lt Brown No odor or sheen
1030	13.63	CPM 4	100	0.50	11.62	0.437	6.16	79.8	1.04	42.6	Lt Brown No odor or sheen
1035	14.45	CPM 4	100		11.42	0.433	6.20	69.7	0.71	32.3	Lt Brown No odor or sheen
1040	15.75	CPM 4	100	0.75	11.89	0.433	6.20	62.9	0.55	27.9	Lt Brown No odor or sheen
1045	16.00	CPM 4	100		11.99	0.431	6.18	58.1	0.50	24.4	Brown Tint No odor or sheen
1050	15.75	CPM 4	75	1.00	12.32	0.431	6.18	52.9	0.45	24.9	Brown Tint No odor or sheen
1055	15.45	CPM 4	75		12.36	0.430	6.19	52.6	0.46	24.7	Brown Tint No odor or sheen
1100	15.25	CPM 4	75	1.25	12.36	0.430	6.18	51.0	0.45	19.2	Clear No odor or sheen
1105	14.95	CPM 4	75		12.41	0.431	6.18	50.0	0.45	17.0	Clear No odor or sheen
1110	14.90	CPM 4	75	1.50	12.38	0.431	6.19	49.0	0.46	16.6	Clear No odor or sheen
1115	14.90	CPM 4	75		12.46	0.431	6.19	48.3	0.46	15.2	Clear No odor or sheen
1120	14.90	CPM 4	75	1.75	12.36	0.432	6.18	48.2	0.48	13.7	Clear No odor or sheen
1125	14.90	CPM 4	75		12.42	0.433	6.18	48.8	0.48.8	10.43	Clear No odor or sheen
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 1.62 (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW-920-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS
QC: N/A (If applicable) PAGE 2 OF 2

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1130	14.90	CPM 4	75	2.00	12.31	0.434	6.19	46.7	0.48	10.34	Clear No odor or sheen
1135	14.90	CPM 4	75		12.31	0.434	6.18	45.9	0.47	8.68	Clear No odor or sheen
1140	14.90	CPM 4	75	2.25	12.40	0.434	6.19	45.4	0.46	8.05	Clear No odor or sheen
1145	14.90	CPM 4	75		12.46	0.434	6.18	45.1	0.47	7.18	Clear No odor or sheen
1150	14.90	CPM 4	75	2.50	12.50	0.434	6.18	43.2	0.46	5.88	Clear No odor or sheen
1155	14.90	CPM 4	75		12.53	0.434	6.18	42.8	0.46	4.97	Clear No odor or sheen
1200	14.90	CPM 4	75	2.75	12.55	0.434	6.18	42.4	0.45	5.31	Clear No odor or sheen
1205	sample	TF4-MW-920-0510	was	collected.	The	water	was	clear	with	no odor	or sheen
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 1.62' (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW921-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 2
QC: NA (If applicable)

Sample Method: ~~TF4-MW921-0510~~ 35 low flow w/ bladder pump
Depth Sampled: 23 ft bgs Screen Int. Depth 13.28 ft bgs
Sample Date & Time: 05/ 10 /2010 1555 hours NA (Dup Time)
Sampler(s): P. Seward / C. Meyer
initial WL = 15.60 TD = 30.15' below top of pvc

Field Instrument Group (A) B / C / D (refer to site logbook for details)

Sample Analyses:
1. ~~VOC~~ PA (Also refer to separate sample logsheet for gw)

pid = well headspace = 0.5ppm ; breathing zone = 0.0 purge water = 0.0

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 ~~uS/cm~~ mS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1337	15.60	4CPM	150	Initiate purge; check drawdown; adjust flow rate							
1342	15.75	4CPM	90	Fill flow-through cell / monitor parameter readings							
1350	15.75	4CPM	130		13.49	0.276	6.22	231.4	3.16	291	tan.
1405	15.75	4CPM	130		12.02	0.244	5.47	186.0	1.80	127	colorless - cloudy
1410	15.85	4CPM	130		12.10	0.244	5.46	187.0	1.84	147	" "
1415	15.87	4CPM	130		12.10	0.243	5.47	189.3	1.81	155	" "
1420	15.87	4CPM	130		12.14	0.242	5.45	191.8	1.87	141	" "
1425	15.87	4CPM	130	~1.5	12.31	0.242	5.45	190.4	2.16	102.9	" "
1430	15.87	4CPM	130		12.17	0.242	5.44	190.3	1.76	84.7	" "
1440	15.87	4CPM	130		12.09	0.245	5.47	182.7	1.63	65.8	" "
1445	15.87	4CPM	130		12.26	0.248	5.48	180.0	1.67	51.4	" "
1450	15.87	4CPM	130		12.21	0.249	5.51	177.3	1.60	40.4	" "
1455	15.87	4CPM	130		12.17	0.250	5.51	175.4	1.44	36.5	" "
1500	15.87	4CPM	130		12.27	0.250	5.51	176.0	1.36	34.0	" "
1505	15.87	4CPM	130		12.21	0.251	5.53	174.4	1.29	27.5	clear - colorless
1510	15.87	4CPM	130	~3.0	12.10	0.252	5.53	172.8	1.21	24.8	" "
1515	15.87	4CPM	130		12.11	0.252	5.52	173.0	1.18	27.1	" "
1520	15.87	4CPM	130		12.16	0.252	5.52	172.8	1.15	18.6	" "
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

- No sheen observed
- No olfactory evidence of contamination

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 15 x .163 = 2.445 (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW921-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS
QC: NA (If applicable) PAGE 2 OF 2

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 ~~uS/cm~~ mS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1525	15.87	4CPM	130		12.13	0.253	5.53	171.5	1.11	13.7	clear-colorless
1530	15.87	4CPM	130		12.05	0.254	5.54	169.1	0.99	14.6	" "
1535	15.87	4CPM	130	~4.0	12.13	0.255	5.54	168.1	0.94	13.6	" "
1540	15.87	4CPM	130		12.10	0.255	5.55	166.9	0.91	11.6	" "
1545	15.87	4CPM	130		12.12	0.256	5.56	166.3	0.89	10.60	" "
1550	15.87	4CPM	130		12.05	0.256	5.56	166.5	0.85	9.66	" "
			purge complete.								
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW-922

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 2
QC: _____ (If applicable)

Sample Method: Sample Pro bladder pump
Depth Sampled: 25 ft bgs Screen Int. Depth 20-30 ft bgs
Sample Date & Time: 05/10/2010 1545 hours N/A (Dup Time)
Sampler(s):

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1.VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1335	9.04	CPM4	150	Initiate purge; check drawdown; adjust flow rate							
1340	12.78	CPM4	100	Fill flow-through cell / monitor parameter readings							
1345	12.85	CPM4	100	0	11.64	0.292	6.01	49.6	3.62	19.2	Lt Brn Tint No odor or Sheen
1350	12.85	CPM4	100		11.67	0.292	6.13	63.9	0.97	21.3	Lt Brn Tint with no odor or Sheen
1355	12.85	CPM4	100	0.25	11.69	0.292	6.11	50.17	0.73	17.6	
1400	12.85	CPM4	100		11.73	0.292	6.11	52.3	0.54	15.7	
1405	12.85	CPM4	100	0.50	11.75	0.292	6.11	47.9	0.48	14.1	
1410	12.85	CPM4	100		11.76	0.292	6.11	47.5	0.47	13.8	
1415	12.85	CPM4	100	0.75	11.78	0.292	6.15	34.7	0.45	8.42	
1420	12.85	CPM4	100		11.81	0.292	6.06	50.9	0.41	8.84	
1425	12.85	CPM4	100	1.00	11.87	0.293	6.14	42.2	0.42	9.15	
1430	12.85	CPM4	100		11.90	0.293	6.03	50.1	0.40	8.49	
1435	12.85	CPM4	100	1.25	11.93	0.292	5.87	55.4	0.36	8.01	
1440	12.85	CPM4	100		11.95	0.292	5.93	61.9	0.35	7.12	
1445	12.85	CPM4	100	1.50	11.96	0.292	6.01	65.3	0.32	6.25	
1450	12.85	CPM4	100		11.95	0.292	6.14	59.8	0.35	4.14	
1455	12.85	CPM4	100	1.75	12.01	0.295	6.12	91.9	0.36	4.29	
1500	12.85	CPM4	100		12.09	0.295	6.14	63.0	0.35	4.19	
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 1.62 (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

9.04 = WL 30.5 = TD

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF4-MW522-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS
QC: N/A (If applicable) PAGE 2 OF

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1505	12.85	CPM 4	100	2.00	12.89	0.296	6.06	81.4	0.47	4.12	
1510	12.85	CPM 4	100		12.37	0.297	6.14	68.4	0.35	4.49	
1515	12.85	CPM 4	100	2.25	12.09	0.297	6.13	66.1	0.31	3.30	
1520	12.85	CPM 4	100		11.99	0.296	6.14	66.5	0.34	3.97	
1525	12.85	CPM 4	100	2.50	11.99	0.295	6.13	67.3	0.47	4.15	
1530	12.85	CPM 4	1000		11.96	0.295	6.13	68.9	0.33	3.45	
1535	12.85	CPM 4	100	2.75	11.95	0.295	6.12	69.9	0.29	3.33	
1540	12.85	CPM 4	100		11.95	0.296	6.13	67.9	0.31	3.48	
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 1.62 (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: TF4-MW-912-0510
Sample Location: TF4-MW-912
Sampled By: P. Seward/ C. Meyer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/12/10									
Time: 0945									
Method: Bladder Pump	clear	10.30	0.385	0.12	6.15	-42.8	N/A	0.58	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/12/10									
Method: Bladder Pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 7.85									
Static Water Level (WL): 1.39									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 0825									
End Purge (hrs): 0945									
Total Purge Time (min): 70									
Total Vol. Purged (gal): 3.00									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40 ml VOA Vial	6
SVOC	4°C	1 liter Amber Glass	6
Pest/PCB	4°C	1 liter Amber Glass	6
Metals/Mercury	HNO_3 4°C	250 ml Poly	2
Metals	HNO_3 4°C	250 ml Poly	2

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

The water was clear with no odor or sheen observed

Circle if Applicable:

(MS/MSD) Duplicate ID No.:

Signature(s):

[signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF4-MW913-0510

Sample Location: TF4 RUIN 2

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: ~~P. Seward/ C. Meyer~~ M. Horton

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/12/10									
Time: 0905									
Method: GRAB	Colorless	11.07	423	0.69	5.97	13.5	—	31	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/12/10									
Method: low flow Bladder									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 12.79 TOC									
Static Water Level (WL): 2.79									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 0827									
End Purge (hrs): 0857									
Total Purge Time (min): 30									
Total Vol. Purged (gal): 2.5									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SVOC	4°C	2x1L Amber	Yes
Pest PCB	4°C	2x1L Amber	↓
Metals	HNO_3	2x250ml poly	↓
VOC	HCl	2x40ml Vial	↓

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	TF4-MW-DUP02-051210

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF4-MW-914-0510

Sample Location: TF4-MW-914

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: P. Seward / C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/11/10									
Time: 1055									
Method: Bladder Pump									

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/11/10									
Method: Bladder Pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 18.35									
Static Water Level (WL): 1.19									
Well or Sat. Screen Volume(gal): 1.63									
Start Purge (hrs): 0935									
End Purge (hrs): 1050									
Total Purge Time (min):									
Total Vol. Purged (gal): ~4.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SVOC	4°C	2 1 L amber jars	Yes
Pest/PCBs	4°C	2 1L amber jars	Yes
VOC	4°C + HCL	2 40 mL ~~vo~~ vials	Yes
Metals	4°C + HNO_3	2 250mL poly bottles	Yes

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF4-MW919

Sample Location: RUN 2 TF4

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: ~~R. Seward/ C. Meyer~~ M. Horton

C.O.C. No.:

Type of Sample: Grab

[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/12/10	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Time: 1250									
Method: GRAB	Colorless	10.59	303	0.26	5.88	26.7	—	7.9	

PURGE DATA:

Date: 5/12/10	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Method: low flow · Bladder									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 22.48 TOR									
Static Water Level (WL): 5.48									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 1040									
End Purge (hrs): 1245									
Total Purge Time (min): 125									
Total Vol. Purged (gal): 6									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SVOC	4°C	2 X 1L Ambers	Yes
Pest/PCB	4°C	2X 1L Ambers	↓
Metals	HNO_3	2X 250ml Poly	↓
VOC	HCl	2X 40ml Vial	↓

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or ~~no~~ If yes, describe:

Olfactory evidence of contamination - yes or ~~no~~ If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF4-MW-920-0510

Sample Location: TF4-MW-920

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: P. Seward/ C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/11/10 Time: 1205 Method: Sample Pro. Bladder Pump	clear	12.55	0.434	0.45	6.18	42.4	N/A	5.31	

PURGE DATA:

Date: 5/11/10	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Method: Bladder Pump									
Monitor Reading (ppm): 0.1									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 42.00									
Static Water Level (WL): 10.05									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 1010									
End Purge (hrs): 1205									
Total Purge Time (min): 115									
Total Vol. Purged (gal): 3.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCl	40 ml VOA Vial	2
TCL SVOC	4°C	1 Liter Amber Glass	2
TCL Pest/PCB	4°C	1 Liter Amber Glass	2
TAL Metals Mercury	HNO_3 4°C	250 ml Poly	1
TAL Metals	HNO_3 4°C	250 ml Poly	1

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

The water was clear with no odor or sheen present.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF4-MW921-0510

Sample Location: MW921

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: (P. Seward) / C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. ~~(µS/cm)~~ mS/cm	DO (mg/L)	pH (S.U.)	ORP (mv)	~~Salinity (ppth)~~	Turbidity (NTU)	Other
Date: 5-10-10									
Time: 1555									
Method: low flow w/ bladder pump	colorless	12.05	0.256	0.85	5.56	166.5		9.60	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/10/10									
Method: low flow w/ bladder pump									
Monitor Reading (ppm): 0.5									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 30.15									
Static Water Level (WL): 15.60									
Well or Sat. Screen Volume(gal): =	2.445								
Start Purge (hrs): 1337									
End Purge (hrs): 1550									
Total Purge Time (min):									
Total Vol. Purged (gal): ~4.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL & 4°C	2 40 mL amber vials	Yes
SVOC	4°C	2 1L amber jars	Yes
Pest/pcb	4°C	2 1L amber jars	Yes
Metals	HNO_3 & 4°C	2 250 mL poly bottles	Yes

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Peter C M

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TR4-MW-922-0510

Sample Location: T124-MW-922

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: P. Seward/ C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/10/10									
Time: 1545									
Method: Bladder Pump	Clear	11.95	0.296	0.31	6.13	67.9	N/A	3.48	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/10/10									
Method: Bladder Pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 30.52									
Static Water Level (WL): 9.04									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 1335									
End Purge (hrs): 1540									
Total Purge Time (min): 125									
Total Vol. Purged (gal): 3.0									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SVOC	4°C	1 Liter Amber Glass	
Pest/PCB	4°C	1 Liter Amber Glass	
VOC	HCl 4°C	40 ml VOA Vials	
TAL Metals Mercury	HNO_3 4°C	250 ml Poly	
TAL Metals	HNO_3 4°C	250 ml Poly	

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

The water was clear with no odor or sheen observed

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Naval Station Newport Tank Farms 4+5
Sample ID Number: TF4-W-RB01-051010
Project Number: 112G00963
Sampled By: CM/PS
Sample Location:
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[✓] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 5/10/10
Time: 1815
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[✓] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier:
Manufacturer: Thermo Scientific
Order Number:
Lot Number: 0319240
Expiration Date: 03/11

RINSATE INFORMATION (If Applicable):

Media Type: Aqueous
Equipment Used: Bladder Pump
Equipment Type:
[] Dedicated
[✓] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PAH	4°C	1 Liter Amber Glass	YES / NO
ExTPH	4°C	1 Liter Amber Glass	YES / NO
Metals Mercury	HNO_3	250 ml Poly	YES / NO
Metals	HNO_3	250 ml Poly	YES / NO
			YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Naval Station Newport Tank Farms 4 & 5
Sample ID Number: TF4-W-RB01-051010
Project Number: 112G00963
Sampled By: CM PS
Sample Location: TF4-W-RB01-051010
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[✓] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 5/10/10
Time: 1815
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[✓] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: Thermo Scientific
Manufacturer: Thermo Scientific
Order Number:
Lot Number: 0319240
Expiration Date: 03/11

RINSATE INFORMATION (If Applicable):

Media Type:
Equipment Used: Bladder Pump
Equipment Type:
[] Dedicated
[✓] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PAH Ex TPH			YES / NO
			YES / NO
			YES / NO
			YES / NO
			YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Naval Station Newport Teale Farms 4+5
Project Number: 112G00963
Sample Location:
QA Sample Type:

Sample ID Number: TF4-W-TB02-051110
Sampled By: CM
C.O.C. Number:

[✓] Trip Blank
[] Source Water Blank
[] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 5/11/10
Time: 0730
Method: Laboratory Supplied

WATER SOURCE:

[✓] Laboratory Prepared
[] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name:
Supplier:
Manufacturer:
Order Number:
Lot Number:
Expiration Date:

RINSATE INFORMATION (If Applicable):

Media Type:
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40 ml VOA Vial	YES / NO
			YES / NO
			YES / NO
			YES / NO
			YES / NO

OBSERVATIONS / NOTES:

Signature(s):

B-2 GROUNDWATER LOG SHEETS DU 5-1

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TFB-MW-915
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-28-10
Dev. Method: Surge + Purge
Pump Type: Waterra w/ foot valve

Depth to Bottom (ft.): 18.79'
Static Water Level Before (ft.): 4.00'
Static Water Level After (ft.):
Screen Length (ft.): 6'-16'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: S. Seward
Drilling Co.: Crawford
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1230	began well surge							
1305	completed well surge		-					
1310	1500	began well developing						
1320	1400	5	4.32	10.13	9.67	0.368	236	gray - dev. 14'-16' interval
1330	820		4.30	9.94	7.11	0.338	56.5	gray - dev 14'-16' interval
1342	820		4.30	9.85	6.32	0.338	72.5	light gray - dev. 14'-16' interval
1350	820	10	4.30	9.85	6.19	0.337	20.7	clear-colorless - dev 14'-16' interval
1400	820		4.30	9.88	6.00	0.330	82.0	light gray - dev 12'-14' interval
1410	820		4.30	9.91	6.03	0.335	15.4	clear-colorless - dev. 12'-14' interval
1420	820	15	4.30	10.02	6.02	0.335	112	light gray - dev. 10'-12' interval
1435	820		4.30	10.60	5.98	0.337	57.2	clear-colorless - dev. 10'-12' interval
1445	800		4.34	10.06	5.94	0.334	97.9	light gray - dev. 10'-12' interval
1500	800	20	4.36	10.04	5.97	0.333	24.6	clear-colorless - dev. 10'-12' interval
1510	800		4.34	9.96	5.96	0.335	125	light gray - dev. 8'-10' interval
1515	800		4.34	10.07	5.96	0.336	110	light gray - dev. 8'-10' interval
1520	800		4.40	10.09	5.96	0.336	93	light gray - dev. 8'-10' interval
1525	800		4.46	10.11	5.94	0.335	44	clear colorless - dev. 8'-10' interval
1530	800	28	4.39	10.02	5.94	0.335	18.9	clear colorless - dev 8'-10' interval
1535	800		4.34	10.08	5.94	0.336	157	light gray - dev. 6'-8' interval
1540	800	30	4.39	10.11	5.97	0.336	88.4	light gray - dev 6-8' interval
1545	800		4.39	10.20	5.95	0.336	33.2	clear-colorless - dev 6'-8' interval
1550	800	32	4.39	10.09	5.96	0.336	21.4	clear-colorless - dev. 6'-8' interval
			Dev. complete					

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TFS-MW916
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4/28/10 & 4/29/10 & 4/30/10
Dev. Method: Surge & purge
Pump Type: Wattera

Depth to Bottom (ft.): 22.70
Static Water Level Before (ft.): 16.09
Static Water Level After (ft.):
Screen Length (ft.): 10-20
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: P. Seward
Drilling Co.: Crawford
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ flow rate: mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mS/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1315		0	16.09					water was gray w/ no odor or sheen
1330		0.5	19.13					water was gray w/ no odor or sheen well went dry
1345		1.0	19.69					" "
~~1400~~ 1400		1.0	21.69	9.43	5.41	0.257		purged dry at 100 ml/min
	4-29-10		16.71	began purging @ 1052 @ 2500 mls/min				
1055	2500	2.0	well ran dry	10.32	3.45	0.270	911	dev. bottom interval, well ran dry. Purge water was brown & turbid
1147	water level = 19.89'							
1148				13.13	5.29	0.271	229	dev. bottom interval. well ran dry purge water was brown-turbid
		removed ~1000 mls						
1630	~2500		17.90	began purge				
1632	~2500			9.69	6.23	0.294	341	dev. bottom interval. well ran dry purge water brown
	4-30-10							
0820	2000		16.80					
0822		3.0		9.85	4.22	277	314	dev. bottom interval, well ran dry purge water was brown & turbid

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TFS-MW-917
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4/27/10
Dev. Method: Surge + Purge
Pump Type: Waterra

Depth to Bottom (ft.): 12.2
Static Water Level Before (ft.): 11.0
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.):

Responsible Personnel: Chuck Meyer
Drilling Co.: Crawford Drilling Service
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW923
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4-28-10/4-29-10/4-30-10
Dev. Method: Surge & Purge
Pump Type: Waterra w/ foot valve

Depth to Bottom (ft.): ~~31.00~~ 31.00
Static Water Level Before (ft.): 13.10
Static Water Level After (ft.):
Screen Length (ft.): 20-30
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Peter Del
Drilling Co.: Crawford
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ flow rate mls/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
4-28-10 0800	began well surge							
0830	completed well surge							
0845	began developing well - black sludge coming from bottom of well							28'-30' interval
	increased flow rate to 2500 mls/min to attempt to remove sludge							
	@ 0854 well ran dry ~ 4.0 gal purged. Bottom of well is still "soft" - Recharge rate = 1'/10 min							
1610	resumed pumping sludge from bottom of well. Attempted to pump @ the lowest possible							
	purge rate (~250 mls/min) - could not control drawdown.							
1723	completed purge @ 250 mls/min - well ran dry - pulled and additional 6 gallons of water/sludge							
	from the bottom of the well							
4-29-10 0750	began developing		12.77"	heavy silt content		but were able to collect YSI readings		
0800	~200		18.77	11.91	4.87	0.337	offscale	gray; dev. the bottom interval 28-30'
0810	~200	12	23.07	11.31	4.99	0.334	"	" " "
0820	200		23.98	11.49	5.17	0.334	"	" " "
0830	200		25.72	11.83	5.36	0.334	"	" " "
0840	200		27.22	11.97	5.41	0.333	"	" " "
0850	200	15	28.50	12.00	5.41	0.332	"	" " "
0900	200		29.49	12.42	5.47	0.324	"	" " "
0910	200		30.10	12.47	5.47	0.326	"	" " "
0920	200		30.80	12.71	5.50	0.329	"	" " "
0930	200		31.45	12.79	5.56	0.329	"	" " "
0940	200	17.5	31.97	12.87	5.61	0.330	"	" " "
0950	200		32.20	13.35	5.63	0.331	"	" " "
	well ran dry							
1120	2000	begin	purging					dark gray - dev bottom of screen 28-30'

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW923
Site: Tank Farms 4 & 5
Date Installed:
Date Developed:
Dev. Method:
Pump Type:

Depth to Bottom (ft.):
Static Water Level Before (ft.):
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel:
Drilling Co.:
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	~~Estimated Sediment Thickness (Ft.)~~ flow rate ml/min	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1123		20		11.79	4.58	0.325	offscale	dark gray; dev. bottom of screen 28-30'
1607	~2000		13.35					
1612	~2000	23		11.30	5.96	0.346	offscale	" " "
		well ran dry						
4-30-10								
0753	~2000							
0803		26.5	dry	11.74	5.29	0.324	offscale	" " "

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TFS-MW-924
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4/27/10 4/28/10
Dev. Method: Surge + Purge
Pump Type: Wattera

Depth to Bottom (ft.): 18.55
Static Water Level Before (ft.): 12.41 12.47
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Chuck Meyer
Drilling Co.: Crawford Drilling Service
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1540		0	12.41	10.51	6.95	0.364	>2000	Very Turbid Gray
1550		2.5	15.91	10.53	6.05	0.412	657	
1600		5.0	15.71	10.51	5.92	0.411	185	
1610		7.5	15.75	10.43	5.84	0.411	104	
1620		10	15.75	10.44	5.83	0.412	68.1	
1630		12.5	15.80	10.45	5.83	0.412	69.0	
1640		15	15.85	10.58	5.82	0.412	76.0	
1650		17.5	15.90	10.54	5.82	0.412	79.5	
1700		20.0	15.85	10.49	5.85	0.411	72.6	
1710		22.5	15.90	10.44	5.79	0.412	44.9	
water Level 12.47 4/28/10								
0830		0	12.47	10.51	6.69	0.428	>2000	
0840		2.5	15.75	10.54	6.03	0.428	>2000	
0850		5.0	17.45	10.41	5.92	0.429	342	
0900		7.5	16.80	10.48	5.87	0.428	54.8	
0910		10.00	15.00	10.36	5.87	0.428	34.5	
0920		11.00	14.79	10.39	5.88	0.429	25.2	Moved up to Mid Screen
0930		12.50	14.00	10.41	5.86	0.429	189	
0940		14.00	13.87	10.73	5.93	0.430	94.4	
0950		15.00	13.12	10.70	5.84	0.429	69.3	Lowered purge rate 250 ml/min
1000		16.00	13.00	10.65	5.85	0.430	44.3	Moved top to top Screen
1010		17.00	13.09	10.26	5.90	0.430	46.7	Lowered purge rate 150 ml/min
1020		17.50	13.15	10.37	5.90	0.431	184	
1030		18.00	13.17	10.30	5.85	0.431	152	
1040		18.50	13.17	10.21	5.89	0.431	40.0	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: TF5-MW-924
Site: Tank Farms 4 & 5
Date Installed:
Date Developed: 4/27/10 4/28/10
Dev. Method: Surge + Purge
Pump Type: Waterra

Depth to Bottom (ft.): 18.55
Static Water Level Before (ft.): 12.41 12.43
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Chuck Meyer
Drilling Co.: Crawford Drilling Services
Project Name: Data Gaps Investigation, Tank Farms 4 & 5, CTO 464
Project Number: 112G00963-0320

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1050		19.00	13.15	10.20	5.89	0.430	70.1	Lowered flow rate to 150 ml/min Light Brown
1100		19.50	13.14	10.26	5.90	0.430	38.2	odor or sheen present
1110		20.00	13.14	11.46	6.06	0.429	38.4	

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TFS-MW-915-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of ___
QC: N/A (If applicable)

Sample Method: Bladder Pump
Depth Sampled: 13.9 ft bgs Screen Int. Depth 8.90 - 18.9 ft bgs
Sample Date & Time: 05/ 17 /2010 1205 hours N/A (Dup Time)
Sampler(s):
4.46 = WL 18.90 = TD

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1. VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1105	4.46	CPM 4	200	Initiate purge; check drawdown; adjust flow rate							
1110	4.48	CPM 4	200	Fill flow-through cell / monitor parameter readings							
1115	4.48	CPM 4	200	0	13.34	0.311	6.42	-34.2	3.12	185.9	Lt Brown No odor or sheen
1120	4.48	CPM 4	200	0.25	12.40	0.303	6.39	-35.8	1.45	106.3	Lt Brown No odor or sheen
1125	4.48	CPM 4	200	0.50	12.15	0.299	6.38	-39.2	0.89	74.4	Lt Brown No odor or sheen
1130	4.48	CPM 4	200	0.75	11.97	0.297	6.38	-42.2	0.49	44.5	Lt Brown No odor or sheen
1140	4.48	CPM 4	200	1.00	11.87	0.296	6.38	-43.0	0.27	20.9	
1145	4.48	CPM 4	200	1.25	11.99	0.297	6.39	-43.1	0.19	14.1	
1150	4.48	CPM 4	200	1.50	11.87	0.296	6.39	-43.0	0.19	6.5	
1155	4.48	CPM 4	200	1.75	11.86	0.299	6.39	-42.6	0.19	2.7	
1200	4.48	CPM 4	200	2.00	11.87	0.297	6.39	-42.1	0.19	1.2	
1205	Sample TFS-MW-915-0510 was collected										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF5-MW-915-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 1
QC: NA (If applicable)

Sample Method: low flow w/ bladder pump
Depth Sampled: 11 ft bgs Screen Int. Depth 6-16 ft bgs
Sample Date & Time: 05/14/2010 1505 hours NA (Dup Time)
Sampler(s):
initial WL=4.43' btoc TD=18.92' btoc

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1. VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 ~~uS/cm~~ mS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
~~1403~~ 1418	4.45	4CPM	340	Initiate purge; check drawdown; adjust flow rate							
1423	4.52	4CPM	300	Fill flow-through cell / monitor parameter readings							
1428	4.55	4CPM	220		11.69	0.334	5.84	23.0	0.80	29	clear - colorless
1435	4.55	4CPM	200		11.81	0.334	5.91	17.2	0.59	19.8	" "
1440	4.55	4CPM	200		11.74	0.335	5.93	14.4	0.45	17.9	" "
1445	4.55	4CPM	200		11.70	0.334	5.94	13.1	0.40	16.6	" "
1450	4.55	4CPM	200	~2.0	11.61	0.334	5.92	12.2	0.35	8.29	" "
1455	4.55	4CPM	200		11.74	0.334	5.93	10.9	0.33	6.50	"
1500	4.55	4CPM	200	~2.5	11.91	0.333	5.93	9.8	0.33	5.00	" "
				purge complete							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

- no sheen observed on purge water
- no olfactory evidence of contamination

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF5- MW-916-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of ___
QC: _____ (If applicable)

Sample Method: Bladder Pump
Depth Sampled: 21 ft bgs Screen Int. Depth 12.68-22.68 ft bgs
Sample Date & Time: 05/14/2010 _____hours _____(Dup Time)
Sampler(s):

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1.VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1025	18.19	CPM4	50	Initiate purge; check drawdown; adjust flow rate							
1030	18.65	CPM4	50	Fill flow-through cell / monitor parameter readings							
1035	18.80	CPM4	50	0	11.27	0.315	6.34	-15.7	6.89	77.4	Light Brown No odor or Sheen
1040	18.98	CPM4	50		11.23	0.314	6.36	-16.7	6.77	13.4	Clear No odor or Sheen
1045	19.10	CPM4	50		11.26	0.312	6.82	-17.0	6.83	11.8	Clear No odor or Sheen
1050	19.21	CPM4	50	0.25	11.28	0.310	6.40	-17.6	6.79	9.97	Clear No odor or Sheen
1055	19.31	CPM4	50		11.39	0.307	6.40	-18.2	6.54	10.51	Clear No odor or Sheen
1100	19.39	CPM4	50		11.45	0.305	6.40	-19.1	6.42	9.86	Clear No odor or Sheen
1105	19.45	CPM4	50		11.50	0.305	6.40	-19.6	6.37	10.40	Clear No odor or Sheen
1110	19.57	CPM4	50	0.50	11.57	0.305	6.41	-19.7	6.18	9.19	Clear No odor or Sheen
1115	19.63	CPM4	50		11.58	0.304	6.40	-19.8	6.14	8.43	Clear No odor or Sheen
1120	19.63	CPM4	50		11.61	0.304	6.40	-19.8	6.10	7.20	Clear No odor or Sheen
1125	19.67	CPM4	50		11.61	0.301	6.35	-20.1	5.83	3.85	Clear No odor or Sheen
1130	19.75	CPM4	50	0.75	11.60	0.300	6.37	-20.2	5.76	6.59	Clear No odor or Sheen
1135	19.81	CPM4			11.60	0.300	6.34	-20.5	5.51	4.21	Clear No odor or Sheen
1140	19.86	CPM4			11.61	0.301	6.32	-20.1	5.39	7.32	Clear No odor or Sheen
1145	19.91	CPM4	50		11.62	0.301	6.31	-20.1	5.33	4.57	Clear No odor or Sheen
1150	20.00	CPM4	50	1.00	11.68	0.302	6.31	-20.2	5.26	6.26	Clear No odor or Sheen
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF5-MW-916-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS
QC: _____ (If applicable) PAGE 2 OF

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1155	20.01	CPM4	50		11.72	0.303	6.31	-20.3	5.16	4.78	
1200	20.05	CPM4	50		11.74	0.303	6.30	-20.3	5.15	5.84	
1205	20.08	CPM4	50		11.76	0.304	6.29	-20.5	5.04	6.15	
1210	20.11	CPM4	50	1.25	11.77	0.304	6.29	-20.5	4.92	6.39	
1215	20.15	CPM4	50		11.83	0.304	6.29	-20.9	4.83	4.71	
1220	20.18	CPM4	50		11.85	0.305	6.29	-21.5	4.71	6.32	
1225	20.20	CPM4	50	1.50	11.88	0.305	6.29	-21.7	4.67	3.44	
	Due to continuing loss of water level CM will purge the well Dry and come back on Monday and sample										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF5-MW-923-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of ___
QC: N/A (If applicable)

Sample Method: Sample Pro Bladder Pump
Depth Sampled: 27.63 ft bgs Screen Int. Depth 32.63-22.63 ft bgs
Sample Date & Time: 05/13/2010 1725 hours N/A (Dup Time)
Sampler(s):

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1. VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1520	13.13	CPM 4	100	Initiate purge; check drawdown; adjust flow rate							
1525	13.62	CPM 4	100	Fill flow-through cell / monitor parameter readings							
1530	15.31	CPM 4	100	0	13.46	0.341	5.73	31.2	0.40		
1530	14.59	CPM 4	50		13.65	0.341	5.74	30.9	0.58		
1535	14.58	CPM 4	50		13.90	0.341	5.75	31.8	0.56		
1540	14.58	CPM 4	50	0.25	14.02	0.341	5.75	32.0	0.67		
1545	14.58	CPM 4	50		14.03	0.341	5.75	32.4	0.66	28.5	
1550	14.58	CPM 4	50		14.12	0.340	5.76	32.9	0.59	27.6	
1555	14.58	CPM 4	50		14.04	0.340	5.76	32.9	0.54	20.7	
1600	14.60	CPM 4	50	0.50	13.89	0.340	5.77	33.3	0.51		
1605	14.60	CPM 4	50		13.72	0.340	5.77	33.5	0.49		
1610	14.60	CPM 4	50		13.61	0.340	5.77	33.7	0.48		
1615	14.60	CPM 4	50		13.63	0.339	5.77	33.2	0.46	19.5	
1620	14.60	CPM 4	50	0.75	13.72	0.340	5.78	33.1	0.44	18.5	
1625	14.60	CPM 4	50		13.95	0.340	5.78	33.2	0.43	19.2	
1630	14.60	CPM 4	50		13.71	0.341	5.78	33.5	0.44	17.4	
1635	14.60	CPM 4	50		13.64	0.340	5.79	33.3	0.44	19.5	
1640	14.60	CPM 4	50	1.00	13.60	0.340	5.79	35.1	0.44	18.3	
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TFS-MW-923-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS
QC: N/A (If applicable) PAGE 2 OF

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1645	14.60	CPM4	50	1.00	13.51	0.340	5.79	35.4	0.45	16.4	
1650	14.60	CPM4	50		13.63	0.340	5.79	36.8	0.48	16.9	
1655	14.60	CPM4	50		13.20	0.341	5.79	38.7	0.55	17.5	
1700	14.60	CPM4	50	1.25	13.16	0.341	5.79	39.3	0.53	15.4	
1705	14.60	CPM4	50		13.13	0.340	5.79	39.6	0.50	16.3	
1710	14.60	CPM4	50		13.12	0.339	5.79	39.9	0.48	17.3	
1715	14.60	CPM4	50		13.29	0.340	5.80	40.1	0.54	15.6	
1720	14.60	CPM4	50	1.50	12.89	0.341	5.81	40.4	0.53	15.6	
1725	Sample	TFS-	MW-923	was	collected	the	sample	was	tinted	brown	
			with	no	odor	or	sheen	observed			
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TF5-MW-923-051810

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 1
QC: VT (If applicable)

Sample Method: low flow w/ bladder pump
Depth Sampled: ~25 ft bgs Screen Int. Depth 20-30 ft bgs
Sample Date & Time: 05/18 /2010 1130 hours NA (Dup Time)
Sampler(s): P. Seward / C. Meyer
initial water level = 13.10' Total depth = 32.60'

Field Instrument Group (A) / B / C / D (refer to site logbook for details)

Sample Analyses:
1. ~~VOC~~ (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 ~~uS/cm~~ mS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1030	12.60	4CPM	70	Initiate purge; check drawdown; adjust flow rate							
				Fill flow-through cell / monitor parameter readings							
1040	13.45	4CPM	70		12.98	0.344	5.70	62.3	4.69	20.2	clear - colorless
1045	14.11	4CPM	70		12.43	0.342	5.55	69.0	2.59	15.8	"
1050	14.45	4CPM	70		12.70	0.341	5.50	70.4	1.62	14.6	"
1055	14.65	4CPM	70		12.70	0.341	5.49	70.5	1.31	14.2	"
1105	15.15	4CPM	70		12.62	0.340	5.49	68.8	0.90	12.5	"
1110	15.30	4CPM	50		12.67	0.340	5.49	68.6	0.83	10.97	"
1115	15.40	4CPM	50		12.70	0.340	5.48	68.3	0.76	9.41	"
1120	15.43	4CPM	50		12.79	0.340	5.49	67.6	0.73	9.39	"
1125	15.50	4CPM	50	~1.5	12.83	0.340	5.49	67.4	0.70	9.88	"
			purge	complete							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

PID = 0.2 ppm (headspace) 0.0 (breathing zone) 0.0 ppm (purge water)

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TFS-MW-924-0510

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 1
QC: NA (If applicable)

Sample Method: Bladder Pump
Depth Sampled: ~163 ft ~~bgs~~ btoc PS Screen Int. Depth 11-16 ft bgs
Sample Date & Time: 05/14/2010 1130 hours NA (Dup Time)
Sampler(s):

btoc = below top of casing

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1. ~~VOC~~ PS (Also refer to separate sample logsheet for gw)

PID - breathing zone = 0.0 ppm, well headspace = 0.0 ppm; purge water = 0.0 ppm

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 ~~uS/cm~~ mS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0955	12.77	4CPM	150	Initiate purge; check drawdown; adjust flow rate							
1000	13.08	4CPM	100	Fill flow-through cell / monitor parameter readings							
1005	13.20	4CPM	100		11.62	0.449	5.79	149.0	3.74	46.6	clear - colorless
1010	13.20	4CPM	80		11.71	0.450	5.79	147.1	3.62	34	" "
1015	13.10	4CPM	80		11.93	0.450	5.81	142.8	3.69	38	" "
1025	13.08	4CPM	80		11.90	0.450	5.82	141.3	3.56	24	" "
1030	13.12	4CPM	100		11.87	0.450	5.79	142.5	3.58	22	" "
			stopped purging to change N tank								
1040	13.00	4CPM	80		12.13	0.444	5.85	137.9	3.26	27	" "
1045	13.15	4CPM	100		12.25	0.450	5.82	138.7	3.44	18	PS 18 clear - colorless
			stopped purging to talk with base security							PS	
1110	13.15	4CPM	90	~1.0	11.80	0.448	5.84	135.2	3.43	11	clear - colorless
1115	13.15	4CPM	90		11.76	0.448	5.84	135.6	3.47	9.1	" "
1120	13.15	4CPM	90		11.69	0.448	5.84	134.6	3.49	7.1	" "
1125	13.15	4CPM	90	~1.5	11.69	0.448	5.84	134.7	3.47	8.6	" "
				purge complete							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

no sheen observed on purge water
no olfactory evidence of contamination

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons)_____ (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW STRESS" GROUNDWATER

Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RI
Sample ID: TFS-MW-924-051810

Tetra Tech NUS Charge No. 112G02698 FI.WS Page 1 of 1
QC: NA (If applicable)

Sample Method: low flow w/ bladder pump
Depth Sampled: ~13.5 ft bgs Screen Int. Depth 11-16 ft bgs
Sample Date & Time: 05/ 18 /2010 0925 hours NA (Dup Time)
Sampler(s): P. Seward / C. Meyer
initial WL = 12.87' below top of pvc TD = 18.80' below top of pvc

Field Instrument Group A / B / C / D (refer to site logbook for details)

Sample Analyses:
1. VOC (Also refer to separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0835	12.60	4 CPM	150	Initiate purge; check drawdown; adjust flow rate							
0840	12.88	"	120	Fill flow-through cell / monitor parameter readings							
0845	13.20	"	100		12.27	0.425	6.31	180.5	7.14	13.8	clear-colorless
0850	13.10	"	110		12.17	0.425	5.88	187.4	4.19	6.24	"
0855	13.10	"	110		12.14	0.425	5.85	185.1	4.15	5.84	"
0900	13.10	"	110		12.05	0.426	5.83	182.6	~~3.90~~ 3.80	3.11	"
0905	13.10	"	110		12.00	0.426	5.82	181.8	3.88	3.02	"
0910	13.10	"	110	~1	12.01	0.426	5.80	178.2	3.51	3.00	"
0915	13.10	"	110		11.87	0.425	5.80	176.0	3.54	2.91	"
0920	13.10	"	110		11.99	0.426	5.80	177.4	3.63	3.11	"
				purge complete							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 0.1 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009 (modified for Tank Farms 4&5)

Saturated Screen Volume (gallons) 0.815 = 1 saturated screen volume (2" screen = 0.163 gals./ft of depth; 4" =0.653 gals/ft; 6"=1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. microSiemens per cm (same as micromhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

- no sheen observed on purge water
- no olfactory evidence of contamination

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF5-MW-915-0510

Sample Location: MW915

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: (P. Seward/) C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. ~~(uS/cm)~~ mS/cm	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5-14-10									
Time: 1505									
Method: low flow w/ bladder pump	colorless	11.91	0.333	0.33	5.93	9.8	—	5.00	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5-14-10									
Method: low flow w/ bladder pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.~~5 or~~ 2 inch / PVC									
Total Well Depth (TD): 18.92									
Static Water Level (WL): 4.43									
Well or Sat. Screen Volume(gal): ≈1.63									
Start Purge (hrs): 1418									
End Purge (hrs): 1500									
Total Purge Time (min): 38									
Total Vol. Purged (gal): 25									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PAH	4°C	2 x 1 L amber jars	Yes
ETPH	4°C	2 x 1L amber jars	Yes
metals	4°C & HNO_3	2 x 250 mL poly bottles	Yes

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Peter C. H

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF5-MW-915-0510

Sample Location: TF5-MW-915-0510

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: P. Seward/ C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/17/10									
Time: 1205									
Method: Bladder Pump	clear	11.87	0.297	0.19	6.39	-42.1	N/A	1.2	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/17/10									
Method: Bladder Pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 18.90									
Static Water Level (WL): 4.46									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 1105									
End Purge (hrs): 1200									
Total Purge Time (min): 55									
Total Vol. Purged (gal): 2.00									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40 ml VOA Vials	
SVOC	4°C	1 liter Amber Glass	
Pest / PCB	4°C	1 liter Amber Glass	
Metals Mercury	HNO3	250 ml Poly	
Metals	HNO3	250 ml Poly	

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

There were no odors or sheens present during purging or sampling

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF5-MW-~~9~~-0510 916 CM 5/17/10

Sample Location: TF5-MW-~~9~~ CM 5/17/10

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: P. Seward/ C. Meyer 916

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

Date: 5/17/10	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Time: 1330									
Method: Peristaltic Pump	Clear								

PURGE DATA:

Date: 5/14/10	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Method: Bladder Pump									
Monitor Reading (ppm): 0.2									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 22.68									
Static Water Level (WL): 18.19									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 1020									
End Purge (hrs): 1225									
Total Purge Time (min): 125									
Total Vol. Purged (gal): 1.50									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40 ml VOA Vial	2
SVOC	4°C	1 Liter Amber Glass	2
Pest/PCB	4°C	1 Liter Amber Glass	2
TAL Metals/Mercury	HNO_3	250 ml Poly	1
TAL Metals	HNO_3	250 ml Poly	1
Dissolved Metals Mercury	HNO_3	250 ml Poly	1
Dissolved Metals	HNO_3	250 ml Poly	1

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Due to Low recovery no parameters were collected. Three Liters were collected monday additional bottlewere collected on Tuesday. Well purged dry on Friday. Water Level on Monday was 18.43 Feet

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Chuck Meyer

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: TF5-MW-923-0510
Sample Location: TF5-MW-923
Sampled By: P. Seward/ C. Meyer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (uS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5/13/10									
Time: 1725									
Method: Bladder Pump	Clear	12.89	0.1341	0.53	5.81	40.4	N/A	15.6	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/13/10									
Method: Bladder Pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 32.63									
Static Water Level (WL): 13.13									
Well or Sat. Screen Volume(gal):									
Start Purge (hrs): 1520									
End Purge (hrs): 1720									
Total Purge Time (min): 120									
Total Vol. Purged (gal): 1.50									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PAH	4°C	1 Liter Amber Glass	2
ExTPH	4°C	1 Liter Amber Glass	2
Metals/Mercury	HNO_3	250 ml Poly	1
Metals	HNO_3	250 ml Poly	1
Dissolved Metals Mercury	HNO_3	250 ml Poly	1
Dissolved Metals	HNO_3	250 ml Poly	1

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

There were no odors or sheens observed during purging or sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF5-MW-923-051810

Sample Location: MW923

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: (P. Seward) / C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. mS/cm ~~(uS/cm)~~	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5-18-10 Time: 1130 Method: low flow w/ bladder pump	colorless	12.83	0.340	0.70	5.49	67.4	—	9.88	

PURGE DATA:

Date: 5-18-10 low flow w/ bladder pump	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Method:									
Monitor Reading (ppm): 0.2									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 32.60'									
Static Water Level (WL): 13.10'									
Well or Sat. Screen Volume(gal): ≈ 1.63									
Start Purge (hrs): 1030									
End Purge (hrs): 1125									
Total Purge Time (min):									
Total Vol. Purged (gal): ~1.5									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	4°C + HCL	2 x 1L amber vials	Yes
SVOC	4°C	2 x 1L amber jars	Yes
Pest/PCB	4°C	2 x 1L amber jars	Yes

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or (no) If yes, describe:

Olfactory evidence of contamination - yes or (no) If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Tank Farms 4 & 5 Naval Station Newport Newport, RII

Sample ID No.: TF5-MW-924-0510

Sample Location: TF5-MW-924

Project No.: 112G02698 FI.WS

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sampled By: P. Seward / C. Meyer

C.O.C. No.:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. ~~(us/cm)~~ mS/cm	DO (mg/L)	pH (S.U.)	ORP (mv)	Salinity (ppth)	Turbidity (NTU)	Other
Date: 5-14-10									
Time: 1130									
Method: low flow w/ bladder pump	colorless	11.69	0.448	3.47	5.84	134.7	—	8.6	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Salinity	Turbidity	Other
Date: 5/14/10									
Method: Bladder Pump									
Monitor Reading (ppm): 0.0									
Well Casing Diameter & Material	See separate low-flow purge data sheet								
Type: 1.5 or 2 inch / PVC									
Total Well Depth (TD): 18.80									
Static Water Level (WL): 12.77									
Well or Sat. Screen Volume(gal): ~0.8									
Start Purge (hrs): 0955									
End Purge (hrs): 1125									
Total Purge Time (min):									
Total Vol. Purged (gal): ~1.5									

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PAH	4°C	2 × 1L amber bottles	Yes
ExTPH	4°C	2 × 1L amber bottles	Yes
metals	4°C + HNO_3	2 × 250 mL poly bottles	Yes

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Peter C. [illegible]

B-3 SURFACE WATER/SEDIMENT LOG SHEETS DU 4-1

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-901-0310
Sample Location: SW901
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ µS/cm	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/18/10								
Time: 1130								
Depth: 4"	Colorless	6.52	284	9.08	0.97	11.96	0.14	71.7
Method: Direct Dip Grab								

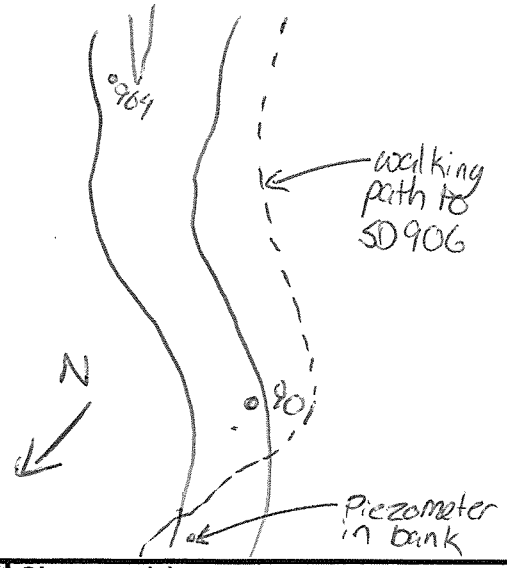
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	6 ~~3~~ - 40mL vials	Yes / No
SVOCs/~~PAH~~	4° C	6 ~~2~~ - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	3 ~~2~~ - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	6 ~~2~~ - ~~500mL~~ 250 poly	Yes / No

OBSERVATIONS / NOTES:

Triple volume collected for lab QC
stream with rocky bottom, sample collected from South edge, about 10' wide 1' deep at deepest part
- location located about 50' down stream from SD904 on the South stream bank
- Piezometer & white PVC located about 15' down stream on opposite side

MAP:



Circle if Applicable:

MS/MSD: Lab QC

Duplicate ID No.: NA

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-901-0006
Sample Location: SD901
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/18/10 Time: 1200 Method: Hand Auger Grab Monitor Reading (ppm): NA	0-6	Grey / Brown	Sandy silt with fine to coarse grained sand, some gravel up to 1"

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

lab QC collected triple volume, double volume for Dioxins
- located at crossing point in stream where there is a piezometer on the opposite bank and 4" PVC in the stream
- about 50' downstream from SD904

MAP:

see SW collection log sheet

Circle if Applicable:

MS/MSD
lab QC

Duplicate ID No.:

Signature(s):

Michael Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-902-0310
Sample Location: SW902
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/18/10 Time: 1240 Depth: Direct Dip Grab Method:	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ uS/cm	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
	Colorless	6.66	287	10.42	2.1	10.94	0.14	42.8

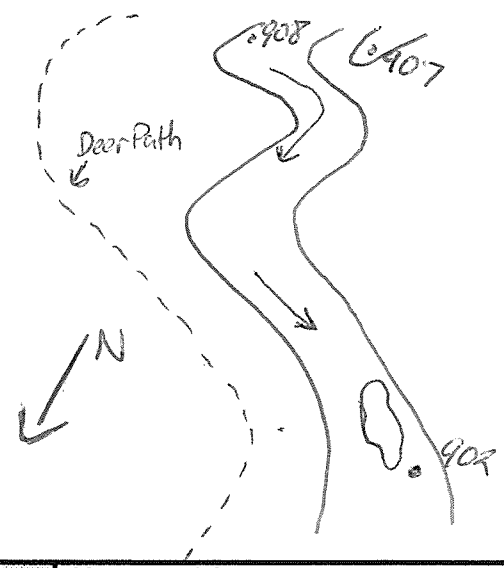
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	~~23~~ 40mL vials	Yes / No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	12 - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - ~~500~~mL poly	Yes / No
		~~250~~	

OBSERVATIONS / NOTES:

-located about 50' downstream from SD908 & 907 on the west bank depositional area

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
	TF4-SW-DUP02-031810

Signature(s): [signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-902-0006
Sample Location: SD902
Sampled By: M. Hoiten
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/18/10 Time: 1255 Method: Hand Auger Grab Monitor Reading (ppm): N.A	0-6"	Brown	Silty medium grained sand, well graded

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	~~YES~~ / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
~~Pesticides / PCBs~~	~~4° C~~	~~1 - 4oz wide mouth jar~~	~~YES / NO~~	
TAL Metals	4° C	1 - 4oz wide mouth jar	~~YES~~ / NO	
~~PAHs~~ Dioxins	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

collected Dup 02
- located about 50' downstream from SW/SD 908 & 907 on the west Bank Depositional Area

MAP:

- See SW collection form

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	TF4-SD-DUP02-031810

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-~~904~~ 903 0310
Sample Location: SW901
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ uS/cm	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/18/10								
Time: 1345								
Depth: ~~@~~ 3"	colorless	7.57	347	14.90	~~10.72~~ 0.00	10.72	0.17	-44.6
Method: Direct Dip Grab								

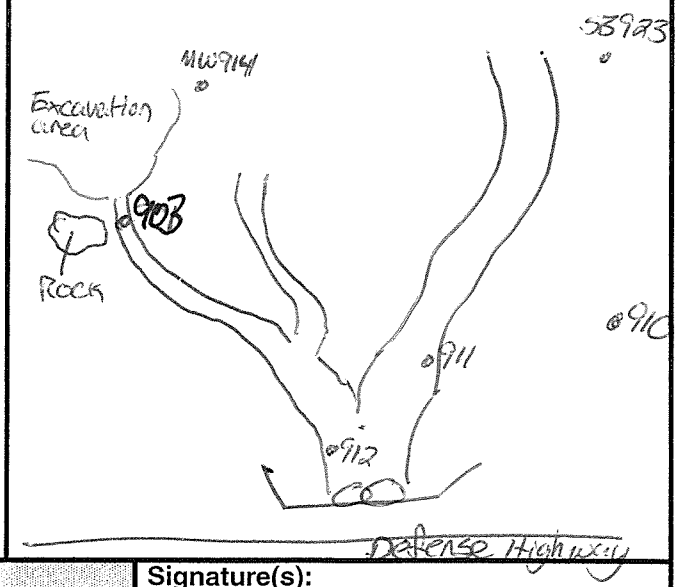
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 ~~3~~ - 40mL vials	Yes / No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	1 ~~2~~ - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - ~~500~~ 250 mL poly	Yes / No

OBSERVATIONS / NOTES:

- located in the discharge stream from the excavation area near Ruin 1

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-~~904~~ 903-0006
Sample Location: SD904
Sampled By: M. Herton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/18/10 Time: 1400 Method: Hand Auger Grab Monitor Reading (ppm): NA	0-6	Brown / Black	Silt with trace fine sand and some organics

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

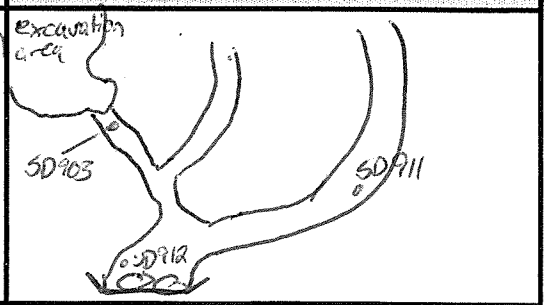
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's ~~TOC, pH~~	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	~~4° C~~	~~1 - 4oz wide mouth jar~~	~~YES / NO~~	
TAL Metals, TOC, pH	4° C	1 - 4oz wide mouth jar	YES / NO	
~~PAHs~~ Dioxins	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

- located in the discharge stream from the excavation area near Ruin 1

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Michael Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-904-0310
Sample Location: SW904
Sampled By: M. Heston
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ uS/cm	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/17/10								
Time: 0905								
Depth: 6"	colorless	6.28	290	5.77	1.3	12.01	0.14	61.7
Method: Direct Dip Grab								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 - 40mL vials	Yes / No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	1 - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - ~~500~~ 250mL poly	Yes / No

OBSERVATIONS / NOTES:

- located about 50' downstream from SW/SD 905 - there is a small island in the stream, sample was collected near the downstream point on the north side of the island

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Mark A Heston

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[x] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-904-0006
Sample Location: SD904
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/18/10 Time: 0920 Method: Hand Auger Grab Monitor Reading (ppm): NA	0-6"	GREY/BROWN	Fine to coarse grained silty sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

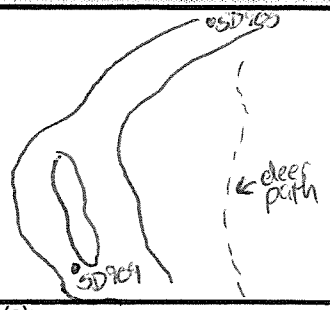
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 ~~- 2oz jar %moisture~~	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	~~4° C~~	~~1 - 4oz wide mouth jar~~	YES / NO	
TAL Metals, TOC, pH	4° C	1 - 4oz wide mouth jar	YES / NO	
~~PAHs~~	4° C	1 - 4oz wide mouth jar	YES / NO	
DIOXINS	4°C	4oz	Yes	

OBSERVATIONS / NOTES:

- located about 50' downstream from SW/SD 905 - there is a small island in the stream, sample was collected near the downstream point on the north side of the island

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A. Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-905-0310
Sample Location: SW905
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/18/10								
Time: 0935								
Depth: 6''	Colorless	6.29	285	6.16	1.6	11.92	0.14	68.7
Method: Direct Dip Grab								

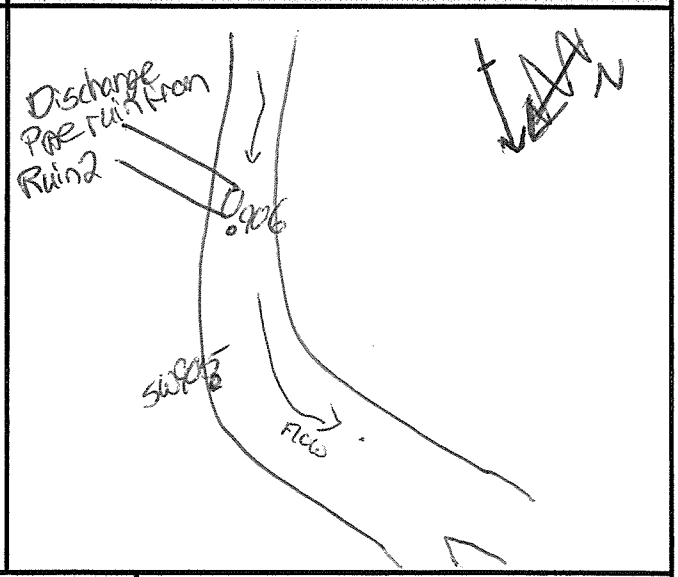
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 ~~3~~ - 40mL vials	Yes / No
SVOCs/PAH	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	1 ~~2~~ - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - ~~500~~ 250mL poly	Yes / No

OBSERVATIONS / NOTES:

- located about 15-20' downstream from what appears to be a concrete discharge pipe from Ruin 2

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): M. Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-905-0006
Sample Location: SD905
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/19/10 Time: 0945 Method: Hand Auger Grab Monitor Reading (ppm): NA	0-6"	Brown/Grey	Silty sand with fine to medium grained sand and some roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

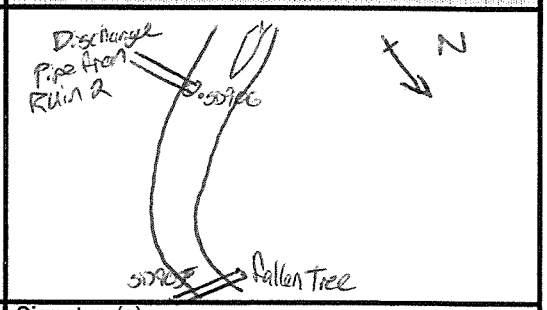
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	~~4° C~~	~~1 - 4oz wide mouth jar~~	~~YES / NO~~	
TAL Metals, TOC, pH	4° C	1 - 4oz wide mouth jar	YES / NO	
~~PAHs~~	~~4° C~~	~~1 - 4oz wide mouth jar~~	~~YES / NO~~	
DIOXINS	4°C	4oz	Yes	

OBSERVATIONS / NOTES:

- Located about 15-20' down stream from a discharge pipe that could potentially come from Ruin 2

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): M. Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-906-0310
Sample Location: SW906
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/18/10								
Time: ~~0945~~ 1005								
Depth: 8"	Colorless	6.02	291	6.78	1.5	11.57	0.14	54.5
Method: Direct Dip Grab								

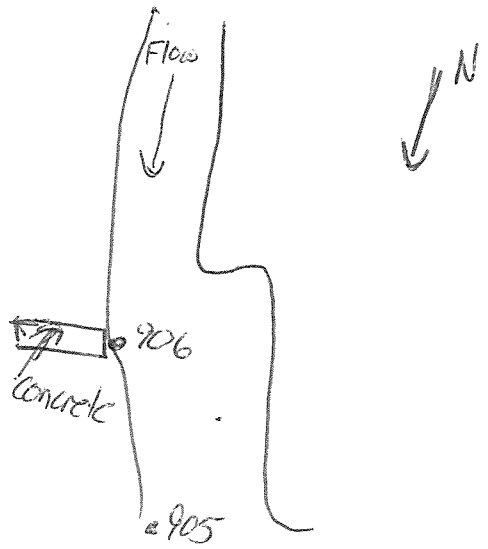
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	Yes / No
SVOCs/PAH	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	2 - 1L Ambers	Yes / No
Metals (filtered & unfiltered)	HNO3	2 - 500mL poly	Yes / No

OBSERVATIONS / NOTES:

- located at the end of a concrete structure that could potentially be a discharge pipe from Ruin 2 - located about 15-20' upstream from SW/SD 905

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): M. Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-906-0006
Sample Location: SD906
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/18/10 Time: 1020 Method: Hand Auger Grab Monitor Reading (ppm): NA	0-6'	Red / Grey	Silt with trace fine sand and trace gravel up to 1". lots of organic material red iron staining top 2-3"

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

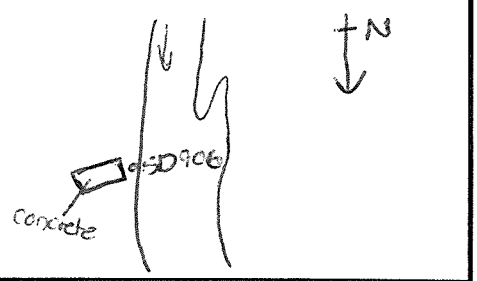
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

located at the end of a concrete structure that could potentially be a discharge pipe from Ruin 2 - located about 15-20' upstream from SW/SD 905

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-907
Sample Location: SW-907
Sampled By: MR/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/17/10	Color (Visual)	pH (S.U.)	S.C. µS/cm (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Time: 1340								
Depth: 8"	Clear	6.16	232	6.36		11.48	0.11	124.9
Method: Direct Fill								

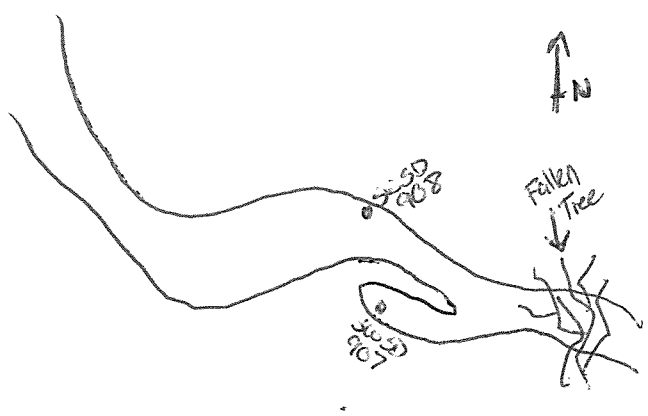
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	Yes / No
SVOCs/PAH	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	2 - 1L Ambers	Yes / No
Metals (filtered & unfiltered)	HNO3	2 - 500mL poly	Yes / No

OBSERVATIONS / NOTES:

- located on south stream bank on the far side of the Pennisula

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Mark A. Morton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-907
Sample Location: SD-907
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 3/17/10	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1345	0-6"	Dark Brown	Silty Sand with rust Brown mottles
Method: Disposable Trowel			
Monitor Reading (ppm): N/A			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

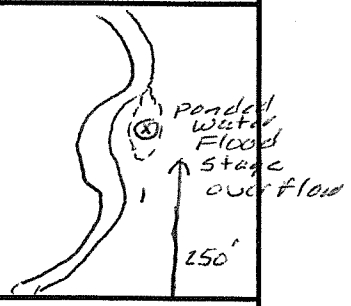
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) NO	
SVOC's / Pest/PCB/% moist	4° C	1 - 8oz wide mouth jar	(YES) NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES (NO)	
TAL Metals Mercury TOC pH	4° C	1 - 4oz wide mouth jar	(YES) NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES (NO)	
Dioxins	4oC	1 - 4oz Wide Mouth	(Yes) No	

OBSERVATIONS / NOTES:

Surface water and sediment collected from this location, The sample was collected from a ponded water area at flood stage flow through

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): [signature]

Burma Road

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-909
Sample Location: SW-908
Sampled By: MH/CW
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ µS/cm	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/17/10								
Time: 1315								
Depth: 4"								
Method: Direct Fill	Clear	6.59	276	9.62	1.5	10.99	0.13	66.2

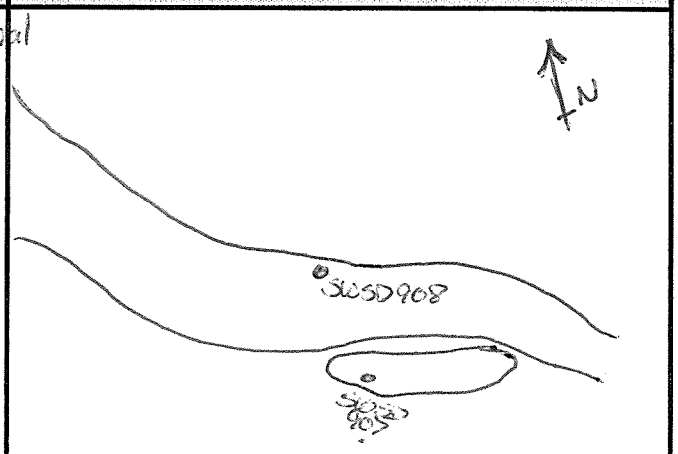
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	(Yes) No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - 250mL poly	(Yes) No

OBSERVATIONS / NOTES:

- located on North stream bank in depositional area

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
N.A	N.A

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-908
Sample Location: SD-908
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/17/10 Time: 1330 Method: Disposable Trowel Monitor Reading (ppm): N/A	0-6	Dark Brown	Silty Sand with gravel and some organic material

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

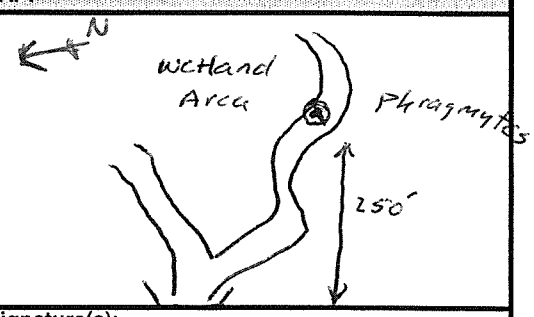
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest / PCB / % moist	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals Mercury TOC pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
Dioxins	4°C	1-4oz wide Mouth	(Yes) / No	

OBSERVATIONS / NOTES:

water and sediment collected from this location
- located on North stream bank in depositional area

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Burma Road
Mike Hof

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-909
Sample Location: SD-909
Sampled By: MH/LW
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/17/10 Time: 1305 Method: Disposable Trowel Monitor Reading (ppm): N/A	0 - 6"	Dark Brown	Silty very fine grained sand with rust brown mottles

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

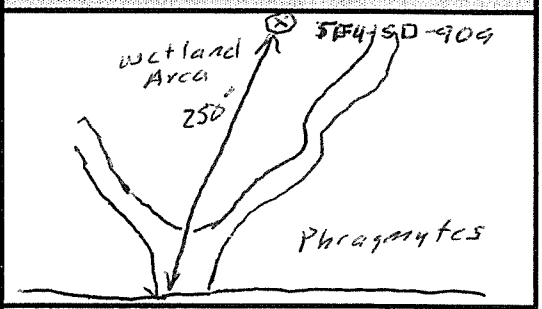
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

No surface water was collected at this location Due to No Flow conditions Ponded water from the recient rains was noted to 1/2" but no Flow
- Collected in wetland area at spot agreed to by EPA

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Boima Road

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-910
Sample Location: TF4-SD-910
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/17/10 Time: 1235 Method: Disposable Trowel Monitor Reading (ppm): N/A	0-6"	Brown	Sandy silt with root matural from phragmytes

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

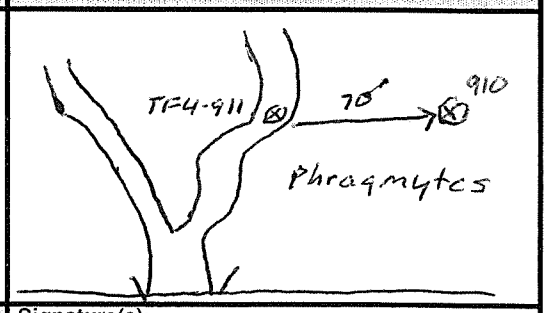
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest / PCB	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals Mercury TOC, pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
Dioxins	4°C	1 4oz Wide Mouth	(YES) / NO	

OBSERVATIONS / NOTES:

No surface water was collected from this location. Minimal depth 1/2" so surface water was not collected
- Collected deep into stand of Phragmetes

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Burma Road
Michael R Nestor

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SW-911
Sample Location: SW-911
Sampled By: MH/CW
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/17/10 Time: 1145 Depth: 4" Method: Direct Fill	Clear	7.01	281	7.73		11.93	0.13	57

SAMPLE COLLECTION INFORMATION:

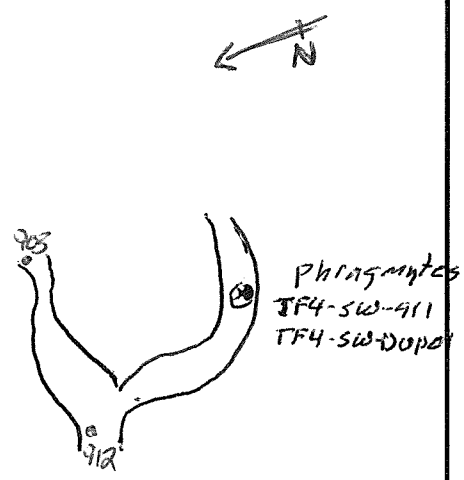
Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	4 - 40mL vials	Yes / No
SVOCs/~~PAH~~	4° C	4 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	2 - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - 500mL poly	Yes / No

OBSERVATIONS / NOTES:

Duplicate sample TF4-SW-DUP01-031710 with an assigned time of 0000

-Collected on South bank of stream just in front of the stand of common Reed

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	Assigned time = 0000 TF4-SW-DUP01-031710

Signature(s): [signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD-911
Sample Location: SD-911
Sampled By:
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/17/10 Time: 1200 Method: Disposable Trowel Monitor Reading (ppm): N/A	0-6"	Brown to Dk Brown	Sandy Silt with some organic material gravel medium coarse sand trace silt

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

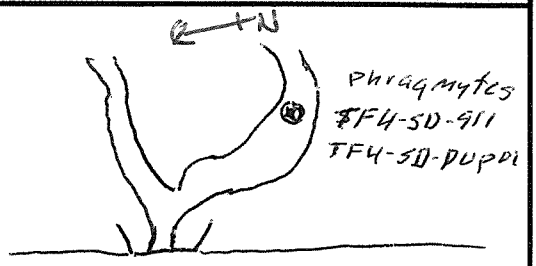
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	6 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest / PCB % moist	4° C	2 - 8oz wide mouth jar	(YES) NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES (NO)	
TAL Metals Mercury TOC pH	4° C	2 - 4oz wide mouth jar	(YES) NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES (NO)	
Dioxins	4°C	2 4oz wide mouth	(Yes) / No	

OBSERVATIONS / NOTES:

The sample was collected as a DUP and was a brown sandy silt to Dark brown to black sandy gravel with trace silt and organic material a 4"
- located on the south Bank of the stream in front of the stand of common reed

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.: Assigned Time = 0000
NA	TF4-SD-DUP01-031710

Signature(s): Michael J. [illegible]

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.:
Sample Location: TF4-~~SD~~ SW 912-0006
Sampled By: M. Horton
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/17/10								
Time: ~~HH~~ 1120								
Depth: 6"	colorless	7.01	297	7.50	3.2	13.28	0.11	
Method: Direct Dip Grab								

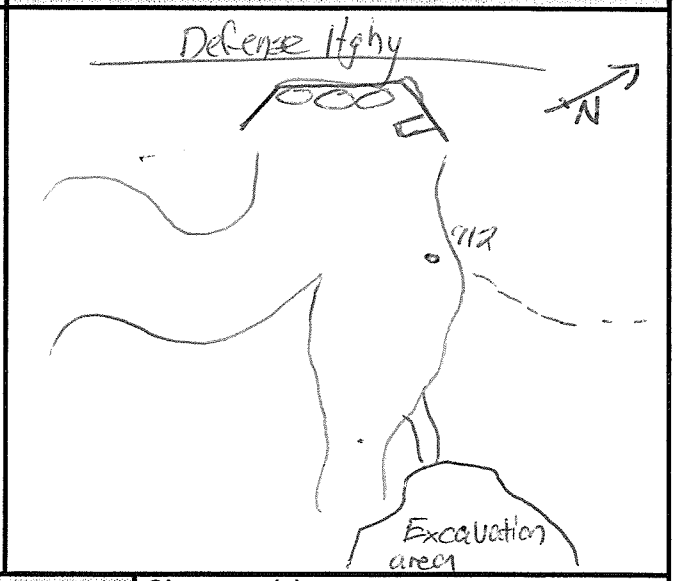
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 ~~3~~ - 40mL vials	Yes / No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	1 ~~2~~ - 1L Ambers	Yes / No
Metals (~~filtered~~ & unfiltered)	HNO3	1 ~~2~~ - 500mL poly	Yes / No

OBSERVATIONS / NOTES:

- location Believed to be where pipe from ruin 1 discharged - There was some water running into stream at location from upgradient

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael L Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF4-SD912-0006
Sample Location: SD 912
Sampled By: MHCM
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/17/10 Time: 1130 Method: Hand Auger Grab Monitor Reading (ppm): NA	0-6"	Light Brown	Sandy silt with fine grained sand and trace gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

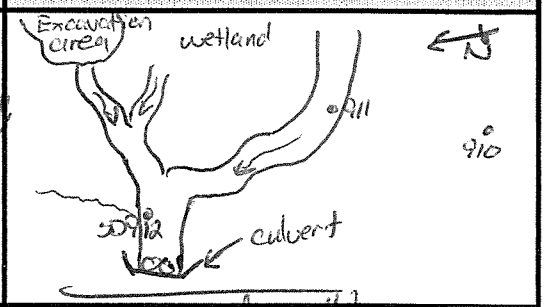
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

- located about 25' upstream from culvert that discharges under defense highway
- located in area where discharge pipe from Ruin 1 potentially was

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Defense Hwy

Michael J. Hutter

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NS Newport TF45
Sample ID Number: TF4-SO-RB01-031710
Project Number: CTO 464
Sampled By: MH/CM
Sample Location: NS Newport TF4
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[✓] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 3/17/10
Time: 1610
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[✓] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade H_2O
Supplier: Thermo Scientific
Manufacturer: NERL Diagnostics LLC
Order Number:
Lot Number: 0108120
Expiration Date: 1/2011

RINSATE INFORMATION (If Applicable):

Media Type: Sediment
Equipment Used: Hand Auger
Equipment Type:
[] Dedicated
[✓] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles	Cool 4°C & HCl	2) 40 ml VOA Vials	(YES) / NO
Semivolatiles	Cool 4°C	2) 1 Liter Amber Glass	(YES) / NO
Pesticide / PCB	Cool 4°C	1) 1 Liter Amber Glass	(YES) / NO
Metals	Cool 4°C & HNO_3	2) 250 ml Poly	(YES) / NO
Cyanide	Cool 4°C & NaOH		YES / (NO)
Dioxins	Cool 4°C	2) 1 Liter Amber Glass	(YES) / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NS Newport TF 4+5
Project Number:
Sample Location:
QA Sample Type:

Sample ID Number: TF4-SD-FB01-031710
Sampled By: MH/CM
C.O.C. Number:

[] Trip Blank
[] Source Water Blank
[] Rinsate Blank
[✓] Other Blank Field Blank

SAMPLING DATA:

Date: 3/17/10
Time: 1630
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[✓] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade H_2O
Supplier: Thermo Scientific
Manufacturer: NERL Diagnostics LLC
Order Number:
Lot Number: 0109120
Expiration Date: 1/2011

RINSATE INFORMATION: (If Applicable):

Media Type: ~~Sediment~~ N/A CM 3/17/10
Equipment Used: ~~Hand Auger~~ N/A CM 03/17/10
Equipment Type:
[] Dedicated
[✓] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles	Cool 4°C & HCl	2 40 ml VOA Vials	(YES) NO
Semivolatiles	Cool 4°C	2 1 Liter Amber Glass	(YES) NO
Pesticide / PCB	Cool 4°C	1 1 Liter Amber Glass	(YES) NO
Metals / Mercury	Cool 4°C & HNO_3	250 ml Poly	(YES) NO
Cyanide	Cool 4°C & NaOH		YES (NO)

OBSERVATIONS / NOTES:

Signature(s):

B-4 SURFACE WATER/SEDIMENT LOG SHEETS DU 5-1

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-913
Sample Location: SD-913
Sampled By: MH/CW
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:			
Time: 1445	0-6"	Dark Brown	Silty Fine grained sand trace organics orange mottles No water collected
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

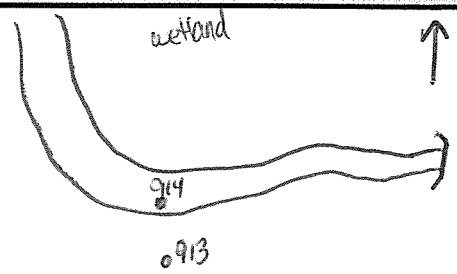
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

Soil was a dark brown silty sand with orange mottles potential wetland soils. No surface water was available at this location
- located south of the stream on a wet land area

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TFS-SW-914
Sample Location: SW-914
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/16/10								
Time: 1500								
Depth: 6"								
Method: Direct Fill	Clear	6.55	294	9.45	0.35	11.11	0.14	110.4

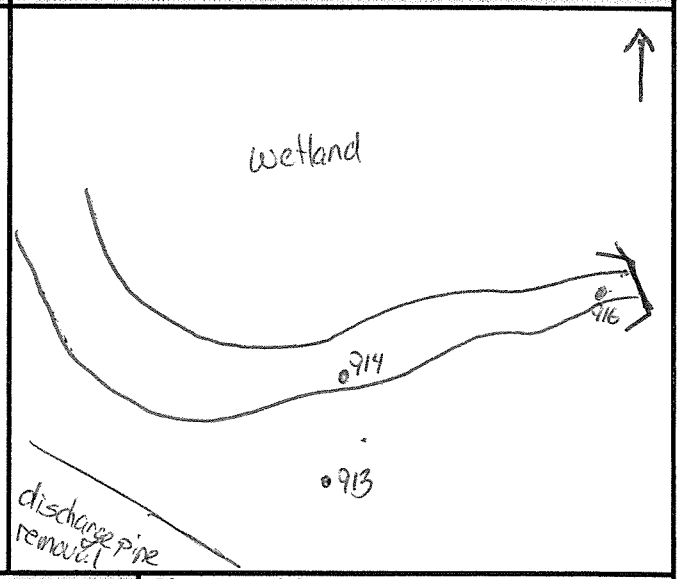
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 - 40mL vials	(Yes) No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - 500mL poly	(Yes) No

OBSERVATIONS / NOTES:

- located on the south bank of the stream

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael R Hart

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-914
Sample Location: SD-914
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 3/16/10	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1510	0-6"	Black to Lt Brown	Silty Fine grained sand to medium coarse sand trace silt
Method: Disposable Trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

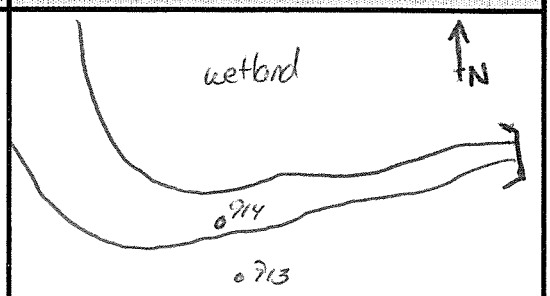
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

- located on South Bank of stream

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael Q Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SW-915
Sample Location: SW-915
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/16/10 Time: 1530 Depth: 1" Method: Bottle Transfer	Lt Brown	5.98	347	8.77	45	4.93	0.17	187.7

SAMPLE COLLECTION INFORMATION:

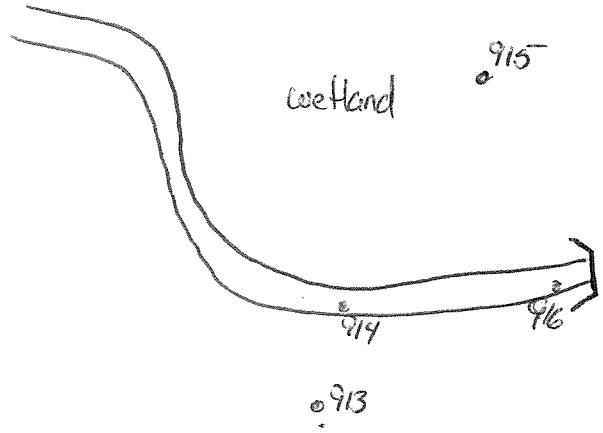
Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	Yes / No
SVOCs/PAH	4° C	2 - 1L Ambers	Yes / No
Pesticides/PCBs	4° C	2 - 1L Ambers	Yes / No
Metals (filtered & unfiltered)	HNO3	2 - 500mL poly	Yes / No

OBSERVATIONS / NOTES:

For sample had to transfer from 1 liter amber to bottle-ware due to low flow conditions

- located in wetland/mud flat area north of culvert that runs beneath the road

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael R Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: FFS-SD-915
Sample Location: SD-915
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1535 Method: Disposable Trowel Monitor Reading (ppm):	0-6"	Dark Brown	Medium Coarse sandy silt with trace organics and pebbles

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

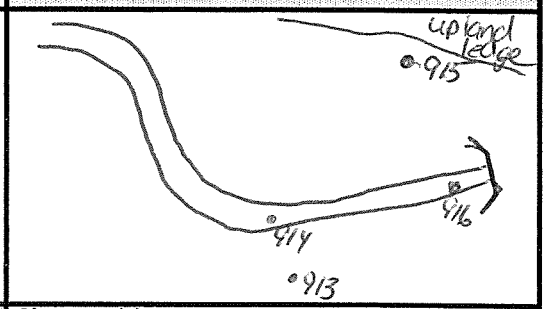
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

- Located in the mudflat / wetland area North of the discharge of the culvert that flows beneath the road

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael R Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SW-916
Sample Location: SW-916
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/16/10 Time: 1559 Depth: 6" Method: Direct Fill	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
	Clear	6.51	295	9.14	10	11.01	0.14	125.7

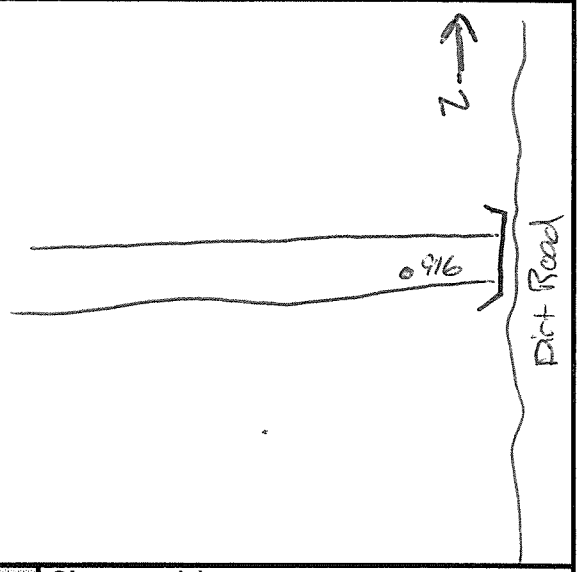
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	(Yes) No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - 500mL poly	(Yes) No

OBSERVATIONS / NOTES:

The sample was collected 15 feet downstream of the discharge pipes that flow beneath the road

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael D Notor

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-916
Sample Location: SD-916
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1605 Method: Hand Auger Monitor Reading (ppm):	0-6"	Dark Brown to Gray	Silty Fine grained sand to Medium to Coarse sand

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

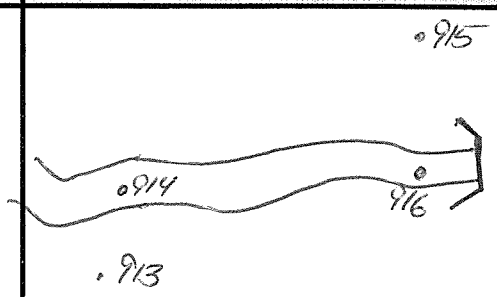
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	

OBSERVATIONS / NOTES:

- sample collected 10-15' downstream from the discharge of the culverts that flow beneath the dirt road

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TFS-SW-917
Sample Location: SW-917
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ µS/cm	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/16/10 Time: 1300 Depth: 2" Method: Direct Fill	Clear	6.15	304	11.25	5.3	11.43	0.15	201.5

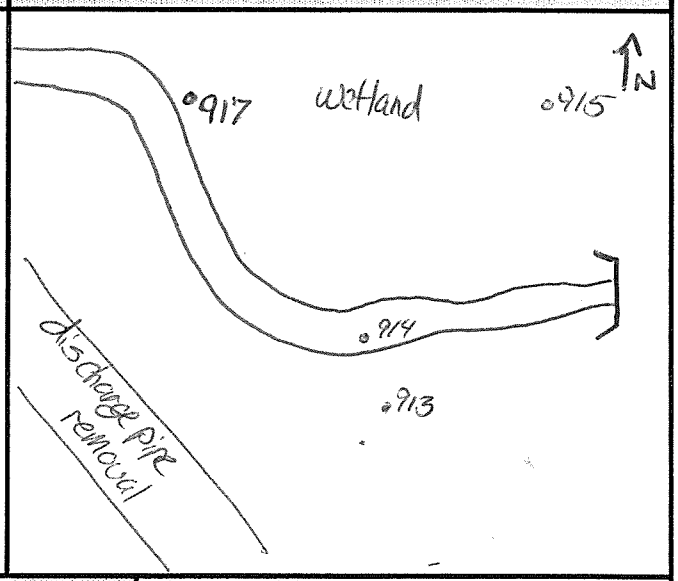
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	9 - 40mL vials	(Yes) / No
SVOCs/PAH	4° C	6 - 1L Ambers	(Yes) / No
Pesticides/PCBs	4° C	3 - 1L Ambers	(Yes) / No
Metals (~~filtered~~ & unfiltered)	HNO3	3 - 250mL poly	(Yes) / No

OBSERVATIONS / NOTES:

MS/MSD Sample Collected at this location
- Collect in center of small stream that drains some of the water from the wetland/mud flat into the main stream channel

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	NA

Signature(s): Michael D. Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD917-0006
Sample Location: 917
Sampled By: MH CM
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1315 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Dark Brown	Silty Fine grained sand with organic material

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

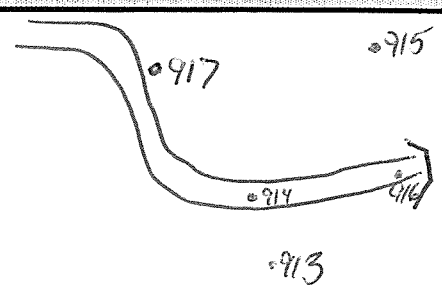
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest/PCB %moist	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals TOC, pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	

OBSERVATIONS / NOTES:

MS/MSD was collected at this location - located in small stream that drains some of the water from the wetland/mud flat into the main stream channel

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	NA

Signature(s): Michael A Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SW-918
Sample Location: SW-918
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/16/10 Time: 1400	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Depth: 2" Method: Direct Pour	Lt Brown	5.79	295	12.97	50.7	2.42	0.14	131.0

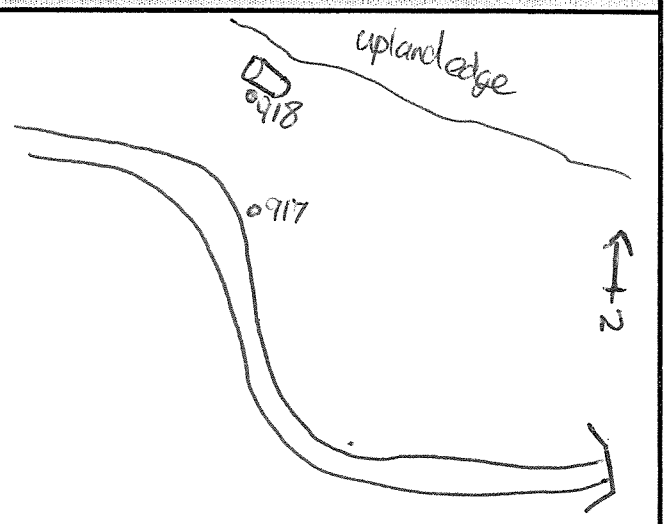
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	(Yes) No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - 250mL poly	(Yes) No

OBSERVATIONS / NOTES:

The sample was collected through amber glass bottle due to low flow of water on flood plain
- collected in the wetland / mudflat area where a piece of a 55 gal drum was located

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A. Heck

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-918
Sample Location: SD-918
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1345 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0 - 6"	Dark Brown	Silty Fine grained sand with organic Material

COMPOSITE SAMPLE DATA:

	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

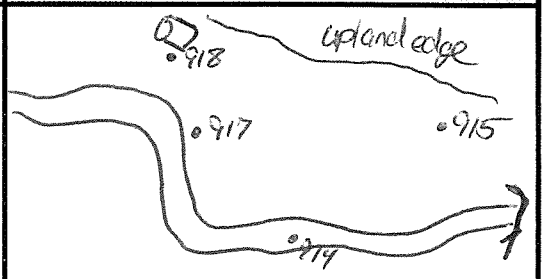
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest PCB %moist	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals TOC, pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
Dioxins	4°C	1-4oz wide mouth	(Yes) / No	

OBSERVATIONS / NOTES:

- Sample collected in the wetland / mudflat area next to a piece of a 55 gal Drum

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SW-919
Sample Location: SW-919
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/16/10	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Time: 1105								
Depth: 4"								
Method: Direct Fill	clear	5.95	227	8.50	2.35	10.01	0.11	103.9

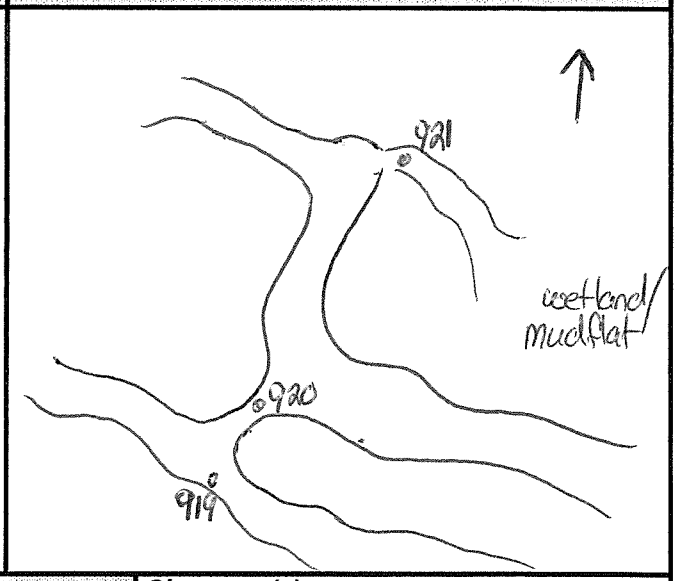
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 - 40mL vials	(Yes) No
SVOCs/PAH	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) No
Metals (filtered & unfiltered)	HNO3	1 - 250mL poly	(Yes) No

OBSERVATIONS / NOTES:

- located next to south bank of part of the stream where the water was almost not moving at all
- Iron staining observed in sediment
- slight sheen (possibly organic) observed along edge of stream in this area

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A. Nortons

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-919
Sample Location: SD-919
Sampled By: MH CM
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1120 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Dark Brown	Sandy Silt with organic

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

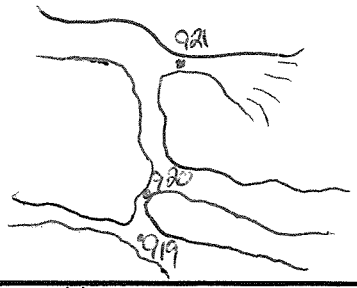
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's Pest PCB	4° C	1 - 8oz wide mouth jar	YES / NO	
~~Pesticides / PCBs~~	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals pH TOC	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	
Dioxin			Yes	

OBSERVATIONS / NOTES:

- located next to south bank of part of the stream where water was almost not moving at all
- Iron staining observed in sediment
- Slight sheen (possibly organic) observed on the water near stream edge

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael J Hooton

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SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TFS-SW-920
Sample Location: SW-920
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/16/10 Time: 1040 Depth: 4" Method: Direct Fill	Clear	6.35	295	8.05	1.72	11.34	0.14	114.2

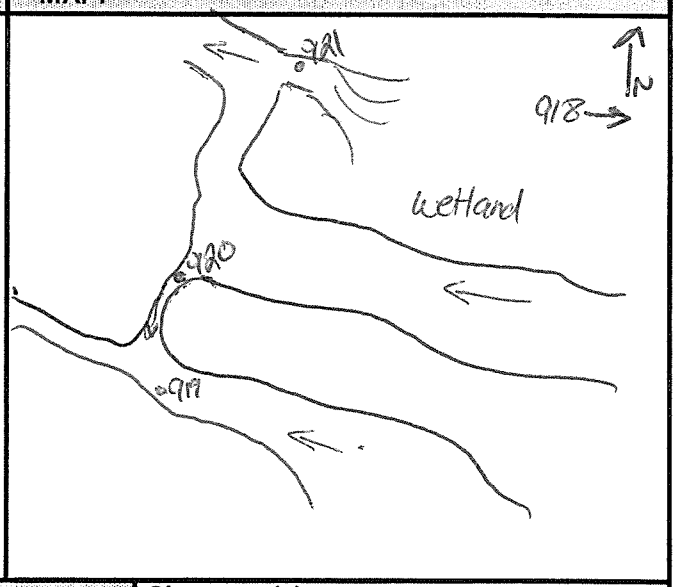
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 - 40mL vials	(Yes) / No
SVOCs/PAH	4° C	2 - 1L Ambers	(Yes) / No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) / No
Metals (filtered & ~~unfiltered~~)	HNO3	1 - 250mL poly	(Yes) / No

OBSERVATIONS / NOTES:

Located in small channel where water discharges into area of 919

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TFS-SD-920
Sample Location: SD-920
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1100 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Brown to Dk Brown	Fine medium sand with organic material to silt

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

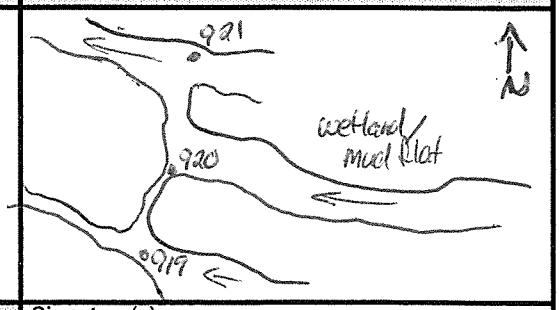
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's Pest/PCB % moist	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals / TOC, pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
Dioxins	4°C	1 4oz wide mouth	(Yes) / NO	

OBSERVATIONS / NOTES:

located in small channel that discharges into the area of 919

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other: _____
[ ] QA Sample Type: _____

Sample ID No.: TF5-SW-921
Sample Location: SW-921
Sampled By: MH/CM
C.O.C. No.: _____

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/06/10	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Time: 1025								
Depth: 8-10"								
Method: Direct fill	Clear	6.42	293	7.97	1.5	11.65	0.14	145.9

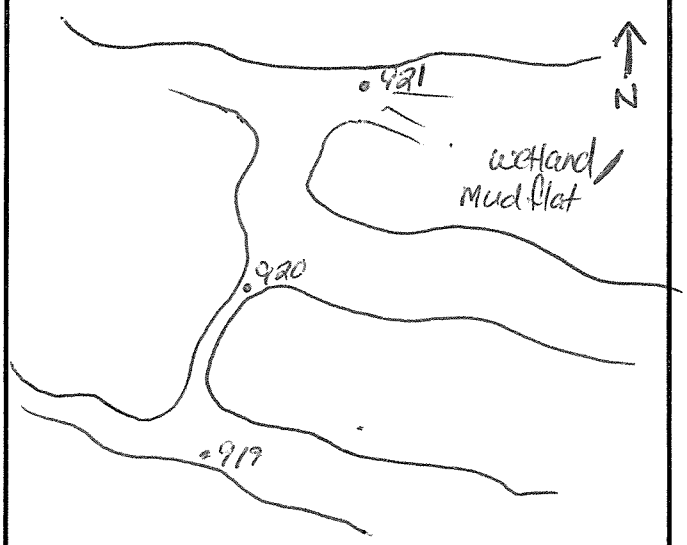
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 - 40mL vials	(Yes) No
SVOCs/~~PAH~~	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	2 - 1L Ambers	(Yes) No
Metals (~~filtered~~ & unfiltered)	HNO3	2 - 500mL poly	(Yes) No

OBSERVATIONS / NOTES:

located in channel where water from mud flat / wetland discharges into main stream channel

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A Hodson

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-921
Sample Location: SD-921
Sampled By: MH/LM
C.O.C. No.:

Type of Sample:
[ ] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 1035 Method: Disposable Trowel Monitor Reading (ppm):	0-6"	Brown to Dk Brown	Fine medium sand with organics to silt

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

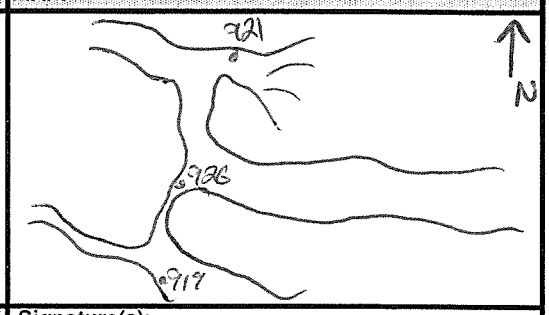
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	YES / NO	
SVOC's / Pest/PCB % moist	4° C	1 - 8oz wide mouth jar	YES / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / NO	
TAL Metals TOC, pH	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / NO	
Dioxins	4°C	1 4oz wide mouth	Yes / No	

OBSERVATIONS / NOTES:

- located in channel where water from wetland/mud flat area discharges into main stream channel

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TFS-SW-922
Sample Location: SW-922
Sampled By: MH CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. ~~(mS/cm)~~ µS/cm	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/16/10								
Time: 0805								
Depth: 4"								
Method: Direct Pour	Clear	6.82	287	6.36	0.75	12.26	0.14	40.0

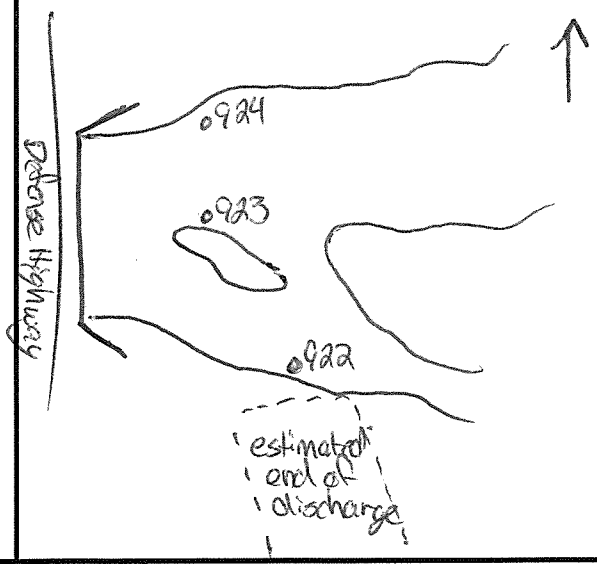
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	2 - 40mL vials	(Yes) No
SVOCs/PAH	4° C	2 - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	1 2 - 1L Ambers	(Yes) No
Metals ~~(filtered~~ & unfiltered)	HNO3	1 2 - 500mL poly	(Yes) No

OBSERVATIONS / NOTES:

- located on south bank of stream 10-15' away from culvert that flows beneath Defense Highway

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael A Horton

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-922
Sample Location: SD-922
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 0820 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Brown	Silty Fine grained sand some organic material

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

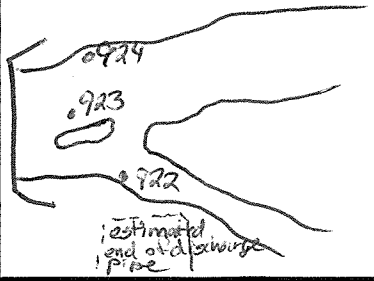
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest PCB	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals TOC, pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
DIOXINS	4°C	1-4oz wide mouth	(YES) / NO	

OBSERVATIONS / NOTES:

- Located on the south bank of the stream about 10-15' upstream from the culvert that flows beneath defense highway
- At spot where discharge from OWS is believed to be

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s): Michael R Horton

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

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Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF-SW-923
Sample Location: SW-923
Sampled By: MH/LM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 3/16/10	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Time: 0835								
Depth: 9"	clear	6.57	291	6.56	2.28	12.28	0.14	122.1
Method: Direct Fill								

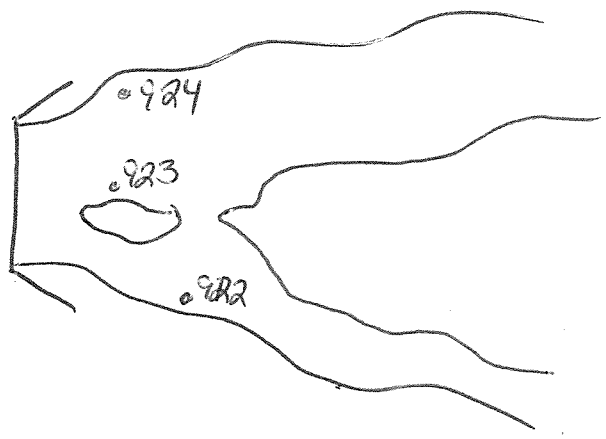
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	4 ~~2~~ - 40mL vials	(Yes) No
SVOCs/~~PAH~~	4° C	4 ~~2~~ - 1L Ambers	(Yes) No
Pesticides/PCBs	4° C	1 - 1L Ambers	(Yes) No
Metals (~~filtered~~ & unfiltered)	HNO3	1 - ~~250~~ 500mL poly	(Yes) No

OBSERVATIONS / NOTES:

- sample collected next to sandy depositional area in the center of the stream channel about 10-15' upstream from the culvert that flows beneath Defense Highway

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	TF5-DUP-01-1200

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-923
Sample Location: SD-923
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 0900 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Brown To Lt Brown	Sandy silt with organic material roots leaves

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

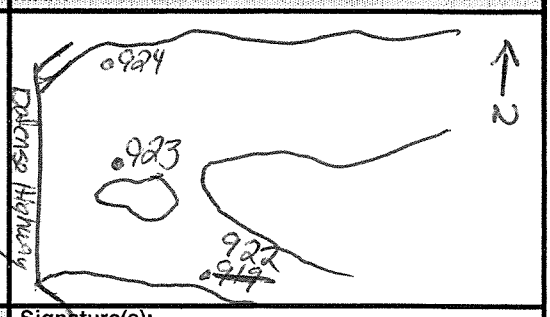
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's / Pest / PCB % moist	4° C	1 - 8oz wide mouth jar	(YES) / NO	
Pesticides / PCBs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
TAL Metals TOC pH	4° C	1 - 4oz wide mouth jar	(YES) / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
Dioxins	4°C	1 - 4oz wide mouth	(Yes) / NO	

OBSERVATIONS / NOTES:

- collected on small depositional area in center of stream channel about 10-15' upstream from the culvert that runs beneath Defense Highway

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	TF5-DUP-01 = 1205

Signature(s): Michael Hoover

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[✓] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TFS-SW-924
Sample Location: SW-924
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. µS/cm ~~(mS/cm)~~	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Date: 3/16/10 Time: 0930 Depth: 6" Method: Direct Pour	Clear	6.31	293	6.92	0.97	11.03	0.14	63.8

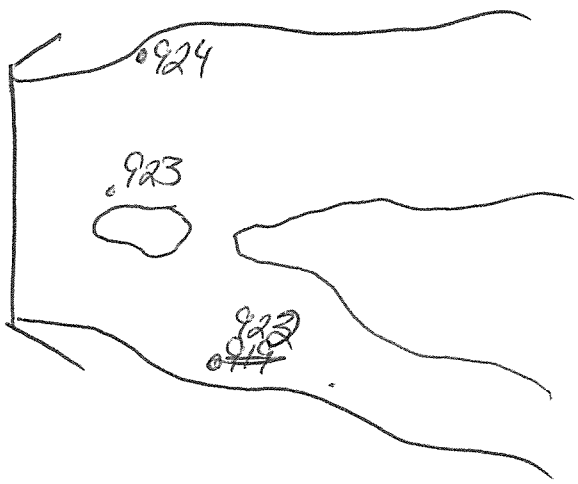
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOA's	HCl	3 - 40mL vials	(Yes) / No
SVOCs/PAH	4° C	2 - 1L Ambers	(Yes) / No
Pesticides/PCBs	4° C	1 - 1L Ambers	(Yes) / No
Metals (~~filtered~~ & unfiltered)	HNO3	1 - 500mL poly	(Yes) / No

OBSERVATIONS / NOTES:

- Located on North bank of stream about 10' upstream from culvert that flows beneath the Defense Highway

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
NA	NA

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: TANK FARMS 4 & 5, CTO 464
Project No.: 112G00963

[ ] Surface Soil
[ ] Subsurface Soil
[✓] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: TF5-SD-924
Sample Location: SD-924
Sampled By: MH/CM
C.O.C. No.:

Type of Sample:
[✓] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 3/16/10 Time: 0940 Method: Disposable Trowel Monitor Reading (ppm): 0.0	0-6"	Brown	Silty Fine grained sand with organic material

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

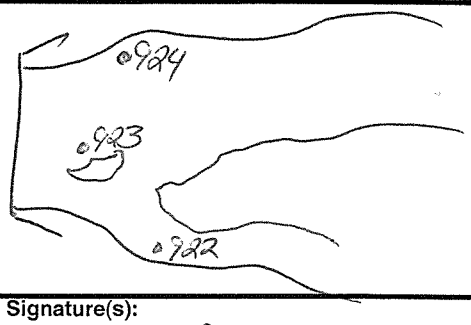
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
VOC's	MeOH (in one vial)	3 - 40mL Vials, 1 - 2oz jar %moisture	(YES) / NO	
SVOC's, Pest, PCB	4° C	1 - 8oz wide mouth jar	(YES) / NO	
~~Pesticides / PCBs~~	~~4° C~~	~~1 - 4oz wide mouth jar~~	~~YES / NO~~	
TAL Metals TOC/pH	4° C	1 - 4oz wide mouth jar	YES / NO	
PAHs	4° C	1 - 4oz wide mouth jar	YES / (NO)	
Dioxins	4°C	1-4oz wide mouth	Yes/No	

OBSERVATIONS / NOTES:

located on North Bank of Stream about 10' upstream of culvert that flows beneath Defense Highway

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
N.A	N.A

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NS Newport TF 4+5
Sample ID Number: TF4-SO-RB01-031710
Project Number: CTO 464
Sampled By: MH/CM
Sample Location: NS Newport TF4
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[✓] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 3/17/10
Time: 1610
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[✓] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade H_2O
Supplier: Thermo Scientific
Manufacturer: NERL Diagnostics LLC
Order Number:
Lot Number: 0108120
Expiration Date: 1/20/11

RINSATE INFORMATION (If Applicable):

Media Type: Sediment
Equipment Used: Hand Auger
Equipment Type:
[] Dedicated
[✓] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles	Cool 4°C & HCl	2) 40 ml VOA Vials	(YES) / NO
Semivolatiles	Cool 4°C	2) 1 Liter Amber Glass	(YES) / NO
Pesticide / PCB	Cool 4°C	1) 1 Liter Amber Glass	(YES) / NO
Metals	Cool 4°C & HNO_3	2) 250 ml Poly	(YES) / NO
Cyanide	Cool 4°C & NaOH		YES / (NO)
Dioxins	Cool 4°C	2) 1 Liter Amber Glass	(YES) / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NS Newport TF 45
Project Number:
Sample Location:
QA Sample Type:

Sample ID Number: TF4-SD-FB01-031710
Sampled By: MH/CM
C.O.C. Number:

[] Trip Blank
[] Source Water Blank
[] Rinsate Blank
[✓] Other Blank Field Blank

SAMPLING DATA:

Date: 3/17/10
Time: 1630
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[✓] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade H_2O
Supplier: Thermo Scientific
Manufacturer: NERL Diagnostics LLC
Order Number:
Lot Number: 0109120
Expiration Date: 1/2011

RINSATE INFORMATION (If Applicable):

Media Type: ~~Sediment~~ N/A CM 3/17/10
Equipment Used: ~~Hand Auger~~ N/A CM 03/17/10
Equipment Type:
[] Dedicated
[✓] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles	Cool 4°C & HCl	2 40 ml VOA Vials	(YES) NO
Semivolatiles	Cool 4°C	2 1 Liter Amber Glass	(YES) NO
Pesticide / PCB	Cool 4°C	1 1 Liter Amber Glass	(YES) NO
Metals / Mercury	Cool 4°C & HNO_3	250 ml Poly	(YES) NO
Cyanide	Cool 4°C & NaOH		YES (NO)

OBSERVATIONS / NOTES:

Signature(s):

B-5 CHAINS OF CUSTODY RECORDS

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Debra Seiken
TENUS
55 Jonspin Rd
Wilmington MA 01887
Telephone #: (978) 471-8445
Project Mgr. Debra Seiken

Invoice To: _____
P.O. No.: _____ RQN: _____

Project No.: 112600963
Site Name: Tank Farms 4 & 5 CTO 464
Location: Newport State: RI
Sampler(s): M. Horton P. Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes:
(check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC DI, MeOH 40ml vial; SVOC, Pest, PCB 8oz; Metals 4oz

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC	SVOC, Pest, PCB	Metals
	TF5-SB968-0001	4/12/10	1105	G	SO					3	1	1
	TF5-SB968-0204	↓	1110	↓	↓					3	1	1
	TF5-SB968-0810	↓	1115	↓	↓					3	1	1
	TF5-SB972-0001	↓	1245	↓	↓					3	1	1
	TF5-SB972-0204	↓	1250	↓	↓					3	1	1
	TF5-SB972-0810	↓	1255	↓	↓					3	1	1
	TF5-SB973-0001	↓	1430	↓	↓					3	1	1
	TF5-SB973-0204	↓	1435	↓	↓					3	1	1
	TF5-SB973-0810	↓	1440	↓	↓					3	1	1
	TF5-SB969-0001	↓	1545	↓	↓					3	1	1

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/13/10	1415	

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:
_____

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: See pg 1

Site Name:

Location: State:

Sampler(s):

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC DI MeOH 40ml Vial	SVOC, Pest, PCB 8oz	Metals 4oz						
	TF5-SB969-0204	4/12/10	1550	G	SO						3	1	1						
	TF5-SB969-0810	4/12/10	1555	↓	↓						3	1	1						
	TF5-SB-DUP01-041210	4/12/10	0000	↓	↓						3	1	1						SB973-0204
	TF5-SB-TB01-041210	4/12/10	0900	QC	QC						2								

Containers: | Analyses:

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/13/10	1415	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
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HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
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- Samples disposed of after 60 days unless otherwise instructed.

Report To: TE NUS
55 Jonspin Rd
Wilmington MA 01887

Telephone #: (978) 474-8445
Project Mgr. Dabra Seiken

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 112600963
Site Name: Tank Farms 4&5 CTO 464
Location: Newport State: RI
Sampler(s): M. Horton P. Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC DI MeOH 40ml	SVOC, Pest, PCB 8oz	Metals 4oz	SVOC, Pest, PCB, TPH 8oz					
	TF5-SB976-0001	4/13/10	1125	G	SO						3	1	1						
	TF5-SB976-0204	↓	1120	↓	↓						3	1	1						
	TF5-SB976-0810		1115								3	1	1						
	TF5-SB971-0001		1000								3	1	1						
	TF5-SB971-0204		1010								3	1	1						DUP02
	TF5-SB971-0810		1005								3	1	1						
	TF5-SB970-0001		0835								3	~~1~~	1	1					
	TF5-SB970-0204		0840								~~3~~ 9	~~1~~	3	~~1~~ 3	MJH	4/13/10			Lab QC
	TF5-SB970-0810		0830								3	~~1~~	1	1					
	TF5-SB974-0001	↓	1445	↓	↓						3	1	1						

Analyses:

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
Michael J Horton	[signature]	4/14/10	0720	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112600963

Site Name: Tank Farms 4 & 5 CTO 464

Location: Newport State: RI

Sampler(s): M. Horton P. Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC (DI MeOH 40ml); SVOC, Pest, PCB (8oz); Metals (4oz); VOC (HCl 40ml); SVOC (1L Amber); Pest, PCB (1L Amber); Metals (HNO_3 250ml Poly)

- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC (DI MeOH 40ml)	SVOC, Pest, PCB (8oz)	Metals (4oz)	VOC (HCl 40ml)	SVOC (1L Amber)	Pest, PCB (1L Amber)	Metals (HNO_3 250ml Poly)		
	TF5-SB974-0204	4/13/10	1450	G	SO						3	1	1						
	TF5-SB974-0810		1440	G	SO						3	1	1						DUP03
	TF5-SB-TB02-041310		0800	QC	QC						2			1					
	TF5-SB-RB01-041310		1715	QC	DI									2	2	1	2		
	TF5-SB-DUP02-041310		0000	G	SO						3	1	1						
	TF5-SB-DUP03-041310		0000	G	SO						3	1	1						

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/14/10	0720	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
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CHAIN OF CUSTODY RECORD

Page 1 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
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- Samples disposed of after 60 days unless otherwise instructed.

Report To: TENUS
55 Jonspin Rd
Wilmington MA 01887
Telephone #: (978) 474-8445
Project Mgr. Debra Seiken

Invoice To:
P.O. No.: RQN:

Project No.: 1DG00963
Site Name: Tank Farms 4 & 5 CTO 464
Location: Newport RI State: RI
Sampler(s): M. Horton, P. Seward, C. Meyer

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC DI MeOH; Metals 4 oz; SVOC, Pest, PCB 8 oz; SVOC, Pest, PCB, TPH; Metals, pH, TOC 4 oz

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC DI MeOH	Metals 4 oz	SVOC, Pest, PCB 8 oz	SVOC, Pest, PCB, TPH	Metals, pH, TOC 4 oz				
	TF5-SB966-0001	4/14/10	0905	G	SO					3	1		1					
	TF5-SB966-0406	↓	0910	↓	↓					3	1		1					
	TF5-SB966-0608		0915							3	X MH		1	1				
	TF5-SB967-0001		0950							3	1		1					
	TF5-SB967-0204		0955							3	1		1					
	TF5-SB975-0001		1200							3	1	1	X MH					
	TF5-SB975-0204		1205							3	1	1						
	TF5-SB975-0810		1210							3	X MH	1		1				
	TF4-SB936-0001		1505							3	1	1						
	TF4-SB936-0204	↓	1510	↓	↓					3	1	1						

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/15/10	0715	

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: See pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963

Site Name: Tank Farms 4 & 5 CTO 464

Location: State:

Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

QA/QC Reporting Notes: (check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC DI MeOH 40ml	Metals 4oz	Metals, TOC, pH 4oz	SVOC, Pest, PCB 8oz	SVOC, Pest, PCB, TPH 8oz				QA/QC Reporting Notes
	TF4-SB936-0810	4/14/10	1515	G	SO						~~3~~ 9		3	3					Lab QC
	TF4-SB935-0001	↓	1615	↓	↓						3	1		1					
	TF4-SB935-0204		1620								3	1		1					
	TF4-SB935-0810		1625								3		1	1					
	TF5-SB978-0810		1330								3		1		1				
	TF5-SB978-0001		1155								3	1			1				
	TF5-SB978-0204		1225								3	1			1				
	TF5-SB979-0001		1605								3	1			1				
	TF5-SB979-0204		1615								3	1			1				
	TF5-SB979-0810	↓	1645	↓	↓						3		1		1				

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/15/10	0715	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 3 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963

Site Name: Tank Farms 4 & 5 CTO 464

Location: State:

Sampler(s):

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes:
(check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC MeOH DF 40 ml

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC MeOH DF 40 ml							
	~~TF5-TB03~~																
	TF5-SB-TB03-041410	4/14/10	0700							2							

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/15/10	0715	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: TENUS
55 Jonspin Rd
Wilmington MA 01887
Telephone #: (978) 474-8445
Project Mgr. Debra Seiken

Invoice To:
P.O. No.: RQN:

Project No.: 112600963
Site Name: Tank Farms 4 & 5 CTO 464
Location: Newport State: RI
Sampler(s): M. Horton, C. Meyer, P. Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC MeOH DI 40 ml	Metals 4oz	Metals, pH, TOC 4oz	SVOC, Pest, PCB 8oz	SVOC, Pest, PCB, TPH 8oz				
	TF4-SB943-0001	4/15/10	1240								3	1		1					
	TF4-SB943-0204		1245								3	1		1					
	TF4-SB943-0810		1250								3	X	1	1					
	TF4-SB934-0001		1010								3		1	1					
	TF4-SB934-0204		1015								9	3		3					LabQC
	TF4-SB934-0810		1020								3		1	1					
	TF4-SB941-0001		0915								3	1		1					
	TF4-SB941-0204		0920								3	1		1					
	TF4-SB941-0810		0925								3		1	1					DUP01
	TF4-SB928-0001		1120								3	1			1				

Analyses:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]		4/16/10	0940	
	[signature]	4/16/10	9:40	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112600963

Site Name: Tank Farms 4&5 CTO 464

Location: State:

Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC ~~HCl~~ MeOH DI 40 ml	Metals 4oz	Metals, pH, TOC 4oz	SVOC, Pest, PCB 8oz	SVOC, Pest, PCB, TPH 8oz	VOC HCl	SVOC, Pest, PCB 1L Amber	Metals HNO_3 250 ml	
	TF4-SB928-0204	4/15/10	1125								3	1			1				
	TF4-SB928-0810		1130								3		1		1				
	TF4-SB-DUP01-041510		0000								3		1	1					SB928-0810
	TF5-SB-TB04-041510		0700								2					1			
	TF4-SB-RB01-041510		1530													2	3	2	
	TF5-SB977-0001		1245								3	1			1				DUP04
	TF5-SB977-0204		1345								3	1			1				
	TF5-SB977-0810		1415										1		1				
	TF5-SB-DUP04-041510		0000								3	1			1				977-0001

Analyses:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]		4/16/10	0940	
	[signature]	4/16/10	9:40	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 4 of 4

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: Tank Farm ~~464~~ 465 CTO 464

Site Name:

Location: State:

Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		δ2H/δ18O							
	TF4-SB941-0001	4/15/10	0915	G	SOIL						1							
	TF4-SB941-0204	↓	0920	↓	↓						1							
	TF4-SB928-0001	↓	1120	↓	↓						1							
	TF4-SB928-0204	↓	1125	↓	↓						1							
	TF5-SB-DUP01-041210	4/12/10	0000	↓	↓						1							
	TF5-SB-DUP02-041310	4/13/10	0000	↓	↓						1							
	TF5-SB-RB01-041310	4/13/10	1715	G	H_2O						~~1~~ 2							
	TF4-SB-RB04H1510	4/15/10	1530	G	H_2O						2							

Containers:

Analyses:

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
[illegible]	Fed Ex	4/15/10	1600	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

11 Almgren Drive • Agawam, MA 01001 • 413-789-9018 • FAX 413-789-4076 • www.spectrum-analytical.com

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page _____ of _____

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: TENUS
55 Jonspin Rd
Wilmington MA ~~02~~ 01887
Telephone #: (978) 474-8445
Project Mgr. Debra Seiken

Invoice To: _____
P.O. No.: _____ RQN: _____

Project No.: 112600963
Site Name: CT0464 Tank Farms 4+5
Location: Newport State: RI
Sampler(s): M. Horton, P. Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC MOH DI 40ml	Metals 4oz	Metals, pH, TOC 4oz	~~SVOC, Pest, PCB 8oz~~	SVOC, Pest, PCB, TPH 8oz				QA/QC Reporting Notes
	TF4-SB923-0001	4/19/10	0915	G	SO					3	1			1				
	TF4-SB923-0204		0920							9	2			3				Lab QC
	TF4-SB923-0406		0925							3		1		1				
	TF4-SB922-0001		1030							3	1			1				
	TF4-SB922-0204		1035							3	1			1				DUP02
	TF4-SB922-0608		1040							3		1		1				
	TF4-SB926-~~0608~~ 0001		1320							3	1			1				
	TF4-SB926-0204		1325							3	1			1				DUP03
	TF4-SB926-0406		1330							3		1		1				
	TF4-SB927-0001		1410							3	1			1				

Analyses:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/20/10	0750	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: TENUS
55 Jonspin Rd
Wilmington MA 01887

Telephone #: (978) 474-8445
Project Mgr. Debra Seiken

Invoice To:

P.O. No.: _____ RQN: _____

Project No.: 112G00963
Site Name: CTO 464 Tank Farms
Location: Newport State: RI
Sampler(s): M. Horton, P. Seiward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials; # of Amber Glass; # of Clear Glass; # of Plastic

Analyses: VOC (MeOH DI 40 ml); Metals (4 oz); Metals, pH, TOC (4 oz); SVOC, PCB, TPH (8 oz); VOC (HCl 40 ml); SVOC, PCB, RCB (1 L Amb); Metals (HNO_3 250 ml)

- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC (MeOH DI 40 ml)	Metals (4 oz)	Metals, pH, TOC (4 oz)	SVOC, PCB, TPH (8 oz)	VOC (HCl 40 ml)	SVOC, PCB, RCB (1 L Amb)	Metals (HNO_3 250 ml)	QA/QC Reporting Notes
	TF4-SB933-0001	4/20/10	1120	G	SO					3	1		1				
	TF4-SB932-0001	4/20/10	1055	↓	↓					3	1		1				
	TF4-SB942-0001	↓	0915	↓	↓					3	1		1				
	TF4-SB942-0204	↓	0920	↓	↓					3	1		1				
	TF4-SB924-0001	↓	1425	↓	↓					3	1		1				
	TF4-SB924-0204	↓	1430	↓	↓					9	2		3				Lab QC
	TF4-SB924-0810	↓	1435	↓	↓					3		1	1				
	TF4-SB931-~~0900~~ 0001	↓	0900	↓	↓					3	1		1				
	TF4-SB-DUP02-042010	↓	0000	↓	↓					3		1	1				SB924-0810
	TF4-SB-RB03-042010	↓	~~1614~~ 1615	QC	H_2O									2	3	2	

Relinquished by:	Received by:	Date:	Time:	Temp°C
M. Horton	[signature]	4/21/10	0700	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page _____ of _____

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
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- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963

Site Name: Tank Farms 4 & 5 CTO 464

Location: Newport State: RI

Sampler(s): M. Horton, P. Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes:
(check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC MeOH DI 40 ml	Metals 4 oz	SVOC, Pest, PCB, TPH 8 oz	SVOC, Pest, PCB 1L Amber	Metals HNO3 250 ml	VOC HCl 40 ml			
	TF4-SB-DUP02-041910	4/19/10	0000	G	SO						3	1	1						~~SB923~~ SB922-0204
	TF4-SB-DUP03-041910	4/19/10	0000	G	SO						3	1	1						SB926-0204
	TF5 SB TB05-041910		0700	QC							2								
	TF4 ~~TF5~~-SB-RB02-041910		1715	QC										3	2	2			
	TF4-SB-FB01-041910		1730	QC										3	2	2			

Analyses:

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/20/10	0750	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: TtNUS
55 Jonspin Rd
Wilmington MA 01887

Telephone #:
Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963
Site Name: CT0464
Location: Newport State: RI
Sampler(s):

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOA MeOH DI 40 ml							
	TF5-SB-TB06-042010	4/20/10	0700	QC							2							

Containers:

Analyses:

QA/QC Reporting Notes:
(check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/21/10	0700	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: TENUS
55 Jonspin Rd
Wilmington MA 01887
Telephone #: (978) 474-8445
Project Mgr. Dabia Geiken

Invoice To:
P.O. No.: RQN:

Project No.: 112G00963
Site Name: CTO 464 Tank Farms
Location: Newport State: RI
Sampler(s): M. Horton C. Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOA MeOH DI 40 ml	Metals 4oz	Metals, pH, TOC 4oz	SVOC, Pest, PCB	SVOC, Pest, PCB, TPH				
	TF4-SB940-0001	4/22/10	1155	G	SO						3	1		1					
	TF4-SB940-0204	↓	1200	↓	↓						3	1		1					
	TF4-SB940-0810		1205								3		1	1					
	TF4-SB939-0001		1350								3	1			1				
	TF4-SB939-0204		1355								3	1			1				
	TF4-SB939-0810		1400								3		1		1				
	TF4-SB938-0001		1450								3	1			1				
	TF4-SB938-0204		1455								3	1			1				DUP-0706
	TF4-SB938-0810		1445								3		1		1				
	TF4-SB920-0001	↓	0825	↓	↓						3	1			1				

Analyses:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/23/10	0700	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 117G00963

Site Name: Tank Farms CTO464

Location: State:

Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOA MeOH DI 40 ml	Metals 4oz	Metals, pH, TOC 4oz	SVOC, Pest, PCB, TPH	VOC HCl 40 ml	SVOC, Pest, PCB	Metals		
	TF4-SB920-0204	4/22/10	MH ~~0825~~ 0830	G	SO						9	2		3					Lab QC
	TF4-SB920-0810		MH ~~0830~~ 0835								3		1	1					~~Lab QC~~ MH
	TF4-SB921-0001		0920								3	1		1					
	TF4-SB921-0204		0925								3	1		1					
	TF4-SB921-0810		0930								3		1	1					DUP05
	TF4-SB937-0001		1600								3	1		1					
	TF4-SB937-0204		1610								3	1		1					
	TF4-SB-DUP05-042210		0000								3		1	1					
	TF4-SB-DUP06-042210		0000								3	1		1					
	TF4-SB-RB04-042210		1815	QC	DI H2O										2	3	1		

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/23/10	0700	

☐ EDD Format

☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 3 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963

Site Name: CTO 464 Tank Farms

Location: State:

Sampler(s):

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes:
(check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC (MeOH DF 40ml)

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC (MeOH DF 40ml)							
	TF5-SB-TB07 042210	4/22/10	0730	QC	—						2							

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/23/10	0700	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ___°C ☐ Freezer temp ___°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: TENUS
55 Jonspin Rd
Wilmington MA 01887

Telephone #: (978) 474-8445
Project Mgr. Debra Seiken

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 112G00963
Site Name: Tank Farms 4 & 5 CT0464
Location: Newport RI State: RI
Sampler(s): M. Horton, C. Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes:
(check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials; # of Amber Glass; # of Clear Glass; # of Plastic

Analyses: VOC MeOH DI 40ml; Metals 4oz; Metals, pH, TOC 4oz; SVOC, PCB, TPH 8oz

- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:
_____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC MeOH DI 40ml	Metals 4oz	Metals, pH, TOC 4oz	SVOC, PCB, TPH 8oz				
	TF4-SB925-0001	4/23/10	1410	G	SO					3	1		1				
	TF4-SB925-0204		1415							3	1		1				
	TF4-SB925-0608		1400							3		1	1				
	TF4-SB930-0001		1305							3	1		1				
	TF4-SB930-0204		1315							3	1		1				
	TF4-SB930-0608		1320							3		1	1				
	TF4-SB929-0001		1200							3	1		1				
	TF4-SB929-0204		1205							3	1		1				
	TF4-SB929-0608		1210							3		1	1				
	TF4-SB933-0204		0955							3	1		1				

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/23/10	17:00	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: see pg 1

Telephone #:

Project Mgr.

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963

Site Name: Tank Farms 4 & 5 CTO 464

Location: State:

Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC MeOH DI 40 ml; Metals 4oz; Metals, pH, TOC 4oz; SVOC, Pest, PCB, TPH

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC MeOH DI 40 ml	Metals 4oz	Metals, pH, TOC 4oz	SVOC, Pest, PCB, TPH	QA/QC Reporting Notes
	TF4-SB933-0608	4/23/10	0950	G	SO					3		1	1	
	TF4-SB932-0204	↓	1100	↓	↓					3	1		1	
	TF4-SB932-0607	↓	1050	↓	↓					3		1	1	
	TF4-SB-DUP07-042310	↓	0000	↓	↓					3	1		1	9/29-0204
	TF5-SB-TB08-042310	↓	0730	QC	—					2				

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	4/23/10	17:00	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services™ 19408 Park Row, Ste 320 • Houston, TX 77084 • (713) 266-1599 • FAX (713) 266-0130

DATE 4/15/10 PAGE 2 OF 4

PROJECT NAME Tank Farm 4&5 CT0464

PROJECT # See pg 1

COMPANY/ADDRESS

PHONE

REPORT TO:

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	8290	1613B	1613 TCDD only	1668 WHO	1668 Full List													REMARKS
TF5-SB969-0001	4/12/10	1545	Soil		1																	
TF5-SB969-0204		1550			1																	
TF5-SB973-0001		1430			1																	
TF5-SB973-0204		1440			1																	
TF5-SB972-0001		1245			1																	
TF5-SB972-0204		1250			1																	
TF5-SB966-0001	4/14/10	0905			1																	
TF5-SB966-0406		0910			1																	
TF5-SB967-0001		0950			1																	
TF5-SB967-0204		0955			1																	

RELINQUISHED BY:
Signature
Printed Name Michael Hooton
Firm TENG
Date/Time 4/15/10 1600

RECEIVED BY:
Signature FedEx
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD.....15 DAYS

DELIVERABLES
____ I. Analytical Report
____ II. Analytical Report + QC
____ IV. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Opened by:
Inspected by:
Date:
Time:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

SAMPLER'S SIGNATURE

DISTRIBUTION: WHITE - return to originator; YELLOW - retained by originator

coc11-09

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services™ 19408 Park Row, Ste 320 • Houston, TX 77084 • (713) 266-1599 • FAX (713) 266-0130

DATE 4/15/10 PAGE 1 OF 4

PROJECT NAME Tank Farm 4&5 CTO 464

PROJECT # 112G00963

COMPANY/ADDRESS Tetra Tech NUS
55 Jonspin Rd
Wilmington MA 01887 PHONE (978) 474-8445

REPORT TO: Debra Seiken

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	8290	1613B	1613 TCDD only	1668 WHO	1668 Full List	REMARKS
TF5-SB970-0001	4/13/10	0835	Soil		1					
TF5-SB970-0204		0840			1 ~~2~~					Lab QC
TF5-SB971-0001		1000			1					
TF5-SB971-0204		1010			1					
TF5-SB976-0001		1125			1					
TF5-SB976-0204		1120			1					
TF5-SB974-0001		1445			1					
TF5-SB974-0204		1450			1					
TF5-SB968-0001	4/12/10	1105			1					
TF5-SB968-0204		1110			1					

RELINQUISHED BY:
Signature: [signature]
Printed Name: Michael J Hollen
Firm: TtNUS
Date/Time: 4/15/10 1600

RECEIVED BY:
Signature: Fed x
Printed Name:
Firm:
Date/Time:

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD.....15 DAYS

DELIVERABLES
___ I. Analytical Report
___ II. Analytical Report + QC
___ IV. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Opened by:
Inspected by:
Date:
Time:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Lab QC designated for lab Dup. double volume

SAMPLER'S SIGNATURE

DISTRIBUTION: WHITE - return to originator; YELLOW - retained by originator

coc11-09

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services™ 19408 Park Row, Ste 320 • Houston, TX 77084 • (713) 266-1599 • FAX (713) 266-0130

DATE 4/15/10 PAGE 3 OF 4

PROJECT NAME Tank Farm 4&5 CTO464

PROJECT # see pg 1

COMPANY/ADDRESS

PHONE

REPORT TO:

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	8290	1613B	1613 TCDD only	1668 WHO	1668 Full List	REMARKS
TF5-SB975-0001	4/14/10	1200	Soil		1					
TF5-SB975-0204		1205			1					
TF4-SB936-0001		1505			1					
TF4-SB936-0204		1510			1					
TF4-SB935-0001		1615			1					
TF4-SB935-0204		1620			1					
TF4-SB943-0001	4/15/10	1240			1					
TF4-SB943-0204		1245			1					
TF4-~~SB943~~ SB934-0001		1010			1					
TF4-SB934-0204		1015			2					lab QC

RELINQUISHED BY:
Signature: Michael A Horton
Printed Name: Michael Horton
Firm: TENUS
Date/Time: 4/15/10 1600

RECEIVED BY:
Signature: Fed Ex
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD.....15 DAYS

DELIVERABLES
___ I. Analytical Report
___ II. Analytical Report + QC
___ IV. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Opened by:
Inspected by:
Date:
Time:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Lab QC Designated for lab Dup, Double volume

SAMPLER'S SIGNATURE

DISTRIBUTION: WHITE - return to originator; YELLOW - retained by originator

coc11-09

Columbia Analytical Services™

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

SR #

CAS Contact

www.caslab.com

One Mustard St., Suite 250 • Rochester, NY 14609-0859(585) 288-5380 • 800-695-7222 x11 • FAX (585) 288-8475

Project Name: Tank Farms 4/5 CTO 464

Project Number: 112G00963

Project Manager: Debra Seiken

Report CC:

Company/Address: 55 Jonspin Rd, Wilmington MA 01887

Phone #: (978) 474-8445

FAX#:

Sampler's Signature: [signature]

Sampler's Printed Name: Michael Horton

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOA's ☐ 8260 ☐ 624 ☐ CLP	GC/MS SVOA's ☐ 8270 ☐ 625 ☐ CLP	GC VOA's ☐ 8021 ☐ 601/602	PESTICIDES ☐ 8081 ☐ 608 ☐ CLP	PCB's ☐ 8082 ☐ 608 ☐ CLP	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	8290 Dioxins	REMARKS/ ALTERNATE DESCRIPTION
~~SB912~~ TF4-SB923-0001		4/19/10	0915	Soil									1	
TF4-SB923-0204		↓	0920	↓									2	Lab QC
TF4-SB929-0001			1030										1	
TF4-SB922-0204			1035										1	
TF4-SB926-0001			1320										1	
TF4-SB926-0204			1325										1	
TF4-SB927-0001		↓	1410										1	
TF4-SB933-0001		4/20/10	1120										1	
TF4-SB932-0001		↓	1055										1	
TF4-SB942-0001		↓	0915	↓									1	

SPECIAL INSTRUCTIONS/COMMENTS

Metals

lab QC, double volume, designated for Laboratory Dup

See QAPP ☐

TURNAROUND REQUIREMENTS

_____ RUSH (SURCHARGES APPLY)

____ 24 hr ____ 48 hr ____ 5 day

_____ STANDARD

REQUESTED FAX DATE

REQUESTED REPORT DATE

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

____ V. Specialized Forms / Custom Report

Edata ____ Yes ____ No

INVOICE INFORMATION

PO#

BILL TO:

SUBMISSION #:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: _____ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [signature]	Signature	Signature	Signature	Signature	Signature
Printed Name: Charles Meyer	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm: TKNUS	Firm	Firm	Firm	Firm	Firm
Date/Time: 4/26/10 1930	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

SCOC-1102-08

Shipped via Federal Express Airbill NO 8715 7497 0295

Columbia Analytical Services™

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

SR #

CAS Contact

www.caslab.com One Mustard St., Suite 250 • Rochester, NY 14609-0859(585) 288-5380 • 800-695-7222 x11 • FAX (585) 288-8475

Project Name: TankFarms 4&5 CT0464

Project Number:

Project Manager:

Report CC:

Company/Address: see pg 1

Phone #:

FAX#:

Sampler's Signature:

Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOA's ☐ 8260 ☐ 624 ☐ CLP	GC/MS SVOA's ☐ 8270 ☐ 625 ☐ CLP	GC VOA's ☐ 8021 ☐ 601/602	PESTICIDES ☐ 8081 ☐ 608 ☐ CLP	PCB's ☐ 8082 ☐ 608 ☐ CLP	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	8290 Dioxins	REMARKS/ ALTERNATE DESCRIPTION
TF4-SB942-0204		4/20/10	0920	Soil									1	
TF4-SB924-0001		↓	1425	↓									1	
TF4-SB924-0204			1430										2	Lab QC
TF4-SB931-0001			0900										1	
TF4-SB940-0001		4/22/10	1155										1	
TF4-SB940-0204			1200										1	
TF4-SB939-0001			1350										1	
TF4-SB939-0204			1355										1	
TF4-SB938-0001			1450										1	
TF4-SB920-0001		↓	0825	↓									1	

SPECIAL INSTRUCTIONS/COMMENTS

Metals

see pg 1

See QAPP ☐

TURNAROUND REQUIREMENTS

_____ RUSH (SURCHARGES APPLY)

____ 24 hr ____ 48 hr ____ 5 day

_____ STANDARD

REQUESTED FAX DATE

REQUESTED REPORT DATE

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

____ V. Specialized Forms / Custom Report

Edata ____ Yes ____ No

INVOICE INFORMATION

PO#

BILL TO:

SUBMISSION #:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: _____ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [signature]	Signature	Signature	Signature	Signature	Signature
Printed Name: Charles Meyer	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm: TRWS	Firm	Firm	Firm	Firm	Firm
Date/Time: 4/22/10 1500	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

SCOC-1102-08

Shipped via Federal Express Airbill No 8215 7497 0295

Columbia Analytical Services™

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

SR #

CAS Contact

www.caslab.com

One Mustard St., Suite 250 • Rochester, NY 14609-0859(585) 288-5380 • 800-695-7222 x11 • FAX (585) 288-8475

Project Name: Tank Farms 4&5 CTO464

Project Number:

Project Manager:

Report CC:

Company/Address: see pg 1

Phone #:

FAX#:

Sampler's Signature:

Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

NUMBER OF CONTAINERS

GC/MS VOA's ☐ 8260 ☐ 624 ☐ CLP

GC/MS SVOA's ☐ 8270 ☐ 625 ☐ CLP

GC VOA's ☐ 8021 ☐ 601/602

PESTICIDES ☐ 8081 ☐ 608 ☐ CLP

PCB's ☐ 8082 ☐ 608 ☐ CLP

METALS, TOTAL (List in comments below)

METALS, DISSOLVED (List in comments below)

8290 Dioxins

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOA's 8260 624 CLP	GC/MS SVOA's 8270 625 CLP	GC VOA's 8021 601/602	PESTICIDES 8081 608 CLP	PCB's 8082 608 CLP	METALS, TOTAL	METALS, DISSOLVED	8290 Dioxins	REMARKS/ ALTERNATE DESCRIPTION
TF4-SB920-0204		4/22/10	0830	Soil									2	Lab QC
TF4-SB921-0001		↓	0920	↓									1	
TF4-SB921-0204		↓	0925	↓									1	
TF4-SB937-0001		↓	1600	↓									1	
TF4-SB937-0204		↓	1610	↓									1	
TF4-SB925-0001		4/23/10	1410	↓									1	
TF4-SB925-0204		↓	1415	↓									1	
TF4-SB930-0001		↓	1305	↓									1	
TF4-SB930-0204		↓	1315	↓									1	
TF4-SB929-0001		↓	1200	↓									1	

SPECIAL INSTRUCTIONS/COMMENTS

Metals

See pg 1

See QAPP ☐

TURNAROUND REQUIREMENTS

_____ RUSH (SURCHARGES APPLY)

____ 24 hr ____ 48 hr ____ 5 day

_____ STANDARD

REQUESTED FAX DATE

REQUESTED REPORT DATE

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

____ V. Specialized Forms / Custom Report

Edata ____ Yes ____ No

INVOICE INFORMATION

PO#

BILL TO:

SUBMISSION #:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: _____ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature [illegible]	Signature	Signature	Signature	Signature	Signature
Printed Name [illegible]	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm Tetra Tech	Firm	Firm	Firm	Firm	Firm
Date/Time 4/26/10 1930	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

SCOC-1102-08

Columbia Analytical Services™

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

SR #

CAS Contact

www.caslab.com

One Mustard St., Suite 250 • Rochester, NY 14609-0859(585) 288-5380 • 800-695-7222 x11 • FAX (585) 288-8475

Project Name: Tank Farms 4&5 CTO 464

Project Number:

Project Manager:

Report CC:

Company/Address: see pg 1

Phone #:

FAX#:

Sampler's Signature:

Sampler's Printed Name:

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

NUMBER OF CONTAINERS

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	GC/MS VOA's ☐ 8260 ☐ 624 ☐ CLP	GC/MS SVOA's ☐ 8270 ☐ 625 ☐ CLP	GC VOA's ☐ 8021 ☐ 601/602	PESTICIDES ☐ 8081 ☐ 608 ☐ CLP	PCB's ☐ 8082 ☐ 608 ☐ CLP	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	8290 Dioxins	1 Liter Amber Glass 8290 Dioxins	REMARKS/ ALTERNATE DESCRIPTION
TF4-SB929-0204		4/23/10	1205	Soil								1		
TF4-SB933-0204		↓	0955	↓								1		
TF4-SB932-0204		↓	1100	↓								1		
TF4-SB-DUP02-041910		4/19/10	0000	↓								1		SB922-0204
TF4-SB-DUP03-041910		4/19/10	0000	↓								1		SB926-0204
TF4-SB-DUP06-042210		4/22/10	0000	↓								1		SB938-0204
TF4-SB-DUP07-042310		4/23/10	0000	↓								1		
TF4-SB-RB02-041910		4/19/10	1715	AQ									2	
TF4-SB-RB03-042010		4/20/10	1615	AQ									2	

SPECIAL INSTRUCTIONS/COMMENTS

Metals

see pg 1

See QAPP ☐

TURNAROUND REQUIREMENTS

_____ RUSH (SURCHARGES APPLY)

____ 24 hr ____ 48 hr ____ 5 day

_____ STANDARD

REQUESTED FAX DATE

REQUESTED REPORT DATE

REPORT REQUIREMENTS

____ I. Results Only

____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

____ III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

____ V. Specialized Forms / Custom Report

Edata ____ Yes ____ No

INVOICE INFORMATION

PO#

BILL TO:

SUBMISSION #:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: _____ CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [illegible]	Signature	Signature	Signature	Signature	Signature
Printed Name: Charles Meyer	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Ft Cus	Firm	Firm	Firm	Firm	Firm
Date/Time: 4/23/10 1920	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

SCOC-1102-08

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 3 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: _____
Telephone #: _____
Project Mgr. _____

Invoice To: _____
P.O. No.: _____ RQN: _____

Project No.: 112G00963 CT0464
Site Name: Tank Farms 4&5
Location: Newport State: RI
Sampler(s): M. Horton, C. Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes:
(check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		SVOC 1L	Pest PCB 1L	Metals 250ml	VOC HCl 40ml	VOC DI 40ml				
	TF5-SW-921-0006	3/16/10	1025	G	SW	2	3		1		2	1	1	2					
	TF5-SW-922-0006	↓	0805	↓	↓	2	3		1		2	1	1	2					
	TF5-SW-923-0006	↓	0835	↓	↓	2	3		1		2	1	1	2					
	TF5-SW-924-0006	↓	0930	↓	↓	2	3		1		2	1	1	2					
	TF5-SW-DUP01-031610	↓	0000	↓	↓	2	3		1		2	1	1	2					SW923
	TF5-SD-TB01-031610	↓	0800	QC	EMPTY	2									2				
	TF5-SW-TB01-031610	↓	0800	QC	PS Water	2								2					

Containers: | Analyses:

QA/QC Reporting Notes:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
Mel J Hot	[signature]	3/17/10	0800	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ___ °C ☐ Freezer temp ___ °C

5 Coolers

SPECTRUM ANALYTICAL, INC.
Featuring
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CHAIN OF CUSTODY RECORD

Page 1 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Steve Parker
55 Jonspin Rd
Wilmington MA 01887

Telephone #: (978) 474-8400
Project Mgr. Steve Parker / Debra Seiken

Invoice To:

P.O. No.: RQN:

Project No.: 112G00963 CTO464
Site Name: Tank Farm 4&5
Location: Newport RI State: RI
Sampler(s): Michael Horton, Chuck Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= DI 10= MeOH 11= 4°C

List preservative code below: 11 11 1/10

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= Sediment X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: SVOC, Pest, PCB 8oz; Metals, TOC, OH 4oz; VOC 40ml

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report
QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____
State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		SVOC, Pest, PCB 8oz	Metals, TOC, OH 4oz	VOC 40ml						QA/QC Notes
	TF5-SD-913-0006	3/16/10	1445	G	X1	3	2				1	1	3						
	TF5-SD-914-0006	↓	1510	↓	↓	3	2				1	1	3						
	TF5-SD-915-0006	↓	1535	↓	↓	3	2				1	1	3						
	TF5-SD-916-0006	↓	1605	↓	↓	3	2				1	1	3						
	TF5-SD-917-0006	↓	1315	↓	↓	9	6				3	3	9						Lab QC
	TF5-SD-918-0006	↓	1345	↓	↓	3	2				1	1	3						
	TF5-SD-919-0006	↓	1120	↓	↓	3	2				1	1	3						
	TF5-SD-920-0006	↓	~~1040~~ MH 1100	↓	↓	3	2				1	1	3						
	TF5-SD-921-0006	↓	~~1025~~ MH 1035	↓	↓	3	2				1	1	3						
	TF5-SD-922-0006	↓	0820	↓	↓	3	2				1	1	3						

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	3/17/10	0800	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

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CHAIN OF CUSTODY RECORD

Page 2 of 3

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: _____

Telephone #: _____

Project Mgr. _____

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 112600963 CT0464

Site Name: Tank Farms 4&5

Location: Newport State: RI

Sampler(s): M. Horton C. Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= Sediment X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		SVOC, Pest PCB 8oz	Metals TOC pH 4oz	VOC 40ml	SVOC 1L	Pest PCB 1L	Metals 250ml	VOC 40ml		
	TF5-SD-923-0006	3/16/10	0900	G	X1	3	2				1	1	3						
	TF5-SD-924-0006	↓	0940	↓	↓	3	2				1	1	3						
	TF5-SD-DUP01-031610	↓	0000	↓	↓	3	2				1	1	3						DUP01 → SD 923
	TF5-SW-914-0310	↓	1500	G	SW	2	3		1					2	1	1	2		
	TF5-SW-915-0310	↓	1530	↓	↓	2	3		1					2	1	1	2		
	TF5-SW-916-0310	↓	1555	↓	↓	2	3		1					2	1	1	2		
	TF5-SW-917-0310	↓	1300	↓	↓	~~2~~ 6	~~3~~ 9		X3					~~2~~ 6	X3	~~1~~ 2	~~2~~ 6 MH		Lab QC
	TF5-SW-918-0310	↓	1400	↓	↓	2	3		1					2	1	1	2		
	TF5-SW-919-0310	↓	1105	↓	↓	2	3		1					2	1	1	2		
	TF5-SW-920-0310	↓	1040	↓	↓	2	3		1					2	1	1	2		

Analyses:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	3/17/10	0800	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
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- Samples disposed of after 60 days unless otherwise instructed.

Report To: Steve Parker
55 Jonspin Rd
Wilmington MA 01887

Telephone #: (978) 474-8434
Project Mgr. Steve Parker, Debra Seiken

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 112G00963 CTO464
Site Name: Tank Farms 4 & 5
Location: Newport State: RI
Sampler(s): M. Horton C. Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= Sediment X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC (DI, MeOH) 40ml; SVOC, Pest, PCB 8oz; Metals, TOC, pH 4oz; VOC (HCl) 40ml; SVOC 1L; Pest PCB 1L; Metals Mercury 250ml

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report
QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____
State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC (DI, MeOH) 40ml	SVOC, Pest, PCB 8oz	Metals, TOC, pH 4oz	VOC (HCl) 40ml	SVOC 1L	Pest PCB 1L	Metals Mercury 250ml		
	TF4-SW-907-0310	3/17/10	1340	G	SW	2	3		2					2	2	1	2		
	TF4-SW-908-0310	3/17/10	1315	G		2	3		2					2	2	1	2		
	TF4-SW-911-0310		1145	G		2	3		2					2	2	1	2		
	TF4-SW-912-0310		1120	G		2	3		2					2	2	1	2		
	TF4-SW-DUP-031710		0000	G		2	3		2					2	2	1	2		SW911
	TF4-SD-907-0006		1345	G	X1	3	2				3	1	1						
	TF4-SD-908-0006		1330	G		3	2				3	1	1						
	TF4-SD-909-0006		1305	G		3	2				3	1	1						
	TF4-SD-910-0006		1235	G		3	2				3	1	1						
	TF4-SD-911-0006		1200	G		3	2				3	1	1						

Relinquished by:	Received by:	Date:	Time:	Temp°C
Mel J Hort	[signature]	3/18/10	0800	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: _____

Telephone #: _____

Project Mgr. _____

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 112600963 CTO464

Site Name: Tank Farm 4&5

Location: Newport State: RI

Sampler(s): Michael Horton Chuck Meyer

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= Sediment X2= _____ X3= _____

G=Grab C=Composite

QA/QC Reporting Notes: (check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC (DI, MeOH) 40ml	SVOC, Pest, PCB 8oz	Metals, TOC, pH 4oz	VOC (HCl) 40ml	SVOC 1L	Pest PCB 1L	Metals, Mercury 250ml		
	TF4-SD-912-0006	3/17/10	1130	G	X1						3	1	1						
	TF4-SD-DUP01-031710	↓	0000	G	X1						3	1	1						SD911
	TF4-SW-TB01-031710	↓	0800	QC	PS H_2O									2	~~2~~	~~1~~	~~2~~	MH	
	TF4-SD-TB01-031710	↓	0800	QC	EMPTY						~~2~~	1	1	MH					
	TF4-SD-FB01-031710	↓	1630	QC	DI H_2O									2	2	1	2		
	TF4-SD-RB01-031710	↓	1610	QC	DI H_2O									2	2	1	2		

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	3/18/10	0800	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: _____
Telephone #: _____
Project Mgr. _____

Invoice To: _____
P.O. No.: _____ RQN: _____

Project No.: 112G00963 CT0464
Site Name: Tank Farm 4&5
Location: Newport State: RI
Sampler(s): M. Horton

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= SED sediment X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC (DI, MeOH) 4(2ml)	SVOC, Pest, PCB 8oz	Metals, TOC, pH 4oz						
	TF4-SD-904-0006	3/18/10	0920	G	SED	3	2				3	1	1						
	TF4-SD-905-0006	3/18/10	0945	↓	↓	3	2				3	1	1						
	TF4-SD-906-0006	3/18/10	1020	↓	↓	3	2				3	1	1						
	TF4-SD-901-0006	↓	1200	↓	↓	~~3~~ 9	6				9	3	3						Lab QC
	TF4-SD-902-0006	↓	1255	↓	↓	3	2				3	1	1						
	TF4-SD-903-0006	↓	1400	↓	↓	3	2				3	1	1						
	TF4-SD-DUP02-031810	↓	0000	↓	↓	3	2				3	1	1						SD902
	TF4-SD-TB02-031810	↓	0800	QC	EMPTY	2					2								

Analyses:

QA/QC Reporting Notes:
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	3/19/10	10:20	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ___ °C ☐ Freezer temp ___ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
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- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Steve Parker
55 Jonspin Rd
Wilmington MA 01887

Telephone #: (978) 474-8400
Project Mgr. Steve Parker / Debra Seiken

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: 112G00963 CT0464
Site Name: Tank Farms 4 & 5
Location: Newport RI State: RI
Sampler(s): M. Horton

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: VOC (HCl) 40ml; SVOC 1L; Pest PCB 1L; Metals, Mercury 250ml

QA/QC Reporting Notes: (check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	VOC (HCl) 40ml	SVOC 1L	Pest PCB 1L	Metals, Mercury 250ml					
	TF4-SW-904-0310	3/18/10	0905	G	SW					2	2	1	2					
	TF4-SW-905-0310	3/18/10	0935							2	2	1	2					
	TF4-SW-906-0310		1005							2	2	1	2					
	TF4-SW-901-0310		1130							6	~~2~~6	3	6					lab QC
	TF4-SW-902-0310		1240							2	2	1	2					
	TF4-SW-903-0310		1345							2	2	1	2					
	TF4-SW-DUP02-031810		0000							2	2	1	2					SW902
	TF4-SW-TB02-031810		0800	QC	RS H_2O					2								

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	3/19/10	10:20	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services™ 19408 Park Row, Ste 320 • Houston, TX 77084 • (713) 266-1599 • FAX (713) 266-0130

DATE 3/18/10 PAGE 2 OF 3

PROJECT NAME Tank Farms 4 & 5

PROJECT #

COMPANY/ADDRESS

PHONE

REPORT TO:

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	8290 DIOXINS	1613B	1613 TCDD only	1668 WHO	1668 Full List	REMARKS
TF5-SD-923-0006	3/16/10	0900	SED	1	1					
TF5-SD-924-0006	↓	0940	↓	1	1					
TF5-SD-DUP01-031610	↓	0000	↓	1	1					SD923
TF4-SD-907-0006	3/17/10	1345	↓	1	1					
TF4-SD-908-0006	↓	1330	↓	1	1					
TF4-SD-909-0006	↓	1305	↓	1	1					
TF4-SD-910-0006	↓	1235	↓	1	1					
TF4-SD-911-0006	↓	1200	↓	1	1					
TF4-SD-912-0006	↓	1130	↓	1	1					
TF4-SD-DUP01-031710	↓	0000	↓	1	1					SD911

RELINQUISHED BY:
Signature
Printed Name: Michael Horton
Firm: TRC
Date/Time: 3/18/10 1700

RECEIVED BY:
Signature: Fed Ex
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD.....15 DAYS

DELIVERABLES
____ I. Analytical Report
____ II. Analytical Report + QC
____ IV. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Opened by:
Inspected by:
Date:
Time:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

SAMPLER'S SIGNATURE

DISTRIBUTION: WHITE - return to originator; YELLOW - retained by originator

coc11-09

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services™ 19408 Park Row, Ste 320 • Houston, TX 77084 • (713) 266-1599 • FAX (713) 266-0130

DATE 3/18/10 PAGE 1 OF 3

PROJECT NAME Tank Farms 4/5
PROJECT # 112G00963 CTO 464
COMPANY/ADDRESS Tetra Tech NUS
55 Jonspin Rd
Wilmington MA 01887 PHONE (978) 474-8400
REPORT TO: Steve Parker

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	8290 Dioxins	1613B	1613 TCDD only	1668 WHO	1668 Full List	REMARKS
TF5-SD-913-0006	3/16/10	1445	SED	1	1					
TF5-SD-914-0006	↓	1510	↓	1	1					
TF5-SD-915-0006	↓	1535	↓	1	1					
TF5-SD-916-0006	↓	1605	↓	1	1					
TF5-SD-917-0006	↓	1315	↓	2	2					Lab QC
TF5-SD-918-0006	↓	1345	↓	1	1					
TF5-SD-919-0006	↓	1120	↓	1	1					
TF5-SD-920-0006	↓	1100	↓	1	1					
TF5-SD-921-0006	↓	1035	↓	1	1					
TF5-SD-922-0006	↓	0820	↓	1	1					

RELINQUISHED BY:
Signature: [signature]
Printed Name: Michael Horton
Firm: TE NUS
Date/Time: 3/18/10 1700

RECEIVED BY:
Signature: Fed Ex
Printed Name:
Firm:
Date/Time:

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD.....15 DAYS

DELIVERABLES
____ I. Analytical Report
____ II. Analytical Report + QC
____ IV. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.# ____
Bill To ____

SAMPLE RECEIPT:
Opened by: ____
Inspected by: ____
Date: ____
Time: ____

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Lab QC is lab Duplicate, double volume

[signature]
SAMPLER'S SIGNATURE

DISTRIBUTION: WHITE - return to originator; YELLOW - retained by originator

coc11-09

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Columbia Analytical Services™ 19408 Park Row, Ste 320 • Houston, TX 77084 • (713) 266-1599 • FAX (713) 266-0130

DATE 3/18/10 PAGE 3 OF 3

PROJECT NAME Tank Farms 4/5

PROJECT #

COMPANY/ADDRESS

PHONE

REPORT TO:

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	8290 Dioxins	1613B	1613 TCDD only	1668 WHO	1668 Full List	REMARKS
TF4-SD-RB01-031710	3/17/10	1610	H_2O	2	2					
TF4-SD-906-0006	3/18/10	1020	SED	1	1					
TF4-SD-904-0006	↓	0920	↓	1	1					
TF4-SD-905-0006	↓	0945	↓	1	1					
TF4-SD-902-0006	↓	1255	↓	1	1					
TF4-SD-903-0006	↓	1400	↓	1	1					
TF4-SD-DUP02 031810	↓	0000	↓	1	1					SD902
TF4-SD-901-0006	↓	1200	↓	2	2					Lab QC
~~TF4-SD-~~ MN										

RELINQUISHED BY:
Signature: [signature]
Printed Name: Michael Horton
Firm: TZ NUS
Date/Time: 3/17/10 1700

RECEIVED BY:
Signature: Fed Ex
Printed Name:
Firm:
Date/Time:

TURNAROUND REQUIREMENTS (in working days)
RUSH .....5 Days
RUSH .....10 Days
STD.....15 DAYS

DELIVERABLES
____ I. Analytical Report
____ II. Analytical Report + QC
____ IV. Data Validation Report (includes All Raw Data)

INVOICE INFORMATION:
P.O.#
Bill To

SAMPLE RECEIPT:
Opened by:
Inspected by:
Date:
Time:

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Lab QC is for Lab Duplicate, double volume

SAMPLER'S SIGNATURE: [signature]

DISTRIBUTION: WHITE - return to originator; YELLOW - retained by originator

coc11-09

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: ~~Debra Schlum~~ CM 5/5/10
Chuck Meyer 610 909 2925

Telephone #: ~~978 415 6387~~ CM 5/5/10
Project Mgr.

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA 01887

P.O. No.: _____ RQN: _____

Project No.: 112G00963
Tank Farms 4 + 5
Site Name: Naval Station Newport
Location: Newport State: RI
Sampler(s): Charles Meyer Peter Seaward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

List preservative code below: 4 4

QA/QC Reporting Notes:
(check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:
_____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	1 Liter Amber Glass PAH	1 Liter Amber Glass EPH	250 ml Poly HNO_3 Metals, Mercury	250 ml Poly HNO_3 Metals EP					
	TF4-48-MW409 0510	5/3/10	1735	GW	Aq		4		2	2	2	1	1					
	TF4-48-MW422 0510	5/3/10	1755	GW	Aq		4		2	2	2	1	1					
	TF4-48-MW408 0510	5/4/10	1155	GW	Aq		4		2	2	2	1	1					
	TF4-48-MW910 0510	5/4/10	1550	GW	Aq		4		2	2	2	1	1					

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	5/5/10	6:55	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
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CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: _____

Telephone #: _____

Project Mgr. Debra Seiken

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington MA 01887

P.O. No.: _____ RQN: _____

Project No.: Tank Farms 4 + 5 Naval Station Newport

Site Name: 112600963 CTO 464

Location: Newport State: RI

Sampler(s): Charles Meyer, Peter Seaward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials; # of Amber Glass; # of Clear Glass; # of Plastic; 1 Liter Amber PAH

Analyses: 1 Liter Amber Ex TPH; 250 ml Poly TAL Metals Mercury; 250 ml Poly TAL Metals; 250 ml Poly Dissolved Metals; 250 ml Poly Dissolved Mercury; Dissolved Metals

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	1 Liter Amber PAH	1 Liter Amber Ex TPH	250 ml Poly TAL Metals Mercury	250 ml Poly TAL Metals	250 ml Poly Dissolved Metals	250 ml Poly Dissolved Mercury	Dissolved Metals				QA/QC Reporting Notes (check as needed)
	TF4-38-MW418 0510	5/5/10	1135	GW	Aq		4		2	2	2	1	1							
	TF4-48-MW805 0510	5/5/10	1155	GW	Aq		4		2	2	2	1	1							
	TF4-38-MW903 0510	5/5/10	1610	GW	Aq		4		2	2	2	1	1							
	TF4-38-MW905 0510	5/5/10	1615	GW	Aq		4		2	2	2	1	1							
	TF4-MW-DUP01 050510	5/5/10	0000	GW	Aq		4		2	2	2	1	1							
	TF4-45-MW330 0510	5/6/10	1105	GW	Aq		12		6	6	6	3	3							Do MS/MSD
	TF4-45-MW802 0510	5/6/10	1640	GW	Aq		4		4	2	2	1	1	1	1					Sample Field Filtered
	TF4-45-MW122 0510	5/6/10	1715	GW	Aq		4		4	2	2	1	1	1	1					Sample Field Filtered

QA/QC Reporting Notes (check as needed):
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
Charles Meyer	[illegible]	5/7/10	0:51	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
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CHAIN OF CUSTODY RECORD

Page _____ of _____

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: _____

Telephone #: _____

Project Mgr. Darbra Seiken

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA 01887

P.O. No.: _____ RQN: _____

Project No.: 112600969 CT0464
Site Name: Naval Station Newport Tank Farms 4+5
Location: Newport State: RI
Sampler(s): Chuck Meyer Peter Seward

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below: 4 4 4 4

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	1 Liter Amber PAH	1 Liter Amber Ex TPH	250 ml poly TAL Metals Mercury	250 ml poly TAL Metals	250 ml poly Dissolved Metals Dissolved Mercury	250 ml poly Dissolved Metals			
	TF4-42-MW906 0510	5/7/10	1145	GW	Aq		4		2	2	2	1	1					
	TF4-42-MW909 0510	5/7/10	1210	GW	Aq		4		2	2	2	1	1					
	TF4-42-MW907 0510	5/7/10	1520	GW	Aq		4		4	2	2	1	1	1	1			

QA/QC Reporting Notes:
(check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:
_____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	5/10/10	6:05	1°C

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

Telephone #:
Project Mgr. Debra Seiken

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

P.O. No.: _____ RQN: _____

Project No.: 112600963
Site Name: Naval Station Newport Tank Farms 4+5
Location: Newport State: RI
Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= ECE 10= _____ 11= _____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		40ml VOA Vials VOC	1 Liter Amber PAH	1 Liter Amber Ex TPH	250ml Poly TAL Metals Mercury	250ml Poly TAL Metals	1 Liter Amber SVOC	1 Liter Amber PCB's/PCB	
						Containers:					Analyses:							
											List preservative code below:	2	9	9	4	4	9	9
	TF4-W-TB01-051010	5/10/10	0730	QC	Aq	2					2							
	TF4-42-MW-801 0510	5/10/10	1050	GW	Aq		4		2			2	2	1	1			
	TF4-42-MW-908 0510	5/10/10	1125	GW	Aq		4		2			2	2	1	1			
	TF4-MW-922 0510	5/10/10	1545	GW	Aq	2	4		2		2			1	1	2	2	
	TF4-MW-921 0510	5/10/10	1555	GW	Aq	2	4		2		2			1	1	2	2	
	TF4-W-RB01-051010	5/10/10	1815	QC	Aq		4		2			2	2	1	1			

QA/QC Reporting Notes:
(check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:
_____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	5/11/10	6:52	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ___ °C ☐ Freezer temp ___ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington MA

Telephone #:
Project Mgr. Debra Seiken

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington MA

P.O. No.: RQN:

Project No.: CTO 464 · 112600963
Site Name: Naval Station Newport Tank Farms 4 + 5
Location: Newport State: RI
Sampler(s): Chuck Mager Peter Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= ECE 10= 11=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

List preservative code below: 2 9 9 4 4 4 4 9

Containers: 9

Analyses:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	1 liter Amber Pest/PCB	40 ml VOA Vial VOC	1 liter Amber PAH	1 liter Amber EXTPH	250 ml Poly Metals/Mercury	250 ml Poly Metals	250 ml Poly Dissolved Metals/Mercury	250 ml Poly Dissolved Metals	1 liter Amber SVOC	QA/QC Reporting Notes (check as needed)
	TF4-38-MW-605 0510	5/10/10	1235	GW	Aq		4		4			2	2	1	1	1	1		
	TF4-W-TB02-051110	5/11/10	0730	QC	Aq	2					2								Laboratory Supplied Trip Blank
	TF4-MW-914-0510	5/11/10	1050	GW	Aq	2	4		2	2	2			1	1			2	
	TF4-MW-920-0510	5/11/10	1205	GW	Aq	2	4		2	2	2			1	1			2	
	TF4-MW-05D-0510	5/11/10	1705	GW	Aq		4		2			2	2	1	1				
	TF4-MW-913 0510	5/12/10	0905	GW	Aq	2	4		2	2	2			1	1			2	TF4-MW-DUP02-051210 Assigned Time 0000
	TF4-MW-912 0510	5/12/10	0945	GW	Aq	6	12		4	6	6			2	2			6	DO MS/MSD
	TF4-MW-919 0510	5/12/10	1250	GW	Aq	2	4		2	2	2			1	1			2	
	TF4-B8-MW-904 0510	5/12/10	1355	GW	Aq		4		2			2	2	1	1				
	TF4-MW-DUP02 051210	5/12/10	0000	GW	Aq	2	4		2	2	2			1	1			2	TF4-MW-913-0510

QA/QC Reporting Notes (check as needed):
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	6:57	5/12/10	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

Telephone #:
Project Mgr.

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

P.O. No.: RQN:

Project No.: CTO 464 112G00963
Site Name: Naval Station Newport Tank Farms 4 + 5
Location: Newport State: RI
Sampler(s): Chuck Meyer Peter Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= Ice 10= 11=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

List preservative code below: 9 9 4 4

QA/QC Reporting Notes: (check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		1 Liter Amber PAH	1 Liter Amber Ext TPH	250 ml Poly Metals Mercury	250 ml Poly Metals				
	TF4-MW-DUP03 051210	5/12/10	0000	GW	AQ	1	4		2		2	2	1	1				

Relinquished by:	Received by:	Date:	Time:	Temp°C
Chuck Meyer	[illegible]	5/13/10	0:57	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
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- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

Telephone #:

Project Mgr. Debra Seiken

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

P.O. No.: _____ RQN: _____

Project No.: CTO 464 112G00963
Site Name: Naval Station Newport Tank Farms 4 + 5
Location: Newport State: RI
Sampler(s): Chuck Meyer Peter Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= Ice 10= _____ 11= _____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

List preservative code below: 9 9 4 4 4 4

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: 1 Liter Amber PAH; 1 Liter Amber EX TPH; 250 ml poly Metals Mercury; 250 ml poly Metals; 250 ml poly Dissolved Metals, Mercury; 250 ml poly Dissolved Metals

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		1 Liter Amber PAH	1 Liter Amber EX TPH	250 ml poly Metals Mercury	250 ml poly Metals	250 ml poly Dissolved Metals, Mercury	250 ml poly Dissolved Metals		
	TF5-50-MW-200 0510	5/13/10	1150	GW	AQ		4		4		2	2	1	1	1	1		
	TF5-50-MW-108 0510	5/13/10	1205	GW	AQ		4		2		2	2	1	1				
	TF5-50-MW-207B 0510	5/13/10	1640	GW	AQ		4		2		2	2	1	1				
	TF5-MW-923 0510	5/13/10	1725	GW	AQ		4		4		2	2	1	1	1	1		

QA/QC Reporting Notes:
(check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:
_____

Relinquished by:	Received by:	Date:	Time:	Temp°C
Chuck Meyer	[illegible]	5/14/10	8:55	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

Telephone #:

Project Mgr. Debra Siekem

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

P.O. No.: _____ RQN: _____

Project No.: Naval Station Newport Tank Farms 4 + 5

Site Name: 112600963

Location: Newport State: RI

Sampler(s): Chuck Meyer Peter Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= _____ 10= _____ 11= _____

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Containers: # of VOA Vials; # of Amber Glass; # of Clear Glass; # of Plastic

Analyses: 1 Liter Amber SVOC; 1 Liter Amber Pest/PCB; 250 ml Poly Metals Mercury; 250 ml Poly Metals; 1 Liter Amber PAH; 1 Liter Amber Ext TPH; 40 ml VOA Vial VOC; 250 ml Poly Dissolved Metals Mercury; 250 ml Poly Dissolved Metals

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	1 Liter Amber SVOC	1 Liter Amber Pest/PCB	250 ml Poly Metals Mercury	250 ml Poly Metals	1 Liter Amber PAH	1 Liter Amber Ext TPH	40 ml VOA Vial VOC	250 ml Poly Dissolved Metals Mercury	250 ml Poly Dissolved Metals	QA/QC Reporting Notes (check as needed)
	TFS-MW-924 0510	5/14/10	1130	GW	Aq		4		2	2	2	1	1						
	TFS-MW-918 0510	5/14/10	1645	GW	Aq		4		2			1	1	2	2				
	TFS-W-TB03 051710	5/17/10	0730	QC	Aq	2										2			Laboratory provided Trip Blank
	TFS-MW-915 0510	5/17/10	1205	GW	Aq	2	4		2	2	2	1	1			2			
	TFS-MW-916 0510	5/17/10	1330	GW	Aq	2	4		4	2	2	1	1			2	1	1	
	TFS-MW-911 0510	5/17/10	1325	GW	Aq		4		2			1	1	2	2				TFS-MW-DUP04 051710
	TFS-MW-RB02 051710	5/17/10	1600	QC	Aq	2	6		4	2	2	1	1		2	2	1	1	
	TFS-MW-DUP04 051710	5/17/10	0000	GW	Aq		4		2			1	1	2	2				TFS-MW-911-0510
	TFS-MW-924 051810	5/18/10	0925	GW	Aq	2										2			
	TFS-MW-923 051810	5/18/10	1130	GW	Aq	2	4			2	2					2			

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	5/19/10	7:00	

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

Telephone #:
Project Mgr. Debra Seiken

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

P.O. No.: RQN:

Project No.: 112 G00963
Site Name: Naval Station Newport Tank Farms 4 & 5
Location: Newport State: RI
Sampler(s):

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 10= 11=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

List preservative code below: 2 4 4 4 4

QA/QC Reporting Notes: (check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		40 ml VOA Vials VOC	1 Liter Amber SVOC	1 Liter Amber Pest/PCB	250 ml Poly Metals/Mercury	250 ml Poly TAL Metals				
	TFS-MW-977 0510	5/18/10	1420	GW	AQ	2	4		2		2	2	2	1	1				
	TFS-MW-979 0510	5/18/10	1500	GW	AQ	2	4		2		2	2	2	1	1				TFS-MW-DUP05 051810
	TFS-W-DUP05 051810	5/18/10	0000	GW	AQ	2	4		2		2	2	2	1	1				TFS-MW-979

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	[signature]	5/19/10	7:00	

☐ EDD Format
☐ E-mail to

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____°C ☐ Freezer temp ____°C

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

Telephone #:
Project Mgr. Debra Seikin

Invoice To: Tetra Tech NUS
55 Jonspin Road
Wilmington, MA

P.O. No.: RQN:

Project No.: 112G00963
Site Name: Naval Station Newport Tank Farms 4 & 5
Location: Newport State: RI
Sampler(s): Chuck Meyer Peter Seward

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= Ice 10= 11=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

List preservative code below: 9 9 2 4 4

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		1 Liter Amber SVOC	1 Liter Amber Pest/PCB	40 ml VOA Vial VOC	250 ml Poly Metals Mercury	250 ml Poly Metals	1 Liter Amber PAH		
	TF5-W-TB04 051910	5/19/10	0730	AQ	QC	2							2					
	TF5-MW-978 0510	5/19/10	0910	AQ	GW	2	4		2		2	2	2	1	1			
	TF5-W-FB01 051910	5/19/10	1230	AQ	DW	2	4		2		2	~~2~~	2	1	1	2		
													CM 5/19/10					

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic
Analyses: 1 Liter Amber SVOC; 1 Liter Amber Pest/PCB; 40 ml VOA Vial VOC; 250 ml Poly Metals Mercury; 250 ml Poly Metals; 1 Liter Amber PAH

QA/QC Reporting Notes:
(check as needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
Charles W Meyer	[signature]	5/21/10	6:51	

☐ EDD Format _____
☐ E-mail to _____

☐ Ambient ☐ Iced ☐ Refrigerated ☐ Fridge temp ____ °C ☐ Freezer temp ____ °C

B-6 FIELD EQUIPMENT CALIBRATION LOG SHEETS

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: TANK FARMS 4 & 5, CTO 464

INSTRUMENT NAME ~~Mini Rae~~ LaMotte 2020 MODEL No.: ~~Mini Rae~~ LaMotte 2020

SERIAL No.: ~~HO-007897~~ 4531-3303 DECAL No.: NA TETRA TECH NUS CHARGE No. 112G00963

DATE	INITIAL READING (AM)		PROCEDURE		FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	0 NTU	10 NTU (span)	Per Manufacturer's Instruction		0 NTU	10 NTU (span)		
3/16/10	0.00	9.80	0.00	10.0	0.00	10.00	AM: C. Meyer PM: M. Horton	
3/17/10	0.00	10.25	0.00	10.01	0.00	9.91	AM: C Meyer PM: C Meyer	
3/18/10	0.00	9.86	0.00	10.00	0.00	10.0	AM: C Meyer PM: M. Horton	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	
							AM: PM:	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: ~~4531 3303~~ 110-007897 Model No.: ~~LaMotte 2020~~ Mini Rae Decal No.: NA

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
3/16/10	Lot # LTL 029-MD-CM Conc. = 100 ppm	0.0 / 101		AM: M. Horton PM:	Expiration 11/12
3/17/10	Lot # LTL 029-MD-CM Conc. = 100 ppm	0.0 / 101	97.4	AM: C Meyer PM: C Meyer	
3/18/10	Lot # LTL-029-MDCM Conc. = 100 ppm	0.0 / 100	98.1	AM: C Meyer PM: C Meyer	
3/19/10	Lot # LTL-029-MDCM Conc. = 100 ppm	0.0 / 100	100	AM: Chuck Meyer PM: Chuck Meyer	
3/22/10	Lot # L+L-029 MDCM Conc. = 100 ppm	0.0 / 100	100	AM: Chuck Meyer PM: Chuck Meyer	
3/23/10	Lot # L+L-029-MDCM Conc. = 100 ppm	0.0 / 100	100	AM: Chuck Meyer PM: Chuck Meyer	
3/24/10	Lot # LTL-029-MDCM Conc. = 100 ppm	0.0 / 100	101	AM: Chuck Meyer PM: Chuck Meyer	
3/25/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	102	AM: Chuck Meyer PM: Chuck Meyer	
3/26/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	102	AM: Chuck Meyer PM: Chuck Meyer	Expiration 11/12

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 110-007897 Model No.: Mini Rae Decal No.: N/A

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS

3/29/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	101	AM: Chuck Meyer
				PM: Chuck Meyer
					Expiration 11/12

3/31/10	Lot # LTL029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	97.6	AM: Chuck Meyer
				PM: Chuck Meyer	

4/1/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	98.1	AM: Chuck Meyer
				PM: Chuck Meyer	

4/2/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	100	AM: Chuck Meyer
				PM: Chuck Meyer	

4/5/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	97.9	AM: Chuck Meyer
				PM: Chuck Meyer	

4/6/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	98.3	AM: Chuck Meyer
				PM: Chuck Meyer	

4/7/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	97.8	AM: Chuck Meyer
				PM: Chuck Meyer	

4/8/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	98.7	AM: Chuck Meyer
				PM: Chuck Meyer	

4/9/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 100	97.6	AM: Chuck Meyer
				PM: Chuck Meyer
					Expiration 11/12

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 110-007897 Model No.: Mini Rae Decal No.: N/A

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
4/12/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	101	AM: Chuck Meyer PM: Chuck Meyer	Expiration 11/12
4/13/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	99.5	AM: Chuck Meyer PM: Chuck Meyer	
4/14/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	101	AM: Chuck Meyer PM: Chuck Meyer	
4/15/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	99.7	AM: Chuck Meyer PM: Chuck Meyer	
4/16/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	96.1	AM: C. Meyer PM: P. [illegible]	
4/19/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	98.3	AM: Chuck Meyer PM: Chuck Meyer	
4/20/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	99.6	AM: Chuck Meyer PM: Chuck Meyer	
4/21/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	98.9	AM: Chuck Meyer PM: P. [illegible]	
4/22/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 100	97.3	AM: Chuck Meyer PM: Chuck Meyer	

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 05399 Model No.: Mini Rae 2000 Decal No.:

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
4/5/10	Lot # LTL 029 MD-CM Conc. = 100 ppm	0.1 / 103	0.1 99.4	AM: M. Horton PM: M. Horton	
4/6/10	Lot # LTL 029 MD-CM Conc. = 100 ppm	0.0 / 112	0.0 111	AM: M. Horton PM: M. Horton	
4/7/10	Lot # LTL 029 MD-CM Conc. = 100 ppm	0.1 / 109	0.0 98.5	AM: M. Horton PM: M. Horton	
4/8/10	Lot # LTL 029 MD-CM Conc. = 100 ppm	0.0 / 109	0.1 98.7	AM: M. Horton PM: M. Horton	
4/9/10	Lot # LTL 029 MD-CM Conc. = 100 ppm	0.0 / 108	0.0 106	AM: M. Horton PM: M. Horton	
4/12/10	Lot # LTL 029 MD-CM Conc. = 100 ppm	0.0 / 106	0.0 120	AM: R Seal PM: M. Horton	
4/13/10	Lot # LTL 029 MD CM Conc. = 100 ppm	0.0 / 104	0.0 106	AM: R Seal PM: M. Horton	
4/14/10	Lot # LTL-029-MD-CM Conc. = 100 ppm	0.0 / 104	0.0 97.9	AM: Chuck Mayer PM: M. Horton	
4/15/10	Lot # LTL-029-MDCM Conc. = 100 ppm	0.0 / 106	0.3 108	AM: M. Horton PM: M. Horton	

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 05399 Model No.: MiniRae 2000 Decal No.:

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS

4/19/10	Lot # LTL 029 MD-CM
	Conc. = 100 ppm
		0.1 / 102	0.0 104	AM:
				PM:
					Expiration Date 11/12

4/20/10	Lot # LTL029 MD-CM
	Conc. = 100 ppm
		0.0 / 105	0.3 102	AM:
				PM:	

4/26/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 102	0.1 102	AM: Chuck Meyer
				PM: Chuck Meyer	

4/27/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 102	0.2 104	AM: Chuck Meyer
				PM: Chuck Meyer	

4/28/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.1 / 104	0.1 103	AM: Chuck Meyer
				PM: Chuck Meyer	

4/29/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.1 / 102	0.2 102	AM: Chuck Meyer
				PM: Chuck Meyer	

4/30/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.1 / 102	0.2 102	AM: Chuck Meyer
				PM: Chuck Meyer
					Expiration Date 11/12

	Lot # _____ Conc. = _____ ppm	/		AM: PM:	
	Lot # _____ Conc. = _____ ppm	/		AM: PM:	

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: _____ Model No.: Min. Rae 2000 Decal No.: A

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS

5/3/10	Lot # LTL029-MD-CM
	Conc. = 100 ppm
		0 / 107	0.0 / 103	AM: P. Seward
				PM: Chuck Meyer	

5/4/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 105	0.0 / 102	AM: Chuck Meyer
				PM: Chuck Meyer	

5/5/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 105	0.0 / 94.2	AM: Chuck Meyer
				PM: P. Seward	

5/6/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 105	0.0 / 95.3	AM: P. Seward
				PM: P. [illegible]	

5/7/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 105	0.0 / 95.4	AM: P. [illegible]
				PM: P. [illegible]	

5/10/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 104	0.0 / 97.8	AM: [illegible]
				PM: P. [illegible]	

5/11/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 102	0.0 / 100	AM: Peter [illegible]
				PM: Peter [illegible]	

5/12/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 106	0.0 97.9	AM: M. Horton
				PM: M. Horton	

5/13/10	Lot # 010889 Conc. = 100 ppm	0.0 / 102	0 / 101	AM: PM: P. Seward	

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: _____ Model No.: Mini Rae 2000 Decal No.: B

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS

5/3/10	Lot # LTL029-MD-CM
	Conc. = 100 ppm
		0 / 107	1.2 / 103	AM: P. Sevard
				PM: Chuck Meyer	

5/4/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 110	0.0 / 102	AM: Chuck Meyer
				PM: Chuck Meyer	

5/5/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 107	0.0 / 102	AM: Chuck Meyer
				PM: Chuck Meyer	

5/6/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 107	0.0 / 93.7	AM: P. Sevard
				PM: P. [illegible]	

5/7/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 104	0.9 / 90.7	AM: P. Sevard
				PM: P. [illegible]	

5/10/10	Lot # LTL-029-MD-CM
	Conc. = 100 ppm
		0.0 / 105	Did not use	AM: [illegible]
				PM: P. [illegible]	

5/11/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 102	0.6 / 92.1	AM: Peter
				PM: P. [illegible]	

5/12/10	Lot # LTL 029 MD CM
	Conc. = 100 ppm
		0.0 / 107	0.1 101	AM: M. Horton
				PM: M. Horton	

5/13/10	Lot # ~~LTL 029~~ 080999 Conc. = 100 ppm	0.0 / 101	0.0 / 89.9	AM: P. Sevard PM: P. Sevard	

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: _____ Model No.: Mini RAE 2000 Decal No.: B

Site Name/Location: TANK FARMS 4 & 5, CTO 464 Tetra Tech NUS Charge No.: 112G00963

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
5/14/10	Lot # 010889 Conc. = 100 ppm	0.0 / 104		AM: Chuck Meyer PM:	
5/17/10	Lot # 010869 Conc. = 100 ppm	0.0 / 107	0.0 / 107	AM: Chuck Meyer PM: Chuck Meyer	
5/18/10	Lot # 010869 Conc. = 100 ppm	0.0 / 107	0.0 / 100	AM: Chuck Meyer PM: Chuck Meyer	
5/19/10	Lot # 010869 Conc. = 100 ppm	0.0 / 107	0.0 / 105	AM: Chuck Meyer PM: Chuck Meyer	
	Lot # _____ Conc. = _____ ppm	/		AM: PM:	
	Lot # _____ Conc. = _____ ppm	/		AM: PM:	
	Lot # _____ Conc. = _____ ppm	/		AM: PM:	
	Lot # _____ Conc. = _____ ppm	/		AM: PM:	
	Lot # _____ Conc. = _____ ppm	/		AM: PM:	

TtNUS Form 0006

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: TANK FARMS 4 & 5, CTO 464

INSTRUMENT NAME: LaMotte 2020 MODEL No.:

SERIAL No.: 02040 DECAL No.: TETRA TECH NUS CHARGE No. 112G00963

DATE	INITIAL READING (AM)		PROCEDURE	FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	~~0~~ 1 NTU	10 NTU (span)	Per Manufacturer's Instruction	~~0~~ 1 NTU	10 NTU (span)		
4/5/10	1.04	9.92		1.04	9.28	AM: M. Horton PM: M. Horton	
4/6/10	0.93	10.03		0.98	9.88	AM: M. Horton PM: M. Horton	
4/7/10	1.03	10.00		0.98	10.18	AM: M. Horton PM: M. Horton	
4/8/10	1.00	9.88		1.1	9.7	AM: M. Horton PM:	
4/9/10	1.00	9.9		0.70	9.9	AM: PM:	
4/16/10	1.00	10		1.2	10	AM: P. Sewell PM: P. Sewell	
4/21/10	1.00	10		1.0	9	AM: P. Sewell PM: P. Sewell	
4/22/10	1.00	10		0.85	10	AM: P. Sewell PM: P. Sewell	
4/26/10	1.00	10.0		1.1	10	AM: Chuck Meyer PM: P. Sewell	
4/27/10	1.00	10		0.85	10.33	AM: Chuck Meyer PM: Chuck Meyer	
4/28/10	1.00	10.0		1.02	10.12	AM: Chuck Meyer PM: Chuck Meyer	
4/29/10	1.00	10.01		1.15	10.33	AM: Chuck Meyer PM: Chuck Meyer	
4/30/10	0.98	10.03		0.97	10.11	AM: [illegible] PM: Chuck Meyer	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: TANK FARMS 4 & 5, CTO 464

INSTRUMENT NAME: La Motte 2020 MODEL No.: La Motte 2020

SERIAL No.: 2554-1701 1998 DECAL No.: 13 TETRA TECH NUS CHARGE No. 112G00963

DATE	INITIAL READING (AM)		PROCEDURE	FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	0 NTU	10 NTU (span)	Per Manufacturer's Instruction	0 NTU	10 NTU (span)		
4/26/10	1.00	10.00		7.70	15.5	AM: Chuck Meyer PM: P. [illegible]	
4/27/10	0.97	10.00		1.1	9.89	AM: Chuck Meyer PM: Chuck Meyer	
4/28/10	0.48	10.46		1.55	10.68	AM: R Sequeira PM: P. [illegible]	
4/29/10	1.01	9.98		1.12	10.26	AM: Chuck Meyer PM: Chuck Meyer	
4/30/10	1.00	10.01		0.77	10.26	AM: PM: P. Seel	
						AM: PM:	
						AM: PM:	
						AM: PM:	
						AM: PM:	
						AM: PM:	
						AM: PM:	
						AM: PM:	
						AM: PM:	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: TANK FARMS 4 & 5, CTO 464

INSTRUMENT NAME: La Motte MODEL No.: 2020

SERIAL No.: 05647 DECAL No.: A TETRA TECH NUS CHARGE No. 112G00963

DATE	INITIAL READING (AM)		PROCEDURE	FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	0 NTU	10 NTU (span)	Per Manufacturer's Instruction	0 NTU	10 NTU (span)		
5/3/10	1.01	/ 10.02		1.04	10.04	AM: Chuck Meyer PM: Chuck Meyer	
5/4/10	1.00	/ 10.00		1.06	10.13	AM: Chuck Meyer PM: Chuck Meyer	
5/5/10	1.00	/ 10.00		1.04	9.85	AM: Chuck Meyer PM: P. Sevard	
5/6/10	0.99	/ 9.99		0	1.3	AM: PM: P. [illegible]	* will ck tom. morning
5/7/10	0.97	/ 9.96		1.30	11.1	AM: Chuck Meyer PM: Chuck Meyer	
5/10/10	1.00	/ 10.00		1.11	/ 10.85	AM: Chuck Meyer PM: P. [illegible]	
5/11/10	1.00	/ 10.01		1.0	10	AM: P. [illegible] PM: P. [illegible]	
5/12/10	0.95	/ 11		0.95	9.8	AM: M. Horton PM: M. Horton	
5/13/10	1.00	/ 10.00		0.92	9.92	AM: Chuck Meyer PM: P. Sevard	
5/14/10	0.97	/ 10.00		1.14	9.99	AM: Chuck Meyer PM: Peter [illegible]	
5/17/10	0.98	/ 10.02		1.24 ~~PS Did not use - reading suspect~~	11.3	AM: Chuck Meyer PM: P. Sevard	~~post cal reading are 9.85 & 11.3 ppm~~ PS
5/18/10	0.98	/ 10.05				AM: PM:	
5/19/10	0.98	/ 10.00		0.93	9.5	AM: Chuck Meyer PM: Chuck Meyer	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: TANK FARMS 4 & 5, CTO 464

INSTRUMENT NAME: La Motte MODEL No.: 2020

SERIAL No.: 02403 DECAL No.: 13 TETRA TECH NUS CHARGE No. 112G00963

DATE	INITIAL READING (AM)		PROCEDURE	FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	0 NTU	10 NTU (span)	Per Manufacturer's Instruction	0 NTU	10 NTU (span)		
5/3/10	1.00	/ 10.00		1.30	9.68	AM: Chuck Meyer PM: Chuck Meyer	
5/4/10	1.00	/ 10.00		1.19	10.17	AM: Chuck Meyer PM: Chuck Meyer	
5/5/10	1.00	/ 10.00		1.01	10.06	AM: Chuck Meyer PM: Chuck Meyer	
5/6/10	0.99	/ 9.99		1.01	10.05	AM: PM: P. [illegible]	
5/7/10	1.03	/ 10.03		1.06	10.45	AM: [illegible] PM: Chuck Meyer	
5/10/10	0.97	/ 10.03		1.10	/ 10.27	AM: Chuck Meyer PM: P. [illegible]	
5/11/10	0.98	/ 10.02		1.10	9.88	AM: P. [illegible] PM: P. [illegible]	
5/12/10	1.01	/ 9.98		0.93	7.44	AM: M. Horton PM: M. Horton	
5/13/10	1.01	/ 10.02		1.31	10.78	AM: Chuck Meyer PM: P. Seward	
5/14/10	0.97	/ 10.00		1.03	9.90	AM: Chuck Meyer PM: P. [illegible]	
5/17/10	1.03	/ 10.04		1.03	9.97	AM: PM: P. [illegible]	
5/18/10	1.00	/ 10.01				AM: PM:	
		/				AM: PM:	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 06E1427 AM
Job No: 112G00963
Model No: 556 MPS

Decal Letter: NA

Instrument is calibrated in accordance with manufactures instructions

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
3/16/10	am	1000	0	4.00	7.00	9.97	99.3	12.67	5.07	135.0	5°	5.25	754.7	M. Horton
	pm	984	0	3.76	7.18	9.47	101.3	13.30	3.97	146.3	4°	3.76	757.5	M. Horton
	notes: ORP is 100mV solution - Recal Check Wed AM (No Time on Tuesday)													
3/17/10	am	1001	0	4.00	7.00	9.90	101.3	13.30	3.77	135.0	4°	3.76	757.5	M. Horton
	pm	957	1	4.23	7.35	10.03	94.4	9.66	14.35	120.5	15°	14.94	756.0	M. Horton
	notes:													
3/18/10	am	1000	1	4.00	7.06	9.93	97.9	11.68	7.70	130.0	8°	7.76	753.4	M. Horton
	pm	965	2	4.31	7.21	10.10	94.4	8.79	18.87	113.1	16°C	15.65	752.6	M. Horton
	notes:													
	am													
	pm													
	notes:													
	am													
	pm													
	notes:													
	am													
	pm													
	notes:													
	am													
	pm													
	notes:													

Calibration STD's

Lot Number:	7342	7345	7352	7302	NA	7206	NA	NA
Expires:	8/5/10	8/6/10	8/7/10	7/21/10		6/10/10		

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 07G101725
Job No: 112G00963
Model No: 556 MPS
Instrument is calibrated in accordance with manufactures instructions

Decal Letter:

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
4/5/10	am	1027	2	4.04	7.14	10.05	—	—	—	—	—	14.35		M. Horton
	pm	958	0	4.17	6.90	10.16	—	—	—	—	—	20.65		M. Horton
	notes: Development only													
4/6/10	am	1000	1	4.00	7.00	10.01	—	—	—	—	—	12.37		M. Horton
	pm	981	1	4.08	6.90	9.82	—	—	—	—	—	19.20		M. Horton
	notes: Development only													
4/7/10	am	983	4	3.96	6.96	10.00	—	—	—	—	—	12.66		
	pm	973	1	4.04	6.87	9.65						23.70		
	notes: Development Only													
4/8/10	am	988	3	3.98	6.97	9.83	—	—	—	—	—	16.99		
	pm	972	1	3.98	6.83	9.82						22.95		
	notes: Development only													
4/9/10	am	1000	1	4.00	7.00	9.97	—	—	—	—	—	15.09		
	pm	973	3	3.96	6.97	9.84						14.29		
	notes: Development only													
4/16/10	am	1001	1	3.99	7.00	10.01						11.06		
	pm	1005	4	3.88	6.87	9.91	—	—	—	—	—	13.33		P. Seal
	notes:													
4/21/10	am	1000	3	3.99	7.04	9.98	—	—	—	—	—	11.40		P. Seal
	pm	977	4	3.76	6.87	9.77						18.66		
	notes:													

Calibration STD's

Lot Number:	7342	7345	7352	7362	NA	7206	NA	NA
Expires:	8/5/10	8/6/10	8/7/10	7/21/10		6/10/10		

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 07610172 5
Job No: 112G00963
Model No: 556 MPS
Instrument is calibrated in accordance with manufactures instructions

Decal Letter: A

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
4/26/10	am	1000	2	4.00	7.00	10.05	—	—	10.29	—	10.29	10.29		
	pm	998	2	4.10	7.12	9.96			14.05	—	14.13	14.13		
	notes:													
4/28/10	am	1000	2	4.00	7.00	10.00	—	—	10.61	—	10.81	10.81		
	pm	1042	1	4.07	6.81	9.89			11.51		11.53	11.53		
	notes:													
4/28/10	am	1000	3	4.00	7.00	10.05			7.42			9.87		
	pm	1027	4	3.98	6.87	10.07			9.89		10.15	10.15		
	notes:													
4/29/10	am	1000	3	4.00	7.00	10.02			7.36			7.65		
	pm	1121		4.10	7.08	10.10			12.40			12.80		
	notes:													
4/30/10	am	1000	2	4.00	7.00	10.04			9.79		11.8	11.88		
	pm	982	4	4.26	6.95	9.95						19.74		
	notes:													
	am													
	pm													
	notes:													
	am													
	pm													
	notes:													

Calibration STD's

Lot Number:					NA		NA	NA
Expires:								

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 08J100318
Job No: 112G00963
Model No: 566 MPS
Instrument is calibrated in accordance with manufactures instructions

Decal Letter: B

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
4/26/10	am	1000	4	4.00	7.00	10.01	—	—	11.43	—	11.43	11.43	—	[illegible]
	pm	992	3	4.17	6.93	9.84			16.28		16.33	16.33	—	[illegible]
	notes:													
4/27/10	am	1000	4	4.00	7.00	10.05			10.84		10.84	10.84		[illegible]
	pm	997	4	4.09	7.03	10.016			12.10		12.14	12.14		
	notes:													
4/28/10	am	1000	4	4.00	7.00	10.05			7.42			9.87		[illegible]
	pm	958	2	4.19	7.38	10.47			PM 9.60		10.23	10.23		[illegible]
	notes:													
4/29/10	am	1000	3	4.00	7.00	10.02			7.36			7.65		[illegible]
	pm	998	4	7.14	6.90	10.04			12.70			15.06		
	notes:			4.00										
4/30/10	am	1000	3	~~3.96~~	7.02	10.03			9.79			10.31		
	pm	997	3	4.11	6.93	10.00			18.11			16.63		[illegible]
	notes:													
	am													
	pm													
	notes:													
	am													
	pm													
	notes:													

Calibration STD's

Lot Number:					NA		NA	NA
Expires:								

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 07J101401
Job No: 112G00963
Model No: 556 MPS

Decal Letter: A

Instrument is calibrated in accordance with manufactures instructions

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
5/3/10	am	1.410	0.002	4.00	7.00	9.97	99.7	9.27	18.54	238.0	18.36	18.59	752.6 mmHg	
	pm	1.425	0.007	3.89	6.92	9.96	98.1	8.69	22.17	234.3	22.26	22.26	751.4 mmHg	
	notes:													
5/4/10	am	1.413	0.004	4.00	7.00	9.98	99.4	9.02	20.12	238.0	18.16	17.43	754.9	
	pm	1363	0.006	4.09	7.06	10.00	97.2	9.03	18.82	236.0	20.58	18.39	753.4	CHUCK MCGEE
	notes:													
5/5/10	am	1.413	0.003	4.00	7.00	10.00	~~94.5~~	9.02	15.62	244.0	15.01		757.9	
	pm	1.409	0.002	4.00	6.98	10.01	79.9	6.82	23.22	238.5	23.11	23.72	757.9	
	notes:								15.77					
5/6	am	1.413	0.003	4.00	7.00	10.00	96.5	9.60	~~156.5~~	244.0	15.81	15.89	753.7	
	pm	1.353	0.002	4.06	7.04	9.90	92.8	8.36	20.44	234.2	20.09	20.63	751.8	
	notes:													
5/7	am	1.413	0.004	4.00	7.00	10.00	99.3	10.11	14.54	244.0	14.83	15.05	758.5	
	pm	1.504	0.004	4.00	7.00	9.95	84.2	7.40	21.71	231.2	20.37	21.79	756.6	
	notes:													
5/10	am	1.413	0.002	4.00	7.00	10.03	98.1	11.45	8.51	250.5	10.31	11.64	760.3	
	pm	1.385	0.004	4.08	7.02	10.13	99.9	11.48	8.40	237.8	15.34	16.02	762.8	
	notes:													
5/11	am	1.413	0.002	4.00	7.00	10.05	99.9	11.48	8.40		9.80	11.15	769.8	
	pm	1.416	0.002	4.00	7.05	10.07	91.3	9.11	15.51	237.8	14.55	16.47	768.6	
	notes:													

Calibration STD's

Lot Number:								
Expires:					NA		NA	NA

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No:
Job No: 112G00963
Model No:

Decal Letter: A

Instrument is calibrated in accordance with manufactures instructions

Date		1.413 ~~1000~~ Conductivity µS/cm	DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	ppm	Air Temp	ORP mV	@ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
5/12/10	am	1.413	.002	3.99	7.00	10.01	102.9	11.44	10.52	250.5	11	10.69	765.7	M. Horton
	pm	1.400	.003	4.01	6.93	9.87	97.5	10.43	12.29	246.9	12	11.49	764.3	
	notes:													
5/13/10	am	1.414	0.002	3.99	7.00	10.01	100.7	11.78	8.45	255.0	9.41	8.56	766.6	P. [illegible]
	pm	1.412	0.003	4.07	7.05	10.01	82.8	8.00	16.99	247.0	16.23	17.50	765.5	P. [illegible]
	notes:													
5/14/10	am	1.414	0.002	4.00	7.00	10.02	100.3	10.60	12.85	244.3	12.60	12.64	763.3	P. [illegible]
	pm	1.413	0.004	4.02	6.99	9.98	103.6	10.14	16.40	242.1	15.63	15.34	760.8	P. [illegible]
	notes:													
5/17/10	am	1.413	0.004	4.00	7.00	10.00	100.7	10.50	13.25	244.0	15.81	16.60	763.5	
	pm	1.716	0.002	3.98	6.98	9.91	84.1	7.62	21.43	236.7	20.51	22.51	764.0	
	notes:													
5/18/10	am	1.413	0.003	4.00	7.00	10.05	100.4	10.42	13.74	244.0	13.43	14.12	763.1	P. [illegible]
	pm	1.369	0.003	3.94	7.05	6.10	98.7	10.24	13.70	240.5	13.89	14.44	761.1	P. [illegible]
	notes:													
5/19/10	am	1.413	0.003	4.00	7.02	10.04	99.4	10.65	12.04	244.0	11.51	11.59	752.8	P. [illegible]
	pm	1.440	0.004	3.94	6.98	9.98	93.2	9.56	14.24	243.0	13.50	14.16	753.0	
	notes:													
	am													
	pm													
	notes:													

Calibration STD's

Lot Number:								
Expires:					NA		NA	NA

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 4692 AL
Job No: 112G00963
Model No: 556 MPS
Decal Letter: B

Instrument is calibrated in accordance with manufactures instructions

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
5/3/10	am	1.410	0.002	4.00	7.00	9.99	99.0	9.24	18.69	238.1	18.20	18.48	752.6	
	pm	1.395	0.050	3.99	7.00	9.87	103.3	9.22	20.89	234.6	20.47	20.47	751.4	
	notes:													
5/4/10	am	1.413	0.002	3.99	7.00	10.04	99.7	9.02	20.14	258.0	18.48	17.46	754.9	
	pm	1.361	0.006	3.90	6.99	10.05	95.4	8.80	19.32	236.7	20.05	18.39	753.4	
	notes:													
5/5/10	am	1.413	0.004	4.00	7.00	9.99	97.4	9.02	15.56	244.0	15.09	15.83	757.9	
	pm	1.394	0.006	4.07	7.04	9.98	95.4	8.42	21.44	236.3	22.05	21.43	758.0	
	notes:													
5/6/10	am	1.413	0.003	4.00	7.00	10.00	97.2	9.60	15.81	244.0	15.81	15.83	753.7	
	pm	1.405	0.004	4.01	7.00	9.97	93.6	8.42	20.53	235.2	19.51	20.58	751.8	
	notes:													
5/7/10	am	1.412	0.003	4.00	7.00	10.00	99.8	9.98	15.43	244.0	14.58	14.89	758.5	
	pm	1.286	0.004	4.03	7.05	10.02	98.3	8.69	22.02	229.7	20.89	21.74	756.6	
	notes:													
5/10/10	am	1.412	0.004	4.00	7.00	10.00	99.3	11.50	8.50	250.5	10.00	11.59	760.3	
	pm	1.325	0.004	4.07	6.99	9.96	99.7	11.45	9.12	241.5	14.68	15.86	762.8	
	notes:													
5/11/10	am	1.413	0.003	4.00	7.00	10.00	99.7	11.45	9.12	250.5	10.23	11.15	769.8	
	pm	~~1.07~~ 1.454	0.004	3.98	6.90	9.97	95.7	9.55	15.46	239.3	14.71	15.89	768.6	
	notes:													

Calibration STD's

Lot Number:								
Expires:					NA		NA	NA

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER CALIBRATION LOG

Site Name: TANK FARMS 4 & 5, CTO 464
Serial No: 0501692 AL
Job No: 112G00963
Model No: 556 MPS
Decal Letter: B

Instrument is calibrated in accordance with manufactures instructions

Date		Conductivity 1000 µS/cm	Conductivity DI check	pH 4.0	pH 7.0	pH 10.0	Dissolved Oxygen 100% % sat.	Dissolved Oxygen 100% ppm	Dissolved Oxygen 100% Air Temp	ORP mV	ORP @ Temp	Solution Temp °C	Barometric Pressure, mm of Hg	Signature
5/12	am	1.413	.001	4.00	7.00	9.99	101.1	11.24	10.67	250.5	11	10.75	765.7	
	pm	1.401	.003	4.08	7.07	9.93	96.0	10.23	12.48	246.3	12	11.67	764.3	
	notes:													
5/13/10	am	1.413	0.004	4.00	7.00	10.01	100.4	11.83	8.29	~~253.1~~ 255.1	9.27	8.17	760.6	P.
	pm	1.395	0.004	4.82	7.30	9.87	92.9	8.45	17.17	243.7	16.80	17.41	765.5	P.
	notes:													
5/14/10	am	1.413	0.001	4.00	7.00	10.00	100.5	10.65	12.76	244.0	12.30	12.83	763.3	P.
	pm	1.412	0.004	4.28	7.09	9.54	95.8	8.97	18.53	233.3	17.18	17.18	760.8	P.
	notes:													
5/17/10	am	1.414	0.004	4.00	7.00	10.00	100.9	10.50	13.39	244.0	16.40	16.60	763.5	P.
	pm	1.763	0.005	4.04	7.08	10.16	95.7	8.43	21.62	236.0	20.82	22.50	764.0	P.
	notes:													
5/18/10	am	1.413	0.003	4.00	7.02	9.98	100.5	10.38	13.88	244.0	13.42	14.03	763.1	P.
	pm	1.422	0.004	4.13	7.12	10.34	99.6	10.33	13.70	188.5	13.88	14.35	761.1	P.
	notes:													
	am													
	pm													
	notes:													
	am													
	pm													
	notes:													

Calibration STD's

Lot Number:					NA		NA	NA
Expires:								

APPENDIX C

FIELD MODIFICATION RECORDS

TETRA TECH NUS, INC.

FIELD MODIFICATION RECORD

464-1

Site Name: Tank Farms 4 & 5 CTO 464 Location: Middletown RI

Project Number: 112G00963 Task Assignment: 0000.0330

To: Steve Parker / Debra Seiken Location: Wilmington MA Date: 3/9/10

Description: At Tank Farm 4, during the site walk with EPA on 3/4/10 the locations of SW/SD stations 901, 902, 903 & 906 were relocated. 901 was moved to a location just west of the 2004 excavation area in the wetland. 902 was relocated in the stream between 907 & 911, and 903 was relocated in the stream between 907 & 904. 906 was relocated down stream about 50' next to a stream island.

Reason for Change: During the site walk it was determined that the original locations of 901, 902, 903 & 906 would not yield results of any significance so locations were moved to areas where potential contamination was more likely to have occurred

Recommended Action: locations of SW/SD 901, 902, 903 & 906 will be moved to locations described above for sampling. locations of all SW/SD locations sampled will be recorded using a handheld GPS unit.

Field Operations Leader (Signature): [signature] Date: 3/9/10

Disposition/Action: Implement as proposed above

Project Manager (Signature): [signature] Date: 3/9/10

Distribution:

		Others as Required:
Program Manager:	Trepanowski	R. Lim, EPA
Project Manager:	Parker	P. Kulpa, RIDEM
Quality Assurance Officer:	Johnston	W. Johnston NAVFAC
Field Operations Leader:	Horton	D. Seiken TT
Project File:	G00963-2.5	

TtNUS Form 0003

TETRA TECH NUS, INC.

FIELD MODIFICATION RECORD

#464-2

Site Name: Tank Farms 4 & 5 CTO464 Location: Middletown RI

Project Number: 112G00963 Task Assignment: 0000.0530

To: Steve Parker / Dabra Seiken Location: Wilmington MA Date: 3/9/10

Description: At Tank Farm 5, during the site walk with EPA on 3/4/10 the locations of SW/SD 916 & 918 were relocated. 916 was moved upstream just beyond the west side of the culvert that runs beneath the access road to Green lane. 918 was moved 20-40' East next to a partially submerged 55gal drum described by RIDEM.

Reason for Change: During the site walk it was determined that ~~916~~ the original location of 916 would not yield results of any significance so it was moved to a location where potential contamination would be more likely. 918 was moved at the request of RIDEM

Recommended Action: SW/SD stations 916 & 918 will be moved to locations described above. locations of all SW/SD samples will be recorded using a handheld GPS unit.

Field Operations Leader (Signature): [signature] Date: 3/9/10

Disposition/Action: Implement as proposed above

Project Manager (Signature): [signature] Date: 3/9/10

Distribution:

		Others as Required:
Program Manager:	Trefanowski	R. Lim EPA
Project Manager:	Parker	P. Kulpa RIDEM
Quality Assurance Officer:	Johnston	W. Johnson NAVFAC
Field Operations Leader:	Horton	D. Seiken TT
Project File:	G00963-2.5	

TtNUS Form 0003

TETRA TECH NUS, INC.

FIELD MODIFICATION RECORD

464-3

Site Name: Tank Farms 4 & 5 Location: Middletown RI

Project Number: 112G00963 Task Assignment: 0000.0320

To: Steve Parker/Debra Seiken Location: Wilmington MA Date: 3/9/10

Description: At Tank Farm 4 Soil boring stations 929, 924, 920, 921, 925 & 930 are located in areas that could not have been impacted by contamination from Ruin 1 or Ruin 2. At Tank Farm 5 soil boring stations 966 & 967 are in areas that could not have been impacted by contamination from the oil water seperator

Reason for Change: Sampling at the stations mentioned above would not yield any significant results

Recommended Action: No soil sampling at stations described above, will relocate to other areas if the need arises

Field Operations Leader (Signature): [signature] Date: 3/9/10

Disposition/Action: Hold borings aside until new locations can be agreed to. All 24 (TF4) and 11 (TF5) are required per QAPP to characterize the Decision Units.

Project Manager (Signature): [signature] Date: 3/9/10

Distribution:

		Others as Required:
Program Manager:	Trepanowski	R. Lin EPA
Project Manager:	Parker	P. Kulpa RIDEM
Quality Assurance Officer:	Johnston	W. Johnson Navy
Field Operations Leader:	Horton	D. Seiken TT
Project File:	G00963-2.5	

TtNUS Form 0003

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

Newport, RI Data Gaps Assessment at

Tank Farm 4/5	464/112600963	4
Project/Installation Name	**CTO & Project Number**	**Task Mod. Number**
SAP	Tank Farm 4	4/13/10
Modification To (e.g. Work Plan)	**Site/Sample Location**	**Date**

Activity Description: Soil boring/soil sampling

Reason for Change: Regulatory requests to modify sampling grid to target worst-case scenario locations. Moving some locations from upgradient (non-impacted) areas. (See Attached Figure)

Recommended Disposition: Moved upgradient borings SB-924, 920, 921, 925, 930 and 929 around former soil excavation area as shown and coordinates attached. Moved SB-942 and 943 because regulators indicated these locations are not needed (not impacted from release). SB-943 is relocated to N. of site near former discharge line. SB-942 is relocated to the end of discharge pipe from Ruin 2.

for M. Horton — 4/13/10

Field Operations Leader (Signature) — **Date**

Approved Disposition: Implement revisions to boring locations as shown in attached sketch and as agreed on phone conference 4/13/10

Will also visually try to locate SB-937 to intersection of swale and former discharge pipe from Tank 41. Will visually observe and document manhole near SB-936.

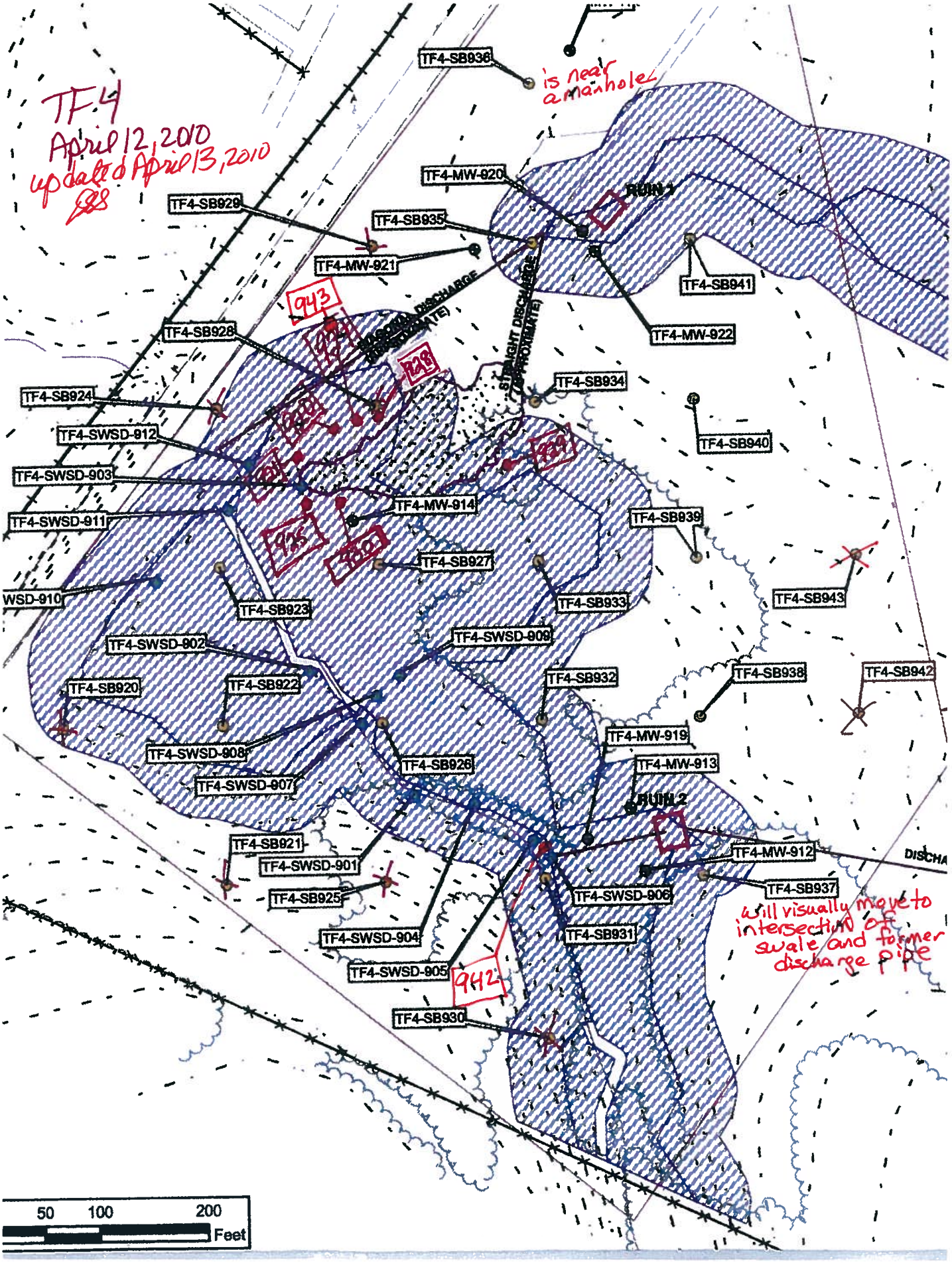
4/13/10

Project/Task Order Manager (Signature) — **Date**

Distribution:

Program/Project File – J. Trepanowski
Project/Task Order Manager – S. Parker
Field Operations Leader – M. Horton
D. Seiken NUS

Other: B. Lim, EPA
P. Kulpa, RIDEM
W. Johnson, NAVFAC
G. Kemp, Gannett Fleming


TF4
April 12, 2010
updated April 13, 2010
SS
TF4-SB936
is near a manhole
TF4-MW-920
RUIN 1
TF4-SB929
TF4-SB935
TF4-MW-921
TF4-SB941
TF4-MW-922
943
TF4-SB928
TF4-SB934
TF4-SB924
TF4-SB940
TF4-SWSD-912
TF4-SWSD-903
TF4-MW-914
TF4-SB939
TF4-SWSD-911
TF4-SB927
TF4-SB943
WSD-910
TF4-SB923
TF4-SB933
TF4-SWSD-909
TF4-SWSD-902
TF4-SB938
TF4-SB942
TF4-SB920
TF4-SB922
TF4-SB932
TF4-MW-919
TF4-SWSD-908
TF4-SB926
TF4-MW-913
TF4-SWSD-907
RUIN 2
TF4-SB921
TF4-MW-912
TF4-SWSD-901
TF4-SB937
TF4-SB925
TF4-SWSD-906
will visually move to intersection of swale and former discharge pipe
TF4-SWSD-904
TF4-SB931
TF4-SWSD-905
942
TF4-SB930
50
100
200
Feet

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

Newport, RI Data Gaps Assessment at Tank Farm 4/5

Project/Installation Name	CTO & Project Number	Task Mod. Number
Tank Farm 4/5	464/112600963	5
Modification To (e.g. Work Plan)	Site/Sample Location	Date
SAP	Tank Farm 5	4/13/10

Activity Description: Soil boring/soil sampling

Reason for Change: Regulatory requests to modify sampling grid to target worst-case scenario locations. Moving some locations from upgradient (non-impacted) areas.
(see attached map for locations)

Recommended Disposition: Moved SB973 NNW at bend in discharge line. Moved SB969 east to discharge line. Moved SB967 to wetland area west of SW/SD-978. Moved SB966 to location at end of pipe from A-18 and end of former lcn. of discharge line from OWS. Note: end of discharge line from A-18 is at SB971, therefore this location is covered.

G. Salas for M. Horton — 4/13/10
Field Operations Leader (Signature) — Date

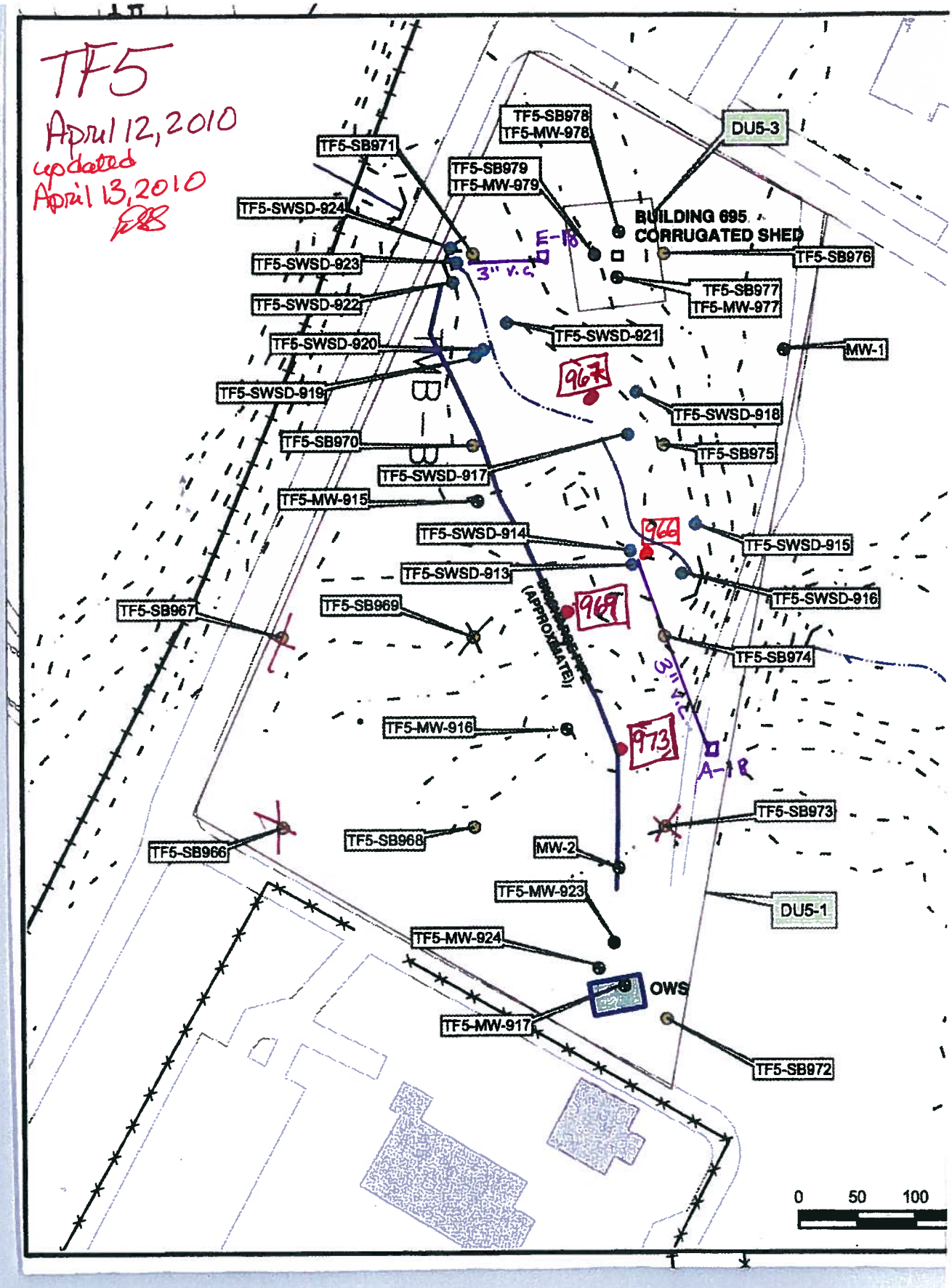
Approved Disposition:
Implement revisions to boring locations as shown on attached sketch and as agreed on phone conference 4/13/10

[signature] — 4/13/10
Project/Task Order Manager (Signature) — Date

Distribution:

Program/Project File – J. Trepanowski
Project/Task Order Manager – S. Parker
Field Operations Leader – M. Horton
D. Seiken - TtNUS

Other: R. Lim, EPA
P. Kulpa, RIDEM
W. Johnson NAVFAC
G. Kemp, Barnett Flemming



Locations of E-18 and A-18 are approximate.

TETRA TECH NUS, INC.

FIELD MODIFICATION RECORD

Site Name: Naval Station Newport Location: Tank Farm 4

Project Number: Task Assignment: Well Installation

To: Dabra Seiken Location: ~~Weapon~~ Tank Farm 4 3/19/10 Date: 3/19/10

Description: Back filling of holes over 15 feet with bentonite chips if not in competent rock. I would like to change to bentonite chips to the 5 foot depth so the material has no potential to migrate to the well

Reason for Change: In incompetent rock there is a potential for the grout to get into the fractures and create problems on the screen zone

Recommended Action: Being able to chip up to 5 feet to elevate any issues with the grout mixture

Field Operations Leader (Signature): [signature] Date: 3/19/10

Disposition/Action:

Project Manager (Signature): Date:

Distribution:

		Others as Required:
Program Manager:		
Project Manager:		
Quality Assurance Officer:		
Field Operations Leader:		
Project File:		

TtNUS Form 0003

TETRA TECH NUS, INC.

FIELD MODIFICATION RECORD

Site Name: Naval Station Newport Tank Farms 4+5 Location: Tank Farms 4+5

Project Number: _____ Task Assignment: _____

To: Dabra Seiken Location: Tank Farm 4 Date: 3/24/10

Description: Well screen installation at TF4-42-MW-906. The well was a deep well to corisponed with the depth of TF4-42-MW-908 42 Feet 10 feet of screen was used in that well

Reason for Change: Due to the material above 24 feet being dry it was determined in order to get water in the well. The well would be screened over 15 feet rather than the 10 foot interval

Recommended Action: 15 feet of screen was installed due to the Tightness of the formation

Field Operations Leader (Signature): [signature] Date: 3/24/10

Disposition/Action: _____

Project Manager (Signature): _____ Date: _____

Distribution:

		Others as Required:
Program Manager:		
Project Manager:		
Quality Assurance Officer:		
Field Operations Leader:		
Project File:		

TtNUS Form 0003

TETRA TECH NUS, INC.

FIELD MODIFICATION RECORD

Site Name: Naval Station Newport Tank Farm 4 and 5 Location: Tank Farms 4 + 5

Project Number: 112G00963 Task Assignment: CTO 464

To: Dabra Sulkes Location: Tank Farm Date: 3/31/10

Description: A 3 7/8" roller bit will be used to install wells into rock

Reason for Change: The coring bit will not be used due to the type of bedrock shale

Recommended Action: Use the 3 7/8" roller bit for installing rock wells

Field Operations Leader (Signature): [signature] Date: 3/31/10

Disposition/Action:

Project Manager (Signature): Date:

Distribution:

		Others as Required:
Program Manager:		
Project Manager:		
Quality Assurance Officer:		
Field Operations Leader:		
Project File:		

TtNUS Form 0003

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

TF 4&5 NAUSTA Newport Project/Installation Name	112G00963 CTO & Project Number	# 464-01A Task Mod. Number
FMR # 464-01 Modification To (e.g. Work Plan)	Tank Farm 4 DU4-1 Site/Sample Location	8/17/10 Date

Activity Description: This FMR supercedes FMR #464-01. Locations were moved as described in FMR-01 but were numbered differently. 901 - between 907 & 904, 902 - ~~between~~ downstream 75' of 907, 903 - west of excavation area, 906 - next to Ruin 2 outfall. Additionally 904 was moved behind stream island 50' downstream of original location (906 as described in FMR 464-01)

Reason for Change: During sampling locations were not numbered as originally described in FMR 464-01

Recommended Disposition: Move forward with locations labeled as decided in the field and as described above

Field Operations Leader (Signature) — Date: 8/17/10

Approved Disposition: approved

Project/Task Order Manager (Signature) — Date: 8/17/10

Distribution:

Program/Project File – Trepanowski
Project/Task Order Manager – Parker, Seiken
Field Operations Leader – Horton

Other: QA - Tom Johnston

APPENDIX D

SOIL BORING AND MONITORING WELL CONSTRUCTION LOGS

D-1 SOIL BORING LOGS (DU 4-1)

Borings Used For Soil Sampling

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB920
DATE: 4/22/10
GEOLOGIST: M. Horton, C Meyer
DRILLER: Joe M.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample			3.5'		Soft	Brown	Sandy silt with very fine grained		moist		0.0	0.0	0.0
0-1			/5'				sand, w/ some organics, and small gravel						
0825													
					medium	Grey/Brown	Sandy silt with fine grained sand with		moist				
	2						some small brown mottling						
Sample									wet				
2-4													
0830													
Lab QC					medium	Grey Brown	silty sand with fine to trace		moist				
	4						medium sand and some fragments						
							of phylite						
			4'		medium	Grey/Brown	silt with trace very fine sand and		moist				
	6		/5'				fragments of ~~iron staining up~~						
							phyllite with lots of iron staining						
					medium	Grey/Brown	silty sand w/ fine to medium grained		moist				
							sand and many fragments of						
	8						phyllite						
Sample													
8-10							SAA with more silt and phyllite		moist				
0835													
	10				soft Rock	Grey	very weathered phyllite with some iron staining		moist				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Boring located along NW edge of wetland excavation

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: Geo Probe

BORING No.: SB921
DATE: 4/22/10
GEOLOGIST: M. Horton
DRILLER: Joe M.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 0920			4/5'		Soft	Grey	- Silt with trace very fine sand and some small roots with iron staining along the root channels - trace clay		moist	0.7	0.0	0.0	0.0
	2												
Sample 2-4 0925					Soft	Brown	- Silt with trace fine sand		wet		0.6		
					dense	White	- Quartz layer		dry				
	4				medium	Brown/orange	- silty sand with fine grained sand and some small fragments of phyllite		moist				
											0.0		
			2.5'/5'		medium	Grey/Brown	Sandy Silt w/ fine grained sand and many small fragments of phyllite		wet				
	6										0.0		
	8												
Sample 8-10 0930 DUP05					medium	Grey	- fine grained sandy silt with frags. of phyllite up to 1" and some iron staining		wet		0.0		
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located along NW edge of wetland excavation

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: 2' spoon - sledge hammer

BORING No.: SB922
DATE: 4/19/10
GEOLOGIST: M. Horton
DRILLER: M. Mellon

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1030			0.5/2'		Soft	Brown	silt with some fine sand and organics on the top 1' - few mottles		moist	0.1	0.0	0.0	0.0
	2												
Sample 2-4 1035 DUP02			2/2'		Soft	Grey/ Brown	silt with little fine sand, mottles, gravel up to 1"		wet	0.3			
	4				Soft	Grey	silt with trace fine sand, lots of mottling		moist				
			1.5'/2										
	6				Soft	Grey	Sandy silt with fine grained sand and some root material		moist				
Sample 6-8 1040			1'/2'										
	8				~~Soft~~	~~Grey~~ Brown	SAA - more root material		~~wet~~ moist				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: 16' total footage
Boring located on west side of stream about 75' from the stream

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: 2" spoon, sledge hammer

BORING No.: SB923
DATE: 4/19/10
GEOLOGIST: M. Horton
DRILLER: M. Melkin

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
Sample	0												
0-1			1.5'/2'		Soft	Brown	Silt with trace very fine sand,		moist	0.0	0.0	0.0	0.0
0915							organics in top 1", some mottles						
	2												
Sample										0.1			
2-4			1.5'/2'						wet				
0920													
lab QC													
	4												
Sample					medium	Brown/ Grey	Silt with some gravel up to 1"		wet	0.2			
4-6			0.5'/2'										
0925													
	6				medium	Grey	Weathered phyllite						
							REFUSAL						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: 18' of total boring
Boring located on West side of stream about 15' from stream

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: GeoProbe

BORING No.: SB924
DATE: 4/20/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-4 1425			3/5'		Soft	Brown	Silt with trace fine sand and some small gravel up to 0.5" and some mottling		moist	0.0	0.0	0.0	0.0
	2												
Sample 2-4 1420 Lab QC					medium	Brown/ Orange	fine to medium grained silty sand with lots of gravel and phyllite fragments up to 1", lots of iron staining		wet	0.0			
	4												
			4.5/5'		dense	Brown/ Grey	silt with many large phyllite fragments		moist	0.0			
	6												
					Soft	Grey/ Brown	Extremely weathered phyllite - iron staining		dry	0.0			
	8				medium	Grey/ orange	large fragments 2"+ of weathered phyllite w/ silt & very fine sand and lots of iron staining		moist	0.0			
Sample 8-10 DUP04 1435					medium	Grey	weathered phyllite		moist				
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located on NW edge of wetland excavation

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: Reidich-25

BORING No.: SB925
DATE: 4/23/16
GEOLOGIST: M. Horton
DRILLER: Tony & Joe Martinelli

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		0												
1410	Sample 0-1		2	2'/2'		Soft	Brown	Silt with trace fine sand and trace		moist	2.3			
			2					gravel up to 1" - some small mottles						
			2											
			2											
		2									2.3			
	Sample 2-4		5	1.75'/2'							0.4			
1415			7			soft	Grey	Silt with trace very fine sand		moist				
			12			soft	Grey	Sandy Silt with fine grained sand		moist				
			16			medium	Grey	Fine to med grained silty sand		moist				
		4				medium	Grey				0.4			
			15	1'/2'		dense	Grey	Fine grained sand with some			0.2			
			13					small frags of phyllite and some						
			13					mottles						
			12			dense	Grey	weathered phyllite with lots of		moist				
		6						iron staining			0.2			
1400	Sample 6-8		19								0.2			
			19											
	1406		25											
			55-3"											
		8									0.2			
								Refusal						
		10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Advanced Boring to 8' then went back down to 2-4' for more sample volume - total 12'
Boring located on SW side of wetland excavation - near MW914

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: 2' Spoon - Sledge Hammer

BORING No.: ~~SB927~~ SB926
DATE: 4/19/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 ~~1300~~ 1320			2'/2'		Soft	BROWN	Silt w/ trace fine sand, little organics		moist	0.0	0.0	0.0	0.0
	2				Soft	Grey/Brown	~~Silty San~~ Sandy silt w/ fine grained sand and some mottles						
Sample 2-4 1325 DUP03			1.5/2'		medium	Grey	Silty sand with fine to coarse grained sand, poorly graded		wet	0.2			
	4												
Sample 4-6 1330			1'/2'		dense	Grey	Silt - with more coarse grained sand		wet	0.0			
	6				dense	Grey	layer of medium grained silty sand fine to coarse grained silty sand w/ frags. of phyllite up to 1" REFUSAL		wet wet				
	8												
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Total footage 12'
- Boring located on East side of stream about 10' NE of SW/SD 908

Drilling Area Background (ppm):

Converted to Well: Yes _____ No ✓ Well I.D. #: _____

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: 2' Spoon - Sledge Hammer

BORING No.: SB927
DATE: 4/19/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1			1.5/2'		Soft	Brown	- Silt w/ trace fine sand and some organics		wet	0.0	0.0	0.0	0.0
1410					dense		- SAA - more dense with some phyllite frags. up to 1.5"		wet				
	2					Grey	- weathered phyllite		wet				
							Refusal						
	4												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: total footage 4'
- Boring located south of wetland excavation in the wooded wetland

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB928
DATE: 4/15/10
GEOLOGIST: M. Horten
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1120			2.5/5'		Soft	Brown	Silt with trace very fine sand, some organics (top 5") and some gravel	moist		0.0	0.0	0.0	0.0
	2												
Sample 2-4 1125					Soft	Grey	Silt with some very fine sand and gravel up to 1"	wet		0.2			
					Soft	Grey/brown	Fine to medium grained silty sand w/ many phyllite fragments	wet					
	4												
										0.0			
			35/5'		Dense	Grey	Silt with some clay and iron staining, little gravel up to 0.5"	moist					
	6												
										0.0			
Sample 8-10 1130	8				Dense		SAA more silt, less clay, not as moist	moist		0.2			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located on the NW side of the wetland excavation

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: COS
DRILLING RIG: Reidich - 25

BORING No.: SB929
DATE: 4/23/10
GEOLOGIST: M. Horton
DRILLER: Tony & Joe Martenilli

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		0												
1200	Sample		1	1'/2'		Soft	Brown	Fine grained sandy silt with some gravel		wet	0.3			
	0-1		2					up to 1" - some mottles						
			2					↓						
			2											
1205		2						↓						
	Sample		5	1.7'/2'			Grey	Silt w/ trace fine sand		wet	0.1			
	2-4		5					↓						
	DUP07		7				Brown/ Grey	Silt with some fine to medium grained						
			9					sand and some phyllite fragments						
		4						up to 1.5" - lots of iron staining						
			15					↓		moist	0.1			
			18				Grey/ Orange	Weathered phyllite w/ some clay - lots						
			18					of iron staining						
			21											
		6						↓						
1210	Sample		15								0.0			
	6-8		27											
			33					↓						
			50-2"					Refusal						
		8												
		10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Advanced Boring to ~~8~~ 7.5' (refusal) then went back down to 2-4 for more volume total of ~~24~~ 12'
Boring located on SW side of wetland excavation

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Reidich -25

BORING No.: SB925 930
DATE: 4/23/10
GEOLOGIST: M. Horton
DRILLER: Tony & Joe Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
0-1		1	1.25/2'		Soft	Brown	- Fine grained sandy silt with some		moist	1.0	0.0	0.0	0.0
Sample		2					roots in top 4" and mottling						
~~1315~~		3											
1305		3											
	2												
~~GT~~ 2-4		3	1.5'/2'						wet	0.2			
1315		3			Soft	Grey	- Silt with trace fine sand and trace						
		3					fragments of phyllite						
		5											
	4												
		18	1.2/2'			Grey	- Fine grained sand w/ trace silt and many		wet	0.2			
		17					small mottles						
		20											
		25			medium	Grey/orange	SA w/ gravel and iron staining						
	6				medium	Grey/orange	Silt w/ fine to medium grained sand		moist				
		14	1.5/2				and large phyllite frags up to 1.5" -		m	0.3			
		18					lots of iron staining						
		18			medium	Grey	Clay - Silt and small phyllite		moist				
		15					fragments						
	8												
6-8		15	1/2'							0.2			
~~1325~~		18											
1320		25											
		55											
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Advanced Boring to 10' then went back down to 2-4' for more sample volume, total of 14'
Boring located on South side of wetland excavation - near MW914

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: 2' Spoon - sledge Hammer

BORING No.: SB931
DATE: ~~4/3~~ 4/30/10
GEOLOGIST: M. Horton
DRILLER: M. Nolen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1			1'/1.5'		Soft	Brown	- silt with trace very fine sand		moist	0.0	0.0	0.0	0.0
0900							↓						
						Brown	- sandy silt with fine grained sand and few small gravel		Wet				
	2						- weathered phyllite		Wet				
							REFUSAL						
	4												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: 6' total
- Boring located on stream bank opposite from concret structure that is believed to be discharge from Ruin 2

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: 2" Spoon - sledgehammer

BORING No.: SB932
DATE: 4/20/10
GEOLOGIST: M. Horton
DRILLER: M. Melton

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0.1			1.75'		Medium	Brown	- Silt w/ trace fine grained sand		- moist	0.0	0.0	0.0	0.0
1055			2'				↓						
					Medium	Brown	SAA with some small gravel up to		moist				
	2						0.5" - frags. of phyllite						
							REFUSAL - Tight material		moist				
	4												
	6												
	8												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: 4' total
- Boring located in wooded upland, surrounded by wetland - advanced boring by hand first but hit refusal at 2' so went back with Rig to get deeper

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Reidich - 25

BORING No.: TF4-513-932
DATE: 4/23/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1							0.0					
	2												
	3	20/20	1.0			Brown	Silty Fine grained Sand with Rock Fragments	0.0					
-1100 TF4-513 932-0204	4	23/20	2.0			Brown Gray	Silty Fine grained sand some med grained and Rock Frag						
	5	20/20	1.5			Brown	Silty Fine grained sand with Rock Frag	0.0					
	6	28/24	2.0			Brown	Silty Fine grained sand with Phylite Frag	0.0					
room TF4-513 932-0207	7	28/24	1.0 / 1.0			Brown Gray	Phylite some Silt						
refusal 1100 1050		50/1"											

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): _____

Remarks: Advanced casing to 7' (refusal) then went back down to 4' for more volume at 2.4. total of 11"

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: 2' spoon - Sledge Hammer

BORING No.: SB933
DATE: 4/20/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1'			1.5'/2'		Soft	Brown	- silt with trace fine sand		wet	0.0	0.0	0.0	0.0
1120					dense	Brown	- fine to medium grained sand with some silt and trace gravel		wet				
	2						REFUSAL (tight sand)						
	4												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 4' total
- Boring located in wooded wetland ~75-100 yards ~~the~~ NW of Run 2

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: Reidich-25

BORING No.: SB933
DATE: 4/23/10
GEOLOGIST: M. Horton
DRILLER: Tony & Joe M.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample		25					- See original Boring log from				0.0	0.0	0.0
0-1		15					4/20/10						
4/20/10		20											
	2	22											
Sample		20	1'/2'		dense	Grey	- Silty Sand w/ fine to medium grained		wet	0.1			
2-4		20					sand - some gravel up to 1.5"						
0955		15					↓						
		15											
	4				Soft Rock	Grey/orange	- Extremely weathered phyllite with		wet	0.1			
		11	1.3'/2				lots of iron staining and silt			0.2			
		11					↓						
		11											
		17											
	6						↓			0.2			
Sample		40	1.2'/1.5'				little more compact phyllite with		wet	0.1			
6-8		57					trace clay						
0950							↓						
		50					REFUSAL 7.5'						
	8									0.1			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Advanced casing to 8' (refusal) - then went back down to 4' for more sample volume at 2-4'. total of 12'

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB934
DATE: 4/15/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1010			4.5/5'		Soft	Brown	- organic topsoil, silt w/little fine sand		Moist	0.2	0.0	0.0	0.0
					Soft	Brown	- Silt with little fine sand and trace small gravel up to 0.5"						
	2				Soft	light Brown	- SM more fine sand and some small gravel		wet				
Sample 2-4 1015 Lab QC										0.2			
	4												
					medium	Brown/ Grey	~~Sm~~ Fine to medium grained sand w/ some silt and small gravel up to 0.5" and some iron staining		wet	0.2			
	6		4'/5										
					medium	Brown/ Red	- Medium to coarse grained sand w/ frags of phyllite - lots of iron staining		wet	0.1			
						Gray/ Brown	- weathered phyllite - iron staining						
	8												
Sample 8-10 1020										0.1			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located on East side of wetland excavation

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB935
DATE: 4/14/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample					Soft	Brown	- fine to medium grained silty sand		moist	0.0	0.0	0.0	0.0
0-1			4/5'				with some gravel up to 2"						
1615					Soft	Grey	- silt with little fine sand and some						
							small gravel up to 0.5"		moist				
	2												
Sample										0.0			
2-4					Dense	Grey	- very fine silty sand with little rounded						
1620							gravel						
	4												
										0.0			
			4/5'		Dense	Grey	~~silty~~ Sandy silt w/ very fine sand and		moist				
	6						little clay						
									wet	0.0			
	8												
Sample										0.0			
8-10					Dense	Grey	- Fine to coarse grained silty sand with		moist				
1625							some small gravel up to ¼" with						
							some iron staining						
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located down gradient of Ruin1 about 20' NE of MW921

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CRAWFORD DRILLING SERVICES
DRILLING RIG: GeoProbe

BORING No.: SB936
DATE: 4/14/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 ~~30~~ 1505			3.5/5'		Soft	Brown	- Silt with little very fine sand and some organics		moist	0.0	0.0	0.0	0.0
						Grey/Brown	- silt with little very fine sand and some small angular gravel up to 0.5" (fill)		moist				
	2				dense	Brown/Grey	- Sandy silt w/ fine grained sand some gravel up to 1"		moist				
Sample 2-4 1510										0.0			
	4				dense	Grey	- Silt with little fine sand and some fragments of phyllite		moist				
										0.0			
	6		5/5										
										0.0			
	8				dense	Brown/Grey	- Silt w/ little clay		moist				
Sample 8-10 1515 Lab QC					Soft Rock		- Extremly weathered phyllite w/ lots of iron staining		moist	0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located SW of Manhole located about 30' towards Ruin 1 from Defense highway

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB938
DATE: 4/22/10
GEOLOGIST: M. Horton
DRILLER: Joe M.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1			3.5'/5'		Soft	Brown	Silt with trace fine sand and some large gravel up to 1.5", some mottling		wet	0.5	0.0	0.0	0.0
~~1445~~ 1450													
	2												
Sample 2-4					dense	Brown/ Grey	Sandy silt w/ fine to medium grained sand, few gravel 0.5" to 1.5"		moist	0.0			
~~1455~~ 1445													
DUP06	4				soft rock	Light grey/ orange	Silt with trace fine grained sand and some quartz & phyllite frags. up to 1" & trace clay		dry	0.0			
	6		4'/5'		soft rock	light grey orange	SAA - More iron staining and lots of large fragments of quartz		PRV	0.0			
	8				Soft Rock	light grey orange	Extremely weathered phyllite with lots of ~~phyllite~~ iron staining		wet	0.1			
Sample 8-10													
~~1450~~ 1445													
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located up hill about 100' from Ruin 2

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: GeoProbe

BORING No.: SB939
DATE: 4/22/10
GEOLOGIST: M. Horton
DRILLER: Joe M.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1350			3.1'/5'		soft	Brown	- Silt with trace very fine grained sand and some gravel up to 1"		very moist	0.0	0.0	0.0	0.0
					medium	Brown	- Fine to medium grained sandy silt w/ phylite frags.		moist				
	2												
Sample 2-4 1355					medium	Grey/Brown orange	- Silt with fine grained sand, quartz and phylite frags up to 1.5", trace clay and lots of iron staining		moist	0.0			
	4												
										0.0			
			4.5'/5'		medium	Grey/Brown orange	SAA - larger fragments		dry				
	6												
										0.0			
					dense/ soft Rock	Grey/orange	Extremely weathered phylite with lots of iron staining. Trace clay		dry				
	8												
Sample 8-10 1400										0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located at woods edge up the hill from Ruin 2

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB940
DATE: 4/22/10
GEOLOGIST: M. Horton
DRILLER: Joe M.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1155			4.25'/5'		soft	Brown	Fine grained sandy silt - with some small roots		moist	3.5	0.0	0.0	0.0
					medium	Brown	~~Silt~~ - no roots		wet				
	2												
Sample 2-4 1200					dense	Grey	Silt with trace fine sand and some small gravel up to 0.5"		moist	0.0			
	4												
					dense	Grey	Silt with larger gravel up to 1" and some phyllite frags.		moist	0.0			
			4.5'/5'										
	6												
					dense	Grey/Brown	SAt - with trace clay, little denser and drier		~~wet~~ moist	0.0			
	8												
8-10 Sample 1205					dense	Grey	Fine grained sandy silt with some small gravel up to 0.5" - little iron staining, and some phyllite frags		moist	0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located South East of Ruin 2 on North side of small stream

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: GeoProbe

BORING No.: SB941
DATE: 4/15/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 0915			4'/5'		Soft	Brown	Sandy silt w/ fine grained sand and little organics		Moist	0.8	0.0	0.0	0.0
	2				Soft	Brown/Grey	Silty fine to very fine sand with some iron staining		Moist				
Sample 2-4 0920										0.2			
	4				medium	Grey	Sandy silt with fine to medium grained sand		Moist				
										0.0			
	6		4.5/5		medium	Grey	Medium to coarse grained silty sand w/ some small gravel up to 0.5"		Moist				
	8				dense	Grey/Brown	Medium to coarse grained sandy silt with some gravel up to 0.5"		Moist	0.0			
Sample 8-10 0925										0.0			
DUP01	10				dense	G/B	Fine to medium grained silty sand		Moist				
					dense	G/B	Fine grained silty sand		Moist				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located East of Ruin 1 in potential wetland

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CDS
DRILLING RIG: 2" Spoon

BORING No.: SB942
DATE: 4/20/10
GEOLOGIST: M. Horton
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
Sample	0		1.25'/2		Soft	Brown	silt w/ trace fine sand and some organics		moist	0.0	0.0	0.0	0.0
0-1													
0915					Soft	Brown	Sandy silt with fine grained sand		moist				
	2						↓						
Sample							↓			0.0			
2-4					medium	Grey	SAA with fine to medium grained sand		Wet				
0920							↓						
					medium	Grey	silty sand w/ fine to medium grained sand		Wet				
	4						weathered phyllite REFUSAL						
	6												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: 6' total
Boring located ~~at~~ immediately upstream of concrete structure that is believed to be discharge pipe from Ruin 2 - next to SB/SD 906

Converted to Well: Yes ____ No ✓ Well I.D. #:

Tetra Tech NUS, Inc.

Page ___ of ___

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB943
DATE: 4/15/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1240			4'/5'		soft	Brown	- Silt w/ fine and medium grained sand, some gravel up to 0.5"		Moist	11.6	0.0	0.0	0.0
					soft	Grey	- Silty sand with large phyllite fragments		Dry				
	2				medium	Grey/ Brown	- Quartz cobble - then sandy silt with fine to medium grained sand and gravel up to 1"		moist				
Sample 2-4 1245										0.1			
					soft	Dark Brown	- Sandy silt w/ trace gravel up to 0.5"		moist				
					medium	Brown	- Silt gravel up to 1"		moist				
	4												
					dense	Brown	Gravelly silt with gravel up to 0.5"		moist	0.0			
	6		4'/5'										
					Dense	Grey/Brown	Fine to medium grained sand w/ little silt and ~~pho~~ some phyllite fragments up to 1"		dry	0.0			
	8												
Sample 8-10 1250										0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located in upland area ~~near~~ to the NW of the wetland excavation area

Drilling Area Background (ppm): 0.0

Converted to Well: Yes _____ No ✓ Well I.D. #: _____

Borings Used For Well Installation

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich-25

BORING No.: TF4-SB-912
DATE: 4/20/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1	1 1 1	1.6 /			Brown Gray	VFG to Fine Sandy Silt Orange mottling and roots		Moist	0.0	0.0	0.0	0.0
	2	5 18	/ 2.0			Lt Brown	Sandy Silt + Gravel trace Phylite Frag		Wet	0.0 0.7	0.0	0.0	0.0
	3	5 5	1.4 /			Brown	Phylite interbedded silt		Moist	0.0	0.0	0.0	0.0
	4	7 12	/ 2.0	14 Screen		Lt Brown	Phylite interbedded silt		Dry	0.0 0.7	0.0	0.0	0.0
	5	7 12	1.2 /			Lt Brown	Phylite interbedded silt		Dry	0.0	0.0	0.0	0.0
	6	24 50	/ 2.0			Lt Brown	Sandy Gravel some silt		Wet	0.0 3.5	0.0	0.0	0.0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling Personnel installed the well from 6-3 feet screen well under artesian pressure Sand to 2 feet and bentonite chips from 2 to surface

Converted to Well: Yes ✓ No ____ Well I.D. #: TF4-MW-912

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich - 25

BORING No.: TF4-SB-913
DATE: 4/20/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1	1/2	1.5			Brown	Fine grained sandy silt Roots and Pebbles		Moist	0.0	0.0	0.0	0.0
	2	3/3	2.0			Gray	Fine Grained sandy silt with Lt Gray Mottles trace Pebbles		Moist	0.0 3.4	0.0	0.0	0.0
	3	7/7	0.6			Gray	Poorly Graded sands with some Silt		Moist	0.0	0.0	0.0	0.0
	4	6/5	2.0			Lt Gray	Concrete with a layer of tar like material		Dry	0.3 11.3	0.0	0.0	0.0
	5	12/24	1.0			Brown	Poorly Graded sands with trace Silt and rock frag		Moist	0.0	0.0	0.0	0.0
	6	25/69	2.0	Bedrock SCREENED INTERVAL		Gray Brown	Phylite		Dry	0.0 1.2	0.0	0.0	0.0
	7					Gray	Shale pieces in wash water		Wet	0.0	0.0	0.0	0.0
	8					Gray					0.0	0.0	0.0
	9					Gray					0.0	0.0	0.0
	10					Gray	Shale pieces in the wash water		Wet	0.0	0.0	0.0	0.0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling personnel installed the well screen from 10-5 feet with 2 feet of sand completed to the surface with Bentonite chips

Converted to Well: Yes ✓ No _____

Well I.D. #: TF4-MW-913

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Deidrich-25

BORING No.: TF4-MW-914
DATE: 4/6/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample HS	Sampler BZ	Borehole**	Driller BZ**
3001M 1130 3640		1	1/1	1.0			Brown	Fine grained sandy silt trace clay + root material	SM	Moist	0.0	0.0	0.0	0.0
		2	1/2	2.0			Brown	Fine grained sandy silt trace clay	SM	Moist	0.0 1.1	0.0	0.0	0.0
		3	2/2	1.4			Brown	Fine grained sandy silt trace clay	SM	Moist	0.0	0.0	0.0	0.0
		4	2/2	2.0			Gray	v Fine grained sandy silt some gravel + Rock Frag	SP	Moist	0.4 0.5	0.0	0.0	0.0
		5	5/5	1.4			Gray	v Fine grained sandy silt some gravel + Rock Frag	SP	Moist	0.0	0.0	0.0	0.0
		6	7/7	2.0			Brown	v Fine grained sandy silt trace medium + coarse sand	SM	Dry	0.0 0.7	0.0	0.0	0.0
		7	7/6	0.7			Brown	v Fine grained sandy silt some clay trace gravel	SM	Dry	0.0	0.0	0.0	0.0
		8	8/6	2.0	SCREENED INTERVAL		Gray	v Fine grained sandy silt some clay + Rock Frag	SM	Dry	0.0 0.5	0.0	0.0	0.0
		9	10/15	1.0			Gray	Fine grained sandy silt with Phylite in shoe	SM	Moist	0.0	0.0	0.0	0.0
		10	40/41	2.0			Gray	Fine grained sandy silt with Phylite Frag + trace pebbles	SM	Moist	0.0 0.2	0.0	0.0	0.0
		11	20/27	2.1			Brown	Fine grained sandy silt with trace clay + Phylite Frag	SM	Moist	0.0	0.0	0.0	0.0
		12	25/20	2.0			Gray	Fine grained sandy silt with trace clay + Phylite Frag	SM	Wet	0.0 0.5	0.0	0.0	0.0
		13	10/20	1.0			Gray	Sandy silt trace clay and Phylite Frag	SM	Moist	0.0	0.0	0.0	0.0
		14	26/30	2.0			Gray	Sandy silt trace clay and Phylite Frag	SM	Moist	0.0 0.2	0.0	0.0	0.0
		15	25/24	1.1			Gray	Sandy silt trace clay and Phylite Frag	SM	Moist	0.0	0.0	0.0	0.0
1300 Boring complete	100/3"	16	39/100	2.0			Gray	Phylite and Shale frag in shoe		Dry	0.0 0.2	0.0	0.0	0.0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling Service Personnel split spooned using drive and wash to 16 feet set well casing from 16 to 6 feet 1 foot of sand was added and Bentonite chips were added to 2.5 feet

Converted to Well: Yes ✓ No ____ Well I.D. #: TF4-MW-714

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich - 25

BORING No.: TF4-SB-919
DATE: 4/19/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks HS	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1	1/1	1.0			Lt Brn	Fine med sandy silt some gravel + rock frag		0.0				
	2	2/3	2.0			Lt Brn	Fine med sandy clay with gravel + rock frag		0.0 1.3				
	3	3/3	0.7			Dk Brn	vfg sandy silt with roots orange mottles trace peat		0.0				
	4	4/3	2.0			Dk Brn	vfg sandy silt with roots mottles + trace rocks		0.0 2.5				
	5	5/5	0.7			Lt Brn	Silty fine med sandy gravel some phyllite trace clay		0.0				
	6	5/5	2.0			Lt Brn	Silty fine med sandy gravel some phyllite frag trace clay		0.0 1.7				
	7	5/5	0.7			Lt Brn Gray	Fine med sand some silt trace clay phyllite		0.0				
Spoon refusal	8	75/4"	1.5			Lt Gray	Phyllite		0.0 0.7				
	9			ROCK INTERFACE		Lt Gray	Shale frag in wash water						
	10					Lt Gray			0.7				
	11			SCREENED INTERVAL		Lt Gray	Slate in wash water						
	12					Lt Gray	with Quartz						
	13					Lt Gray							
	14					Lt Gray	Quartz in wash water						
	15					Lt Gray	with slate		1.2				
	16					Lt Gray	Quartz in wash water						
	17					Lt Gray	with slate						
	18					Gray							
	19					Gray	Shale in wash water						
	20					Gray	some Quartz		0.3				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Crawford Drilling Service completed boring to 7.5 feet spoon refusal Roller bitted 8 to 20 feet total 12 feet roller bitted Installed screen 20-10 feet sand to 8 bentonite chips to surface

Converted to Well: Yes ✓ No ____ Well I.D. #: TF4-MW-919

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: Tank Farms 4+5 CTO 464
PROJECT NUMBER: 112G02763
DRILLING COMPANY: Cornwood Drilling Services
DRILLING RIG: Diedrich-25
BORING No.: TF4-SB-920
DATE: 4/21/10 - 4/21/10
GEOLOGIST: Chuck Mayer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	HS	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Drillhr BZ**
	1	2/2	1.4			Brn	Silty Sand trace Gravel + Rock Frag		Moist	0.0	0.0			
	2	5/7	2.0			Brn	Silty Sand trace Gravel + Rock Frag		Moist	3.2	5.8			
	3	5/7	0.4			Brn	Silty Fine grained Sand trace Med grained		Dry	0.0	0.3			
	4	7/9	2.0			Brn	Silty Fine grained Sand trace Med grained Sand		Dry	0.0	0.0			
	5	5/7	0.0				No Recovery							
	6	7/9	2.0				No Recovery							
	7	12/14	0.6			Gray	Fine Grained Sand + Silt trace Gravel + Rock Frag		Wet		0.0			
	8	12/12	2.0			Gray	Fine Grained Sandy Silt trace Gravel + Rock Frag		Wet	0.7	0.0			
	9	21/54	1.2			Gray Green	Fine grained Sandy Silt with Phylite		Wet		0.0			
Refusal	10	45/50	2.0			Gray	Phylite		Wet	0.9	0.0			
	11					Gray	Shale with interbedded		Wet	0.3	0.0			
	12					Gray	Quartz							
	13					Gray								
	14					Gray								
	15					Gray	Shale with interbedded Quartz		Wet	0.2	0.0			
	16					Gray	Shale with interbedded			0.0	0.0			
	17					Gray	Quartz							
	18					Gray								
	19					Gray								
	20					Gray	Shale with interbedded Quartz		Wet	0.0	0.0			
	21					Gray	Shale with interbedded Quartz		Wet	0.0	0.0			
	22					Gray								
	23					Gray								
	24					Gray								
	25					Gray	Shale with interbedded Quartz		Wet	0.0	0.0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Bagger roller hitting at 10 feet

Converted to Well: Yes ____ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Tank Farms 4+5 CTO 46 BORING No.: TF4-SB-920
PROJECT NUMBER: 112G0963 DATE: 4/21/10 - 4/15/10
DRILLING COMPANY: Crawford Drilling Services GEOLOGIST: Chuck Magee
DRILLING RIG: Diedrich-25 DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm): Sample	Sample B/Z	Borehole**	Driller BZ**
									H2S				
	26					Gray	Shale with interbedded Quartz		Wet 0.3	0.0			
	27					Gray							
	28					Gray							
	29					Gray							
	30					Gray	Shale with interbedded Quartz		Wet 0.1	0.0			
	31			SCREENED INTERVAL		Gray	Shale with interbedded Quartz		Wet 0.5	0.0			
	32					Gray							
	33					Gray							
	34					Gray							
	35					Gray	Shale with interbedded Quartz		Wet 0.3	0.0			
	36					Gray	Shale with interbedded Quartz		Wet 0.2	0.0			
	37					Gray							
	38					Gray							
	39					Gray							
	40					Gray	Shale with interbedded Quartz		Wet 0.3	0.0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes ____ No ____ Well I.D. #:

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Diedrick - 25

BORING No.: TF4-MW-921
DATE: 4/1/10
GEOLOGIST: Chuck Mager
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample HS	Sampler BZ	Borehole**	Driller BZ**
	1	2/2				Brown	Fine grained sandy silt trace rock frag	SM	Moist	0.0	0.0	0.0	0.0
	2	6/6				Gray	Fine grained sandy silt trace clay + rock frag	SM	Moist	0.0 0.2	0.0	0.0	0.0
	3	3/8				Gray	Fine grained sandy silt trace clay + rock frag	SM	Moist	0.0	0.0	0.0	0.0
	4	7/8				Gray	Fine grained sandy silt trace clay + rock frag	SM	Moist	0.0 0.2	0.0	0.0	0.0
	5	12/10				Gray	Fine grained sandy silt trace clay + rock frag	SM	Dry	0.0	0.0	0.0	0.0
	6	14/18				Gray	Fine grained sandy silt trace rock frag pebbles phyllite in spoon	SM	Dry	0.0 0.5	0.0	0.0	0.0
	7	16/15				Gray	Fine grained sandy silt trace clay and pebbles	SM	Dry	0.0	0.0	0.0	0.0
	8	18/18				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0 0.7	0.0	0.0	0.0
	9	12/14				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0	0.0	0.0	0.0
	10	15/19				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0 0.2	0.0	0.0	0.0
	11	20/20				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0	0.0	0.0	0.0
	12	23/23				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0 0.2	0.0	0.0	0.0
	13	15/15				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0	0.0	0.0	0.0
	14	14/16				Gray	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0 0.5	0.0	0.0	0.0
	15	16/36	0.0	SCREENED INTERVAL			No Recovery		Dry	0.0	0.0	0.0	0.0
	16	33/45	2.0				No Recovery		Dry	0.0	0.0	0.0	0.0
	17						Roller Bited 1 foot		Dry	0.0	0.0	0.0	0.0
Poor	18	22/37				Brown	Fine grained sandy silt trace clay and gravel	SM	Dry	0.0	0.0	0.0	0.0
	19	54/4"				Gray	Phylite shale trace sand stone		Dry	0.0 0.3	0.0	0.0	0.0
(fuse)	20					Gray	Shale pieces						
	21					Gray	In the						
	22					Gray	wash water						
	23					Gray	Shale Pieces						
	24					Gray	In the						
	25					Gray	wash water						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling personnel advanced the boring using the Drive and wash method split spoons were collected to 19 feet roller biting was used to complete the hole to 30 feet a total of 11 feet.

Converted to Well: Yes ✓ No _____ Well I.D. #: TF4-MW-921

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Diedrick - 25

BORING No.: TF4-MW-921
DATE: 4/1/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	26					Gray	Shale Pieces						
	27					Gray	In the						
	28					Gray	wash water						
	29					Gray	Shale in the						
	30					Gray	wash water						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 4/2/10 The boring was converted to a well 1 foot of Bentonite 1 foot sand screen set from 28 to 13 feet sand pack to 11 feet bentonite chips to 5 feet

Converted to Well: Yes ✓ No ____

Well I.D. #: TF4-MW-921

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Deidrich - 25

BORING No.: TF4-MW-922
DATE: 4/5/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample HS	Sampler BZ	Borehole**	Driller BZ**
	1	3/3	1.4			Brown	Silty Fine to medium grained sand trace Rock Frag	SM	Moist	0.0	0.0	0.0	0.0
	2	2/4	2.0			Brown Gray	Silty Fine to medium grained sand trace Rock Frag	SM	Moist	0.0 0.4	0.0	0.0	0.0
	3	4/4	0.7			Gray	Silty Fine to medium grained sand some gravel	SM	Dry	0.0	0.0	0.0	0.0
	4	4/4	2.0			Gray	Silty Fine to medium grained sand some Gravel	SM	Dry	0.0 0.2	0.0	0.0	0.0
	5	2/2	1.2			Gray	Silty Fine to medium grained sand some Gravel	SM	Wet	0.0	0.0	0.0	0.0
	6	4/6	2.0			Gray	Silty Fine to medium grained sand some Gravel	SM	Dry	0.0 0.2	0.0	0.0	0.0
	7	22/15	1.0			Brown	Silty Fine to medium grained sand some Gravel trace Clay	SM	Moist	0.0	0.0	0.0	0.0
	8	17/34	2.0			Gray	Silty Fine to medium grained sand some Gravel trace Clay	SM	Moist	0.0 0.5	0.0	0.0	0.0
	9	13/33	0.6			Gray	Silty Fine to medium grained sand Gravel trace clast Rock	SM	Moist	0.0	0.0	0.0	0.0
	10	36/42	2.0			Gray	Silty Fine to medium grained sand Gravel trace clast Rock	SM	Dry	0.0 0.5	0.0	0.0	0.0
	11	50/52	1.0			Gray	Silty Fine to medium grained sand Phylite Shale Frag	SM	Dry	0.0	0.0	0.0	0.0
0001 cfvsol	12	53/60	2.0			Gray	Phylite in shoe of split spoon		Dry	0.0 0.7	0.0	0.0	0.0
	13					Gray	Began Roller Biting						
	14					Gray	Shale Fragments trace						
	15			SCREENED INTERVAL		Gray	Clay						
	16					Gray							
	17					Brown	Shale Fragments with interbedded silty clay						
	18					Brown	Shale Fragments with interbedded silty clay						
	19					Brown	Shale Fragments with interbedded silty clay						
	20					Brown	Shale Fragments with interbedded silty clay						
	21					Brown	Shale Fragments with interbedded silty clay						
	22					Brown	Shale Fragments with interbedded silty clay						
	23					Brown	Shale Fragments with interbedded silty clay						
	24					Brown	Shale Fragments with interbedded silty clay						
	25					Brown	Shale Fragments with interbedded with silty clay						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Total depth of 28 feet screen set from 28-13 feet 2 feet sand completed with bentonite chips to 5 feet. Roller bited from 12 to 28 feet 16 feet of roller bitting

Converted to Well: Yes ✓ No ____

Well I.D. #: TF4-MW-922

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Daniderch - 25

BORING No.: TF4-MW-922
DATE: 4/5/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
26				SCREEN INTERVAL		Brown	Shale Fragments with interbedded silty Clay						
27						Brown	Shale Fragments with interbedded silty Clay						
28						Brown	Shale Fragments with interbedded silty Clay						
drilling complete													

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 010

Remarks: Total depth of 28 feet Screen set from 28-13 feet 2 feet of sand to 11 feet backfilled with bentonite chips to 5 feet. Roller bited from 12 to 28 feet total 16 feet. Drive and wash was used as the drilling method

Converted to Well: Yes ✓ No ____ Well I.D. #: TF4-MW-922

D-2 SOIL BORING LOGS (DU 5-1)

Borings Used For Soil Sampling

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: CRAWFORD DRILLING SERVICES
DRILLING RIG: GeoProbe

BORING No.: SB966
DATE: 4/14/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1			3/5'		Soft	Brown	Silt with little fine grained sand and some organics		wet	0.0	0.0	0.0	0.0
0905					Soft	Brown	Silty sand with fine to medium grained sand and some phyllite frags		wet				
	2												
										0.0			
					Soft	Grey	weathered phyllite with some iron staining		moist				
	4												
Sample 4-6										3.3			
0910													
	6		3/5'										
Sample 6-8					medium	Dark Grey	SAA			14.9			
0915													
	8						Refusal						
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: ~~Boring located about halfway down the slope where the discharge pipe was removed~~
Boring located on wetland hill in area of SD913

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB967
DATE: 4/14/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 0950					Soft	Brown	- Silt with very little very fine sand			0.0	0.0	0.0	0.0
							↓						
					Soft	Brown/ Grey	- fine to medium grained silty sand						
	2												
Sample 2-4 0955					Soft	Grey	- medium to fine grained sand - silty			0.0			
					↓	Grey	- fine grained sand - some silt						
						Grey	- medium to coarse grained sand - silty						
						Grey	- weathered bedrock (Refusal)						
	4												
					USED 2' SPOON WITH RODS AND SLEDGE HAMMER SO COULD NOT GET INTO ROCK MORE THAN 1-2" REFUSAL 3.5'							
	6												
	8												
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located in wetland/mudflat area between 918 and 921

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: GB968
DATE: 4/12/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1105			4/5'		medium	Brown	-Silty sand w/ fine grained sand		moist	0.0	0.0	0.0	0.0
							↓						
					medium/ hard	Brown	- SAA, slightly more dense		moist				
	2												
Sample 2-4 1110										0.0			
							↓						
	4				Soft Rock	Grey	-Weathered Phyllite - some competent fragments up to 2"		moist				
										0.5			
			5/5'										
	6												
										0.6			
					Soft	Grey	-Weathered Phyllite - little more competent than above		moist				
	8					white Grey	- ~~White~~ Phyllite little more competent than above		Dry				
Sample 8-10 1115					Soft	Brown Grey	- Weathered Phyllite		moist	0.2			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located in wooded upland area West of the discharge pipe

Drilling Area Background (ppm): ____

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: GeoProbe

BORING No.: SB969
DATE: 4/12/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
Sample	0				Soft	Brown	Sandy silt w/ some fine grained		Moist	9.3	0.0	0.0	0.0
0-1			4/5				sand, few chunks of phylite up to 1"						
1545							↓						
							SA						
	2												
Sample										0.3			
2-4													
1550							↓						
					Medium	Brown	Silty sand with medium & fine		Moist				
	4						grained sand, w/ small frags of						
							phyllite		Wet	0.7			
							↓		Moist				
			↓			Brown	Sandy silt w/ fine grained sand and						
							sand phyllite fragments						
	6						SA						
			4/5		dense	Brown	Sandy silt w/ fine grained sand, phylite		Wet	0.0			
							frags, many some up to 1.5"						
					dense	light	Sand, fine & medium grained with some		Dry				
						brown	large stone fragments						
	8					Brown	Sand - fine & medium grained with		Moist				
Sample							phyllite frags.			0.0			
8-10					very dense	light grey	Silt with large phyllite frags up		DRY				
1555							to 1"						
	10		↓				↓						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: Boring located about half way down the slope where the discharge pipe was removed

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: GeoProbe

BORING No.: SB970
DATE: 4/13/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 0835			3/5'		soft	Brown	Sandy silt, w/little fine to coarse grained sand & some organics		Wet	0.0	0.0	0.0	0.0
					soft	Brown	Sandy silt with little fine grained sand		Wet				
	2												
Sample 2-4 0840 Lab QC					soft	Brown/ Grey	Silty fine to medium grained sand & some frags of phyllite		moist	0.0			
					weathered	Grey	layer of more competent phyllite 0.3'						
					soft	Brown/ Grey	Silt with little fine sand		moist				
	4												
										0.0			
					soft/rock	Grey/ Brown	Weathered phyllite with quartz frags. up to 0.5' iron staining		Dry/moist				
	6		4/5'										
										0.0			
					soft rock	Grey/ Brown	weathered phyllite, little more competent than above, iron staining		Moist				
	8												
Sample 8-10 0830										0.0			
					medium dense	Grey	weathered phyllite, more dense than above, iron staining		Moist				
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located in wetland at bottom of slope where the discharge pipe was removed

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling
DRILLING RIG: Geo Probe

BORING No.: SB971
DATE: 4/13/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1000			4/5'		Soft	Brown	-Sandy silt w/ fine to medium grained sand, some phyllite fragments up to 1", some organics		Moist	5.4	0.0	0.0	0.0
	2				medium	Brown	Silty fine & medium grained sand with little small gravel up to 0.5"		Moist	0.0			
Sample 2-4 1010 DUP02	4				medium	Grey	Very fine grained sandy silt, with some rounded gravel up to 1"		Moist	0.0			
			4/5'		medium	Grey	-SAA but more coarse sand -SAA with more phyllite frags. up to 1"		Moist				
	6									0.0			
	8												
Sample 8-10 1005	10				Soft Rock	Brown/ GREY	-Weathered phyllite, some iron staining		dry/moist	0.0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks: Boring located to the NW of the culvert where the stream flows beneath defense highway

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geoprobe

BORING No.: SB972
DATE: 4/12/10
GEOLOGIST: M. Horton
DRILLER: Crawford Drilling Services

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
~~0~~	0												
Sample			4/5		medium	Brown/	Sandy silt with fine grained sand		moist	0.0			
0-1						GREY	-organics 0-.2						
1245							-little small gravel up to 0.5"						
							1-1.5 SAA with more gravel larger						
~~2~~	2					Dark Brown	up to 1" - 1.5' - 2' SAA						
Sample					dense	Grey	2-2.25 - Dark Grey weather phyllite		moist	0.0			
2-4						Grey	2.25-2.5 - Silt with little fine sand						
~~1150~~ 1250							2.5-3.5 - Very weathered phyllite moist						
~~4~~	4					Brown	3.5-4 - fine silty sand, moist						
						Grey	4-5 - fine grained silty sand		moist	0.0			
							5-6 - Fine grained silty sand with small						
~~6~~	6						rock frag. up to 0.5" moist						
				water		Brown	6-7 - very fine sand with little		wet	0.0			
							silt - wet						
						Grey	7-7.25 - layer of weathered phyllite						
~~8~~	8						Sandy silt with ~~fine~~ small frag. of phyllite						
Sample					dense	Grey	8-8.5 - Sandy silt with very fine sand			0.0			
8-10							and small frags of Phyllite						
~~1155~~ 1255							8.5-~~10~~ - Silty sand w/ some silt and		dry				
							medium grained sand						
~~10~~	10					Brown	9.5-10 - weathered phyllite - dry						

1/5'

5/5'

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located SW of the OWS

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geoprobe

BORING No.: SB973
DATE: 4/12/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample					medium	Brown	-Sandy silt w/ some fine grained sand		moist	0.0	0.0	0.0	0.0
0-1			4.5/				and phyllite frags. up to 1"						
1430			/5		more dense	Brown	-Sandy silt w/ very fine grained sand &		moist				
							phyllite frag						
	2												
Sample					dense	Brown	-Sandy silt w/ fine & medium grained sand		moist	0.0			
2-4							few small stones up to 0.5"						
1435					dense	Grey/ Brown	-Sandy silt with little fine sand - 2 large		wet				
DUP01							frags of phyllite 3.25 & 3.75						
1440	4												
					dense	Grey	-Sandy silt w/ little fine grained sand		moist	0.2			
							and many phyllite frags up to 1"						
							-SA A		Dry				
					very dense	Grey/ Brown	-Silty sand w/ fine and medium grained		moist				
	6		5/5				sand some rock frags up to 0.5"						
							-SA A			0.0			
					medium	Brown	-very fine sand with little silt		moist				
					dense	Grey	-Silt with little fine sand and many		moist				
	8						large phyllite frags.						
Sample					dense		-SA A			0.0			
8-10													
1440													
					~~dense~~ soft rock	Grey	-weathered phyllite		moist				
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located at top of slope where the discharge pipe was removed

Drilling Area Background (ppm): 0.0

Converted to Well: Yes _____ No ✓ Well I.D. #: _____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: GeoProbe

BORING No.: ~~SB975~~ SB974
DATE: 4/13/10
GEOLOGIST: M. Horton
DRILLER: M. Meilen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1445			3/5'		Soft	Brown	0-6" - fine to medium grained sandy silt		moist	0.0	0.0	0.0	0.0
					Soft	Brown	6"+ fine grained sandy silt with some large fragments of phyllite		wet				
					Soft	Brown/ Grey	- silt		wet				
	2												
Sample 2-4 1450					Soft	Grey	- sandy silt with some small fragments of phyllite		wet	0.0			
					Soft	Dark Grey	- fine to coarse grained sand w/ large frags. of phyllite, some iron staining		wet				
	4												
					hard	Brown/ Red	- medium to coarse grained silty sand with many rock fragments up to 1"		wet	0.0			
			4/5'										
	6												
					hard	Brown	- silty sand w/ medium grained sand and many phyllite fragments		moist	0.0			
					Soft	Grey	- weathered phyllite		moist				
	8												
Sample 8-10 1440 DUP03										0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located at end of ~~disch~~ swale near the stream about 25' South of the culvert that flows beneath the dirt road

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: GeoProbe

BORING No.: SB975
DATE: 4/14/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1200			35/5'		Soft	Brown	0-2" organic topsoil	moist		0.0	0.6	0.0	0.0
						Brown	2"+ Fine grained sandy silt w/ gravel 2"+	moist					
	2												
Sample 2-4 1205					Soft	Brown	Silty fine grained sand with phyllite frags	moist		0.0			
	4												
					Soft	Grey	extremly weathered phyllite w/ some iron staining	moist		0.0			
	6		35/5'		Soft	Grey	extremly weathered phyllite little more competent than above, some iron staining	dry PCF		0.0			
	8												
Sample 8-10 1210										0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Second SB975, Yesterday's boring was discarded
Boring located North of the mud flat/wetland area on the top of the upland slope

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Services
DRILLING RIG: Geo Probe

BORING No.: SB976
DATE: 4/13/10
GEOLOGIST: M. Horton
DRILLER: M. Mellen

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
Sample 0-1 1125			3/5'		Soft	Brown	- Sandy silt with fine grained sand and some gravel up to 1"		moist	15.2	0.0	0.0	0.0
					Medium	Brown	- Fine to medium grained silty sand w/ rounded gravel up to 0.5"		moist				
	2												
Sample 2-4 1120					Dense	Grey	- Fine to medium grained silty sand with few rounded gravel up to 0.5"		moist	0.0			
	4												
										0.0			
			4/5'			Brown/ GREY	Coarse grained sand w/ little silt and many fragments of phyllite up to 1"		moist				
	6												
										0.0			
					hard	Grey	- 1.5" competent phyllite		Dry				
					dense	Grey	- Fine grained sandy silt with many frags of phyllite		moist				
	8												
Sample 8-10 1115					dense	Grey	- Fine to coarse grained silty sand w/ frags of phyllite up to 1.5"		wet	0.0			
	10												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: Boring located to the East of the corrugated shed

Drilling Area Background (ppm):

Converted to Well: Yes ____ No ✓ Well I.D. #: ____

Borings Used For Well Installation

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Company
DRILLING RIG: Diedrich - 25

BORING No.: TF5-SB-915
DATE: 4/13/10 - 4/14/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample 1.5	Sampler BZ	Borehole**	Driller BZ**
	1	1/1	1.7			Dk Brown	Fine grained sandy silt with root material		Moist	1.5	0.0	0.0	0.0
	2	1	2.0			Brown	Fine grained sand trace silt		wet	0.0 3.5	0.0	0.0	0.0
	3	5/8	0.7			Brown	Sandy Gravel with Rock Fragments Trace Silt		wet	0.0	0.0	0.0	0.0
	4	5/5	2.0			Brown	Sandy Gravel with Rock Fragments trace silt		wet	0.0 0.1	0.0	0.0	0.0
	5	6/6	0.9			Brown	Sandy Gravel with Rock Frag		wet	0.0	0.0	0.0	0.0
	6	7/14	2.0			Brown	Sandy Gravel with Rock Fragments trace silt		wet	0.0 0.2	0.0	0.0	0.0
	7	16/19	1.0	PHYLLITE		Gray	Phylite		Dry	0.0	0.0	0.0	0.0
	8	24/29	2.0			Gray	Phylite		Dry	0.0 0.2	0.0	0.0	0.0
	9	20/22	1.0			Gray	Phylite		Dry	0.0	0.0	0.0	0.0
	10	22/24	2.0			Gray	Phylite		Dry	0.0 0.1	0.0	0.0	0.0
spoon refusal	11	14/31	1.0			Gray	Phylite		Dry	0.0	0.0	0.0	0.0
	12	60/0	1.5	SCREENED INTERVAL		Gray	Shale in shoe		Dry	0.0 0.5	0.0	0.0	0.0
	13					Gray	Roller bitting was Began		wet				
	14					Gray	Shale Fragments in		wet				
	15					Gray	wash water		wet				
	16					Gray	Shale Fragments in water		wet	0.0 0.2	0.0	0.0	0.0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling Service completed soil boring to spoon refusal at 12 feet roller bitted to 16 feet total roller bit to 4 feet installed screen 16-11 feet 2 feet sand backfilled with chips to 2 feet

Converted to Well: Yes ✓ No _____ Well I.D. #: TF5-MW-915

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich - 25

BORING No.: TF5-SB-916
DATE: 4/13/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1	2/3	1.4			Brown	Silty Fine grained Sand roots Trace Med Course Sand		Moist	0.0	0.0	0.0	0.0
	2	2/5	2.0			Brown	Silty Fine grained Sand trace Rock Fragments		Moist	0.0 3.1	0.0	0.0	0.0
	3	6/13	1.7			Lt Brown	Silty Fine medium grained Sand with Phylite chips		Dry	0.0	0.0	0.0	0.0
	4	13/17	2.0			Lt Gray	Silty Fine medium grained Sand with Phylite Chips		Dry	0.0 0.2	0.0	0.0	0.0
	5	15/10	1.2			Lt Gray	Silty Med Course Sandy Gravel with Phylite Chips		Moist	0.0	0.0	0.0	0.0
	6	15/19	2.0			Lt Gray	Silty Med Course Sandy Gravel with Phylite and Rock Frag		Moist	0.0 0.2	0.0	0.0	0.0
Spoon	7	14/15	1.0			Gray Brn	Silty Med Course Sandy Gravel with Phylite and Rock Frag		Dry	0.6	0.0	0.0	0.0
50/3"	8	15/50	2.0			Gray Brn	Silty Med Course Sandy Gravel with Phylite		Dry	0.4 0.4	0.0	0.0	0.0
Refusal	9	0/50				Gray	Began Roller Biting						
	10												
	11			SCREENED INTERVAL		Gray	Shale Frag in Wash Water			0.0 0.1	0.0	0.0	0.0
	12										0.0	0.0	0.0
	13										0.0	0.0	0.0
	14										0.0	0.0	0.0
	15					Gray	Shale Frag in Wash Water			0.0 0.2	0.0	0.0	0.0
	16					Gray					0.0	0.0	0.0
	17										0.0	0.0	0.0
	18										0.0	0.0	0.0
	19										0.0	0.0	0.0
	20					Gray	Shale Frag in Wash Water			0.0 0.1	0.0	0.0	0.0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling Service personnel drive and wash to spoon refusal at 8 Feet. Began roller biting at 8 Feet completed boring at 20 Feet 12 Feet of roller biting. Install screen 20 to 10 Feet 2 feet of sand 4 feet bentonite chips

Converted to Well: Yes ____ No ____ Well I.D. #: TF5-MW-915

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich - 25

BORING No.: TFS-SB-917
DATE: 4/12/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1	4/4	1.2			Brown	Fine grained sandy silt with roots		Moist	0.0	0.0	0.0	0.0
	2	5/4	2.0			Brown	Fine med grained sandy silt with Rock Frag		Moist	0.0 0.1	0.0	0.0	0.0
	3	3/4	0.4			Lt Gray	Silty med fine grained sand with Rock Frag		Moist	0.0	0.0	0.0	0.0
	4	4/4	2.0			Lt Gray	Silty med fine grained sand with Rock Frag		Moist	0.0 0.3	0.0	0.0	0.0
	5	10/10	0.4			Brown	Well sorted sandy Gravel with Rock Frag		Wet	0.0	0.0	0.0	0.0
	6	4/2	2.0	SCREENED INTERVAL		Brown	Well sorted sandy Gravel with Rock Frag		Wet	0.0 0.2	0.0	0.0	0.0
	7	3/3	0.2			Brown	Silty Fine grained sandy Gravel		Wet	0.0	0.0	0.0	0.0
	8	2/1	2.0			Brown	Silty Fine grained sandy Gravel		Wet	0.0 0.2	0.0	0.0	0.0
	9	11/20	0.4 / 1.0			Brown	Sandy Gravel trace Silt Concrete + Phylite in Shoe		Wet	0.0 1.3	0.0	0.0	0.0
	10	50/00				Gray	Shale from Wash Water						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling Service personnel roller bited to 10 feet and installed screen from 10-5 feet one foot of sand and a 2 foot Bentonite chip seal well appears to be in the oil water separator

Converted to Well: Yes ✓ No ____ Well I.D. #: TFS-SB-917

Excavation

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Deidrich - 25

BORING No.: TF5-SB-923
DATE: 4/12/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample 1+5	Sampler BZ	Borehole**	Driller BZ**
	1	3/6	1.1			Brown	Silty Fine grained Sand with Roots		Moist	0.0	0.0	0.0	0.0
	2	6/6	2.0			Brown	Fine medium Sand some Silt and Gravel		Moist	0.0 0.2	0.0	0.0	0.0
	3	6/5	0.3			Brown	Fine med Sand trace Silt + Coarse Sand		Moist	0.0	0.0	0.0	0.0
	4	8/9	2.0			Brown	Fine med Sand trace Silt Coarse Sand + Rock Fragments		Moist	0.0 0.4	0.0	0.0	0.0
	5	10/4	0.3			Brown	Sandy Gravel with Rock Fragments		Wet	0.0	0.0	0.0	0.0
	6	4/4	2.0			Gray	Sandy Gravel		Wet	0.0 0.2	0.0	0.0	0.0
	7	4/4	0.2			Brown	Sandy Gravel with some Silt		Wet	0.0	0.0	0.0	0.0
	8	3/2	2.0			Brown	Sandy Gravel with some Silt		Wet	0.0 0.2	0.0	0.0	0.0
	9	10/23	1.1			Gray	Phylite		Dry	0.0	0.0	0.0	0.0
poon 63/5" Refusal	10	63/5"	2.0			Gray	Phylite with Shale in Shoe		Dry	0.0 0.5	0.0	0.0	0.0
	11					Gray	Shale Frag in Wash Water						
	12												
	13												
	14												
	15					Gray	Shale Frag in wash Water			0.0 0.2			
	16					Gray	Shale Frag in wash water						
	17												
	18												
	19												
	20					Gray	Shale Frag in Wash Water			0.0 0.5			
	21			SCREENED INTERVAL									
	22												
	23												
	24												
	25					Gray	Shale Frag in wash Water			0.0 0.5			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling used drive and wash to spoon Refusal at 10 feet than roller bited to 30 feet and installed the well screen from 30-20 2 feet of sand 3 feet bentonite seal and grouted to 5 feet

Converted to Well: Yes ✓ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich-25

BORING No.: TF5-SB-923
DATE: 4/12/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks H2S	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	26			SCREENED INTERVAL		Gray	Shale frag in wash water		0.0 0.5				
	27												
	28												
	29												
	30					Gray	Shale frag in wash water		0.0 25.9				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well: Yes ____ No ____ Well I.D. #: ____

Tetra Tech NUS, Inc.

PROJECT NAME: TANK FARMS 4&5 CTO 464
PROJECT NUMBER: 112G00963
DRILLING COMPANY: Crawford Drilling Service
DRILLING RIG: Diedrich - 25

BORING No.: TF5 - SB - 924
DATE: 4/12/10 - 4/13/10
GEOLOGIST: Chuck Meyer
DRILLER: Tony Martinelli

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1600		1	5/5	1.4			Brown	Silty Fine grained Sand roots + Rock Frag		Moist	0.0	0.0	0.0	0.0
		2	5/5	2.0			Brown	Silty Fine grained Sand Trace Rock Frag		Moist	0.0 0.2	0.0	0.0	0.0
		3	9/12	1.0			Gray	Silty Fine grained Sand with rock Frag		Moist	0.0	0.0	0.0	0.0
		4	18/21	2.0			Gray	Silty Fine grained Sand with rock Frag		Moist	0.0 0.2	0.0	0.0	0.0
		5	5/8	1.1			Brown	Silty Fine grained Sand with Rock Frag		Moist	0.0	0.0	0.0	0.0
		6	8/10	2.0	phylite		Gray	Phylite		Dry	0.0 0.1	0.0	0.0	0.0
		7	10/28	0.7			Brown Gray	Phylite with Shale in shoe		Dry	0.0 0.1	0.0	0.0	0.0
spoon 50/2" refusal		8	50/2"	1.2										
630		9			Shale		Gray	Shale interbedded Quartz						
		10						in wash water						
		11												
		12			SCREEN INTERVAL		Gray	Shale interbedded Quartz						
		13						Trace Silt						
		14						in Wash water						
		15												
		16					Brown Gray	Shale trace silt and Quartz			0.0 2.5/8			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: Crawford Drilling Service hit spoon refusal at 8 feet Roller Biting began at 8 feet boring completed to 16 feet. Screen set 16 to 11 2 feet of sand to 9 feet Bentonite chips to 5 feet. Total of 8 feet of roller biting

Converted to Well: Yes ✓ No _____ Well I.D. #: TF5-MW-924

D-3 WELL CONSTRUCTION LOGS (DU 4-1)

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: TANK FARMS 4 & 5, CTO 464

PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND

WELL NO: TF4-MW-912

CLIENT: US NAVY

BORING NO: TF4-SB-912

CONTRACTOR: Crawford Drilling Service

DRILLER: Tony Martinelli

BORING LOCATION:

LOGGED BY: Chuck Mayer

DATE: 4/20/10

CHECKED BY:

DATE:

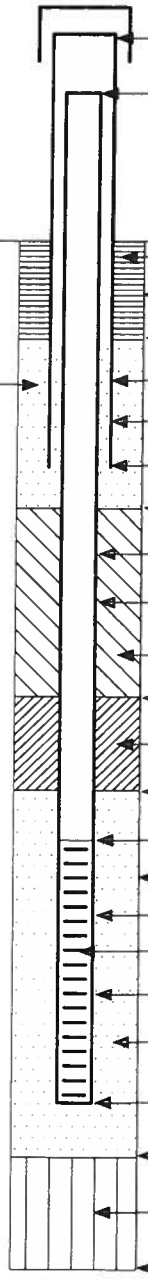
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	Bentonite Chips
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	~~N/A~~ 2'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	N/A
RISER PIPE (In.) I.D.: 2" O.D.:	2.5"
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips
DEPTH TOP OF SEAL (Ft.)	Surface
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL (Ft.)	2
DEPTH TOP OF PERVIOUS SECTION (Ft.)	3
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 slot
PERVIOUS SECTION (In.) I.D.: 2" O.D.:	2.5"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	0.0 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	6'
DEPTH BOTTOM OF FILTER PACK (Ft.)	6'
TYPE OF BACKFILL BELOW FILTER PACK	N/A
END OF BORING (Ft.)	6'

Well is under Artesian pressure
The well is located in a wetland so concrete surface seal was not possible a bentonite seal was used

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: TANK FARMS 4 & 5, CTO 464 — PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND — WELL NO: TF4-MW-913

CLIENT: US NAVY — BORING NO: TF4-SB-913

CONTRACTOR: Crawford Drilling Service — DRILLER: Tony Martinelli — BORING LOCATION:

LOGGED BY: Chuck Meyer — DATE: 4/20/10

CHECKED BY: — DATE:

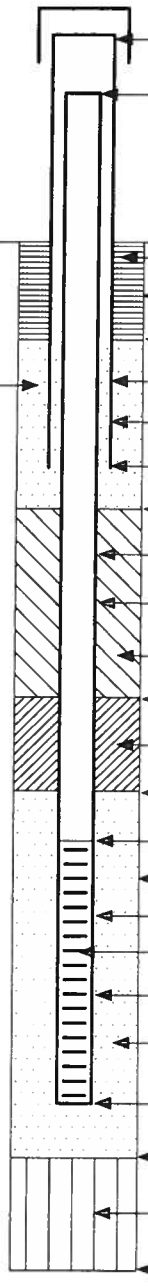
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	Bentonite chips
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	3'
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.5'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	N/A
RISER PIPE (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite chips
DEPTH TOP OF SEAL (Ft.)	Surface
TYPE OF SEAL	Bentonite chips
DEPTH BOTTOM OF SEAL (Ft.)	3'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	5'
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 slot
PERVIOUS SECTION (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	00 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	10'
DEPTH BOTTOM OF FILTER PACK (Ft.)	10'
TYPE OF BACKFILL BELOW FILTER PACK	N/A
END OF BORING (Ft.)	10'

The well is artesian and is located in a wet land a concrete surface seal was not possible bentonite was used as the seal

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: TANK FARMS 4 & 5, CTO 464

PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND

WELL NO: TF4-MW-914

CLIENT: US NAVY

BORING NO: TF4-SB-914

CONTRACTOR: Crawford Drilling Service

DRILLER: Tony Martinelli

BORING LOCATION:

LOGGED BY: Chuck Meyer

DATE: 4/6/10

CHECKED BY:

DATE:

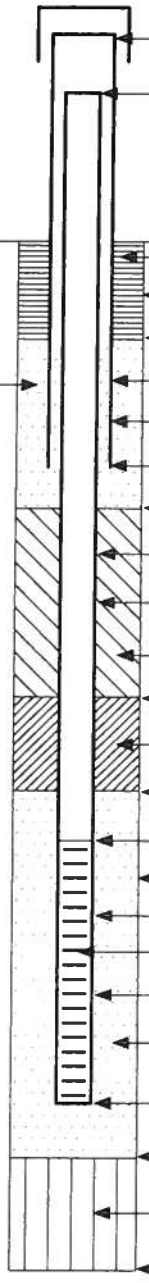
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)

TYPE OF SURFACE SEAL: Concrete

DIA. SURFACE SEAL BGS (In.): 12"

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.): 1.5'

I.D. OF PROTECTIVE CASING (In.): 4"

TYPE OF PROTECTIVE CASING: Steel

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.): 2.0

DEPTH BOTTOM OF DRAIN LAYER (Ft.): 2.5

RISER PIPE (In.) I.D.: 2" O.D.: 2.5"

TYPE OF RISER PIPE: Sch 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE: 00 Sand

DEPTH TOP OF SEAL (Ft.): 2.5'

TYPE OF SEAL: Bentonite Chips

DEPTH BOTTOM OF SEAL (Ft.): 5'

DEPTH TOP OF PERVIOUS SECTION (Ft.): 6'

DIAMETER OF BOREHOLE (In.): 4"

TYPE OF PERVIOUS SECTION: Sch 40 PVC

TYPE OF OPENINGS: 0.010 Slot

PERVIOUS SECTION (In.) I.D.: 2" O.D.: 2.5"

TYPE OF FILTER PACK AROUND PERVIOUS SECTION: 0.0 Sand

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.): 16"

DEPTH BOTTOM OF FILTER PACK (Ft.)

TYPE OF BACKFILL BELOW FILTER PACK

END OF BORING (Ft.)

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: TANK FARMS 4 & 5, CTO 464

PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND

WELL NO: TF4-MW-919

CLIENT: US NAVY

BORING NO: TF4-SB 919

CONTRACTOR: Crawford Drilling Service

DRILLER: Tony Martinelli

BORING LOCATION:

LOGGED BY: Chuck Meyer

DATE: 4/19/10

CHECKED BY:

DATE:

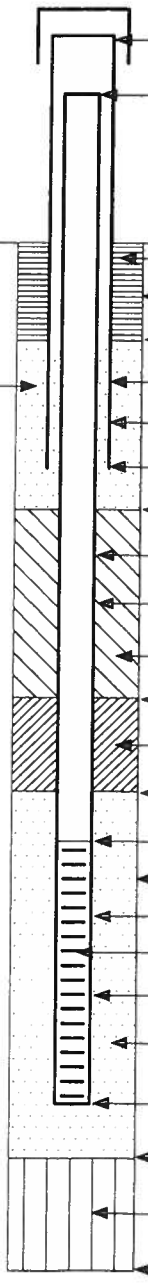
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)

TYPE OF SURFACE SEAL: Bentonite Chips

DIA. SURFACE SEAL BGS (In.): 6"

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.): 8'

I.D. OF PROTECTIVE CASING (In.): 4"

TYPE OF PROTECTIVE CASING: Steel

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.): 2.5'

DEPTH BOTTOM OF DRAIN LAYER (Ft.): N/A

RISER PIPE (In.) I.D.: 2" O.D.: 2.5"

TYPE OF RISER PIPE: Sch 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE: Bentonite chips

DEPTH TOP OF SEAL (Ft.): Surface

TYPE OF SEAL: Bentonite chips

DEPTH BOTTOM OF SEAL (Ft.): 8'

DEPTH TOP OF PERVIOUS SECTION (Ft.): 10'

DIAMETER OF BOREHOLE (In.): 3 7/8

TYPE OF PERVIOUS SECTION: Sch 40 PVC

TYPE OF OPENINGS: 0.010 slot

PERVIOUS SECTION (In.) I.D.: 2" O.D.: 2.5"

TYPE OF FILTER PACK AROUND PERVIOUS SECTION: 00 Sand

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.): 20'

DEPTH BOTTOM OF FILTER PACK (Ft.): 20'

TYPE OF BACKFILL BELOW FILTER PACK: N/A

END OF BORING (Ft.): 20'

The well is located in a wetland a cement surface seal was not posible bentonite chips were used instead

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

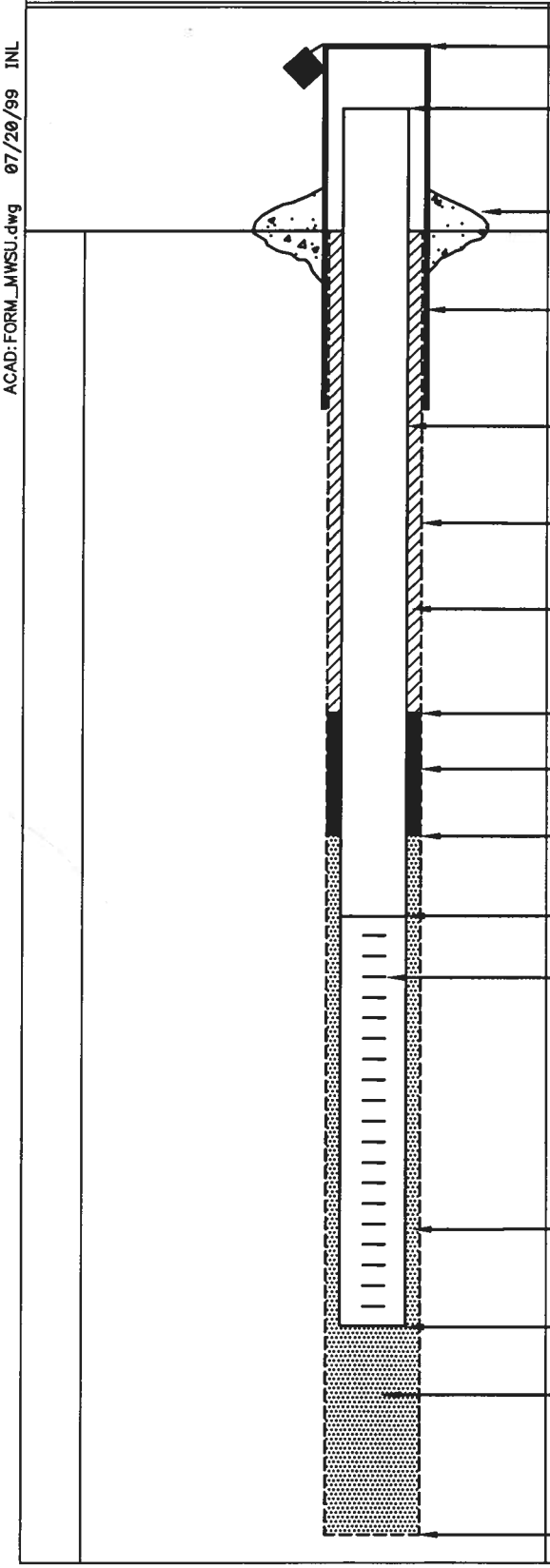
[redacted]

WELL NO.: TF4-MW-92D

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET STICK-UP

PROJECT Tank Farm 4 CTO464	LOCATION Tank Farm 4	DRILLER Crawford / Tony M.
PROJECT NO. 112G00963	BORING 92D	DRILLING METHOD Diedrich-25
DATE BEGUN 4/2/10	DATE COMPLETED 4/5/10	DEVELOPMENT METHOD
FIELD GEOLOGIST Chuck Meyer		
GROUND ELEVATION	DATUM	



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: /

ELEVATION/HEIGHT OF TOP OF RISER PIPE: /

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 3 7/8"

TYPE OF BACKFILL: Grout 5-25'

ELEVATION/DEPTH TOP OF SEAL: /25'

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 28'

ELEVATION/DEPTH TOP OF SCREEN: /30'

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH: 0.010 slot

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 00 Sand

ELEVATION/DEPTH BOTTOM OF SCREEN: /40'

ELEVATION/DEPTH BOTTOM OF SAND PACK: /40'
BACKFILL MATERIAL BELOW SAND: N/A

ELEVATION/DEPTH OF HOLE: /40'

ACAD: FORM_MWSU.dwg 07/20/99 INL

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: TANK FARMS 4 & 5, CTO 464

PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND

WELL NO: TF4-MW 921

CLIENT: US NAVY

BORING NO: TF4-SB-921

CONTRACTOR: Crawford Drilling Service

DRILLER: Tony Martinelli

BORING LOCATION:

LOGGED BY: Chuck Meyer

DATE: 4/1/10

CHECKED BY:

DATE:

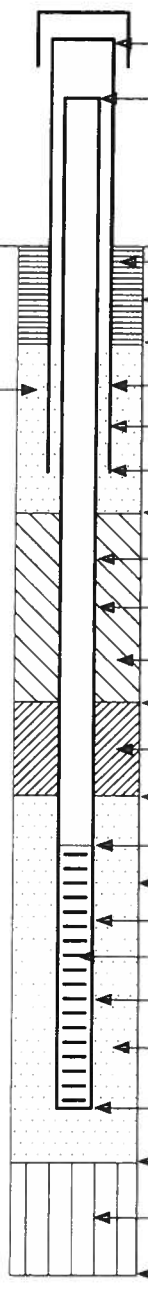
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)

TYPE OF SURFACE SEAL: Concrete

DIA. SURFACE SEAL BGS (In.): 12"

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.): 1.5

I.D. OF PROTECTIVE CASING (In.): 4"

TYPE OF PROTECTIVE CASING: Steel

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.): 2.5'

DEPTH BOTTOM OF DRAIN LAYER (Ft.): 5'

RISER PIPE (In.) I.D.: 2" O.D.: 2.5"

TYPE OF RISER PIPE: Sch 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE: Bentonite Chips

DEPTH TOP OF SEAL (Ft.): 5'

TYPE OF SEAL: Bentonite Chips

DEPTH BOTTOM OF SEAL (Ft.): 11'

DEPTH TOP OF PERVIOUS SECTION (Ft.): 13'

DIAMETER OF BOREHOLE (In.): 3 7/8"

TYPE OF PERVIOUS SECTION: Sch 40 PVC

TYPE OF OPENINGS: 0.010 Slot

PERVIOUS SECTION (In.) I.D.: 2 O.D.: 2.5

TYPE OF FILTER PACK AROUND PERVIOUS SECTION: 00 Sand

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.): 30'

DEPTH BOTTOM OF FILTER PACK (Ft.): 00 Sand

TYPE OF BACKFILL BELOW FILTER PACK: Bentonite

END OF BORING (Ft.): 30

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: TANK FARMS 4 & 5, CTO 464 — PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND — WELL NO: TF4-MW-422

CLIENT: US NAVY — BORING NO: TF4-SB 422

CONTRACTOR: Crawford Drilling Service — DRILLER: Tony Martinelli — BORING LOCATION:

LOGGED BY: Chuck Meyer — DATE: 4/5/10

CHECKED BY: — DATE:

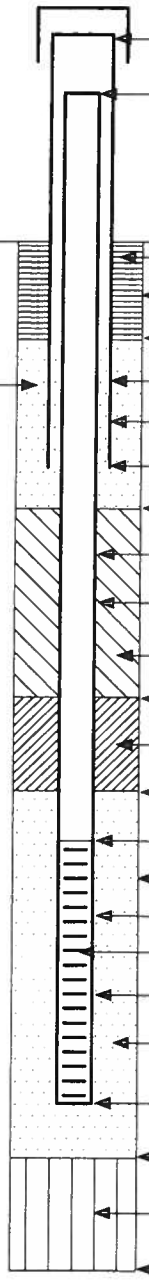
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	Concrete
DIA. SURFACE SEAL BGS (In.)	12"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	1.5
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.5'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	5.0
RISER PIPE (In.) I.D.: 2.0"	O.D.: 2.5"
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips
DEPTH TOP OF SEAL (Ft.)	5.0'
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL (Ft.)	13'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	13'
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 slot
PERVIOUS SECTION (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	0.0
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	28'
DEPTH BOTTOM OF FILTER PACK (Ft.)	N/A
TYPE OF BACKFILL BELOW FILTER PACK	
END OF BORING (Ft.)	

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

D-4 WELL CONSTRUCTION LOGS (DU 5-1)

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: TANK FARMS 4 & 5, CTO 464
PROJECT NO: 112G00963
PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND
WELL NO: TF5-MW-915
CLIENT: US NAVY
BORING NO: TF-SB-915
CONTRACTOR: Crawford Drilling Service
DRILLER: Tony Martinelli
BORING LOCATION:
LOGGED BY: Chuck Meyer
DATE: 4/14/10
CHECKED BY:
DATE:

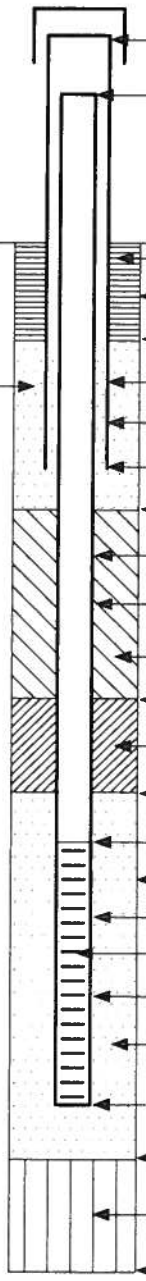
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	Concrete
DIA. SURFACE SEAL BGS (In.)	12"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	1.5'
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	2'
RISER PIPE (In.) I.D.: 2" O.D.: 2.5"	
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips
DEPTH TOP OF SEAL (Ft.)	2'
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL (Ft.)	9'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	11'
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 Slot
PERVIOUS SECTION (In.) I.D.: 2" O.D.: 2.5"	
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	OO Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	16'
DEPTH BOTTOM OF FILTER PACK (Ft.)	16'
TYPE OF BACKFILL BELOW FILTER PACK	N/A
END OF BORING (Ft.)	16'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: TANK FARMS 4 & 5, CTO 464 — PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND — WELL NO: TFS-MW 916

CLIENT: US NAVY — BORING NO: TFS-SB-916

CONTRACTOR: Crawford Drilling Service — DRILLER: Tony Martinelli — BORING LOCATION:

LOGGED BY: Chuck Meyer — DATE: 4/13/10

CHECKED BY: — DATE:

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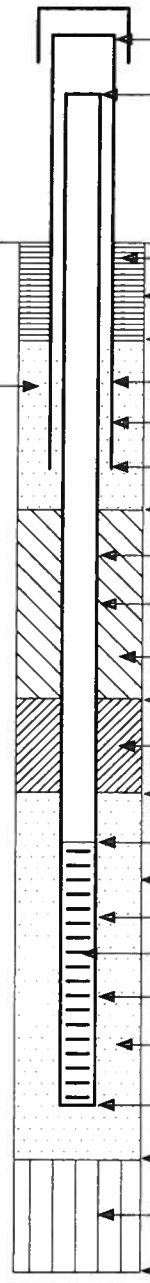


ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER

LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	Concrete
DIA. SURFACE SEAL BGS (In.)	12"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	1.5'
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.5'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	4'
RISER PIPE (In.) I.D.: 2" O.D.: 2.5"	
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips
DEPTH TOP OF SEAL (Ft.)	4'
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL (Ft.)	8'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	10'
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 Slot
PERVIOUS SECTION (In.) I.D.: 2" O.D.: 2.5"	
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	00 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	20'
DEPTH BOTTOM OF FILTER PACK (Ft.)	20'
TYPE OF BACKFILL BELOW FILTER PACK	N/A
END OF BORING (Ft.)	20'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: TANK FARMS 4 & 5, CTO 464

PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND

WELL NO: TF5-MW-917

CLIENT: US NAVY

BORING NO: TF5-SB-917

CONTRACTOR: Crawford Drilling Service

DRILLER: Tony Martinelli

BORING LOCATION:

LOGGED BY: Chuck Meyer

DATE: 4/12/10

CHECKED BY:

DATE:

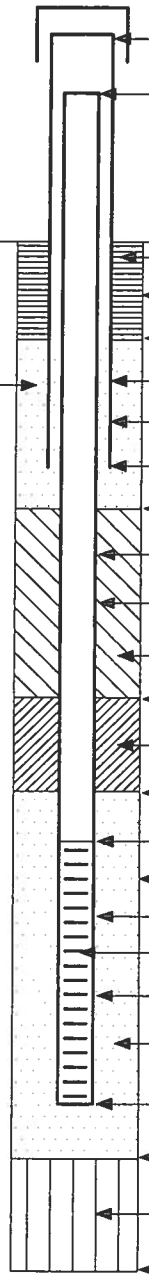
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)

TYPE OF SURFACE SEAL: Concrete

DIA. SURFACE SEAL BGS (In.): 18"

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.): 12"

I.D. OF PROTECTIVE CASING (In.): 4"

TYPE OF PROTECTIVE CASING: Steel

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.): 2'

DEPTH BOTTOM OF DRAIN LAYER (Ft.): 2'

RISER PIPE (In.) I.D.: 2" O.D.: 2.5"

TYPE OF RISER PIPE: Sch 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE: Bentonite Chips

DEPTH TOP OF SEAL (Ft.): 2'

TYPE OF SEAL: Bentonite Chips

DEPTH BOTTOM OF SEAL (Ft.): 4'

DEPTH TOP OF PERVIOUS SECTION (Ft.): 5'

DIAMETER OF BOREHOLE (In.): 3 7/8"

TYPE OF PERVIOUS SECTION: Sch 40 PVC

TYPE OF OPENINGS: 0.010 slot

PERVIOUS SECTION (In.) I.D.: 2" O.D.: 2.5"

TYPE OF FILTER PACK AROUND PERVIOUS SECTION: 00 Sand

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.): 10'

DEPTH BOTTOM OF FILTER PACK (Ft.): 10'

TYPE OF BACKFILL BELOW FILTER PACK: N/A

END OF BORING (Ft.): 10'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: TANK FARMS 4 & 5, CTO 464 — PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND — WELL NO: TF5-MW-923

CLIENT: US NAVY — BORING NO: TF5-SB-923

CONTRACTOR: Crawford Drilling Service — DRILLER: Tony Martinelli — BORING LOCATION:

LOGGED BY: Chuck Meyer — DATE: 4/12/10

CHECKED BY: — DATE:

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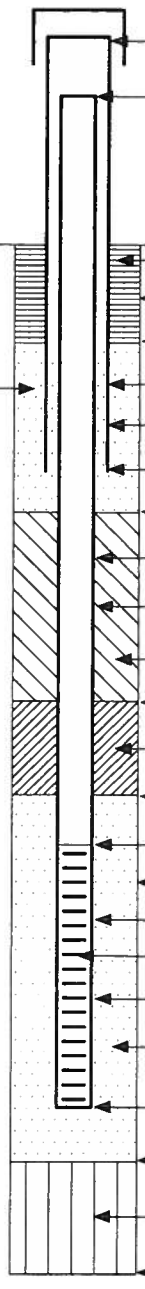
ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION



SAND DRAIN LAYER

LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	
DIA. SURFACE SEAL BGS (In.)	
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	1.5'
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	Steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.5
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	5'
RISER PIPE (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips
DEPTH TOP OF SEAL (Ft.)	17'
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL (Ft.)	18'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	20'
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 slot
PERVIOUS SECTION (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	00 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	30'
DEPTH BOTTOM OF FILTER PACK (Ft.)	30'
TYPE OF BACKFILL BELOW FILTER PACK	N/A
END OF BORING (Ft.)	30'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: TANK FARMS 4 & 5, CTO 464 — PROJECT NO: 112G00963

PROJECT LOCATION: PORTSMOUTH/MIDDLETOWN RHODE ISLAND — WELL NO: TF5-MW-924

CLIENT: US NAVY — BORING NO: TF5-SB-924

CONTRACTOR: Crawford Drilling Service — DRILLER: Tony Martinelli — BORING LOCATION:

LOGGED BY: Chuck Meyer — DATE: 4/13/10

CHECKED BY: — DATE:

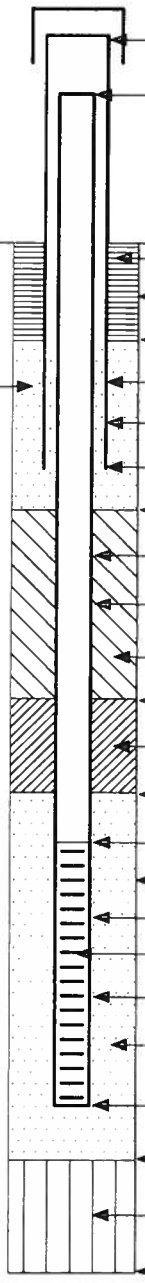
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING

ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	
TYPE OF SURFACE SEAL	Concrete
DIA. SURFACE SEAL BGS (In.)	18"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	1.5'
I.D. OF PROTECTIVE CASING (In.)	4"
TYPE OF PROTECTIVE CASING	steel
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.5'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	5.0'
RISER PIPE (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF RISER PIPE	Sch 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips
DEPTH TOP OF SEAL (Ft.)	5'
TYPE OF SEAL	Bentonite Chips
DEPTH BOTTOM OF SEAL (Ft.)	9'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	11'
DIAMETER OF BOREHOLE (In.)	3 7/8"
TYPE OF PERVIOUS SECTION	Sch 40 PVC
TYPE OF OPENINGS	0.010 slot
PERVIOUS SECTION (In.) I.D.: 2"	O.D.: 2.5"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	00 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	16'
DEPTH BOTTOM OF FILTER PACK (Ft.)	16'
TYPE OF BACKFILL BELOW FILTER PACK	NA
END OF BORING (Ft.)	16'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

APPENDIX E

PREVIOUS BORING LOGS

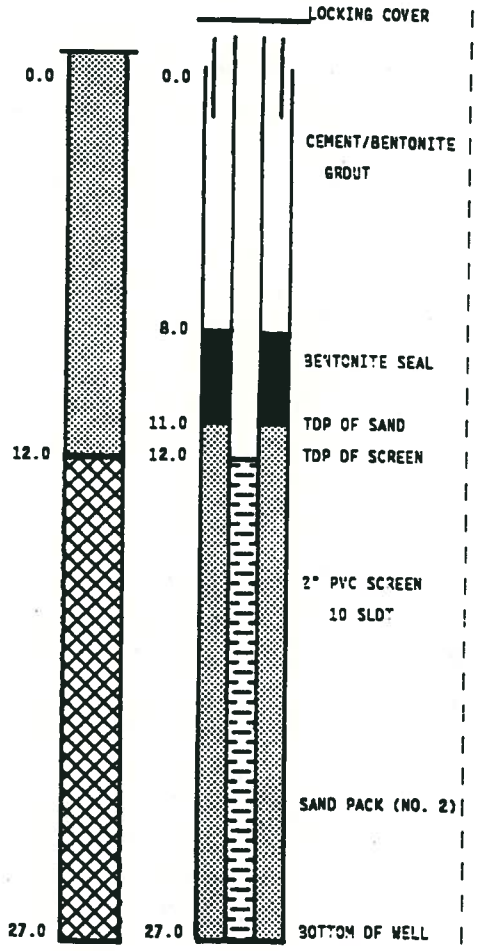
TF5-MW-01

BORING NO.:	MW-1	CONTRACTOR:	CDS	DATE STARTED:	4/30/90
PROJECT NO.:	6760-N81	DRILLERS:	GAYLORD/FAIRCLOUGH	DATE COMPLETED:	4/30/90
ECT:	U.S. NAVY-NETC	TRC INSPECTOR:	SMITH	WATER TABLE LEVEL:	15.5 FT
ION:	NEWPORT, RI	DRILLING METHOD:	4-1/4" HOLLOW STEM AUGERS	LOCATION:	N 171.142
SITE:	13-TANK FARM FIVE	GROUND ELEVATION:	31.21		E 553.297
BORING DEPTH:	45 FT	CASING ELEVATION:	34.32		

DEPTH (FT)	BLOWS	OVA (PPM)	SOIL DESCRIPTION
0 - 2	2 3 4 3	3.3	FINE SAND AND SILT. TRACE CLAY. BROWN. MOIST
2 - 4	3 4 4 5	3.6	SAME AS ABOVE
4 - 6	9 16 18 18	3.7	SILT. SOME M - F SAND. GRAY. DRY (14")
6 - 8	5 13 16 15	3.5	WEATHERED SHALE. SOME FINE SAND. GRAY (8")
8 - 10	5 18 23 17	3.9	FINE SAND. SOME WEATHERED SHALE. GRAY (10")
10 - 12	18 20 25 23	--	NO RECOVERY
12 - 14	9 16 15 11	4.1	WEATHERED SHALE. SOME FINE SAND. GRAY (8")
14 - 16	38 100/	7.7	WEATHERED SHALE. SOME FINE SAND. GRAY/BROWN. MOIST (8")
. - 18	38 100/.1"	7.2	WEATHERED SHALE. SOME SILT. BROWN. WET (6")
18 - 20	40 100/.1"	4.3	SAME AS ABOVE (6")
25 - 27	100/.4"	5	WEATHERED SHALE. SOME SILT. GRAY. WET (4")

END OF BORING AT 27 FT

SAMPLE TF5-M01-1 COLLECTED FROM 12-14 FEET



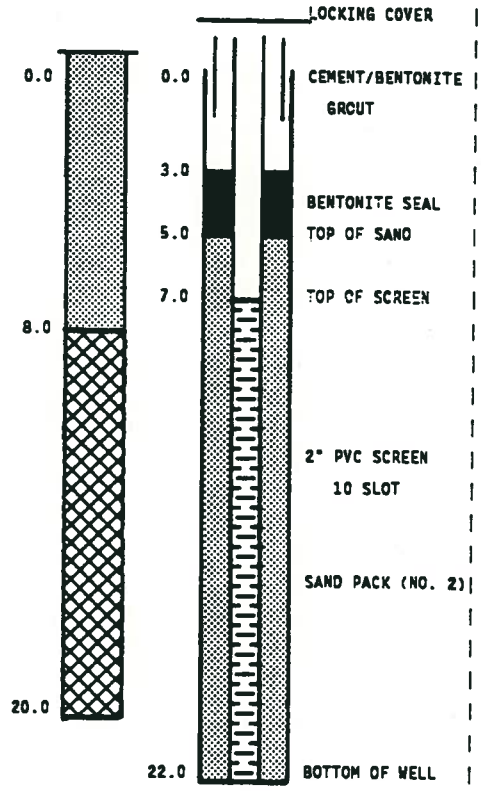
TF5-MW-02

BORING NO.:	MW-2	CONTRACTOR:	CDS	DATE STARTED:	5/16/90
PROJECT NO.:	6760-N81	DRILLERS:	GAYLORD/FAIRCLOUGH	DATE COMPLETED:	5/16/90
PROJECT:	U.S. NAVY-NETC	TRC INSPECTOR:	SMITH	WATER TABLE LEVEL:	12 FT
LOCATION:	NEWPORT, RI	DRILLING METHOD:	4-1/4" HOLLOW STEM AUGERS	LOCATION:	N 170,705
SITE:	13-TANK FARM FIVE	GROUND ELEVATION:	40.23		E 553,156
BORING DEPTH:	22 FT	CASING ELEVATION:	42.85		

DEPTH (FT)	BLOWS	OVA (PPM)	SOIL DESCRIPTION
0 - 2	2 4	4	FINE SAND AND SILT, BROWN (6")
	9 10		SHALE FRAGMENTS AND GRAVEL, SOME FINE SAND, TRACE SILT (12")
2 - 4	15 18	4	M - F SAND, LITTLE SILT, ORANGE (12")
	12 18		
4 - 6	13 13	5.1	FINE SAND, SOME SILT, TRACE SHALE FRAGMENTS, ORANGE (24")
-	19 23		
6 - 8	23 35	4.1	FINE SAND, SOME SILT, LITTLE SHALE FRAGMENTS, GRAY/BROWN (18")
	50 70		
8 - 10	30 100/	4	WEATHERED GRAY SHALE (14")
10 - 12	50 52	4.1	SAME AS ABOVE (20")
	100/3"		
12 - 14	54 100/	3.9	WEATHERED SHALE, TRACE SAND, GRAY/BROWN, WET (8")
14 - 16	100/6"	7.5	SAME AS ABOVE (6")
- 18	100/6"	9.5	SAME AS ABOVE
18 - 20	100/5"	23	SAME AS ABOVE

END OF BORING - 20 FT

SAMPLE TF5-M02-1 COLLECTED FROM 10-12 FEET



APPENDIX F

BACKGROUND SOIL COMPARISON STUDY

Background Comparisons

Introduction

The comparative statistical method was used to compare soil data from Tank Farm 4 and Tank Farm 5 to the appropriate Newport background data set. The comparative method utilizes several statistical techniques to compare site and background data. For all of the evaluations the site data were compared to the background data of the same soil type. The following soil types that were found at Tank Farms 4 and 5 along with their abbreviations are listed below:

Merrimack mucky slit loam (MmA)
Newport silt loam (Ne)
Pittstown silt loam (PmA)
Stissing silt loam (Se)

The comparison of the site data with the background data involved a graphical evaluation and a hypothesis test comparing the mean/median concentrations. The graphical evaluation consisted of visual inspection of boxplots, normal probability plots, and histograms. If there were less than four samples in the site data a formal hypothesis test was not computed and the conclusion was made based on the graphical evaluation. The graphical displays are presented at the end of the section. The statistical package R version 2.9.2 was used to conduct all the statistical evaluations. The final conclusions for Tank Farm 4 surface and subsurface soil are presented in Tables 1 and 2 respectively. The final conclusions for Tank Farm 4 surface and subsurface soil are presented in Tables 3 and 4 respectively.

Statistical Techniques

Boxplots show the central tendency, degree of symmetry, range of variation, and potential outliers of a data set. The data set is shown as a rectangular box that represents the middle 50 percent of the data. The upper value of the box represents the 75th percentile and the lower value of the box represents the 25th percentile. The median is represented by the middle line in the box. Box plots for the same analyte were plotted on the same graph. The plots were visually inspected to see which data sets look similar and which ones differed. Particular attention was paid to see if the median from one data set fell within the 75th and 25th percentile range of the other data sets.

Probability plots are a useful first step for visually comparing two data sets in a single graph. If the site and background distributions were exactly identical, the plotted values would lie on a straight line through the origin. Deviations from this line show the differences between the two distributions. If the site and background distributions are similar the scattering of the two data sets will be mixed. If there is grouping of the two data sets then data sets are most likely different.

If the graphical evaluation described above could not determine that the site data are above or below the background data then an appropriate hypothesis test comparing the mean/median concentration was conducted. The Two sample T-test, Wilcoxon Rank Sum test, Gehan test, the Two Sample Proportion Test, Quantile Test, and Slippage Test were used to determine if the site data is greater than the background data. A five percent significance level was used for all the hypothesis tests.

The Two Sample T-Test tests for a difference between two populations means when it can be assumed that the data are approximately normally distributed or sample sizes are large enough (m and n at least 30) and the data are all detected. If the variances of the two data sets are not equal than the Two sample T Test with unequal variance was computed. The null and alternative hypotheses were:

H_o: Site Average ≥ Background Average + Background Standard Deviation

H_A: Site Average < Background Average + Background Standard Deviation

The Wilcoxon Rank-Sum (WRS) nonparametric test is used to test for a difference between median concentrations between two independent populations. The WRS test was used when the data were not normally distributed and there were less than three reporting limits if non-detected concentrations were present. The null and alternative hypotheses were:

H_o: Site Median ≥ Background Media + Background Standard Deviation
H_A: Site Median < Background Median + Background Standard Deviation

The Gehan nonparametric test is used to test for a difference between median concentrations between two independent populations. The Gehan test can be used when the background or site datasets contain multiple nondetects with different reporting limits. The Gehan test was used when the nondetects had more than three reporting limits. The null and alternative hypotheses were:

H_o: Site Median ≥ Background Media + Background Standard Deviation
H_A: Site Median < Background Median + Background Standard Deviation

The two sample proportion test was used to determine if the number of site detected concentrations was greater than the number of background detected concentrations. The proportion test was used when there was more than 90 percent nondetects. The null and alternative hypothesis was:

H_o: Proportion Site Detected Concentrations ≥ Proportion Background Detected Concentrations
H_A: Proportion Site Detected Concentrations < Proportion Background Detected Concentrations

The Quantile test is used to identify the differences in the right tails of the site and background distributions. This may be regarded as detecting if the values in the right-tail of the site population are greater than the right-tail of the background distribution. If the quantile test found the right tail of the site data to be larger than the right tail of the background data it was concluded that the site concentrations are greater than background. The null and alternative hypothesis were:

H_o: Right Tail of Site Dataset ≤ Right Tail of the Background Dataset
H_A: Right Tail of the Site Dataset > Right Tail of the Background Dataset

The Slippage test is used to test for a shift to the right in the extreme right-tail of the site versus the background concentrations. This is equivalent to asking if a set of the largest values of the site distribution are larger than the maximum value of the background distribution. If the slippage test found the extreme right tail of the site data to be larger than the background data it was concluded that the site concentrations are greater than background. The null and alternative hypothesis were the same as for the quantile test.

Summary of Graphical Evaluation Tank Farm 4 Surface Soil

Aluminum MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. Based on the graphical

displays the Tank Farm 4 MmA surface soil concentrations are less than the background MmA surface soil concentrations.

Aluminum Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being equal to the median background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being equal to the median background concentration. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Aluminum Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. This can be seen by the median Tank Farm 4 concentration being between the 25th percentile and median background concentration. The normal probability plot shows a mixing of the datasets. The histograms show that the Tank Farm 4 concentrations are similar to the background concentrations. This can be seen by the similar range of concentrations of the two datasets. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Antimony MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are less than the background MmA surface soil concentrations.

Antimony Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background concentration. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Arsenic MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being greater than the maximum background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above

the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being roughly an order of magnitude more than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Arsenic Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted slightly above the background concentrations. This shift can be seen by the median Tank Farm 4 concentration being between then the median and 75th percentile background concentration. The normal probability plot shows a mixing of the datasets. The histograms show that the Tank Farm 4 are similar to the background concentrations. The similarity can be seen by the overlapping ranges of concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Arsenic Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the upper whisker, 75th percentile, median, 25th percentile, and lower whisker being roughly equal. There are two potential background outliers that are elevated above the maximum site concentration. The normal probability plot shows a mixing of the datasets with the maximum background concentration being elevated above the rest of the data. The histograms show that the Tank Farm 4 concentrations are similar to the majority of the background concentrations. The similarity can be seen by the overlapping ranges of concentrations, with the exception of the maximum concentration. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Ne surface soil concentrations.

Barium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration falling between the background 25th percentile and median concentration. The normal probability plot shows that the Tank Farm 4 concentrations occur only in the lower half of the combined data. The histograms show that the background concentrations have two distinct groupings of data, with the range of the Tank Farm 4 concentrations being similar to the lower grouping of the background concentrations. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are less than the background MmA surface soil concentrations.

Barium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median of the Tank Farm 4 concentrations falling between the background 25th percentile and median concentration. The normal probability plot shows a mixing of the datasets. The histograms show that the Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the overlapping ranges of concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Barium Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median of the Tank Farm 4 concentrations falling between the background 25th percentile and median concentration. The normal probability plot shows a mixing of the datasets. The histograms show that the Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the overlapping

ranges of concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Beryllium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median of the Tank Farm 4 concentrations falling between the background median and 75th concentration. The normal probability plot shows a mixing of the datasets. The histograms show that the Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the overlapping ranges of concentrations. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are similar to the background MmA surface soil concentrations.

Beryllium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted slightly below the background concentrations. The shift can be seen by the median of the Tank Farm 4 concentrations falling between the background lower whisker and 25th percentile. The normal probability plot shows a mixing of the datasets. The histograms show that the Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the overlapping ranges of concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Beryllium Se

The side by side boxplots shows that background concentrations have less variability than the Tank Farm 4 concentrations. This can be seen by the background lower and upper whiskers falling between the Tank Farm 4 25th and 75th percentiles. The normal probability plot shows a mixing of the datasets. The histograms show that the range of the Tank Farm 4 concentrations are greater than the background range of concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Cadmium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the minimum Tank Farm 4 concentration being greater than the maximum background concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations occurring only in the upper tail of the combined datasets. The histograms show that the Tank Farm 4 concentrations are greater than the background concentrations. The shift can be seen by the minimum Tank Farm 4 concentration being greater than the maximum background concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Cadmium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the median Tank Farm 4 concentration being greater than the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations occurring only in the upper tail of the combined datasets with the exception of the minimum Tank Farm 4 concentration. The histograms show that the Tank Farm 4 concentrations are greater than the background concentrations. The shift can be seen by the Tank Farm 4 concentrations having more samples with concentrations greater than 0.20 mg/kg. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Cadmium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 75th percentile being roughly equal to the background lower whisker. The normal probability plot shows a separation of the two datasets with the majority of the Tank Farm 4 concentrations occurring in the lower tail of the combined datasets with the exception of the two largest Tank Farm 4 concentrations. The histograms show that the Tank Farm 4 concentrations are similar to the background concentrations. This can be seen by the two datasets having similar ranges of concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Calcium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the median Tank Farm 4 concentration being greater than the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations occurring only in the upper tail of the combined datasets. The histograms show that the Tank Farm 4 concentrations are greater than the background concentrations. The shift can be seen by the Tank Farm 4 concentrations having more samples with concentrations greater than 500 mg/kg. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Calcium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm 4 median concentration falling between the background median and 75th percentile. There is one Tank Farm 4 potential outlier that is elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets. The histograms show that the Tank Farm 4 concentrations with the exception of the maximum concentration have a similar range to the background concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Calcium Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm 4 median concentration falling between the background median and 75th percentile. There is one Tank Farm 4 potential outlier that is elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets. The histograms show that the Tank Farm 4 concentrations with the exception of the maximum concentration have a similar range to the background concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Chromium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted slightly above the background concentrations. The shift can be seen by the Tank Farm 4 median concentration falling above the background 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the Tank Farm 4 concentrations have a similar range to the background concentrations. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are similar to the background MmA surface soil concentrations.

Chromium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the background median concentration falling between the Tank Farm 4 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the Tank Farm 4 concentrations have a similar range to the background concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Chromium Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the background and Tank Farm 4 concentrations having similar lower whisker, 25th percentile, median, 75th percentile, and upper whisker. The normal probability plot shows a mixing of the two datasets. The histograms show that the Tank Farm 4 concentrations have a similar range to the background concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Cobalt MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration falling above the background maximum concentration. The normal probability plot shows a separation of the two datasets. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Cobalt Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background upper whisker. The normal probability plot shows a separation of the two datasets. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Cobalt Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 8 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Copper MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration falling above the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations only occurring in the upper tail of the dataset. The histograms show that the Tank Farm 4 concentrations are shifted above

the maximum background concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Copper Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm 4 median concentration falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Copper Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 6 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Iron MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 18000 mg/kg. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Iron Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being greater than the background 75th percentile. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling mainly in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 15000 mg/kg. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Iron Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being greater than the background 75th percentile. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 30000 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Lead MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being greater than the background 75th percentile. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 15 mg/kg. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Lead Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations with the exception of the maximum concentrations in each dataset. The Tank Farm 4 maximum concentration is roughly double the background maximum concentration. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Lead Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Magnesium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are similar to the background MmA surface soil concentrations.

Magnesium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Magnesium Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the Tank Farm median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the

graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Manganese MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 concentration all being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Manganese Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 having more concentrations above 200mg/kg. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Manganese Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being greater than the background 75th percentile. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above background concentrations with Tank Farm 4 having more concentrations above 400 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Mercury MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the median background concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are less than the background MmA surface soil concentrations.

Mercury Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker being less than the background median and the Tank Farm 4 potential outliers being roughly less than or equal to the background 75th percentile. The normal probability plot shows a grouping of the datasets with the majority of the Tank Farm 4 concentrations occurring in the lower tail of the

combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations above 0.14 mg/kg. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Mercury Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted slightly above the background concentrations. The shift can be seen by the Tank Farm median falling above the background 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Nickel MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 concentration all being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Nickel Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 median being roughly equal to the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 dataset having more concentrations above 18 mg/kg. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Nickel Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 median being greater than the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 dataset having more concentrations above 20 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Potassium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 median being less than the background 25th percentile. The normal probability plot shows that the Tank Farm 4 concentrations only occur in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentration. The shift can be seen by the maximum Tank Farm 4 concentration being less than the background median.

Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are less than the background MmA surface soil concentrations.

Potassium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median background concentration falling between the Tank Farm 4 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Potassium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background upper whisker. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 dataset having more concentrations above 250 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Selenium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the all the Tank Farm 4 concentrations being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Selenium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the majority of the Tank Farm 4 concentrations being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Selenium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 upper whisker being roughly equal to the background 25th percentile. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the lower tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted slightly below the background concentration. The shift can be seen by the background concentrations having more

samples above 2.5 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are less than the background Se surface soil concentrations.

Silver MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median Tank Farm 4 concentration falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are similar to the background MmA surface soil concentrations.

Silver Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median Tank Farm 4 concentration falling between the background median and 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Silver Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 maximum concentration being less than the background minimum concentration. The normal probability plot shows that the Tank Farm 4 concentrations only occur in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentration. The shift can be seen by the maximum Tank Farm 4 concentration being less than the background median. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are less than the background Se surface soil concentrations.

Sodium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 maximum concentration being less than the background minimum concentration. The normal probability plot shows that the Tank Farm 4 concentrations only occur in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentration. The shift can be seen by the maximum Tank Farm 4 concentration being less than the background median. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are less than the background MmA surface soil concentrations.

Sodium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 median being roughly equal to the background maximum concentration. The normal probability plot shows a separation of the two datasets with the majority of the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the majority of the Tank Farm 4 concentrations being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Sodium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 maximum concentration being less than the background 25th percentile. The normal probability plot shows that the Tank Farm 4 concentrations only occur in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentration. The shift can be seen by the maximum Tank Farm 4 concentration being less than the background median. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are less than the background Se surface soil concentrations.

Thallium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the all the Tank Farm 4 concentrations being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Thallium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the background maximum concentration falling between the Tank Farm 4 median and 75th percentile. The normal probability plot shows a separation of the two datasets with the three largest Tank Farm 4 concentrations being elevated above the rest of the data. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the Tank Farm 4 data having more concentrations above 0.5. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Thallium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations with the exception of the maximum concentration which is greater than the maximum background concentrations. The normal probability plot shows that the Tank Farm 4 concentrations mainly in the lower tail of the combined dataset with the exception of the maximum Tank Farm 4 concentration which is the maximum combined concentration. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentration with the exception of the maximum Tank Farm 4 concentration. The shift can be seen by the majority of the Tank Farm 4 concentration being less than the background minimum. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Vanadium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median Tank Farm 4 concentration falling between the background median and 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are similar to the background MmA surface soil concentrations.

Vanadium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the median concentrations being roughly equal. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Vanadium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted slightly below the background concentrations. The shift can be seen by the Tank Farm 4 median concentration being less than the background 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar concentrations. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are similar to the background Se surface soil concentrations.

Zinc MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the all the Tank Farm 4 concentrations being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA surface soil concentrations are greater than the background MmA surface soil concentrations.

Zinc Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 median concentration being greater than the background 75th percentile. The normal probability plot shows a separation of the two datasets with the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the all the Tank Farm 4 data having more concentrations above 40 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Ne surface soil concentrations.

Zinc Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. The shift can be seen by the Tank Farm 4 median concentration being greater than the background upper whisker. The normal probability plot shows a separation of the two datasets with the majority of the Tank Farm 4 concentrations falling in the upper tail of the probability plot. The histograms show that the Tank Farm 4 concentrations are shifted above the maximum background concentration. The shift can be seen by the all the Tank Farm 4 data having more concentrations above 60 mg/kg. Based on the graphical displays the Tank Farm 4 Se surface soil concentrations are greater than the background Se surface soil concentrations.

Summary of Graphical Evaluation Tank Farm 4 Subsurface Soil

Aluminum MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the median background concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Aluminum Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being less than the background 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Aluminum Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being less than the background median concentration. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Antimony MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Antimony Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Antimony Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration

being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are less than the background Se subsurface soil concentrations.

Arsenic MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 7 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Arsenic Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being roughly equal to the background median concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 15 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Arsenic Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentration. The similarity can be seen by the Tank Farm 4 median concentration falling between the background 25th percentile and median concentration. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Barium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentration. The similarity can be seen by the background median concentration falling between the Tank Farm 4 median concentration and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are similar to the background MmA subsurface soil concentrations.

Barium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 median concentration being less than the background 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations.

Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Barium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 75th percentile being roughly equal to the background median concentration. The Tank Farm 4 dataset has two potential outliers that are elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets with one Tank Farm 4 concentration elevated above the rest of the data. The histograms show that the two datasets have a similar range of concentrations, with the exception of the two Tank Farm 4 potential outliers. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Beryllium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentration. The similarity can be seen by the background median concentration falling between the Tank Farm 4 median concentration and 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are similar to the background MmA subsurface soil concentrations.

Beryllium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentration. The similarity can be seen by the background median concentration falling between the Tank Farm 4 median concentration and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Beryllium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 75th percentile being less than the background minimum concentration. The Tank Farm 4 dataset has two potential outliers that are elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets with one Tank Farm 4 concentration elevated above the rest of the data. The histograms show that the two datasets have a similar range of concentrations, with the exception of the Tank Farm 4 concentration greater than 0.7 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Cadmium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 0.10 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Cadmium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the maximum background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 0.08 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Cadmium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile falling between the background median and 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 0.25 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are greater than the background Se subsurface soil concentrations.

Calcium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations that are greater than 300 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Calcium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being roughly equal to the background lower whisker. There is one Tank Farm outlier elevated above the rest of the data. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset, with the exception of the Tank Farm 4 maximum concentration. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations that are greater than 400 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Calcium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker being roughly equal to the background lower whisker. The Tank Farm 4 datasets has one potential outlier that is greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail

of the combined dataset, with the exception of the Tank Farm 4 maximum concentration. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations that are greater than 1000 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are less than the background Se subsurface soil concentrations.

Chromium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentration. The similarity can be seen by the background median concentration falling between the Tank Farm 4 median concentration and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are similar to the background MmA subsurface soil concentrations.

Chromium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. The similarity can be seen by the 25th percentiles, median, and 75th percentiles being roughly equal. Tank Farm 4 has two potential outliers elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets, with the exception of the two largest Tank Farm 4 concentrations. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Chromium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. The shift can be seen by the Tank Farm 4 75th percentile being less than the background 25th percentile. There are two Tank Farm 4 potential outliers that are elevated above the rest of the datasets. The normal probability plot shows a mixing of the two datasets, with the exception of the two largest Tank Farm 4 concentrations. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Cobalt MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 10 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Cobalt Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the maximum background concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more

concentrations greater than 10 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Cobalt Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 median concentration being greater than the background median. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring mainly in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 18 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are greater than the background Se subsurface soil concentrations.

Copper MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being greater than the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 20 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Copper Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 median being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 16 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Copper Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. This similarity can be seen by the Tank Farm 4 median concentration falling between the background 25th percentile and median concentration. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Iron MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the minimum Tank Farm 4 concentration being greater than the background maximum. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the all the Tank Farm 4 concentrations

being greater than the background maximum concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Iron Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 median being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the all the Tank Farm 4 dataset having more concentrations greater than 2000 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Iron Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 median being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with only Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the all the Tank Farm 4 dataset having more concentrations greater than 40000 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are greater than the background Se subsurface soil concentrations.

Lead MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the median background concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Lead Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the six largest concentrations all being from the Tank Farm 4 dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the all the Tank Farm 4 dataset having more concentrations greater than 8 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Lead Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. This similarity can be seen by the 25th percentiles and medians being roughly

equal. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Magnesium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Magnesium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring mainly in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 3000 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Magnesium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being less than the background 25th percentile. The Tank Farm 4 dataset has two potential outliers that are greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring mainly in the lower tail of the combined dataset, with the exception of the two potential outliers. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 3000 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are less than the background Se subsurface soil concentrations.

Manganese MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring only in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 700 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Manganese Ne

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. This similarity can be seen by the 25th percentiles and medians being roughly equal. Both datasets have potential outliers elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations, with the exception of the Tank Farm 4 potential outliers. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Manganese Se

The side by side boxplots shows that Tank Farm 4 concentrations are similar to the background concentrations. This similarity can be seen by the 25th percentiles and medians being roughly equal. Both datasets have potential outliers elevated above the rest of the data. The normal probability plot shows a mixing of the two datasets, with the exception of the three Tank Farm 4 potential outliers. The histograms show that the two datasets have a similar range of concentrations, with the exception of the Tank Farm 4 potential outliers. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Mercury MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Mercury Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the all the Tank Farm 4 dataset having more concentrations greater than 0.02 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Mercury Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 median being roughly equal to the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by all the Tank Farm 4 dataset having more concentrations greater than 0.01 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are greater than the background Se subsurface soil concentrations.

Nickel MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the all the Tank Farm 4 dataset having more concentrations greater than 20 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Nickel Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by all the Tank Farm 4 dataset having more concentrations greater than 20 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Nickel Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by all the Tank Farm 4 dataset having more concentrations greater than 40 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Potassium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 4 concentration being less than the maximum background concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Potassium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker falling between the background median and 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more

concentrations greater than 700 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Potassium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 75th percentile being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 600 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are less than the background Se subsurface soil concentrations.

Selenium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by all of the Tank Farm 4 dataset being greater than the background maximum. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Selenium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 lower whisker being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 1 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Selenium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 median being roughly equal to the background maximum. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 0.35 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are greater than the background Se subsurface soil concentrations.

Silver MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being less than the median Tank Farm 4 concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above

the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations that are greater than 0.1 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Silver Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker being roughly equal to the background minimum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 0.10 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Silver Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker being less than the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 0.08 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are less than the background Se subsurface soil concentrations.

Sodium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker being less than the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by all the Tank Farm 4 concentrations being less than the background minimum concentration. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are less than the background MmA subsurface soil concentrations.

Sodium Ne

The side by side boxplots shows that Tank Farm 4 concentrations and background concentrations are similar. This similarity can be seen by the upper whisker of the Tank Farm 4 dataset being roughly equal to the background 75th percentile. The normal probability plot shows a mixing of the two datasets, with four Tank Farm 4 concentrations being elevated above the rest of the data. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 100 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Sodium Se

The side by side boxplots shows that Tank Farm 4 concentrations and background concentrations are similar. This similarity can be seen by the median background concentration falling between the Tank Farm 4 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. Both histograms have similar range of concentrations. Based on the

graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Thallium MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being less than the minimum Tank Farm 4 concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations that are greater than 0.17 mg/kg. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Thallium Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being less than the Tank Farm 4 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations that are greater than 0.35 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Thallium Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 4 upper whisker being roughly equal to the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 0.14 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are less than the background Se subsurface soil concentrations.

Vanadium MmA

The side by side boxplots shows that Tank Farm 4 concentrations and background concentrations are similar. This similarity can be seen by background median falling between the Tank Farm 4 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are similar to the background MmA subsurface soil concentrations.

Vanadium Ne

The side by side boxplots shows that Tank Farm 4 concentrations and background concentrations are similar. This similarity can be seen by background median falling between the Tank Farm 4 25th percentile and median. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Vanadium Se

The side by side boxplots shows that Tank Farm 4 concentrations and background concentrations are similar. This similarity can be seen by background median falling between the Tank Farm 4 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have a similar range of concentrations. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are similar to the background Se subsurface soil concentrations.

Zinc MmA

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 minimum concentration being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by all of the Tank Farm 4 dataset being greater than the background maximum. Based on the graphical displays the Tank Farm 4 MmA subsurface soil concentrations are greater than the background MmA subsurface soil concentrations.

Zinc Ne

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 lower whisker being roughly equal to the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 50 mg/kg. Based on the graphical displays the Tank Farm 4 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Zinc Se

The side by side boxplots shows that Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 25th percentile being roughly equal to the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 4 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 4 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 4 dataset having more concentrations greater than 80 mg/kg. Based on the graphical displays the Tank Farm 4 Se subsurface soil concentrations are greater than the background Se subsurface soil concentrations.

Summary of Graphical Evaluation Tank Farm 5 Surface Soil

Aluminum Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more

concentrations greater than 10000 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Aluminum Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 10000 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Antimony Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 maximum being less than the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 0.16 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Antimony Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 0.35 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Arsenic Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 15 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Arsenic Pm

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This shift can be seen by the Tank Farm 5 median concentration falling between the background 25th percentile and median. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Barium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker falling between the background lower whisker and 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 20 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Barium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker falling between less than the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by all the Tank Farm 5 concentrations being less than the background datasets. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Beryllium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This shift can be seen by the 25th percentiles and median concentrations being roughly equal. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Beryllium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being roughly equal to the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 0.40 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are greater than the background Pm surface soil concentrations.

Cadmium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being roughly equal to the background second largest maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 0.20 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Cadmium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 maximum being roughly equal to the background median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 0.30 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Calcium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 600 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Calcium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 500 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are greater than the background Pm surface soil concentrations.

Chromium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This shift can be seen by the Tank Farm 5 median falling between the background 25th percentile and median concentration. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Chromium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker falling being less than the background median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 14 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Cobalt Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being greater than the background upper whisker. The normal probability plot shows a grouping

of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 8 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Cobalt Pm

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being roughly equal to the background 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Copper Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This shift can be seen by the Tank Farm 5 median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Copper Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 9 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are greater than the background Pm surface soil concentrations.

Iron Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 20000 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Iron Pm

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This shift can be seen by the Tank Farm 5 median falling between the background 25th percentile and median. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Lead Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This similarity can be seen by the Tank Farm 5 median falling between the background median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Lead Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted slightly below the background concentrations. This shift can be seen by the Tank Farm 5 median falling slightly below the background 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Magnesium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This similarity can be seen by the 25th percentiles and medians being roughly equal. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Magnesium Pm

The side by side boxplots shows that Tank Farm 5 are similar to the background concentrations. This shift can be seen by the Tank Farm 5 median being roughly equal to the background 25th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Manganese Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 300 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Manganese Pm

The side by side boxplots shows that Tank Farm 5 and background dataset have similar ranges of concentrations. However, the majority of the Tank Farm 5 data has less spread than the background dataset (seen by the smaller box). The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Mercury Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 75th percentile falling between the background lower whisker and 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 0.12 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Mercury Pm

The side by side boxplots shows that Tank Farm 5 and background dataset have similar 25th percentiles and median concentrations. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Nickel Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median concentration being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 18 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Nickel Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 14 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are greater than the background Pm surface soil concentrations.

Potassium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 maximum concentration being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 300 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Potassium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 lower whisker being roughly equal to the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined

dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 160 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are greater than the background Pm surface soil concentrations.

Selenium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 lower whisker being roughly equal to the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 0.8 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Selenium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being less than the Tank Farm 5 median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 2.4 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are greater than the background Pm surface soil concentrations.

Silver Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 lower whisker being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 0.09 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Silver Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 maximum concentration being less than the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 0.25 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Sodium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 75th percentile being less than the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset, with the exception of the Tank Farm 5 maximum concentration. The histograms show that the Tank Farm

5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 30 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are less than the background Ne surface soil concentrations.

Sodium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 60 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Thallium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 lower whisker being roughly equal to the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 datasets having more concentrations greater than 0.45 mg/kg. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are greater than the background Ne surface soil concentrations.

Thallium Pm

The side by side boxplots shows that Tank Farm 5 data are similar to the background data. This similarity can be seen by the background median falling between the Tank Farm 5 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Vanadium Ne

The side by side boxplots shows that Tank Farm 5 data are similar to the background data. This similarity can be seen by the background median being roughly equal to the Tank Farm 5 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Vanadium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being less than the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background datasets having more concentrations greater than 17 mg/kg. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are less than the background Pm surface soil concentrations.

Zinc Ne

The side by side boxplots shows that Tank Farm 5 data are similar to the background data. This similarity can be seen by the background median falling between the Tank Farm 5 25th percentile and median. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne surface soil concentrations are similar to the background Ne surface soil concentrations.

Zinc Pm

The side by side boxplots shows that Tank Farm 5 data are similar to the background data. This similarity can be seen by the background median falling between the Tank Farm 5 median and 75th. The normal probability plot shows a mixing of the two datasets. The histograms both have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm surface soil concentrations are similar to the background Pm surface soil concentrations.

Summary of Graphical Evaluation Tank Farm 5 Subsurface Soil

Aluminum Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Aluminum Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations above 10000 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Antimony Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being less than the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 0.30 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Antimony Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined

dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the all the Tank Farm 5 concentrations being less than the minimum background concentration. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Arsenic Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being roughly equal to the Tank Farm 5 median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 15 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Arsenic Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being greater than the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 25 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Barium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by background dataset having more concentrations greater than 20 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Barium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 maximum concentration being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations above 20 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Beryllium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This similarity can be seen by the background median falling between the Tank Farm 5 median and 75th percentile. The normal probability plot shows a mixing of the two

datasets. The histograms have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Beryllium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background median concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations above 0.5 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Cadmium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being roughly equal to the Tank Farm 5 lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.05 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Cadmium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 25th percentile being greater than the background maximum concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.2 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Calcium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are similar to the background concentrations. This similarity can be seen by the background median falling between the Tank Farm 5 median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Calcium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations with the exception of the maximum concentration. This shift can be seen by the Tank Farm 5 75th percentile being less than the background 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the

background dataset having more concentrations greater than 1000 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are similar to the background Pm subsurface soil concentrations.

Chromium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by background dataset having more concentrations greater than 12 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Chromium Pm

The side by side boxplots shows that background dataset has less variability than the Tank Farm 5 dataset (seen by the smaller box). The background median concentration falls between the Tank Farm 5 median and 75th percentile indicating the two are similar. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are similar to the background Pm subsurface soil concentrations.

Cobalt Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being roughly equal to the Tank Farm 5 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 10 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Cobalt Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median being greater than the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 16 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Copper Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median being greater than the background 75th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations

greater than 16 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Copper Pm

The side by side boxplots shows that two datasets are similar. The similarity can be seen by the background median falling between the Tank Farm median and 75th percentile. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are similar to the background Pm subsurface soil concentrations.

Iron Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being roughly equal to the Tank Farm 5 median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 30000 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Iron Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 40000 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Lead Ne

The side by side boxplots shows that background dataset has less variability than the Tank Farm 5 dataset (seen by the smaller box). The background median concentration falls between the Tank Farm 5 median and 75th percentile indicating the two are similar. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Lead Pm

The side by side boxplots shows that background dataset has less variability than the Tank Farm 5 dataset (seen by the smaller box). The two median concentrations are roughly equal. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are similar to the background Pm subsurface soil concentrations.

Magnesium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker falling between the background lower whisker and 25th percentile. The normal probability plot shows a

grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by background dataset having more concentrations greater than 2500 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Magnesium Pm

The side by side boxplots shows that background dataset has less variability than the Tank Farm 5 dataset (seen by the smaller box). The background median falls between the Tank Farm 5 median and 75th percentile indicating that the two datasets are similar. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are similar to the background Pm subsurface soil concentrations.

Manganese Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being roughly equal to the Tank Farm 5 median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 600 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Manganese Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 75th percentile being less than the background 25th percentile. There are two potential Tank Farm 5 outliers that fall within the range of the background dataset. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset, with the exception of the two potential outliers. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations above 800 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Mercury Ne

The side by side boxplots shows that background dataset has less variability than the Tank Farm 5 dataset (seen by the smaller box). The background median concentration falls between the Tank Farm 5 median and 75th percentile indicating the two are similar. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Mercury Pm

The side by side boxplots shows that background dataset has less variability than the Tank Farm 5 dataset (seen by the smaller box). The background median concentration falls between the Tank Farm 5 median and 75th percentile indicating the two are similar. The normal probability plot shows a mixing of the two datasets. The histograms show that the two datasets have similar ranges of concentrations. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are similar to the background Pm subsurface soil concentrations.

Nickel Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being roughly equal to the Tank Farm 5 median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 20 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Nickel Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 median being greater than the background upper whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 25 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Potassium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are less than the background Ne subsurface soil concentrations.

Potassium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the background minimum. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the maximum Tank Farm 5 concentration being less than the minimum background concentration. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Selenium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being less than the Tank Farm 5 lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.5 mg/kg. Based on the graphical displays the Tank Farm 5 Ne

subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Selenium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being less than the Tank Farm 5 lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.8 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Silver Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being roughly equal to the Tank Farm 5 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.1 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Silver Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being roughly equal to the Tank Farm 5 median concentration. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.1 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Sodium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations with one outlier greater than the rest of the data. This shift can be seen by the background lower whisker being roughly equal to the Tank Farm 5 75th percentile. The normal probability plot shows a mixing of the datasets. The histograms have similar concentration ranges. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Sodium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more

concentrations greater than 30 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Thallium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background maximum concentration being less than the 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.35 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Thallium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being less than the Tank Farm 5 lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 0.3 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

Vanadium Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background 25th percentile being roughly equal to the Tank Farm 5 75th percentile. The normal probability plot shows a mixing of the datasets. The histograms have similar concentration ranges. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are similar to the background Ne subsurface soil concentrations.

Vanadium Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the Tank Farm 5 upper whisker being roughly equal to the background lower whisker. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the lower tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted below the background concentrations. This shift can be seen by the background dataset having more concentrations greater than 15 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are less than the background Pm subsurface soil concentrations.

Zinc Ne

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background 75th percentile being less than the Tank Farm 5 25th percentile. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 50 mg/kg. Based on the graphical displays the Tank Farm 5 Ne subsurface soil concentrations are greater than the background Ne subsurface soil concentrations.

Zinc Pm

The side by side boxplots shows that Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the background upper whisker being less than the Tank Farm 5 median. The normal probability plot shows a grouping of the datasets with the Tank Farm 5 concentrations occurring in the upper tail of the combined dataset. The histograms show that the Tank Farm 5 concentrations are shifted above the background concentrations. This shift can be seen by the Tank Farm 5 dataset having more concentrations greater than 60 mg/kg. Based on the graphical displays the Tank Farm 5 Pm subsurface soil concentrations are greater than the background Pm subsurface soil concentrations.

TABLE 1
TANK FARM 4 SURFACE BACKGROUND ANALYSIS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

Parameter	Soil Type	Site FOD	Background FOD	Site Maximum Detected Concentration	Background Maximum Detected	Graphical Evaluation	Site Distribution	Background Distribution	Hypothesis Test	P-value	Slippage P-value	Quantile P-value	Conclusion
ALUMINUM	MmA	2 / 2	20 / 20	5300	15500	Site less Background	Assumed Nonparametric	Nonparametric	NA	NA	NA	NA	Site Within Background(1)
	Ne	11 / 11	22 / 22	13000	17900	Site less Background	Normal	Nonparametric	WRS	0	1	0.56	Site Within Background
	Se	11 / 11	20 / 20	15200	16700	Site Similar to Background	Normal	Normal	T-Test	0	1	0.87	Site Within Background
ANTIMONY(3)	MmA	0 / 2	0 / 20	--	--	Site less Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	0 / 11	0 / 22	--	--	Site less Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
ARSENIC	MmA	2 / 2	20 / 20	59.5	6	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	14.7	17.1	Site Similar to Background	Normal	Nonparametric	WRS	0.365	1	0.84	Site Above Background
	Se	11 / 11	20 / 20	15.4	71.7	Site Similar to Background	Normal	Nonparametric	WRS	0	1	0.61	Site Within Background
BARIUM	MmA	2 / 2	20 / 20	19.8	31.7	Site less Background	Assumed Nonparametric	Nonparametric	NA	NA	NA	NA	Site Within Background(1)
	Ne	11 / 11	22 / 22	43.6	36.3	Site Similar to Background	Nonparametric	Normal	WRS	0.016	0.33	0.56	Site Within Background
	Se	11 / 11	20 / 20	56.7	60.6	Site Similar to Background	Normal	Normal	T-Test	0.002	1	0.61	Site Within Background
BERYLLIUM	MmA	2 / 2	20 / 20	0.51	0.58	Site Similar to Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Within Background(2)
	Ne	11 / 11	22 / 22	0.7	0.79	Site Similar to Background	Normal	Normal	T-Test	0	1	0.56	Site Within Background
	Se	11 / 11	1 / 20	0.67	0.37	Site Similar to Background	Normal	Assumed Nonparametric	Gehan	0.995	0.01	0.61	Site Above Background
CADMIUM	MmA	2 / 2	0 / 20	0.3	--	Site greater Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	10 / 11	6 / 22	0.32	0.53	Site greater Background	Normal	Nonparametric	Gehan	0.91	1	0.56	Site Above Background
	Se	9 / 11	0 / 20	0.48	--	Site Similar to Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
CALCIUM	MmA	2 / 2	20 / 20	1900	480	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	9 / 11	22 / 22	1830	559	Site Similar to Background	Nonparametric	Normal	Gehan	0.104	0.1	0.56	Site Above Background
	Se	10 / 11	0 / 20	1450	--	Site Similar to Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
CHROMIUM	MmA	2 / 2	20 / 20	13.8	15.1	Site Similar to Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Within Background(2)
	Ne	11 / 11	22 / 22	14.9	17.1	Site Similar to Background	Normal	Nonparametric	WRS	0.001	1	0.56	Site Within Background
	Se	11 / 11	20 / 20	20.8	28.2	Site Similar to Background	Normal	Nonparametric	WRS	0.001	1	0.61	Site Within Background
COBALT	MmA	2 / 2	20 / 20	20.5	4.6	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	16.1	7.4	Site greater Background	Normal	Nonparametric	WRS	1	0	0.56	Site Above Background
	Se	11 / 11	20 / 20	16.1	11.9	Site greater Background	Normal	Nonparametric	WRS	0.96	0	0.61	Site Above Background
COPPER	MmA	2 / 2	20 / 20	22.1	11.3	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	25.2	20.3	Site Similar to Background	Normal	Nonparametric	WRS	0.134	0.33	0.56	Site Above Background
	Se	11 / 11	0 / 20	22.4	--	Site greater Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
IRON	MmA	2 / 2	20 / 20	53200	18000	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	41000	23000	Site greater Background	Normal	Nonparametric	WRS	0.997	0	0.56	Site Above Background
	Se	11 / 11	20 / 20	37900	53900	Site greater Background	Normal	Nonparametric	WRS	0.798	1	0.61	Site Above Background
LEAD	MmA	2 / 2	20 / 20	30.1	18.4	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	63.5	44	Site Similar to Background	Nonparametric	Nonparametric	WRS	0.003	0.33	0.56	Site Within Background
	Se	11 / 11	20 / 20	33.4	38	Site Similar to Background	Normal	Normal	T-Test	0.018	1	0.61	Site Within Background
MAGNESIUM	MmA	2 / 2	20 / 20	1870	2290	Site Similar to Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Within Background(2)
	Ne	11 / 11	22 / 22	2810	2780	Site Similar to Background	Normal	Normal	T-Test	0.004	0.33	0.56	Site Within Background
	Se	11 / 11	15 / 20	3040	2930	Site Similar to Background	Normal	Normal	Gehan	0.228	0.35	0.61	Site Above Background
MANGANESE	MmA	2 / 2	20 / 20	818	194	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	583	290	Site greater Background	Normal	Normal	T-Test	1	0	0.56	Site Above Background
	Se	11 / 11	20 / 20	591	373	Site greater Background	Normal	Nonparametric	WRS	0.97	0.037	0.61	Site Above Background
MERCURY	MmA	0 / 2	18 / 20	--	0.056	Site less Background	Assumed Nonparametric	Normal	No Hypothesis Test	NA	NA	NA	ND
	Ne	9 / 11	22 / 22	0.14	0.24	Site less Background	Nonparametric	Nonparametric	Gehan	0	1	0.56	Site Within Background
	Se	10 / 11	2 / 20	0.1	0.12	Site Similar to Background	Normal	Assumed Nonparametric	Gehan	0.968	1	0.61	Site Above Background
NICKEL	MmA	2 / 2	20 / 20	37.1	10.6	Site greater Background	Assumed Nonparametric	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	29.2	16.5	Site greater Background	Normal	Nonparametric	WRS	0.998	0	0.56	Site Above Background
	Se	11 / 11	20 / 20	36.7	19.1	Site greater Background	Normal	Normal	T-Test	0.999	0	0.61	Site Above Background

TABLE 1
TANK FARM 4 SURFACE BACKGROUND ANALYSIS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

Parameter	Soil Type	Site FOD	Background FOD	Site Maximum Detected Concentration	Background Maximum Detected	Graphical Evaluation	Site Distribution	Background Distribution	Hypothesis Test	P-value	Slippage P-value	Quantile P-value	Conclusion
POTASSIUM	MmA	2 / 2	20 / 20	353	840	Site less Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	11 / 11	22 / 22	545	666	Site Similar to Background	Normal	Nonparametric	WRS	0.002	1	0.56	Site Within Background
	Se	11 / 11	0 / 20	440	--	Site greater Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SELENIUM	MmA	0 / 2	13 / 20	--	0.55	Site greater Background	Assumed Nonparametric	Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	8 / 11	16 / 22	3.5	0.89	Site greater Background	Normal	Nonparametric	Gehan	1	0	0.56	Site Above Background
	Se	6 / 11	0 / 20	1.8	--	Site less Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SILVER	MmA	0 / 2	0 / 20	--	--	Site Similar to Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	1 / 11	0 / 22	0.068	--	Site Similar to Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Se	0 / 11	0 / 20	--	--	Site less Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SODIUM	MmA	0 / 2	1 / 20	--	63.3	Site less Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	10 / 11	0 / 22	137	--	Site greater Background	Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Se	11 / 11	0 / 6	77.2	--	Site less Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
THALLIUM	MmA	2 / 2	0 / 20	5.3	--	Site greater Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	3 / 11	0 / 22	3.2	--	Site greater Background	Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Se	1 / 11	0 / 20	2.6	--	Site Similar to Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
VANADIUM	MmA	2 / 2	20 / 20	17.4	22.7	Site Similar to Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Within Background(2)
	Ne	11 / 11	22 / 22	28.7	23.1	Site Similar to Background	Normal	Normal	T-Test	0.091	0.1	0.56	Site Above Background
	Se	11 / 11	20 / 20	37.6	34.2	Site Similar to Background	Nonparametric	Normal	WRS	0	0.35	0.61	Site Within Background
ZINC	MmA	2 / 2	20 / 20	125	29.4	Site greater Background	Assumed Nonparametric	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	11 / 11	22 / 22	99.6	67.4	Site greater Background	Normal	Nonparametric	WRS	0.961	0.1	0.56	Site Above Background
	Se	11 / 11	20 / 20	115	81.7	Site greater Background	Normal	Normal	T-Test	0.926	0.003	0.61	Site Above Background

NA = Not Applicable
ND = Site or Background dataset is non-detect.
-- = All samples were non-detect.

(1) Conclusion based on graphical evaluation.
(2) Conclusion based on comparison of maximum detected concentrations.
(3) Background data for antimony soil type Se was rejected; therefore a background comparison was not conducted.

TABLE 2
TANK FARM 4 SUBSURFACE BACKGROUND ANALYSIS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

Parameter	Soil Type	Site FOD	Background FOD	Site Maximum Detected Concentration	Background Maximum Detected Concentration	Graphical Evaluation	Site Distribution	Background Distribution	Hypothesis Test	P-value	Slippage P-value	Quantile P-value	Conclusion
ALUMINUM	MmA	4 / 4	20 / 20	6340	12000	Site less than Background	Normal	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	21 / 21	21 / 21	13700	12300	Site Similar to Background	Normal	Normal	T-Test	0	0.24	0.76	Site Within Background
	Se	17 / 17	15 / 15	17200	14000	Site Similar to Background	Normal	Normal	T-Test	0	0.27	0.73	Site Within Background
ANTIMONY	MmA	0 / 4	0 / 20	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	0 / 21	0 / 21	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Se	0 / 17	0 / 15	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
ARSENIC	MmA	4 / 4	20 / 20	10.6	6.7	Site greater than Background	Normal	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	34.7	17.7	Site greater than Background	Nonparametric	Nonparametric	WRS	1	0	0.76	Site Above Background
	Se	17 / 17	15 / 15	42.9	32.2	Site Similar to Background	Nonparametric	Normal	WRS	0	0.53	0.73	Site Within Background
BARIUM	MmA	4 / 4	20 / 20	49.3	42.9	Site Similar to Background	Normal	Nonparametric	WRS	0.057	0.17	0.73	Site Above Background
	Ne	21 / 21	21 / 21	67.9	39.6	Site Similar to Background	Nonparametric	Normal	WRS	0	0.24	0.76	Site Within Background
	Se	17 / 17	15 / 15	103	30.2	Site Similar to Background	Nonparametric	Normal	WRS	0.003	0.14	0.73	Site Within Background
BERYLLIUM	MmA	4 / 4	20 / 20	0.63	0.71	Site Similar to Background	Normal	Nonparametric	WRS	0.361	1	0.73	Site Above Background
	Ne	21 / 21	21 / 21	0.74	0.57	Site Similar to Background	Normal	Normal	T-Test	0	0.5	0.76	Site Within Background
	Se	17 / 17	15 / 15	0.78	0.61	Site Similar to Background	Nonparametric	Normal	WRS	0.001	0.14	0.73	Site Within Background
CADMIUM	MmA	4 / 4	0 / 20	0.75	--	Site greater than Background	Normal	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	19 / 21	2 / 21	1.15	0.075	Site greater than Background	Nonparametric	Assumed Nonparametric	Gehan	1	0	0.76	Site Above Background
	Se	16 / 17	11 / 15	0.82	0.25	Site greater than Background	Normal	Normal	Gehan	0.99	0	0.73	Site Above Background
CALCIUM	MmA	4 / 4	20 / 20	307	923	Site less than Background	Normal	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	16 / 21	21 / 21	1260	816	Site less than Background	Nonparametric	Normal	Gehan	0	0.5	0.76	Site Within Background
	Se	10 / 17	15 / 15	1750	1540	Site less than Background	Nonparametric	Normal	Gehan	0	0.53	0.73	Site Within Background
CHROMIUM	MmA	4 / 4	20 / 20	15.4	18.8	Site Similar to Background	Normal	Normal	T-Test	0.037	1	0.73	Site Within Background
	Ne	21 / 21	21 / 21	24.1	14.9	Site Similar to Background	Nonparametric	Normal	WRS	0.009	0.12	0.76	Site Within Background
	Se	17 / 17	15 / 15	23.6	17.3	Site Similar to Background	Normal	Normal	T-Test	0.001	0.27	0.73	Site Within Background
COBALT	MmA	4 / 4	20 / 20	29	11.3	Site greater than Background	Normal	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	40.2	9.6	Site greater than Background	Normal	Nonparametric	WRS	1	0	0.76	Site Above Background
	Se	17 / 17	15 / 15	41	17.7	Site greater than Background	Normal	Normal	T-Test	0.941	0	0.73	Site Above Background
COPPER	MmA	4 / 4	20 / 20	24.4	43.7	Site greater than Background	Normal	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	31.8	16.9	Site greater than Background	Normal	Normal	T-Test	0.966	0	0.76	Site Above Background
	Se	17 / 17	15 / 15	31	30.5	Site Similar to Background	Normal	Normal	T-Test	0.003	0.53	0.73	Site Within Background
IRON	MmA	4 / 4	20 / 20	70700	24000	Site greater than Background	Normal	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	69600	31400	Site greater than Background	Normal	Normal	T-Test	1	0	0.76	Site Above Background
	Se	17 / 17	15 / 15	76900	42650	Site greater than Background	Normal	Normal	T-Test	0.842	0.001	0.73	Site Above Background
LEAD	MmA	4 / 4	20 / 20	6.4	10.6	Site less than Background	Normal	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	21 / 21	21 / 21	30.3	11.6	Site greater than Background	Nonparametric	Nonparametric	WRS	0.179	0.01	0.76	Site Above Background
	Se	17 / 17	15 / 15	20.3	13.5	Site Similar to Background	Nonparametric	Normal	WRS	0.037	0.066	0.73	Site Within Background
MAGNESIUM	MmA	4 / 4	20 / 20	1430	4580	Site less than Background	Normal	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	21 / 21	21 / 21	3790	3890	Site less than Background	Normal	Normal	T-Test	0	1	0.76	Site Within Background
	Se	17 / 17	15 / 15	5120	3850	Site less than Background	Normal	Normal	T-Test	0	0.27	0.73	Site Within Background
MANGANESE	MmA	4 / 4	20 / 20	2410	669.5	Site greater than Background	Normal	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	1850	634	Site Similar to Background	Nonparametric	Nonparametric	WRS	0.186	0.053	0.76	Site Above Background
	Se	17 / 17	15 / 15	4480	1330	Site Similar to Background	Nonparametric	Nonparametric	WRS	0.101	0.14	0.73	Site Above Background
MERCURY	MmA	0 / 4	0 / 20	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Ne	10 / 21	2 / 21	0.16	0.017	Site greater than Background	Nonparametric	Assumed Nonparametric	Gehan	0.995	0.004	0.76	Site Above Background
	Se	8 / 17	0 / 15	0.0475	--	Site greater than Background	Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
NICKEL	MmA	4 / 4	20 / 20	96.9	22.6	Site greater than Background	Normal	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	68.2	19.6	Site greater than Background	Nonparametric	Normal	WRS	1	0	0.76	Site Above Background
	Se	17 / 17	15 / 15	87.9	37.1	Site greater than Background	Normal	Normal	T-Test	0.982	0	0.73	Site Above Background

TABLE 2
TANK FARM 4 SUBSURFACE BACKGROUND ANALYSIS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

Parameter	Soil Type	Site FOD	Background FOD	Site Maximum Detected Concentration	Background Maximum Detected Concentration	Graphical Evaluation	Site Distribution	Background Distribution	Hypothesis Test	P-value	Slippage P-value	Quantile P-value	Conclusion
POTASSIUM	MmA	4 / 4	20 / 20	247	2440	Site less than Background	Normal	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	21 / 21	21 / 21	624	2040	Site less than Background	Normal	Nonparametric	WRS	0	1	0.76	Site Within Background
	Se	17 / 17	15 / 15	934	677	Site less than Background	Nonparametric	Normal	WRS	0	0.53	0.73	Site Within Background
SELENIUM	MmA	1 / 4	0 / 20	5.3	--	Site greater than Background	Assumed Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	10 / 21	1 / 21	4.7	0.56	Site greater than Background	Nonparametric	Assumed Nonparametric	Gehan	1	0	0.76	Site Above Background
	Se	5 / 17	1 / 15	4.1	0.3325	Site greater than Background	Nonparametric	Assumed Nonparametric	Gehan	0.977	0	0.73	Site Above Background
SILVER	MmA	1 / 4	0 / 20	0.21	--	Site greater than Background	Assumed Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	1 / 21	0 / 21	0.12	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Within Background(1)
	Se	0 / 17	0 / 15	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SODIUM	MmA	0 / 4	2 / 20	--	67.8	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	1	0.73	ND
	Ne	18 / 21	1 / 21	664	54.9	Site Similar to Background	Nonparametric	Assumed Nonparametric	Gehan	0.996	0.053	0.76	Site Above Background
	Se	16 / 17	3 / 15	79.3	60.8	Site Similar to Background	Nonparametric	Nonparametric	Gehan	0.648	0.14	0.73	Site Above Background
THALLIUM	MmA	4 / 4	0 / 20	11.8	--	Site greater than Background	Normal	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Ne	6 / 21	0 / 21	3.8	--	Site greater than Background	Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Se	0 / 17	0 / 15	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
VANADIUM	MmA	4 / 4	20 / 20	16.2	19	Site Similar to Background	Normal	Normal	NA	NA	NA	NA	Site Within Background(1)
	Ne	21 / 21	21 / 21	23.7	19.5	Site Similar to Background	Normal	Nonparametric	WRS	0.166	0.12	0.76	Site Above Background
	Se	17 / 17	15 / 15	30.2	21.15	Site Similar to Background	Normal	Normal	T-Test	0.004	0.14	0.73	Site Within Background
ZINC	MmA	4 / 4	20 / 20	193	42.8	Site greater than Background	Normal	Normal	NA	NA	NA	NA	Site Above Background(1)
	Ne	21 / 21	21 / 21	122	48.7	Site greater than Background	Normal	Normal	T-Test	1	0	0.76	Site Above Background
	Se	17 / 17	15 / 15	187	74.5	Site greater than Background	Normal	Normal	T-Test	0.976	0	0.92	Site Above Background

NA = Not Applicable
ND = Site or Background dataset is non-detect.
-- = All samples were non-detect.
(1) Conclusion based on graphical evaluation.

TABLE 3
TANK FARM 5 SURFACE BACKGROUND ANALYSIS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

Parameter	Soil Type	Site FOD	Background FOD	Site Maximum Detected Concentration	Background Maximum Detected Concentration	Graphical Evaluation	Site Distribution	Background Distribution	Hypothesis Test	P-value	Slippage P-value	Quantile P-value	Conclusion
ALUMINUM	Ne	6 / 6	22 / 22	9740	17900	Site less than Background	Normal	Nonparametric	WRS	0	1	0.5	Site Within Background
	Pm	5 / 5	20 / 20	9530	14600	Site less than Background	Normal	Normal	T-Test	0	1	0.79	Site Within Background
ANTIMONY	Ne	0 / 6	0 / 22	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	0 / 5	0 / 20	--	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
ARSENIC	Ne	6 / 6	22 / 22	43.7	17.1	Site greater than Background	Normal	Nonparametric	WRS	0.919	0.006	0.5	Site Above Background
	Pm	5 / 5	20 / 20	17.5	21.3	Site Similar to Background	Normal	Nonparametric	WRS	0.082	1	0.79	Site Above Background
BARIUM	Ne	6 / 6	22 / 22	19.8	36.3	Site less than Background	Normal	Normal	T-Test	0	1	0.5	Site Within Background
	Pm	5 / 5	20 / 20	23.7	53.1	Site less than Background	Normal	Normal	T-Test	0	1	0.79	Site Within Background
BERYLLIUM	Ne	6 / 6	22 / 22	0.52	0.79	Site Similar to Background	Normal	Normal	T-Test	0.003	1	0.5	Site Within Background
	Pm	5 / 5	1 / 20	0.55	0.352	Site greater than Background	Normal	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background (1)
CADMIUM	Ne	6 / 6	6 / 22	0.27	0.53	Site greater than Background	Normal	Nonparametric	Gehan	0.992	1	0.5	Site Above Background
	Pm	4 / 5	0 / 20	0.33	--	Site less than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
CALCIUM	Ne	6 / 6	22 / 22	1710	559	Site greater than Background	Normal	Normal	T-Test	0.815	0.001	0.5	Site Above Background
	Pm	5 / 5	0 / 20	1680	--	Site greater than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
CHROMIUM	Ne	6 / 6	22 / 22	12.8	17.1	Site Similar to Background	Normal	Nonparametric	WRS	0.001	1	0.5	Site Within Background
	Pm	5 / 5	20 / 20	12.7	16	Site less than Background	Normal	Normal	T-Test	0	1	0.79	Site Within Background
COBALT	Ne	6 / 6	22 / 22	13.2	7.4	Site greater than Background	Normal	Nonparametric	WRS	0.948	0.001	0.5	Site Above Background
	Pm	5 / 5	20 / 20	11.6	13.8	Site Similar to Background	Normal	Nonparametric	WRS	0.118	1	0.79	Site Above Background
COPPER	Ne	6 / 6	22 / 22	15.1	20.3	Site Similar to Background	Normal	Nonparametric	WRS	0.081	1	0.5	Site Above Background
	Pm	5 / 5	0 / 20	24.2	--	Site greater than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
IRON	Ne	6 / 6	22 / 22	33700	23000	Site greater than Background	Normal	Nonparametric	WRS	0.869	0.001	0.5	Site Above Background
	Pm	5 / 5	20 / 20	28900	43300	Site Similar to Background	Normal	Nonparametric	WRS	0.03	1	0.79	Site Within Background
LEAD	Ne	6 / 6	22 / 22	33.3	44	Site Similar to Background	Normal	Nonparametric	WRS	0.157	1	0.5	Site Above Background
	Pm	5 / 5	20 / 20	32.5	49.5	Site Similar to Background	Normal	Normal	T-Test	0.003	1	0.79	Site Within Background
MAGNESIUM	Ne	6 / 6	22 / 22	2320	2780	Site Similar to Background	Normal	Normal	T-Test	0.004	1	0.5	Site Within Background
	Pm	5 / 5	20 / 20	2290	1960	Site Similar to Background	Normal	Normal	T-Test	0.248	0.033	0.79	Site Above Background
MANGANESE	Ne	6 / 6	22 / 22	415	290	Site greater than Background	Normal	Normal	T-Test	0.891	0.006	0.5	Site Above Background
	Pm	5 / 5	20 / 20	462	477	Site Similar to Background	Normal	Normal	T-Test	0.01	1	0.79	Site Within Background
MERCURY	Ne	1 / 6	22 / 22	0.12	0.24	Site less than Background	Assumed Nonparametric	Nonparametric	Gehan	0.001	1	0.5	Site Within Background
	Pm	1 / 5	4 / 20	0.019	0.68	Site Similar to Background	Assumed Nonparametric	Nonparametric	NA	NA	NA	NA	Site Above Background(1)
NICKEL	Ne	6 / 6	22 / 22	21.1	16.5	Site greater than Background	Nonparametric	Nonparametric	WRS	0.856	0.001	0.5	Site Above Background
	Pm	5 / 5	20 / 20	22.6	14.4	Site greater than Background	Normal	Normal	T-Test	0.982	0	0.79	Site Above Background
POTASSIUM	Ne	6 / 6	22 / 22	294	666	Site less than Background	Normal	Nonparametric	WRS	0	1	0.5	Site Within Background
	Pm	5 / 5	0 / 20	388	--	Site greater than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SELENIUM	Ne	3 / 6	16 / 22	4	0.89	Site greater than Background	Normal	Nonparametric	Gehan	0.981	0	0.5	Site Above Background
	Pm	3 / 5	0 / 18	4.2	--	Site greater than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SILVER	Ne	6 / 6	0 / 22	0.21	--	Site greater than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	2 / 5	0 / 20	0.21	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SODIUM	Ne	1 / 6	0 / 22	39.4	--	Site less than Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	5 / 5	0 / 6	53.9	--	Site less than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
THALLIUM	Ne	6 / 6	0 / 22	2.5	--	Site greater than Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	5 / 5	0 / 20	2.4	--	Site Similar to Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
VANADIUM	Ne	6 / 6	22 / 22	24	23.1	Site Similar to Background	Normal	Normal	T-Test	0.014	0.21	0.5	Site Within Background
	Pm	5 / 5	20 / 20	16.5	35.8	Site less than Background	Normal	Normal	T-Test	0	1	0.79	Site Within Background
ZINC	Ne	6 / 6	22 / 22	66.1	67.4	Site Similar to Background	Normal	Nonparametric	WRS	0.233	1	0.5	Site Above Background
	Pm	5 / 5	20 / 20	69.5	93.7	Site Similar to Background	Normal	Normal	T-Test	0.01	1	0.79	Site Within Background

NA = Not Applicable
ND = Site or Background dataset is non-detect.
-- = All samples were non-detect.
(1) Conclusion based on graphical evaluation.

TABLE 4
TANK FARM 5 SUBSURFACE BACKGROUND ANALYSIS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

Parameter	Soil Type	Site FOD	Background FOD	Site Maximum Detected Concentration	Background Maximum Detected Concentration	Graphical Evaluation	Site Distribution	Background Distribution	Hypothesis Test	P-value	Slippage P-value	Quantile P-value	Conclusion
ALUMINUM	Ne	12 / 12	21 / 21	7950	12300	Site less Background	Normal	Normal	T-Test	0	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	14000	13200	Site less Background	Normal	Normal	T-Test	0	0.27	0.73	Site Within Background
ANTIMONY	Ne	0 / 12	0 / 21	--	--	Site less Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	0 / 9	0 / 24	--	--	Site less Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
ARSENIC	Ne	12 / 12	21 / 21	67.2	17.7	Site greater Background	Normal	Nonparametric	WRS	1	0	0.63	Site Above Background
	Pm	9 / 9	24 / 24	46.7	23.5	Site greater Background	Normal	Normal	T-Test	0.921	0.001	0.73	Site Above Background
BARIUM	Ne	12 / 12	21 / 21	17.6	39.6	Site less Background	Normal	Normal	T-Test	0	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	20	33.4	Site less Background	Normal	Normal	T-Test	0	1	0.73	Site Within Background
BERYLLIUM	Ne	12 / 12	21 / 21	0.525	0.57	Site Similar to Background	Normal	Normal	T-Test	0.001	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	0.5	0.76	Site less Background	Normal	Nonparametric	WRS	0	1	0.73	Site Within Background
CADMIUM	Ne	12 / 12	2 / 21	0.86	0.075	Site greater Background	Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Pm	9 / 9	2 / 24	0.75	0.15	Site greater Background	Normal	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
CALCIUM	Ne	10 / 12	21 / 21	1230	816	Site Similar to Background	Normal	Normal	Gehan	0.004	0.12	0.63	Site Within Background
	Pm	7 / 9	24 / 24	2200	1650	Site Similar to Background	Nonparametric	Normal	Gehan	0.001	0.27	0.73	Site Within Background
CHROMIUM	Ne	12 / 12	21 / 21	11.7	14.9	Site less Background	Normal	Normal	T-Test	0	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	21.7	21.3	Site Similar to Background	Normal	Nonparametric	WRS	0.041	0.27	0.73	Site Within Background
COBALT	Ne	12 / 12	21 / 21	32.8	9.6	Site greater Background	Normal	Nonparametric	WRS	0.999	0	0.63	Site Above Background
	Pm	9 / 9	24 / 24	30	17.1	Site greater Background	Normal	Normal	T-Test	0.627	0.003	0.73	Site Above Background
COPPER	Ne	12 / 12	21 / 21	35.8	16.9	Site greater Background	Normal	Normal	T-Test	0.632	0.001	0.63	Site Above Background
	Pm	9 / 9	24 / 24	32.7	25.8	Site Similar to Background	Nonparametric	Normal	WRS	0.012	0.27	0.73	Site Within Background
IRON	Ne	12 / 12	21 / 21	63200	31400	Site greater Background	Nonparametric	Normal	WRS	0.994	0.04	0.63	Site Above Background
	Pm	9 / 9	24 / 24	72100	38700	Site greater Background	Normal	Normal	T-Test	0.947	0	0.73	Site Above Background
LEAD	Ne	12 / 12	21 / 21	11.8	11.6	Site Similar to Background	Normal	Nonparametric	WRS	0.05	0.36	0.63	Site Above Background
	Pm	9 / 9	24 / 24	15.3	11.3	Site Similar to Background	Normal	Normal	T-Test	0.006	0.27	0.73	Site Within Background
MAGNESIUM	Ne	12 / 12	21 / 21	2240	3890	Site less Background	Normal	Normal	T-Test	0	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	4870	3360	Site Similar to Background	Normal	Normal	T-Test	0.011	0.27	0.73	Site Within Background
MANGANESE	Ne	12 / 12	21 / 21	4220	634	Site greater Background	Nonparametric	Nonparametric	WRS	0.795	0.12	0.63	Site Above Background
	Pm	9 / 9	24 / 24	778	1520	Site less Background	Nonparametric	Nonparametric	WRS	0	1	0.73	Site Within Background
MERCURY	Ne	0 / 12	2 / 21	--	0.017	Site Similar to Background	Assumed Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	2 / 9	1 / 24	0.0148	0.016	Site Similar to Background	Assumed Nonparametric	Assumed Nonparametric	Proportion	0.9799	1	0.73	Site Above Background
NICKEL	Ne	12 / 12	21 / 21	72.5	19.6	Site greater Background	Nonparametric	Normal	WRS	0.993	0	0.63	Site Above Background
	Pm	9 / 9	24 / 24	58.4	27.1	Site greater Background	Normal	Normal	T-Test	0.943	0.001	0.73	Site Above Background
POTASSIUM	Ne	12 / 12	21 / 21	374	2040	Site less Background	Normal	Nonparametric	WRS	0	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	289	590	Site less Background	Nonparametric	Normal	WRS	0	1	0.73	Site Within Background
SELENIUM	Ne	10 / 12	1 / 21	7	0.56	Site greater Background	Normal	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
	Pm	4 / 9	1 / 24	4.4	0.71	Site greater Background	Normal	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1)
SILVER	Ne	11 / 12	0 / 21	0.65	--	Site greater Background	Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	4 / 9	0 / 24	0.25	--	Site greater Background	Normal	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
SODIUM	Ne	4 / 12	1 / 21	61.4	54.9	Site Similar to Background	Nonparametric	Assumed Nonparametric	NA	NA	NA	NA	Site Above Background(1,2)
	Pm	4 / 9	20 / 24	30.9	94.5	Site less Background	Normal	Nonparametric	Gehan	0	1	0.73	Site Within Background
THALLIUM	Ne	11 / 12	0 / 21	7.4	--	Site greater Background	Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
	Pm	9 / 9	0 / 24	4.7	--	Site greater Background	Nonparametric	Assumed Nonparametric	No Hypothesis Test	NA	NA	NA	ND
VANADIUM	Ne	12 / 12	21 / 21	14.4	19.5	Site Similar to Background	Normal	Nonparametric	WRS	0	1	0.63	Site Within Background
	Pm	9 / 9	24 / 24	25	28.5	Site less Background	Nonparametric	Nonparametric	WRS	0	1	0.73	Site Within Background
ZINC	Ne	12 / 12	21 / 21	123	48.7	Site greater Background	Normal	Normal	T-Test	0.923	0.001	0.63	Site Above Background
	Pm	9 / 9	24 / 24	111	61.4	Site greater Background	Normal	Normal	T-Test	0.943	0.001	0.73	Site Above Background

NA = Not Applicable
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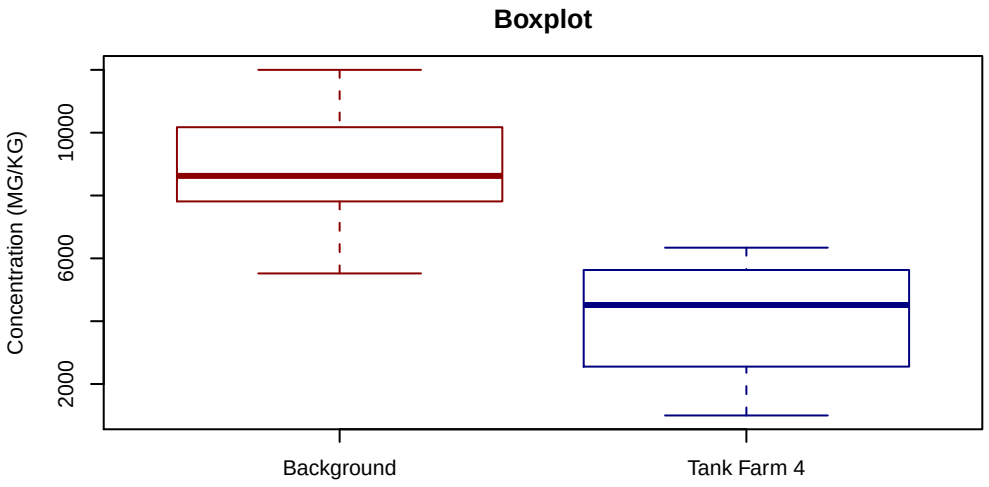
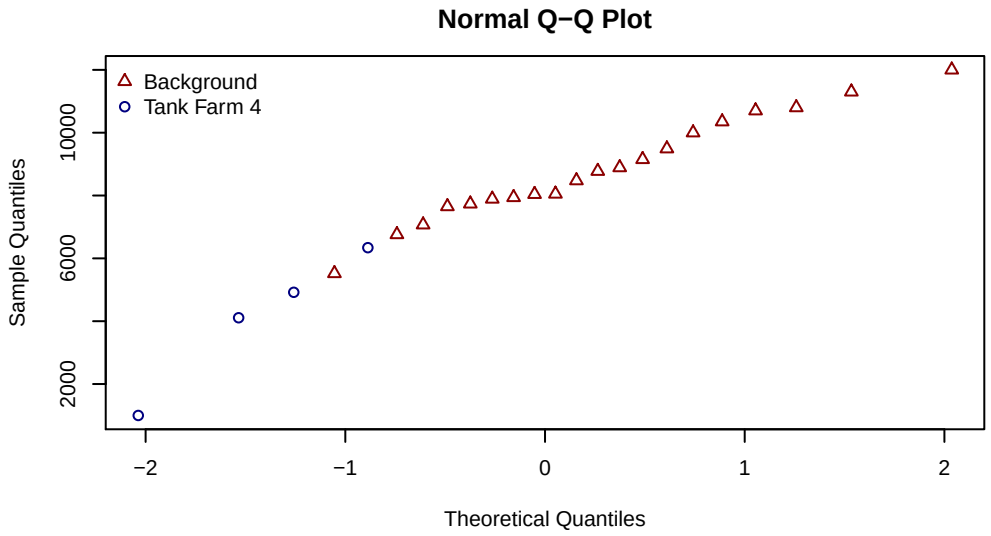
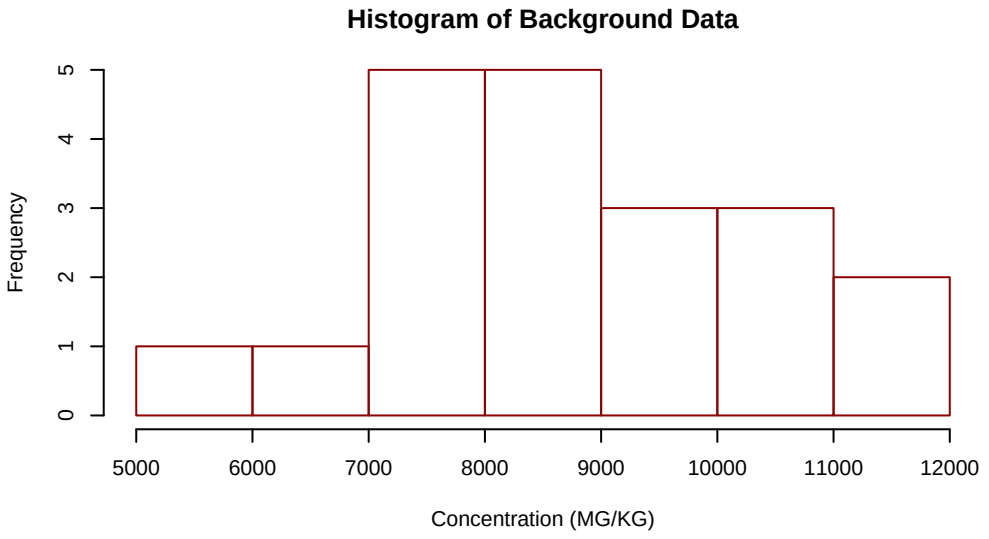
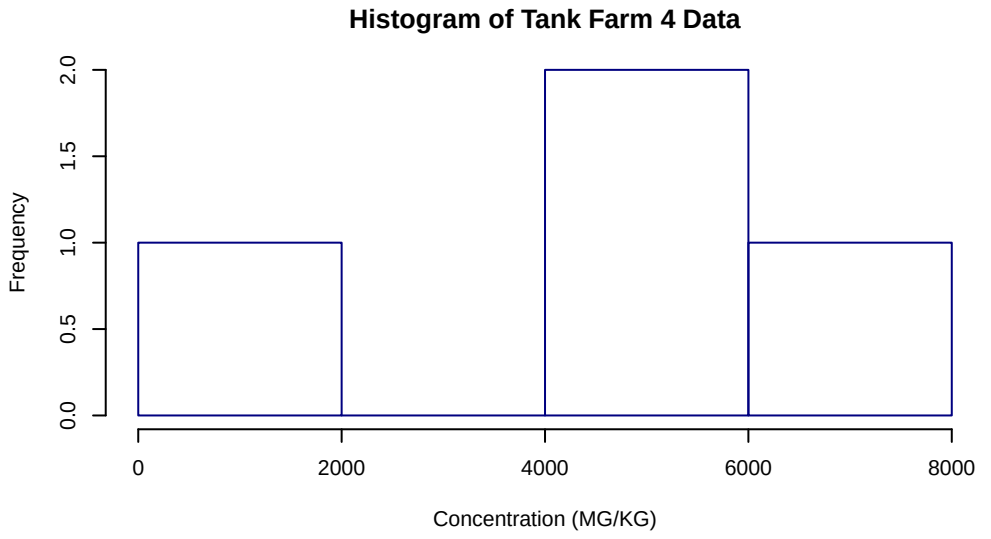
(1) Conclusion based on graphical evaluation.

ALUMINUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

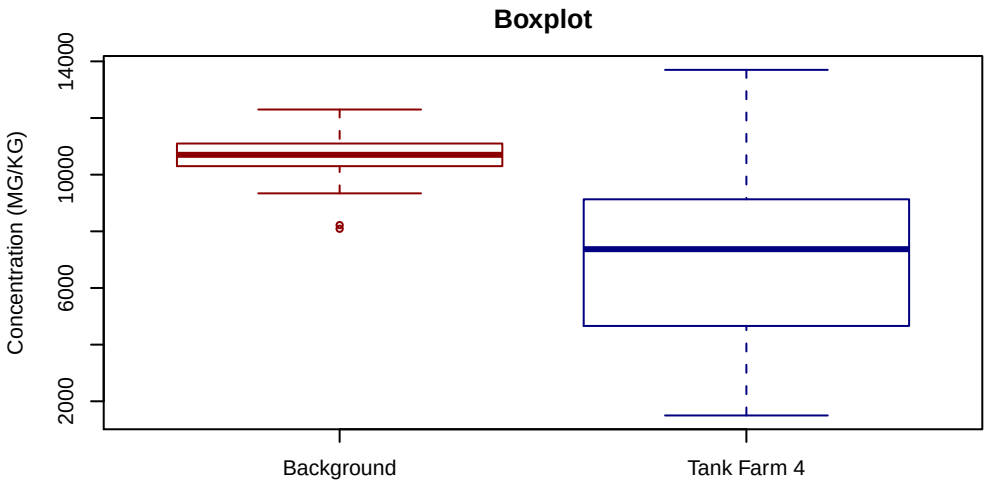


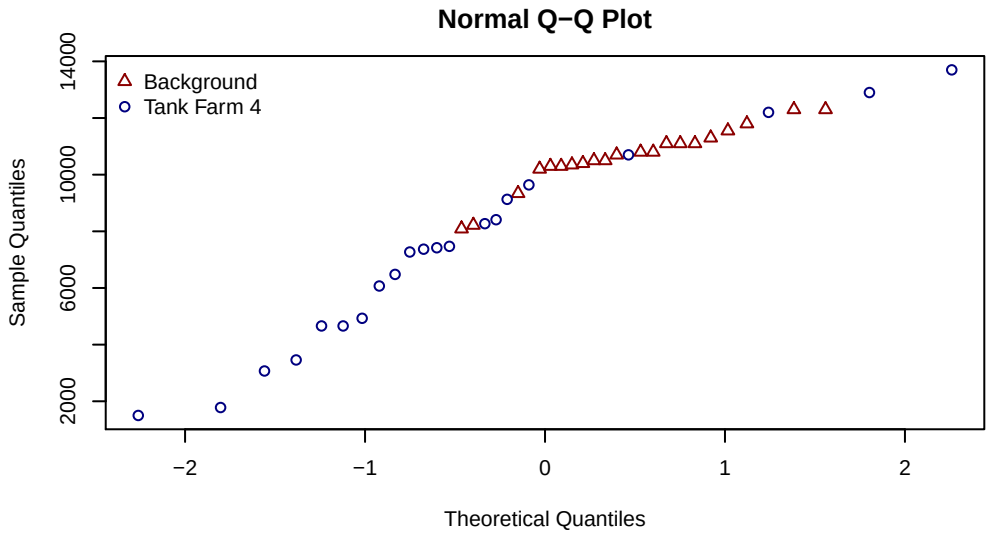


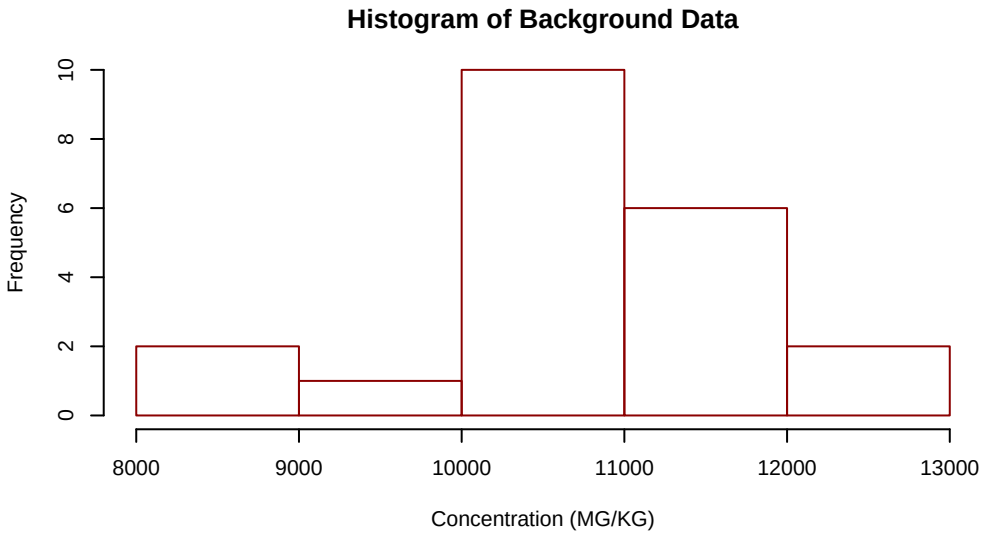


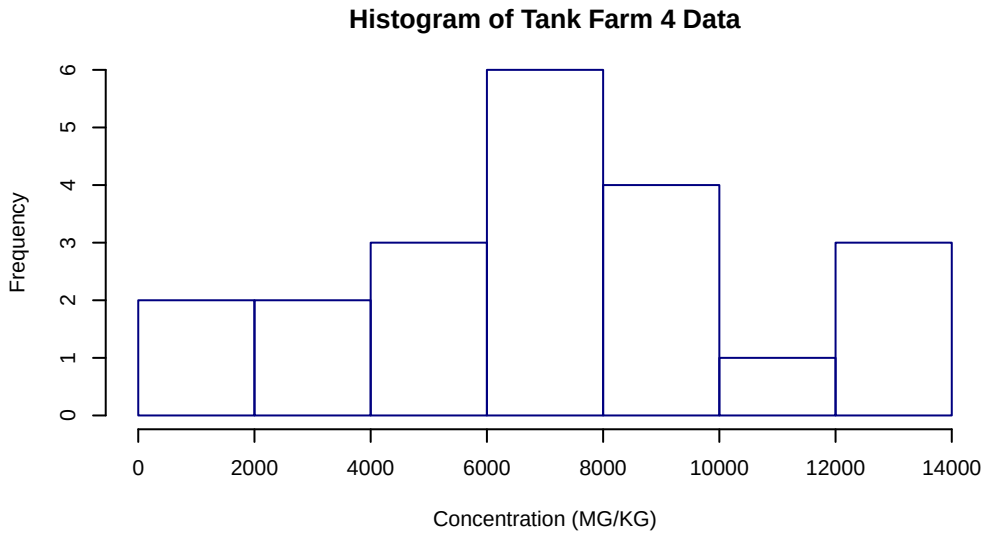


ALUMINUM Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

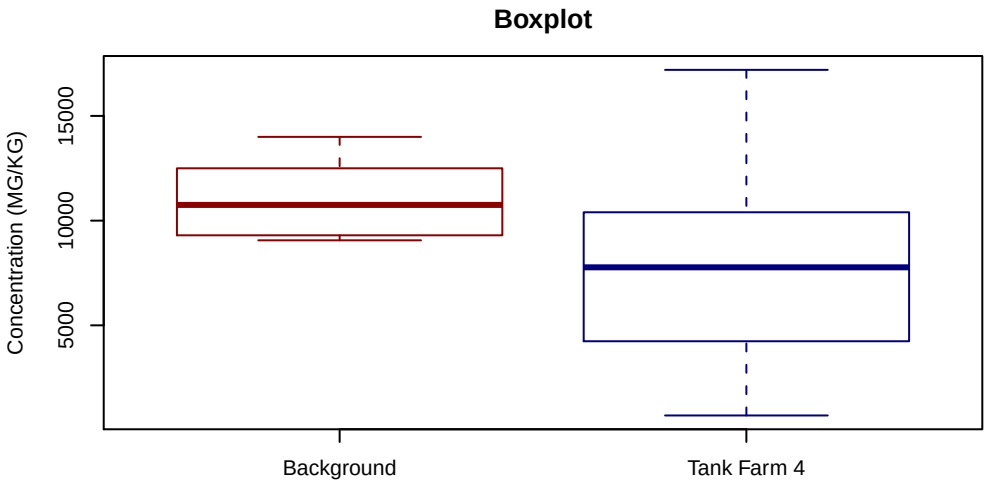


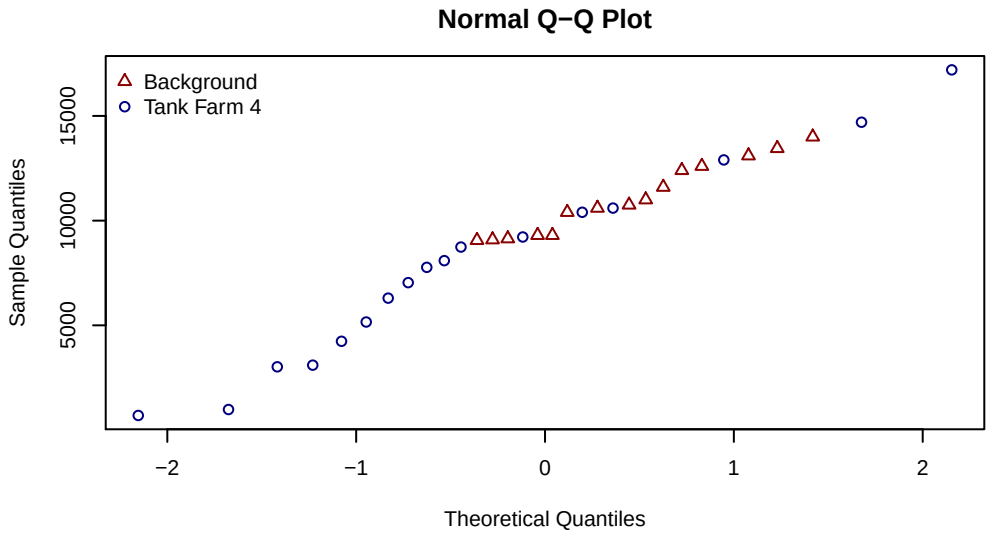


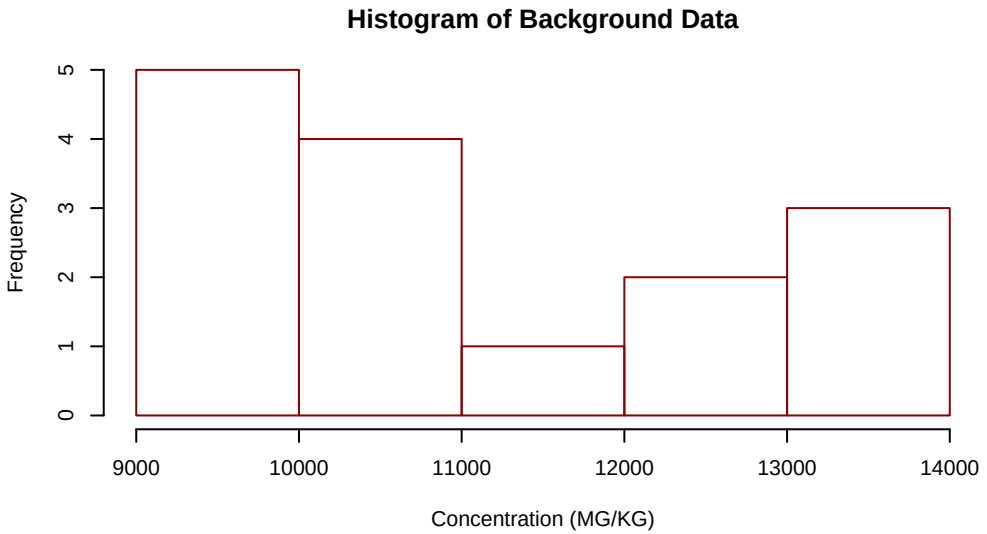


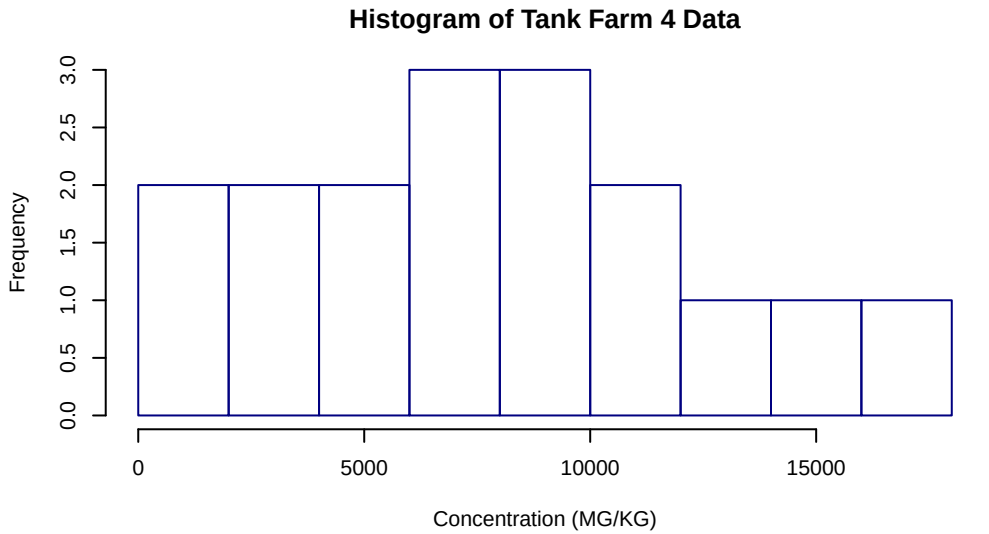


ALUMINUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

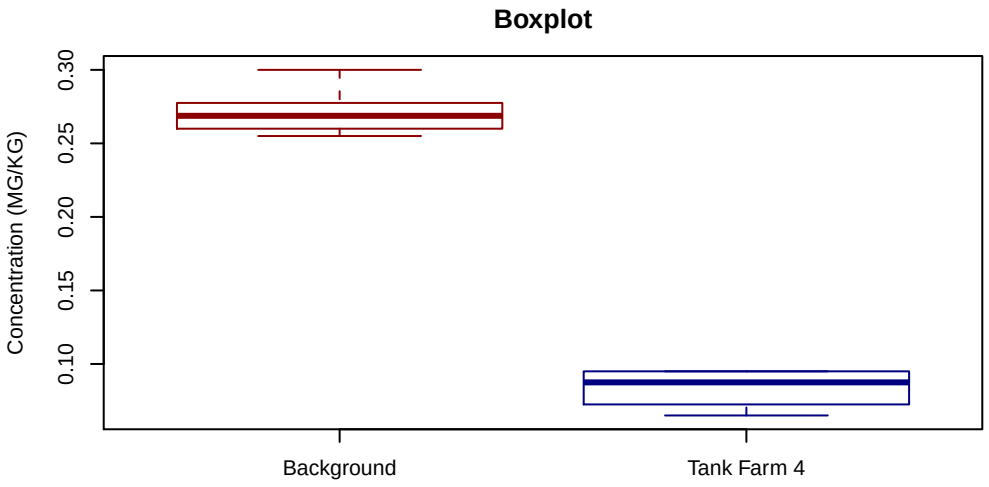


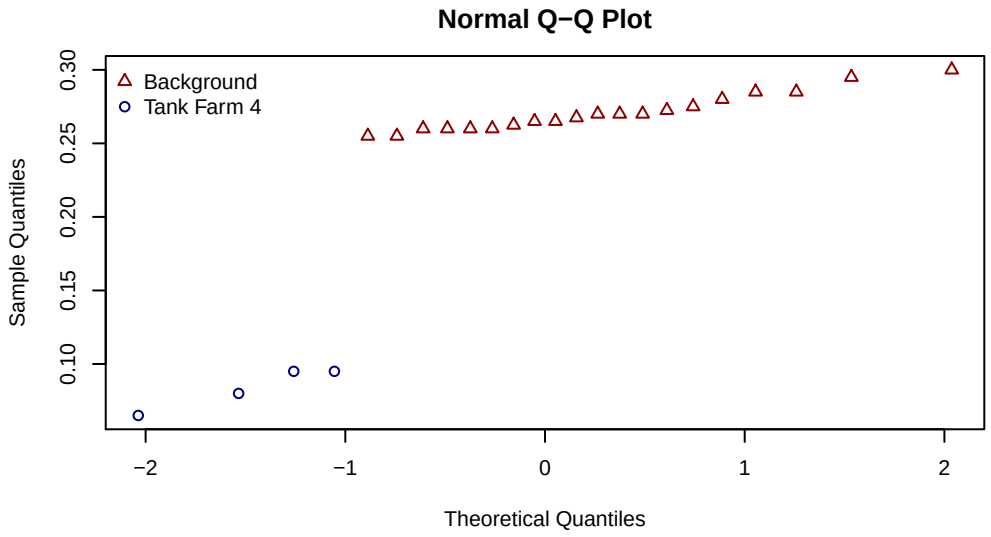


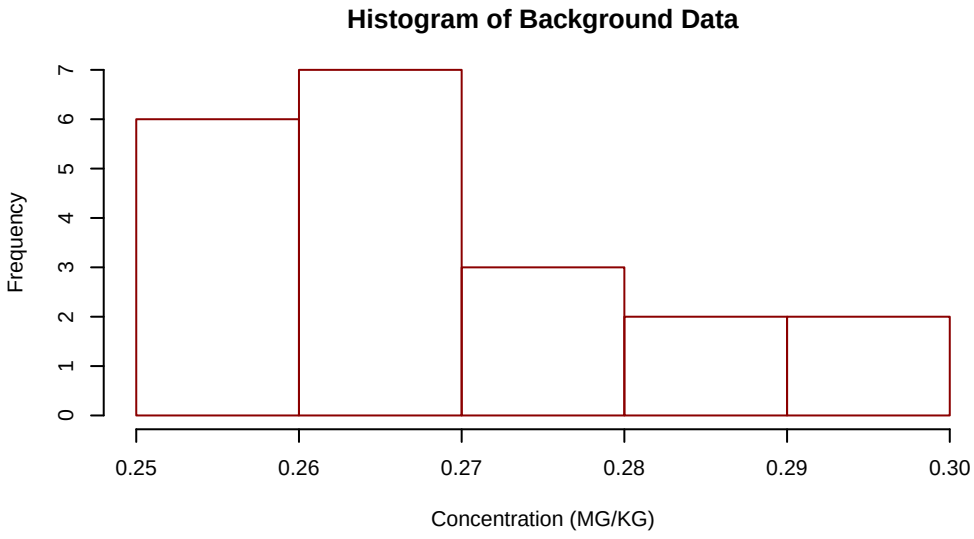


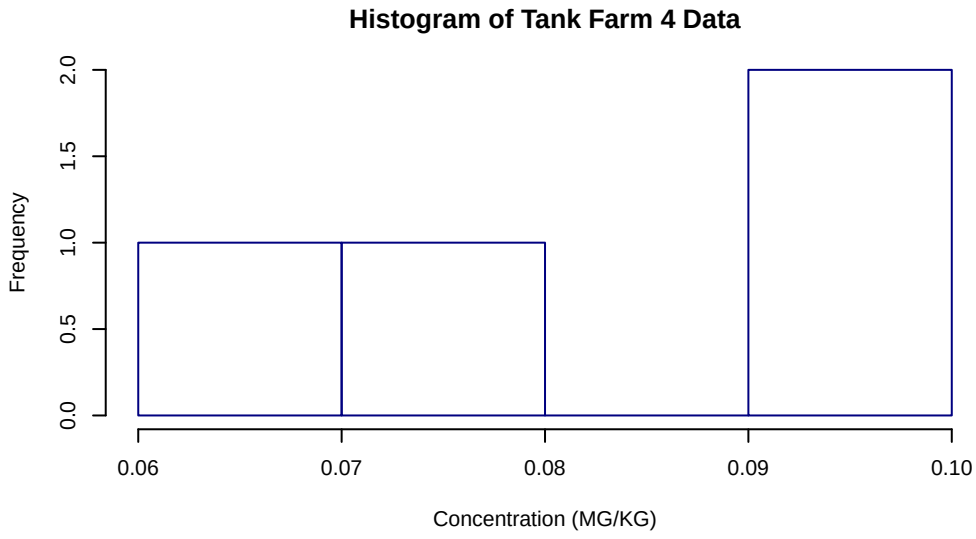


ANTIMONY MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

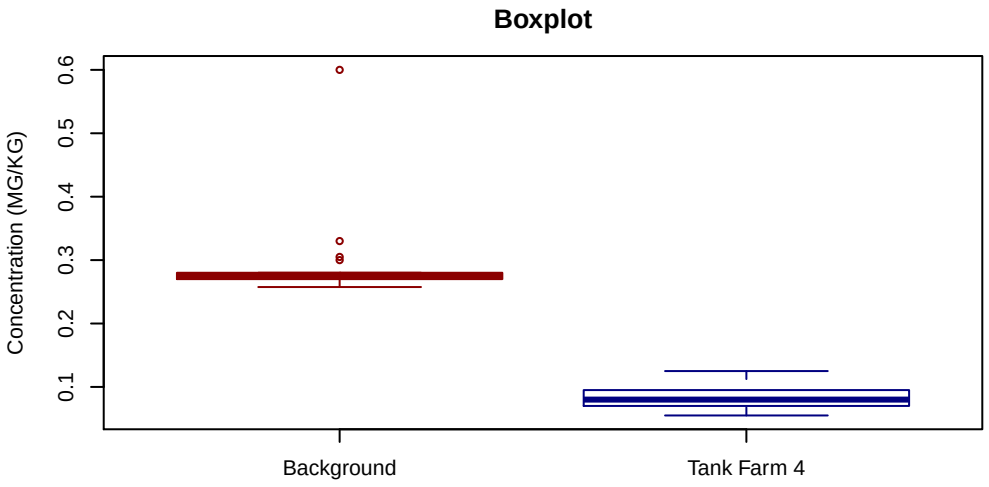


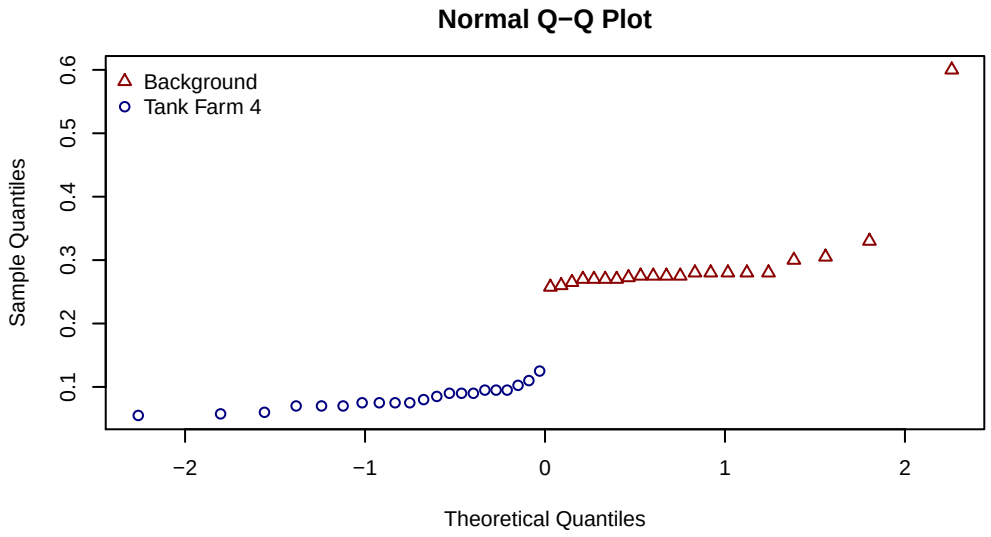


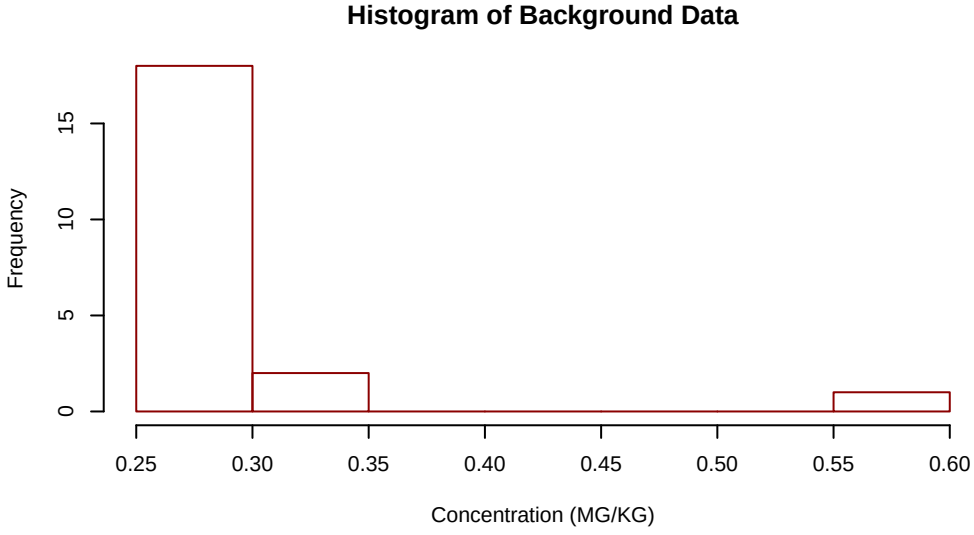


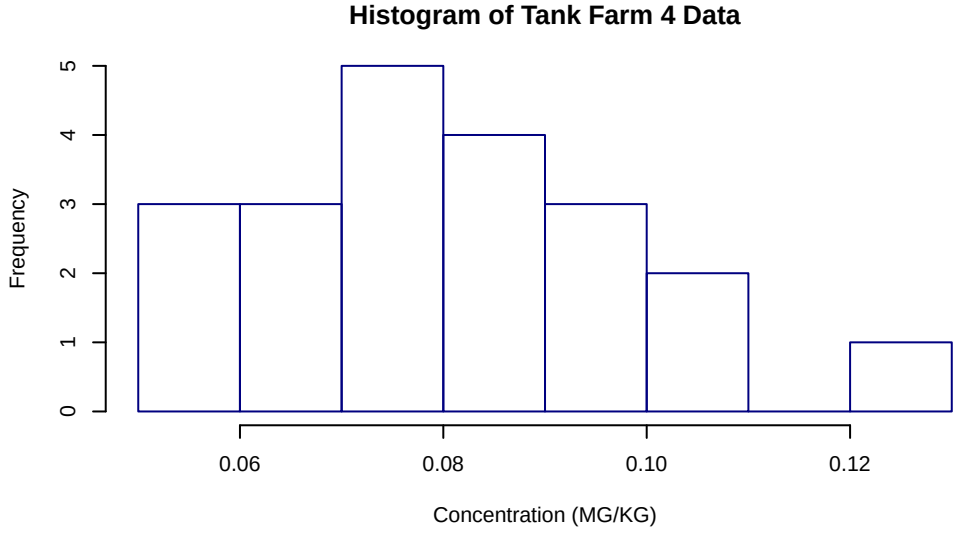


ANTIMONY Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

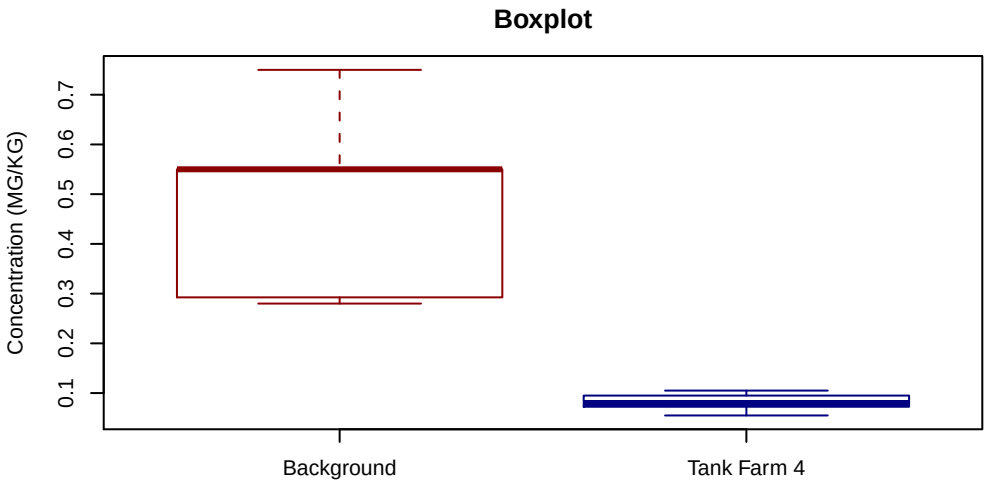


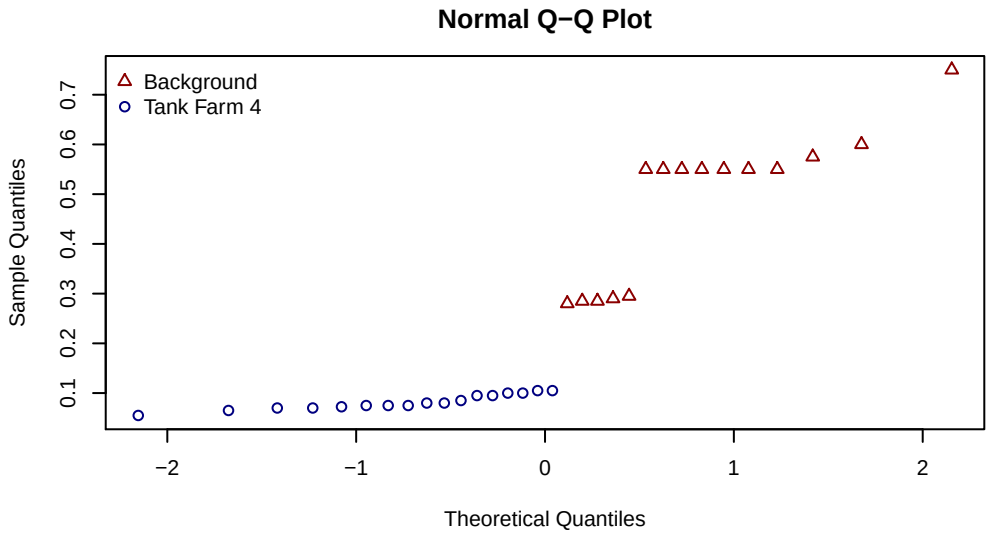


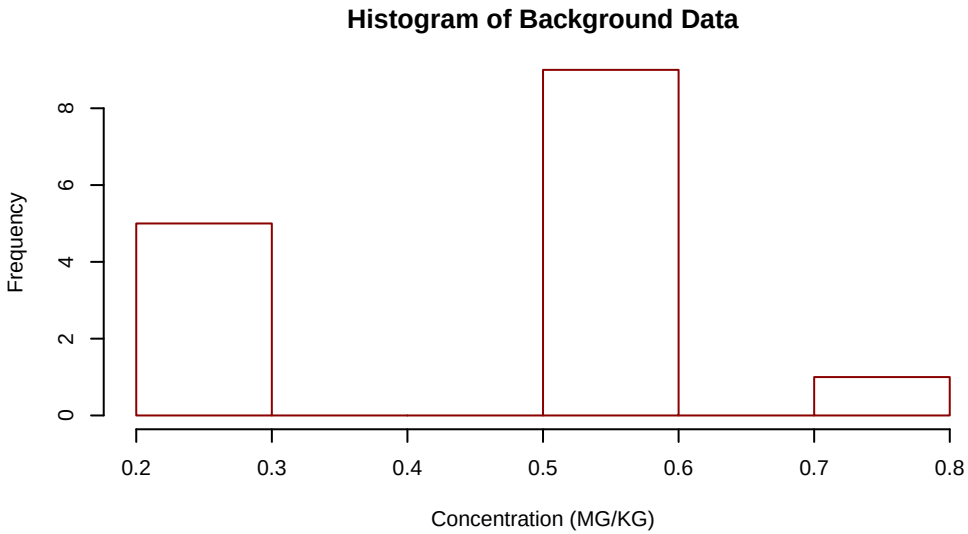


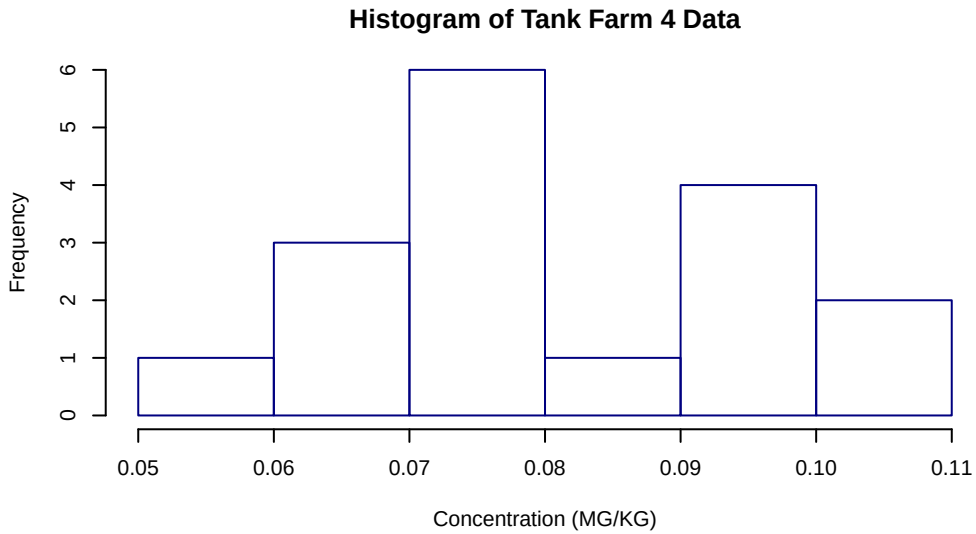


ANTIMONY Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

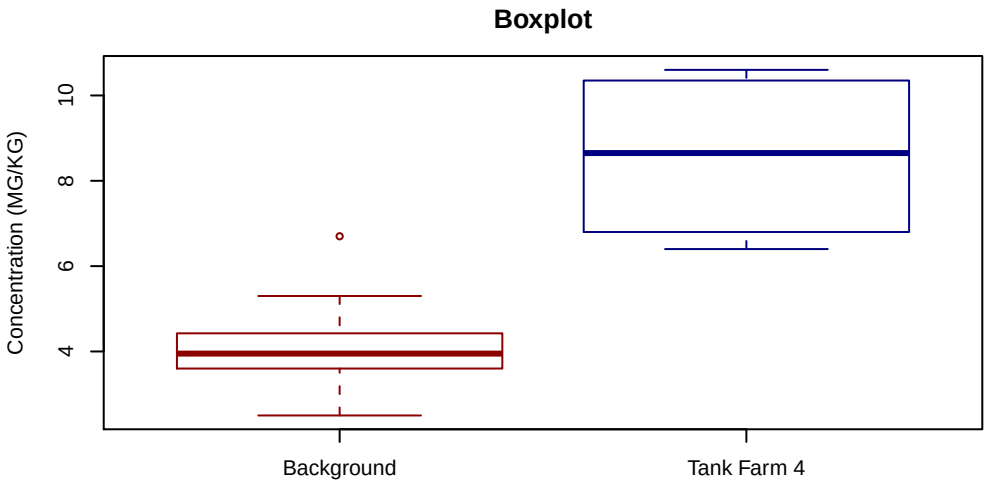


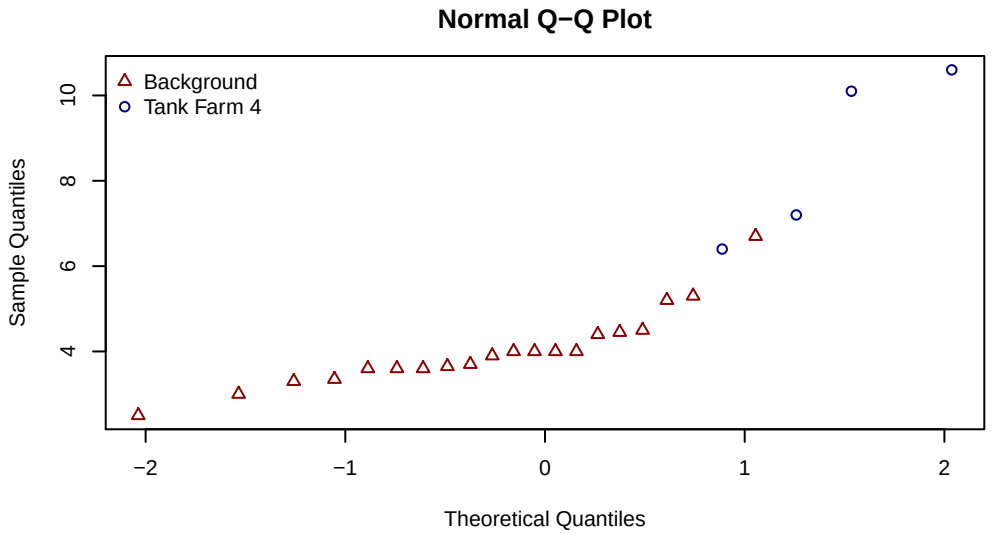


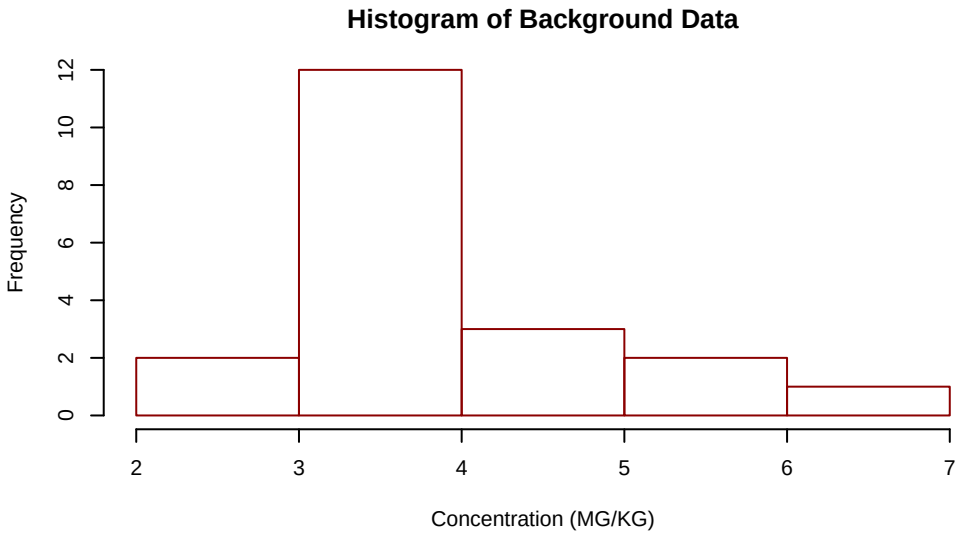


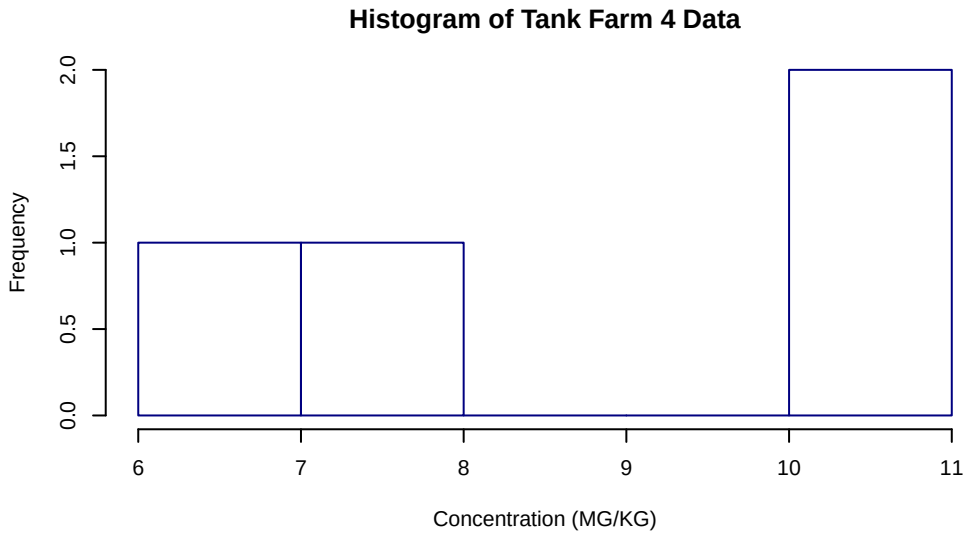


ARSENIC MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

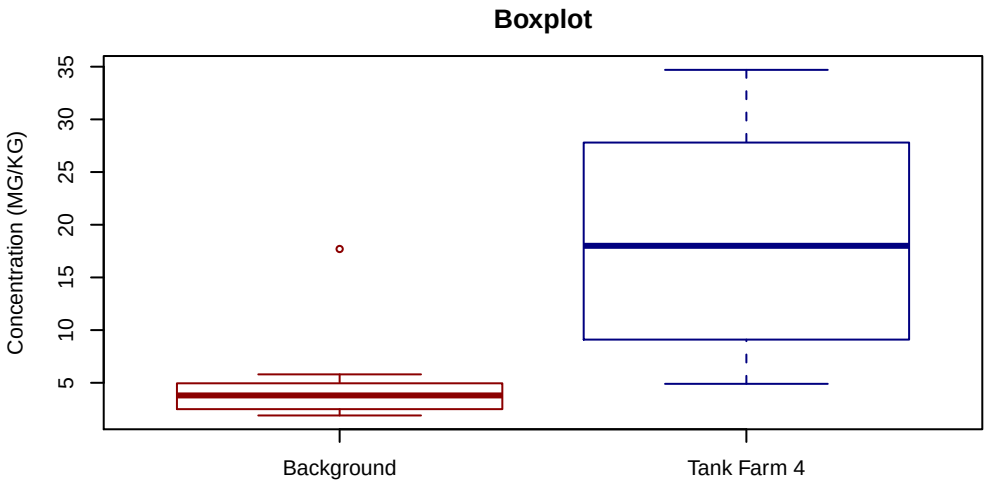


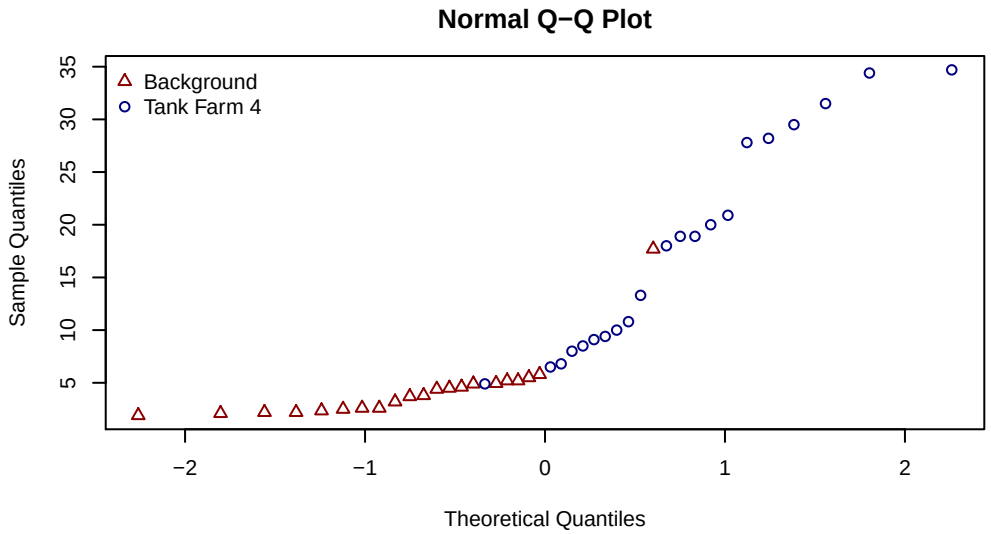


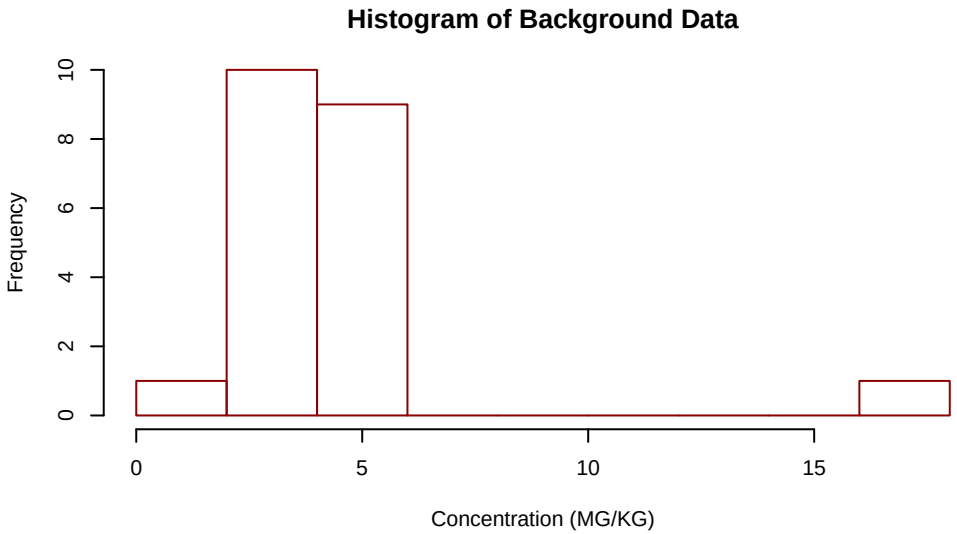


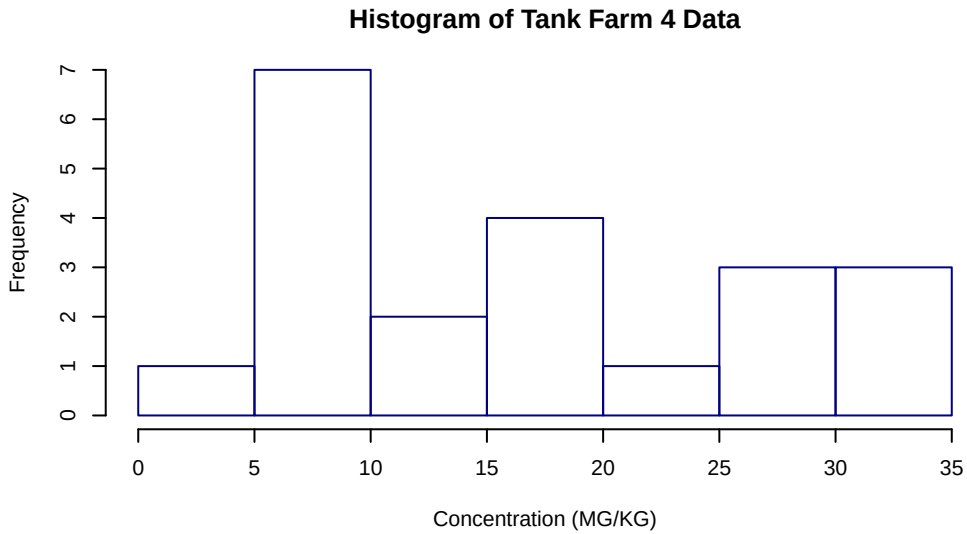


ARSENIC Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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TANK FARM 4 BACKGROUND COMPARISON
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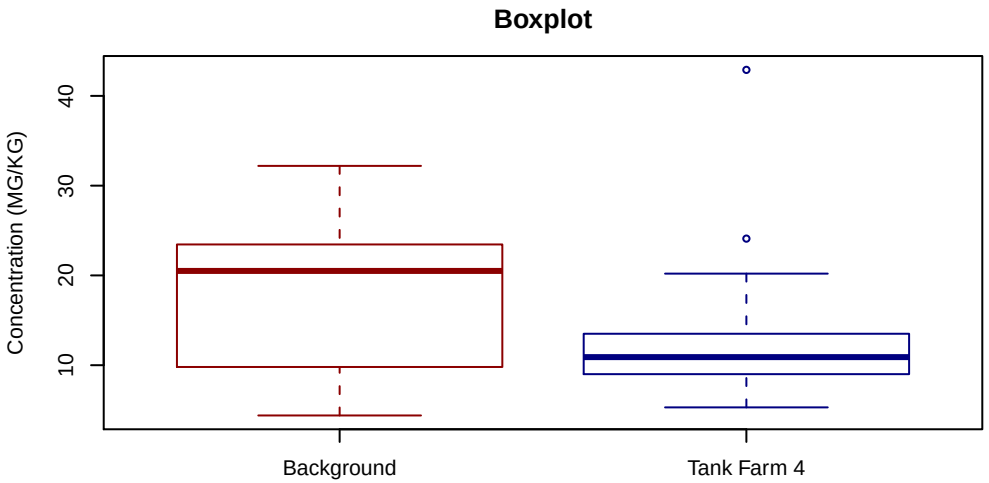
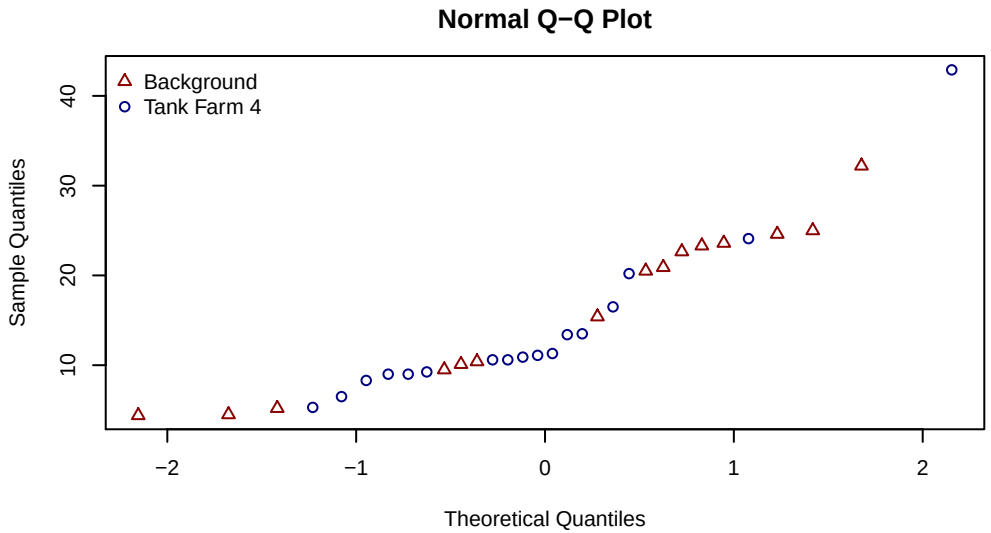
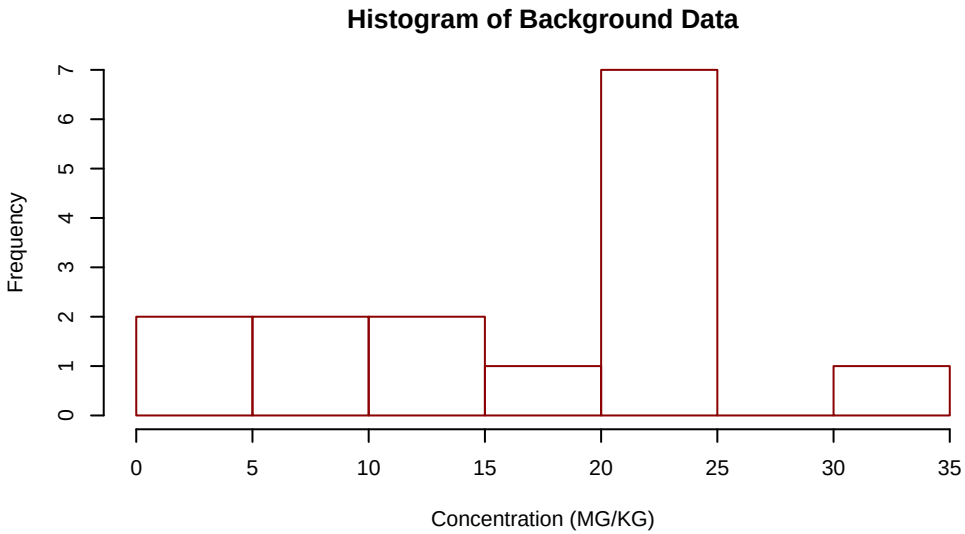
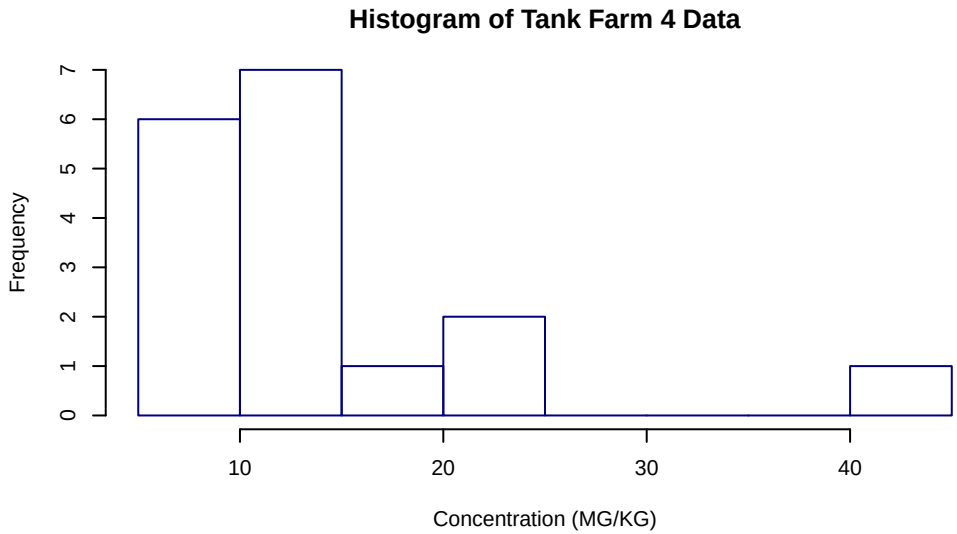
NEWPORT, RHODE ISLAND









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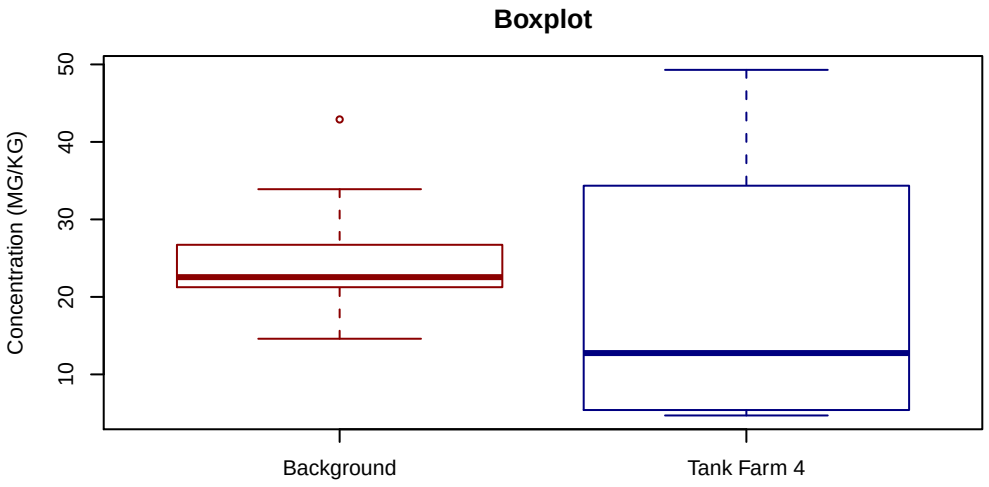
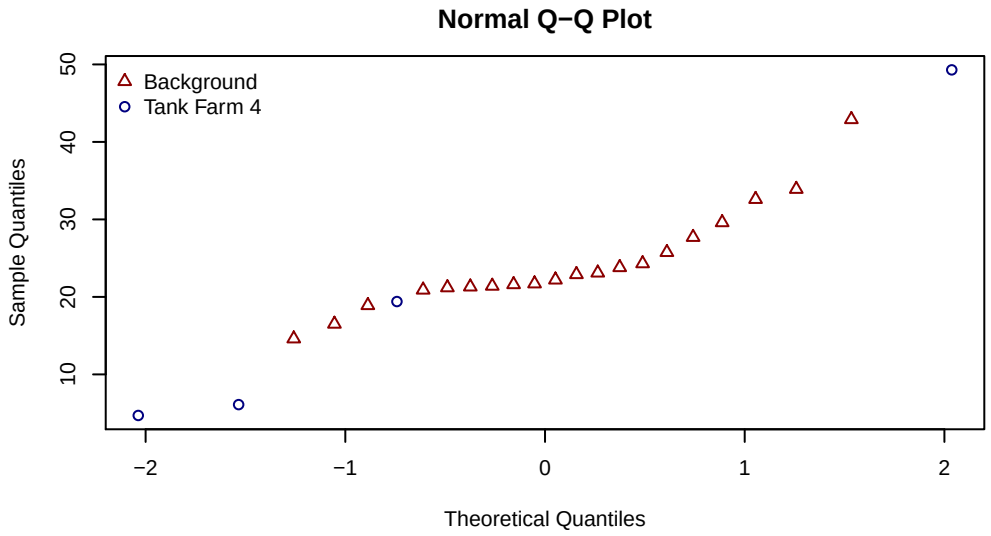
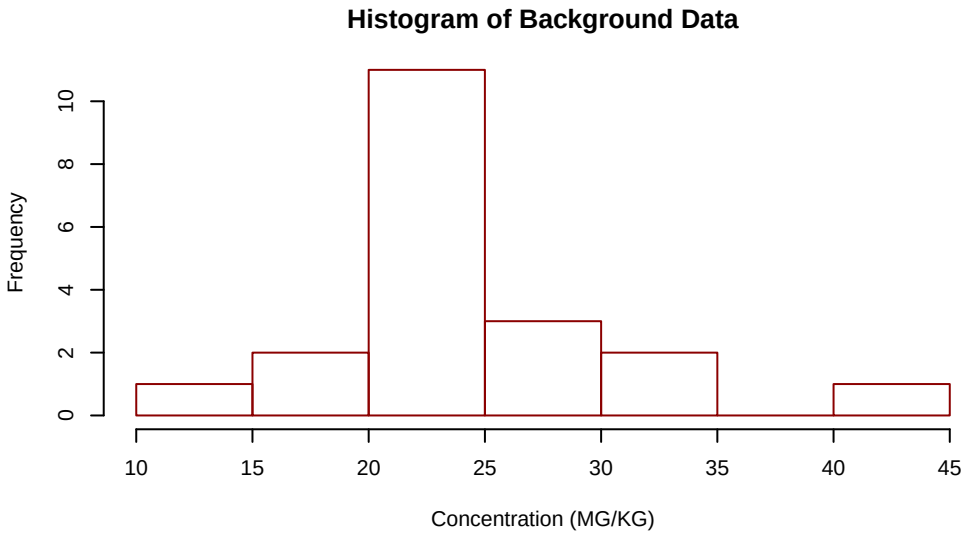
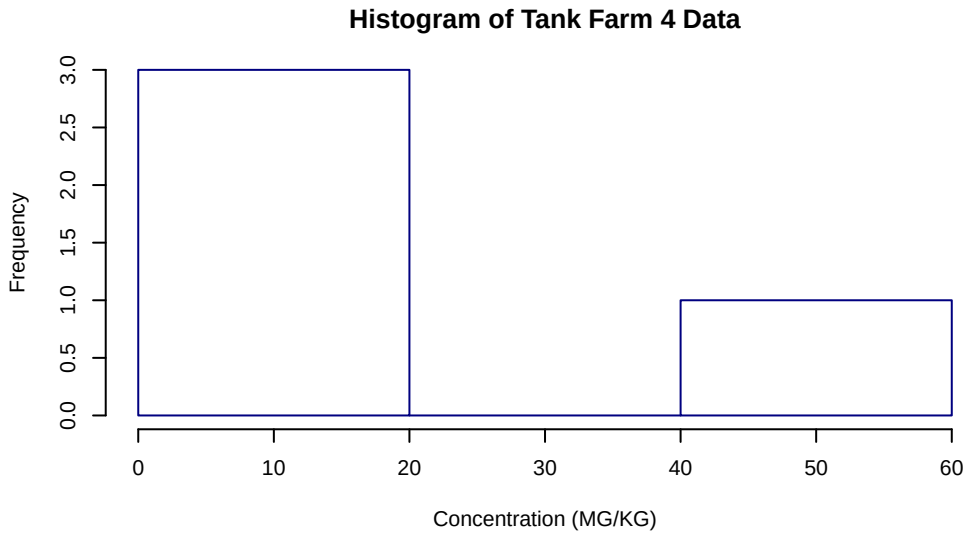
NEWPORT, RHODE ISLAND









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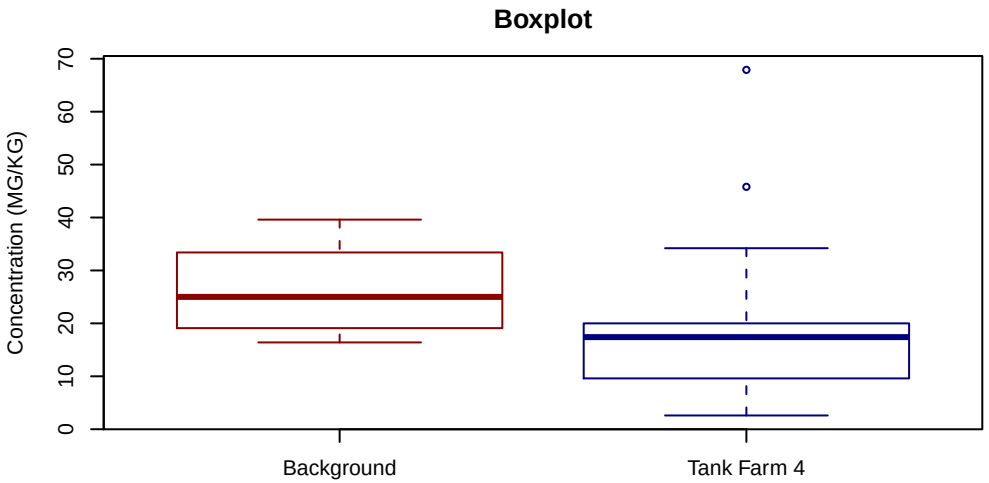
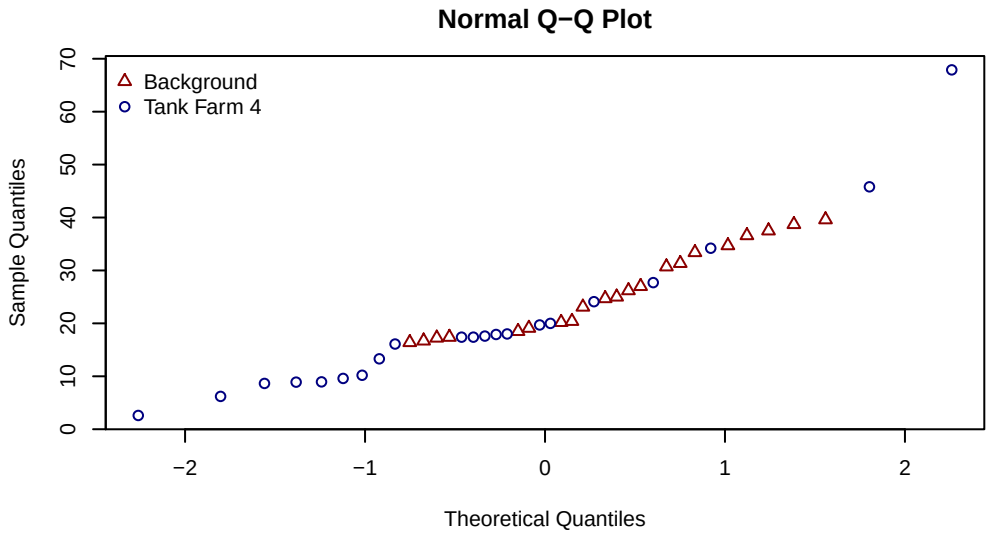
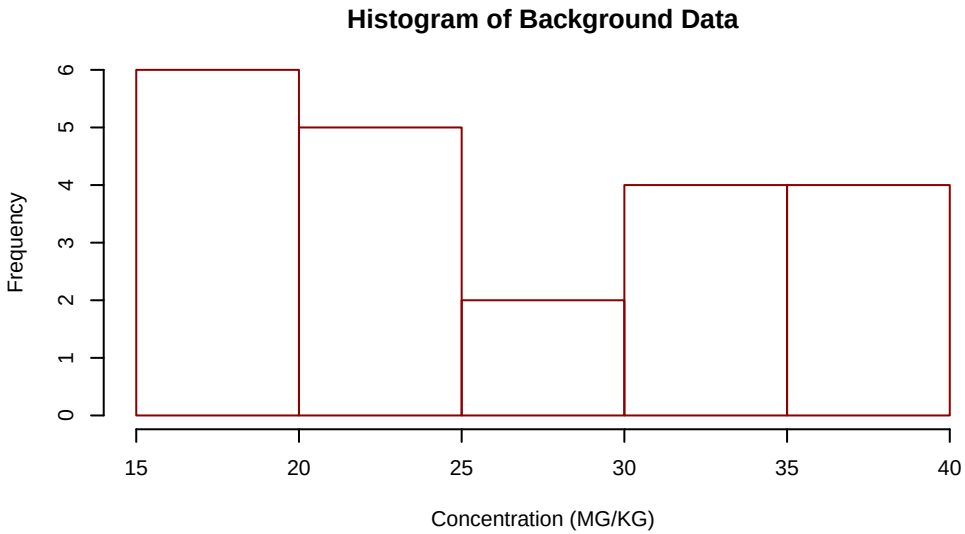
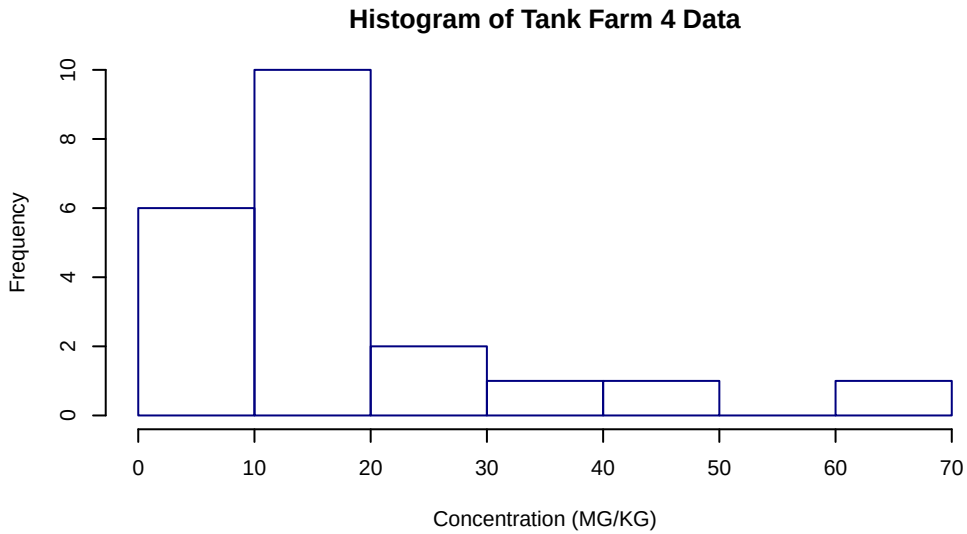
NEWPORT, RHODE ISLAND









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TANK FARM 4 BACKGROUND COMPARISON
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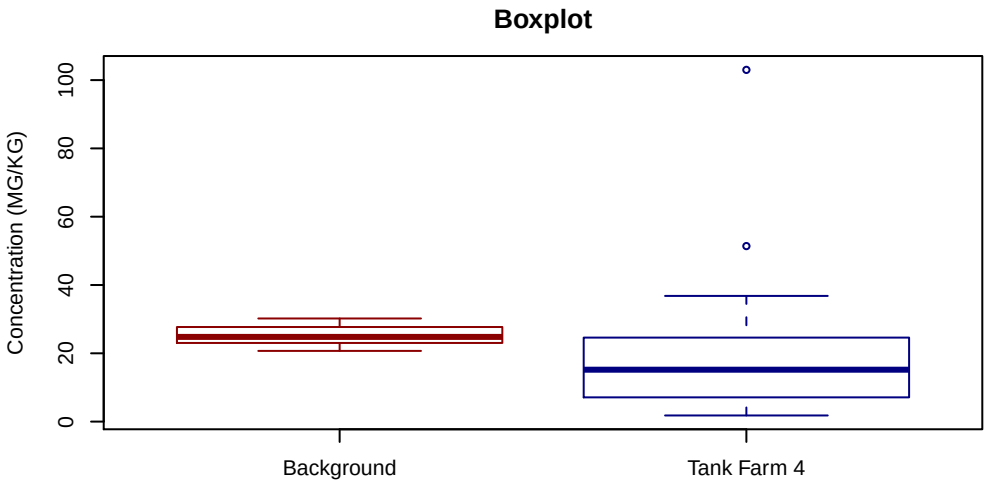
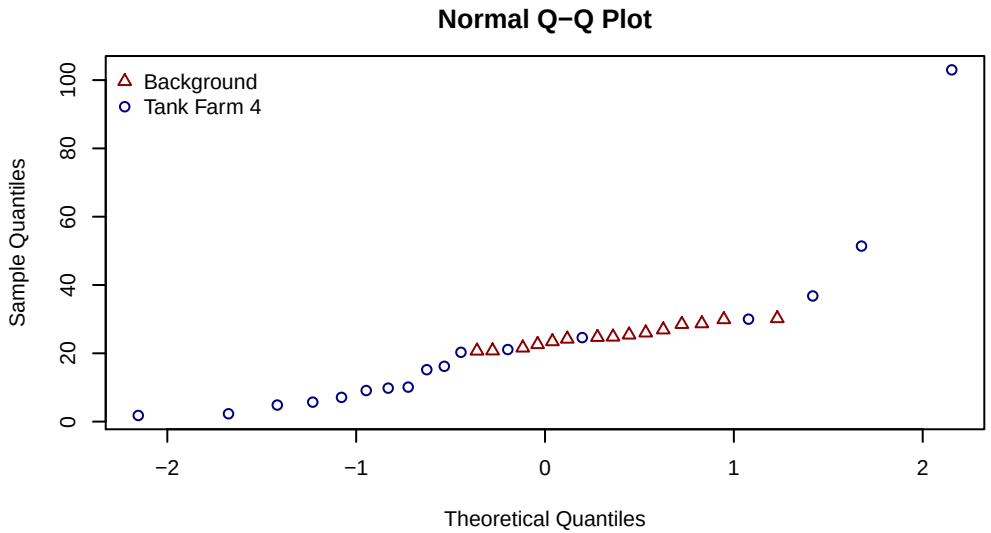
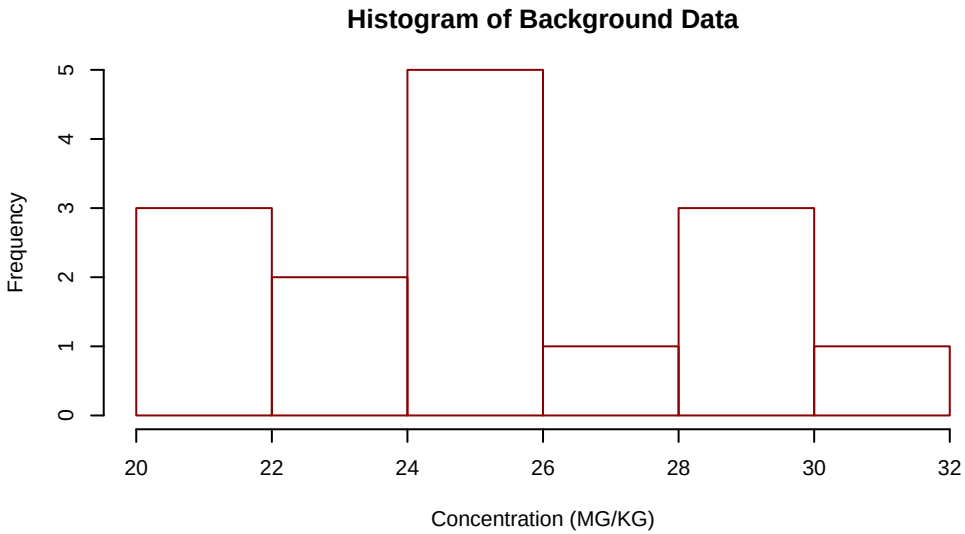
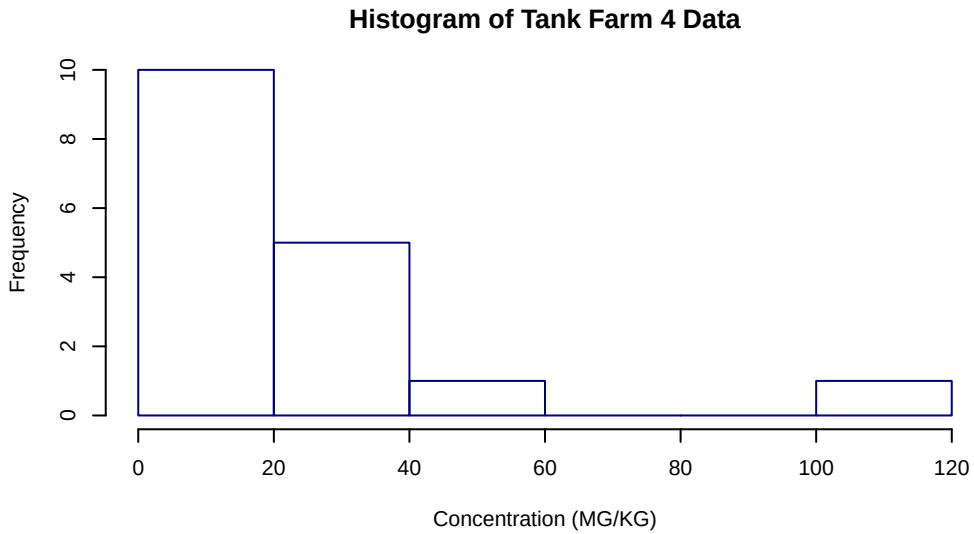
NEWPORT, RHODE ISLAND









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TANK FARM 4 BACKGROUND COMPARISON
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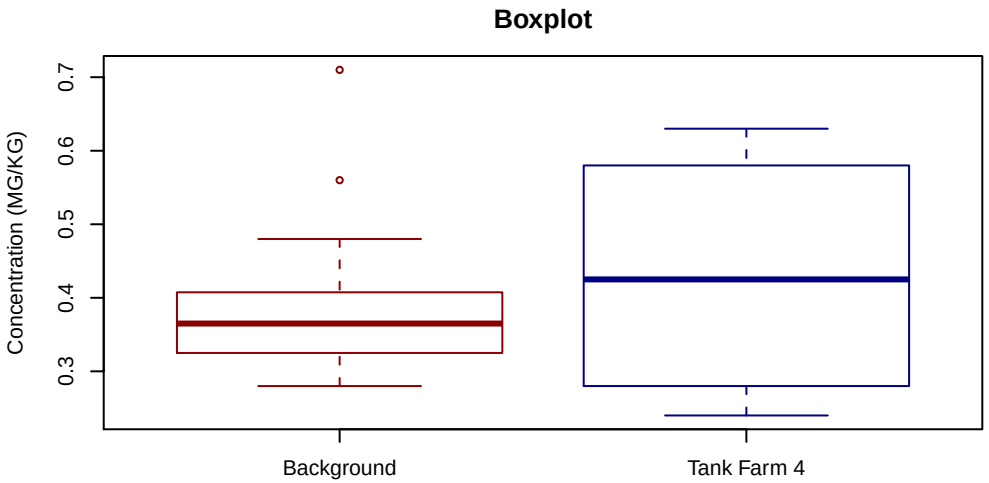
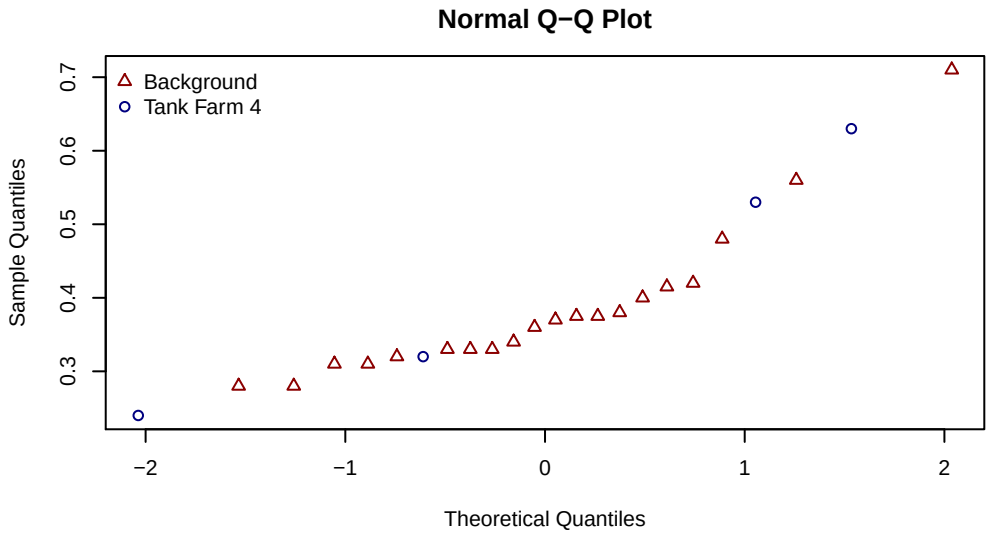
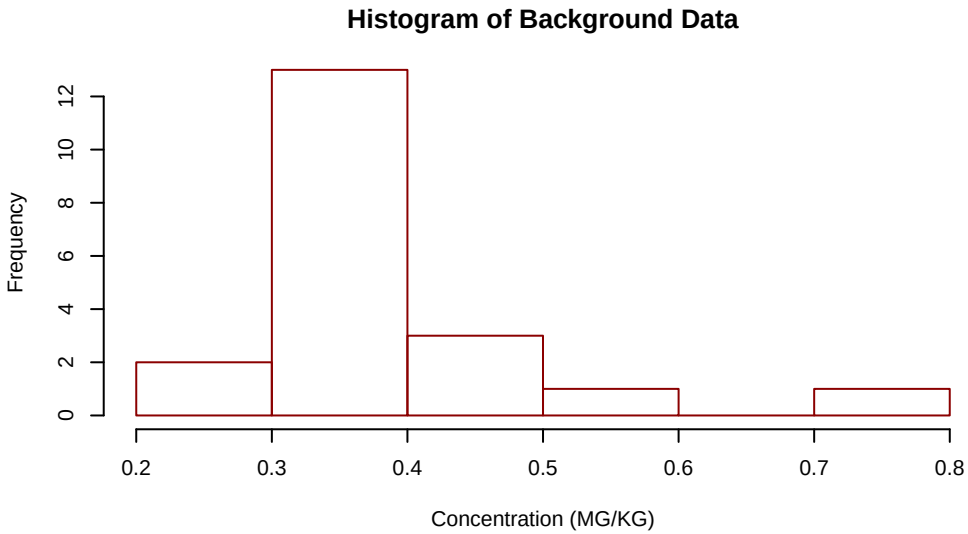
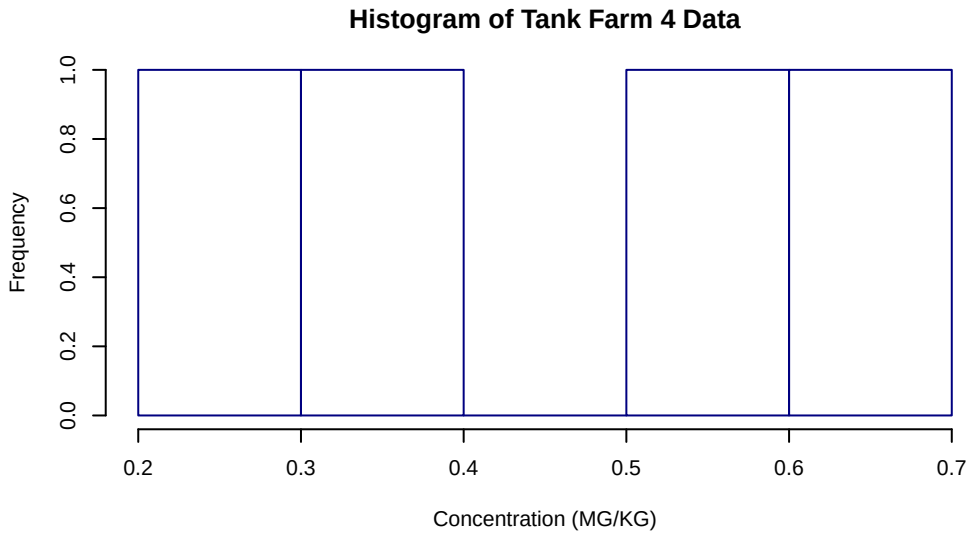
NEWPORT, RHODE ISLAND









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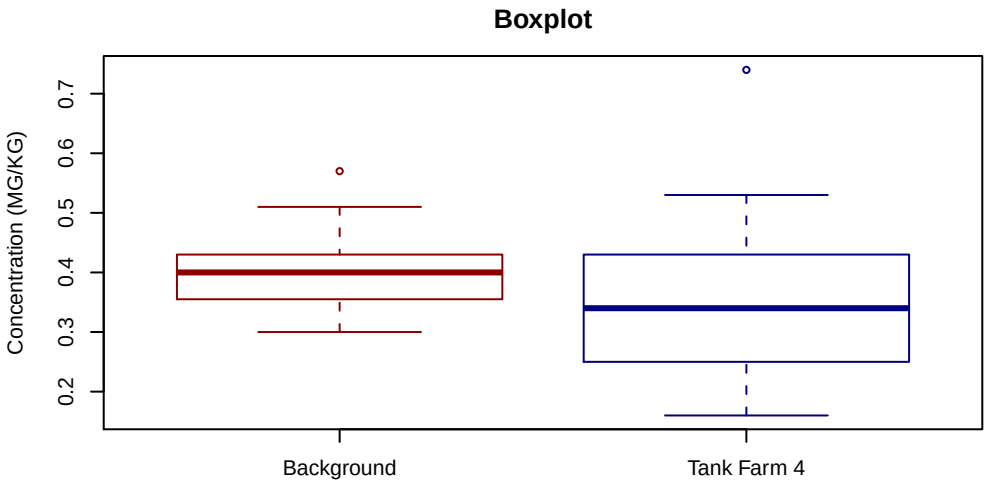
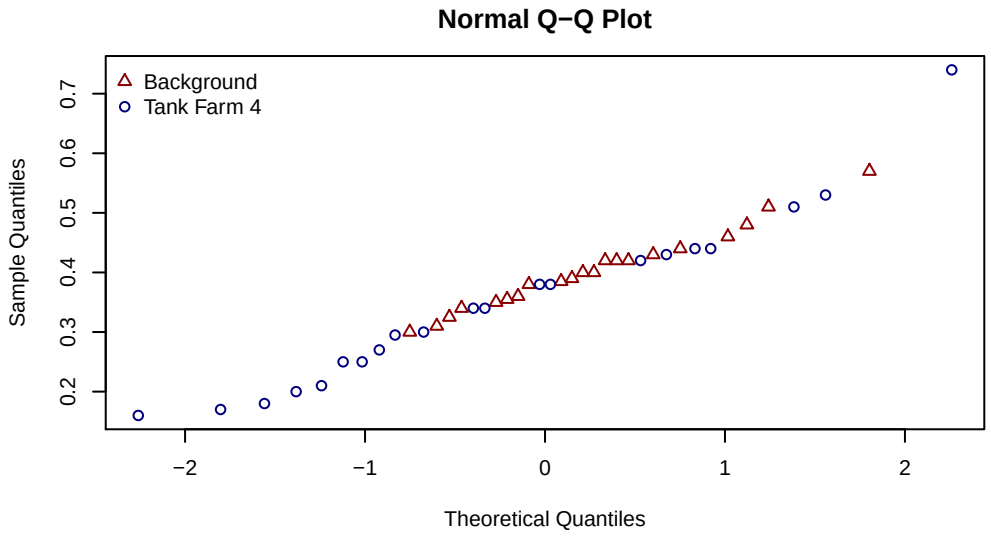
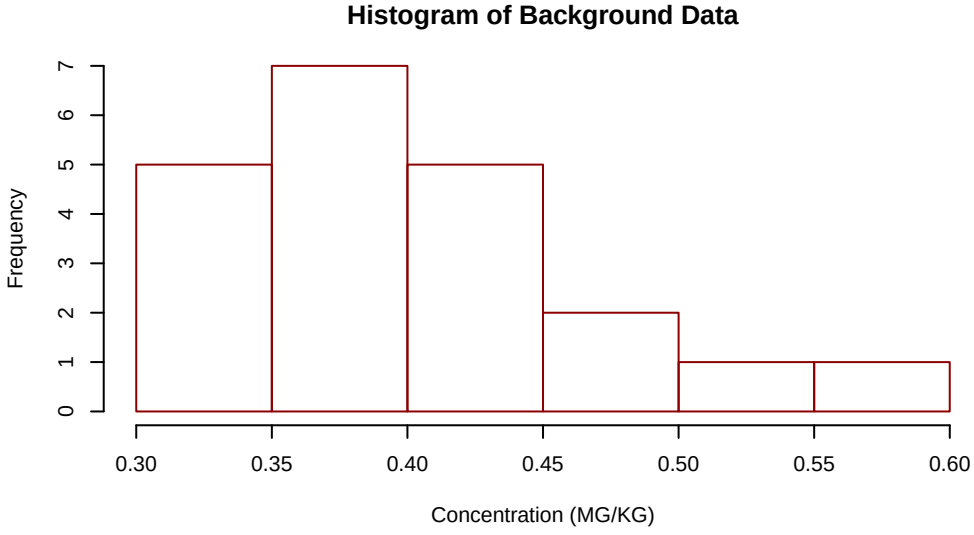
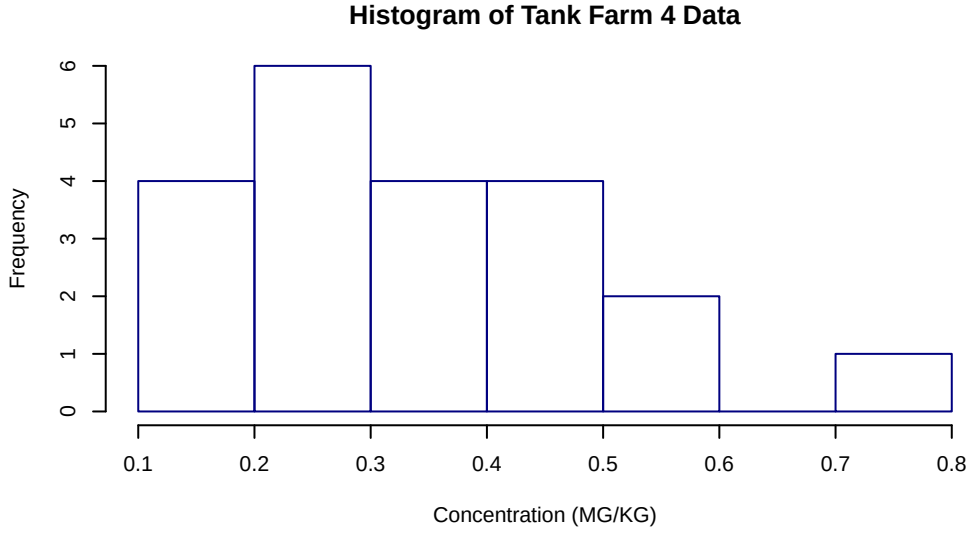
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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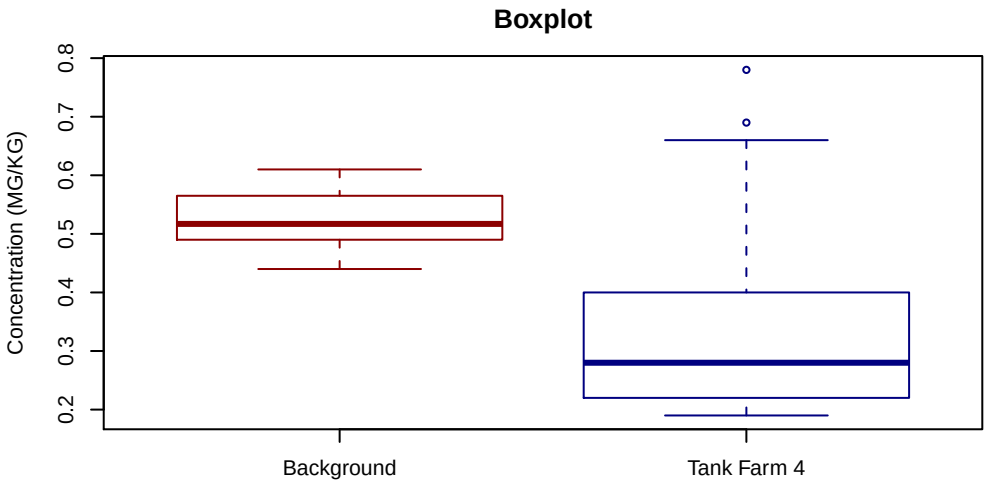
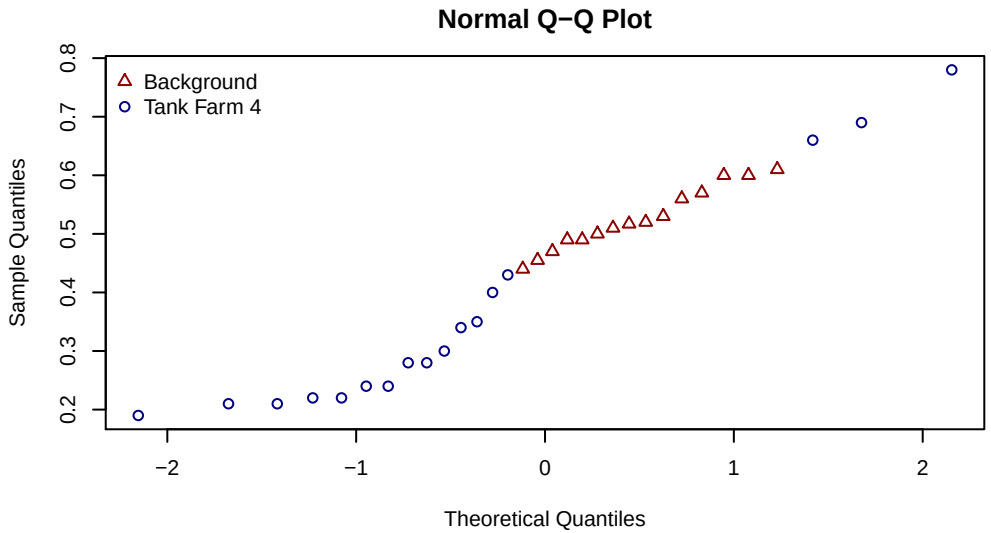
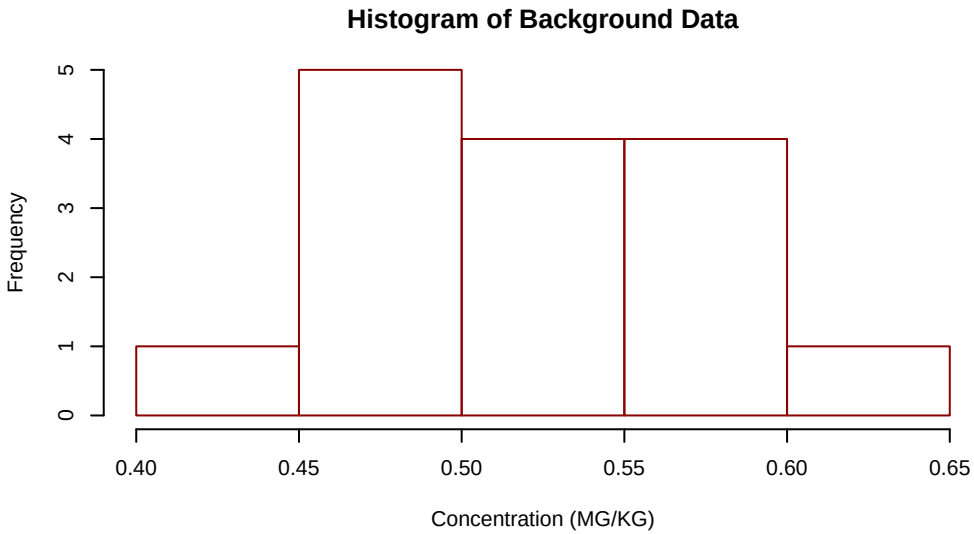
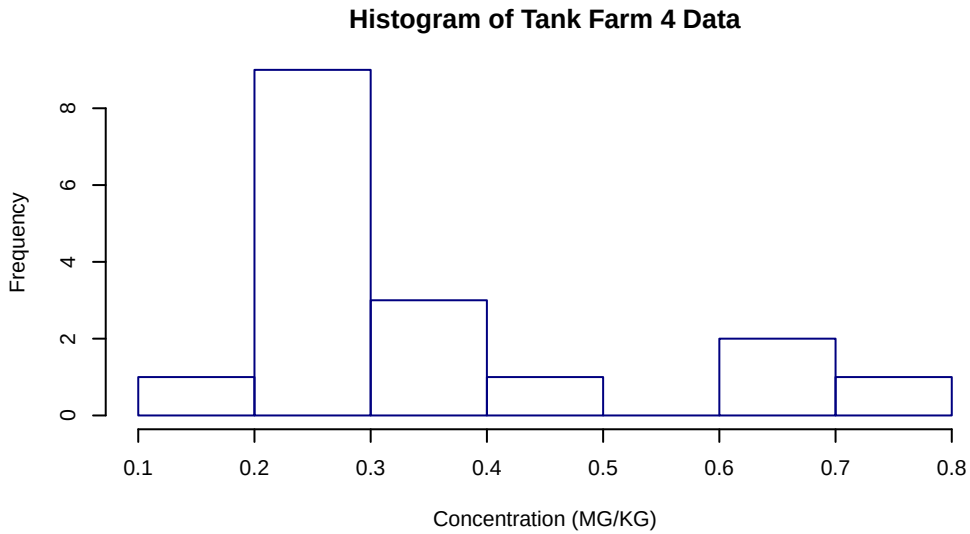
NEWPORT, RHODE ISLAND









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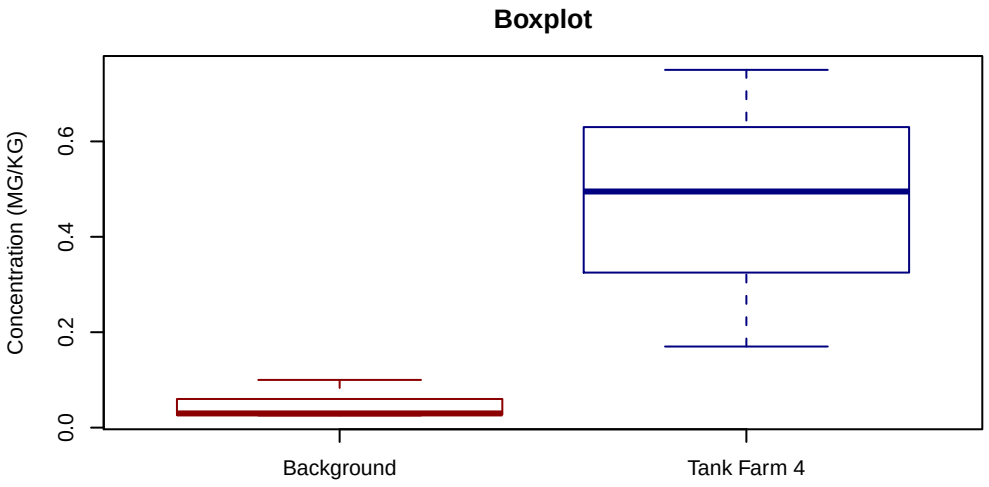
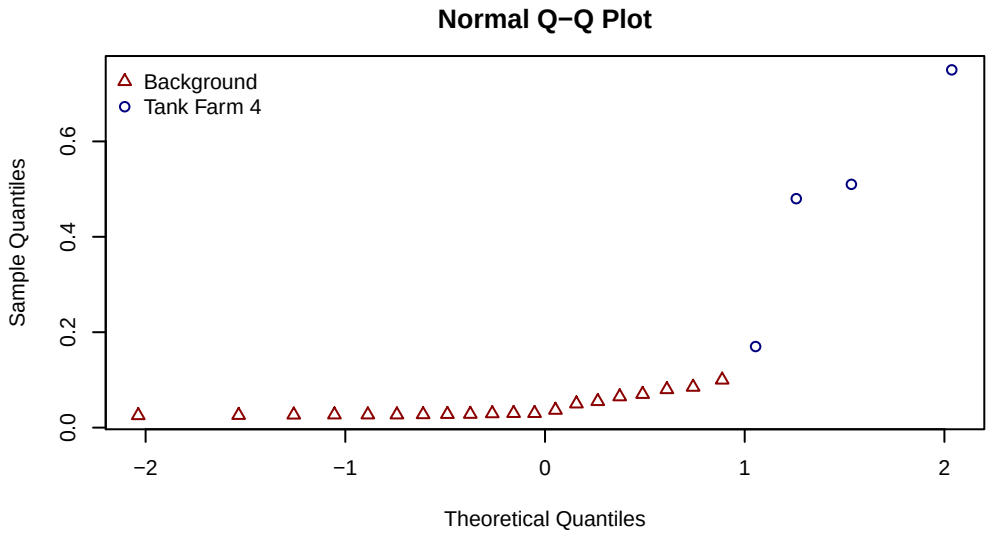
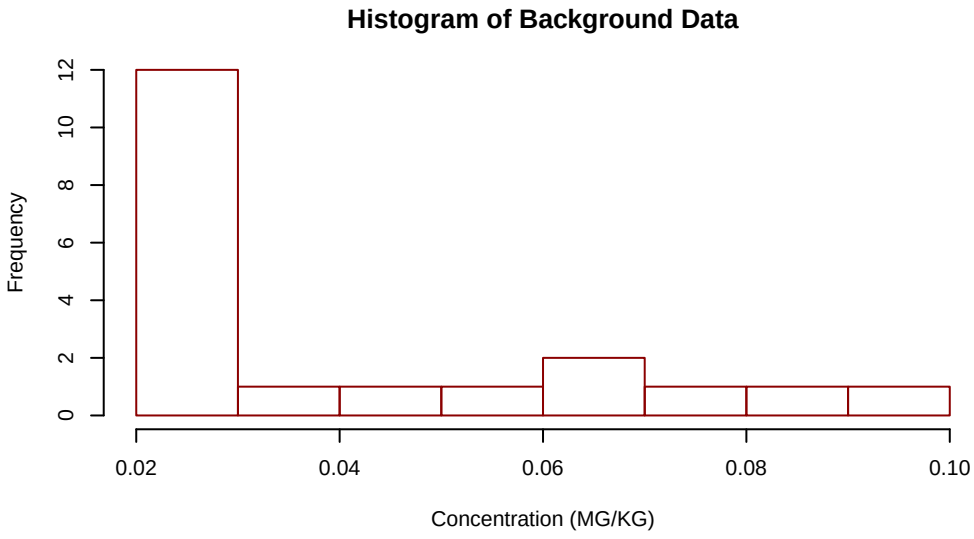
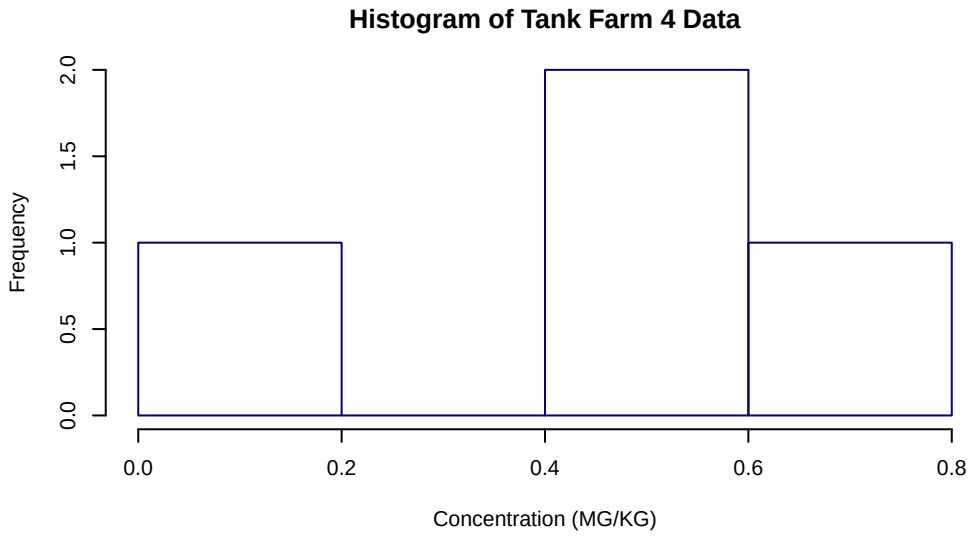
NEWPORT, RHODE ISLAND









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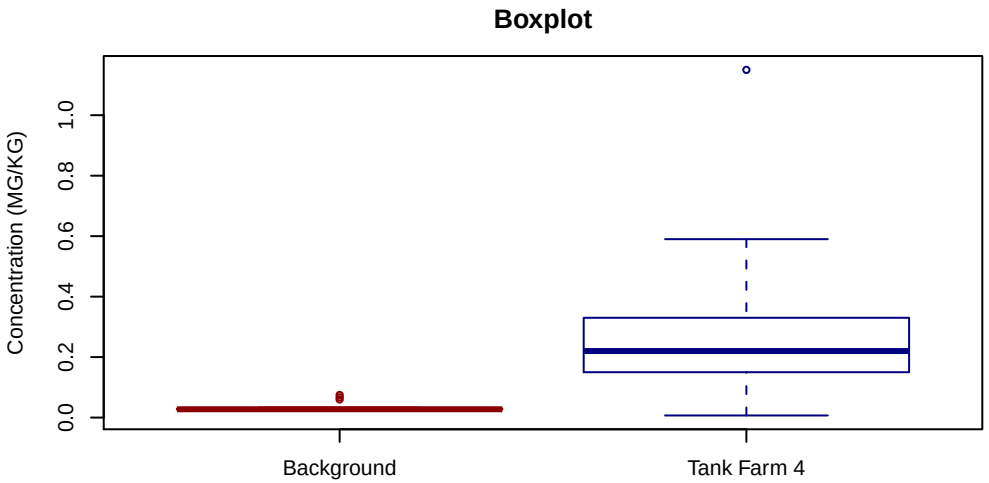

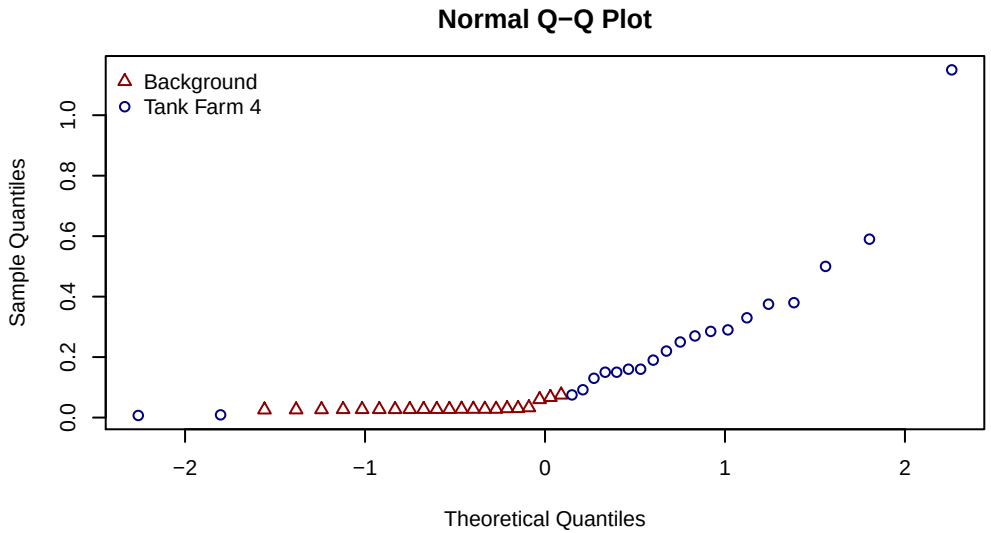

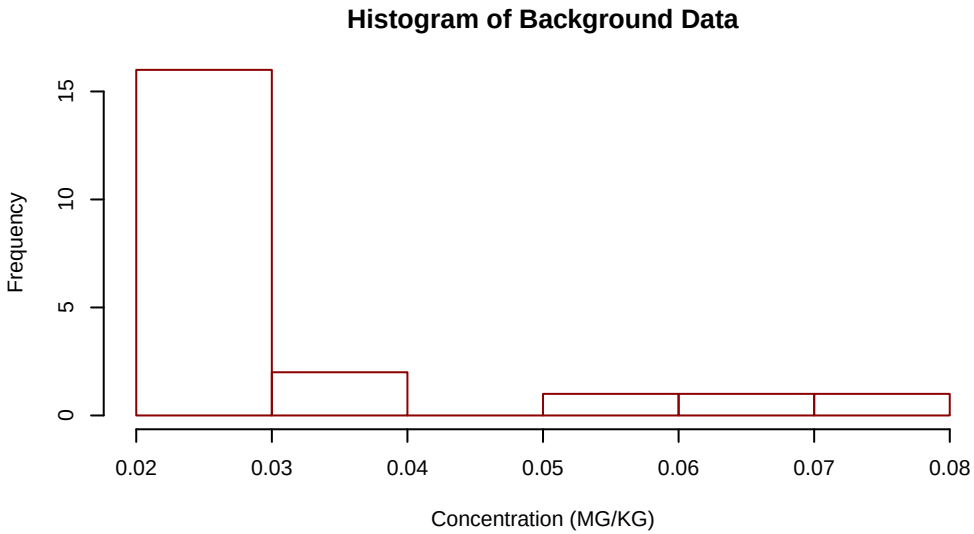

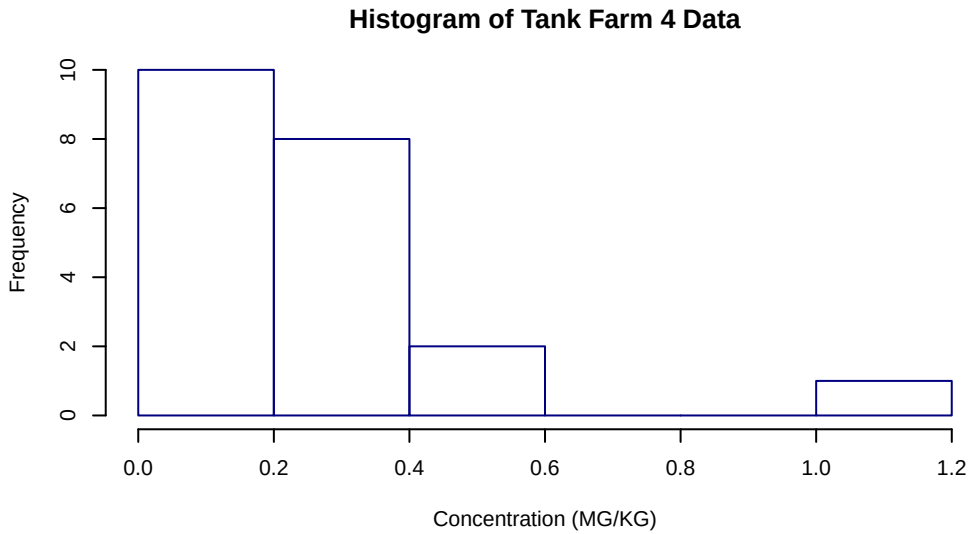

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TANK FARM 4 BACKGROUND COMPARISON
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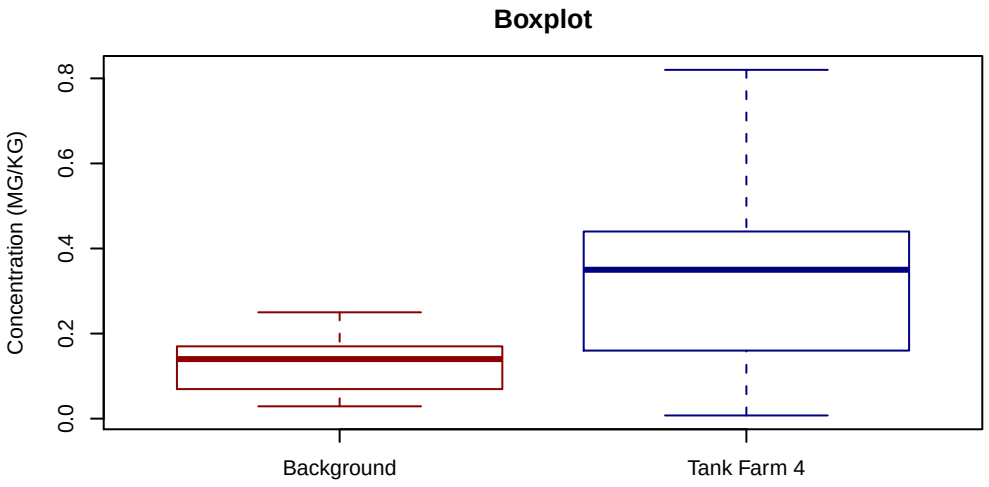

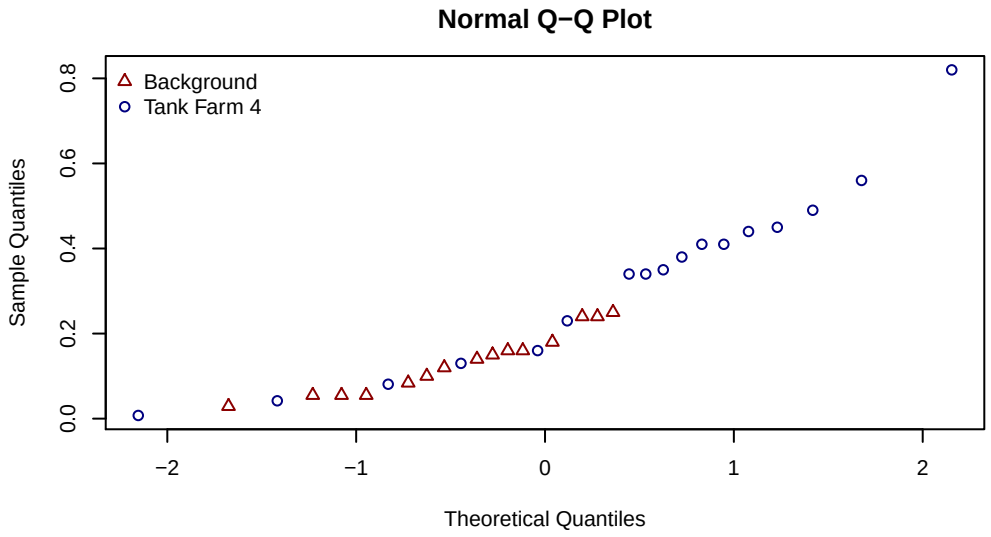

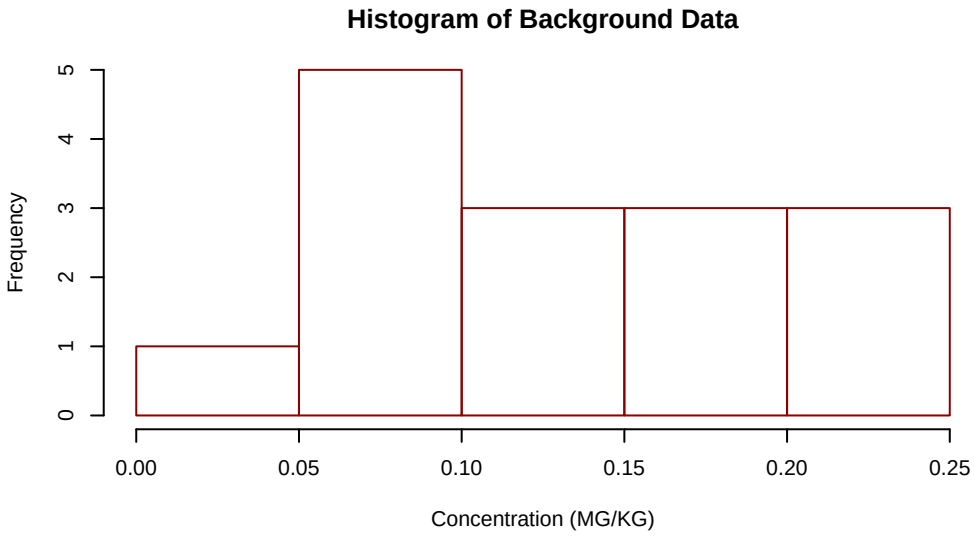

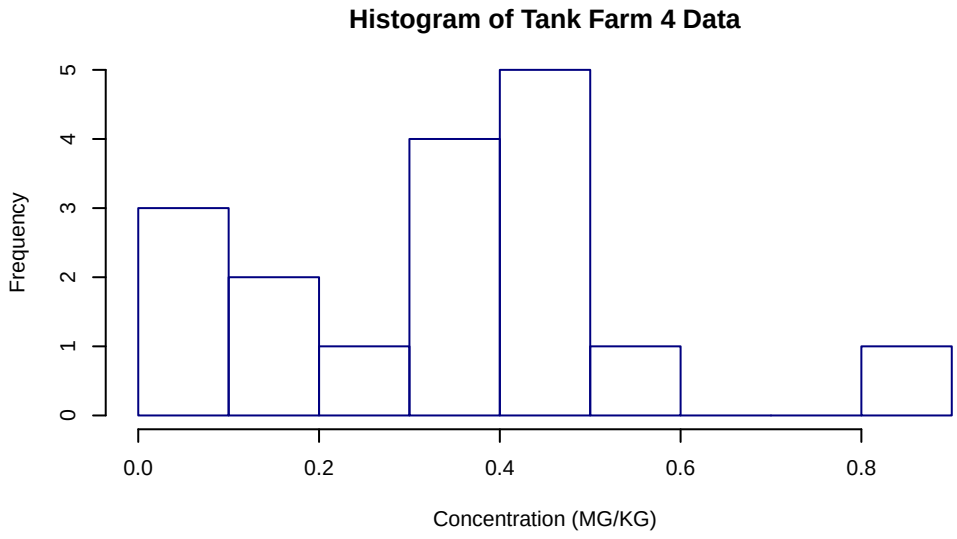

CALCIUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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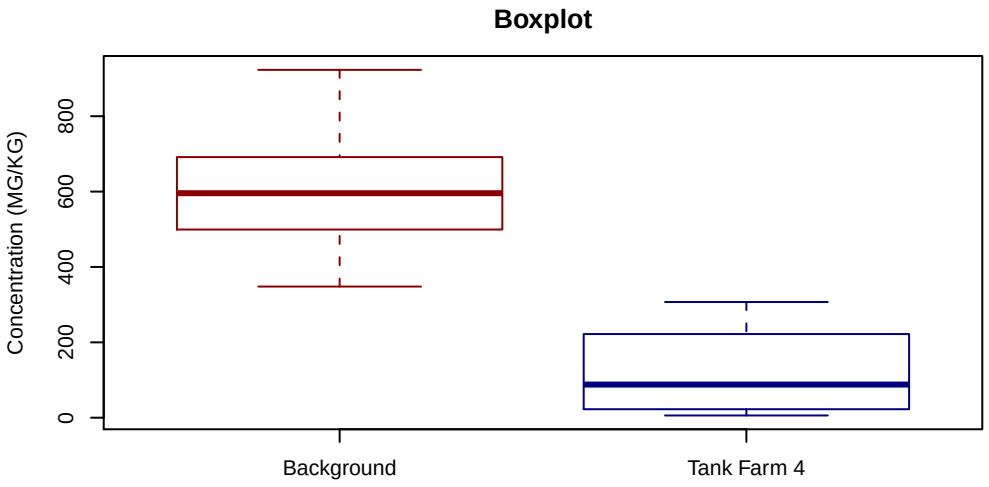

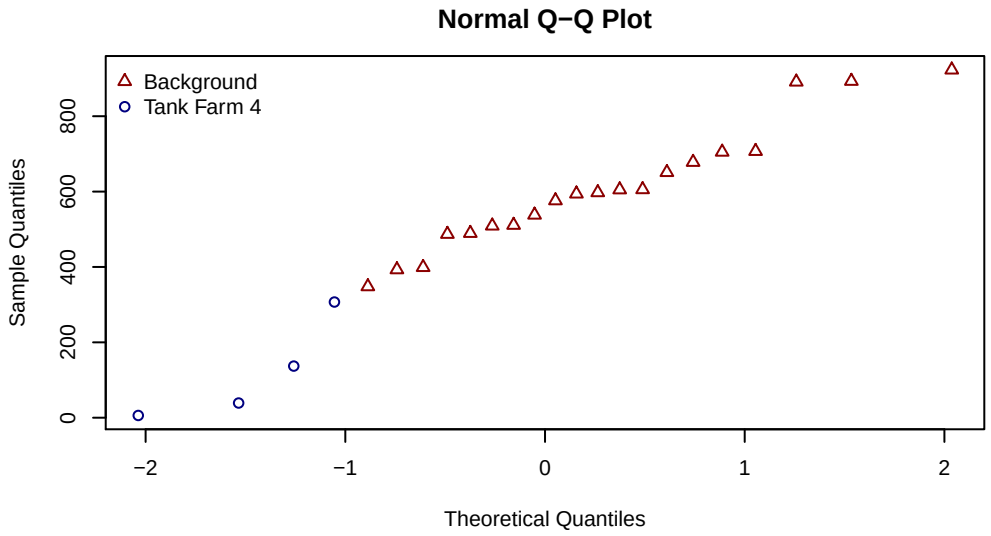

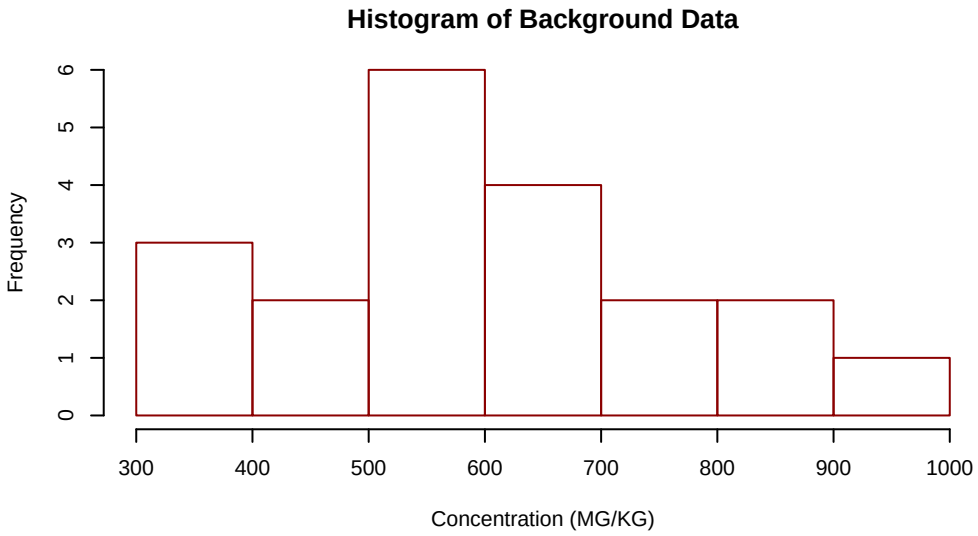

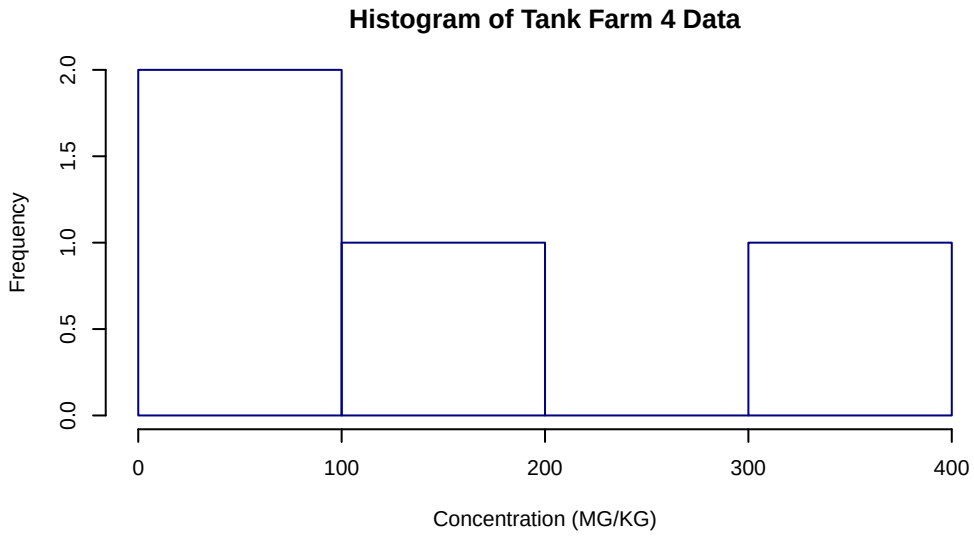

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TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
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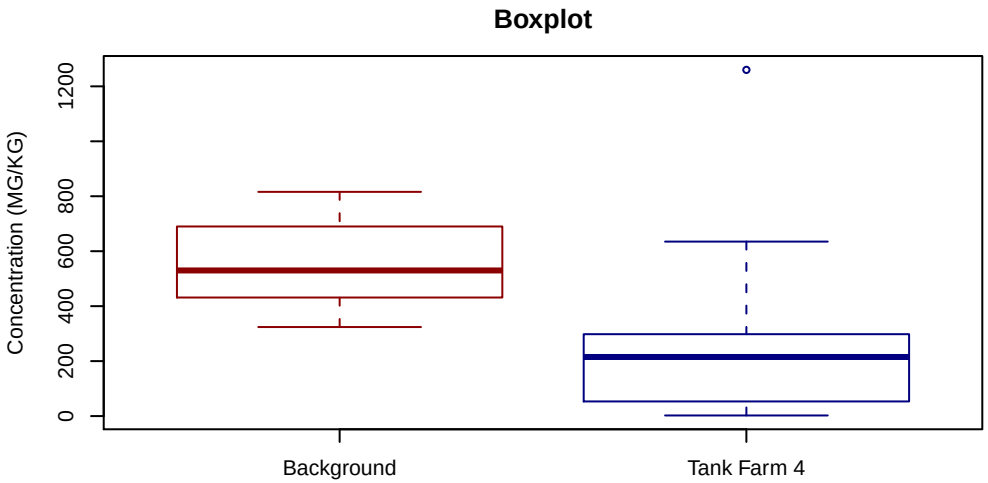
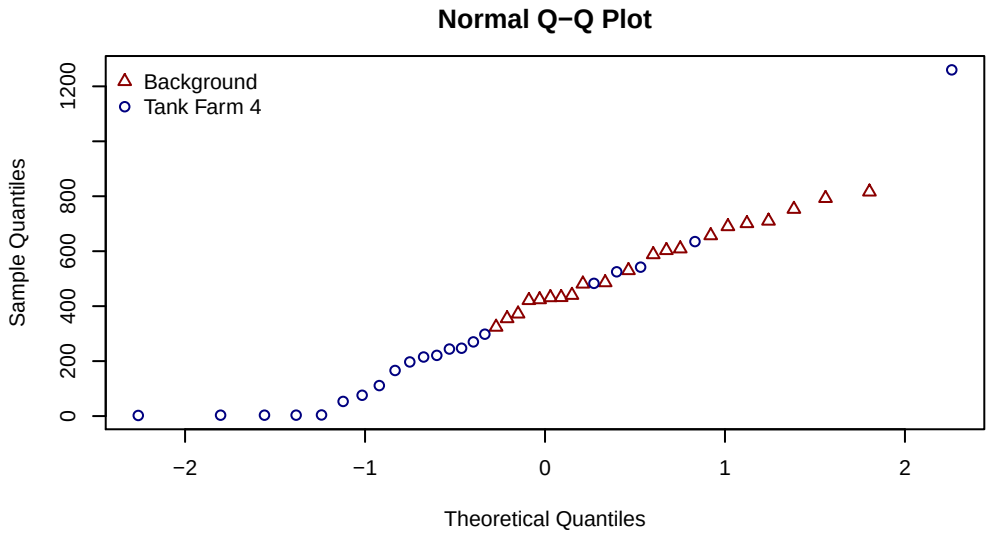
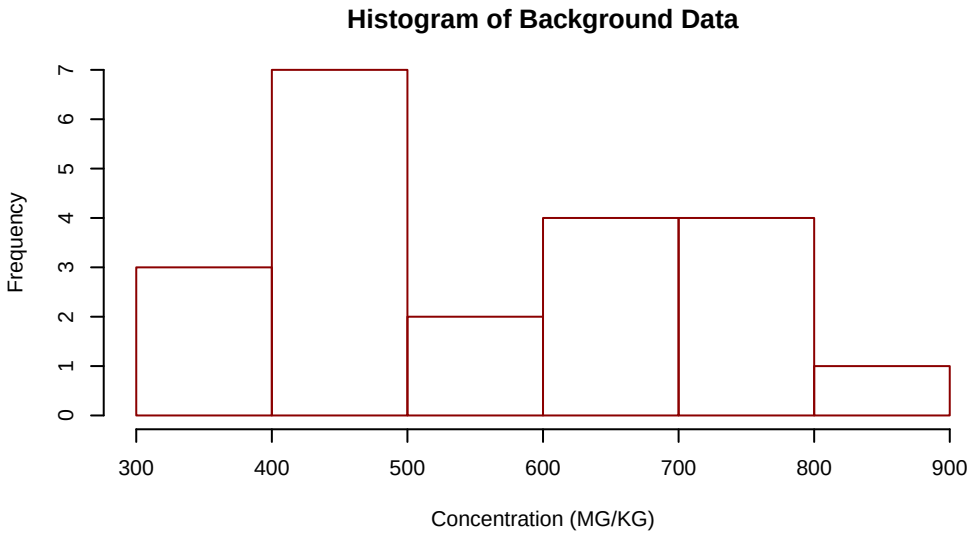
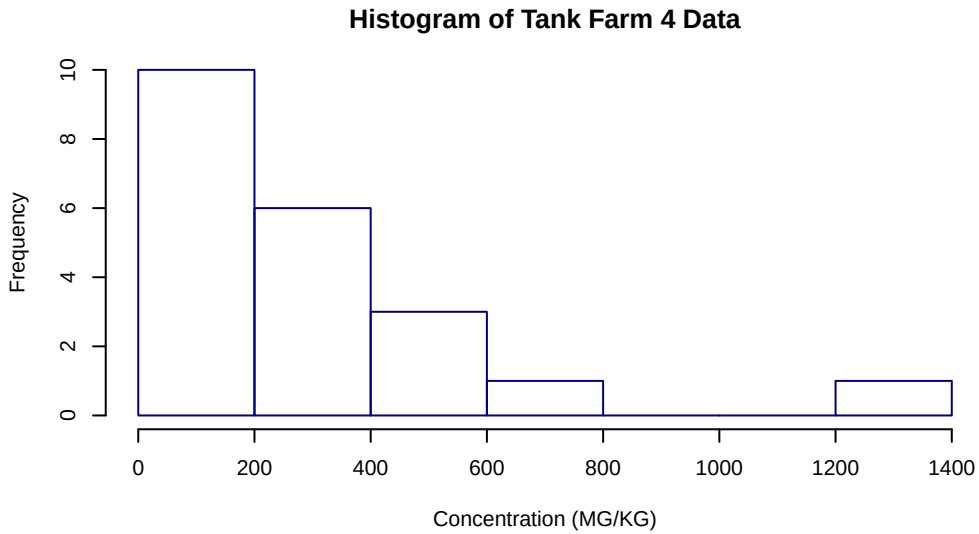
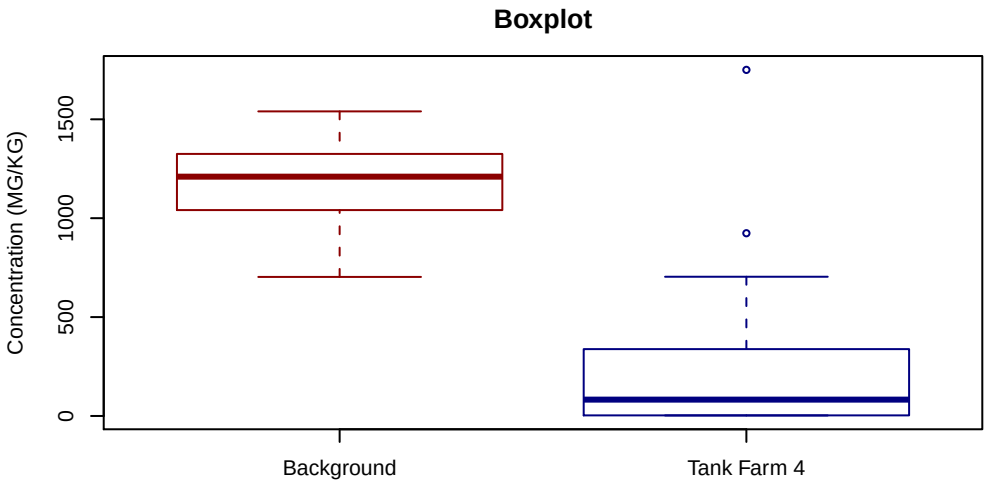


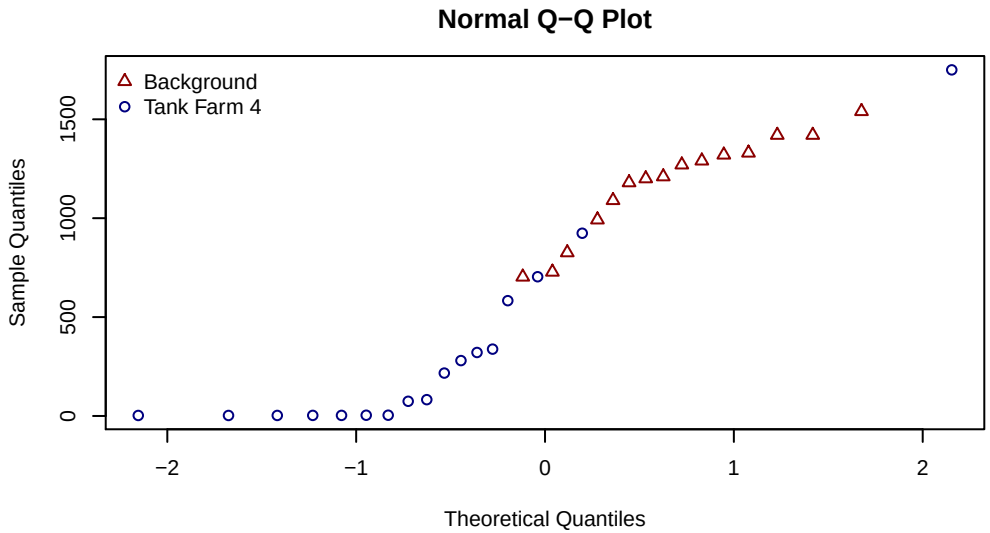


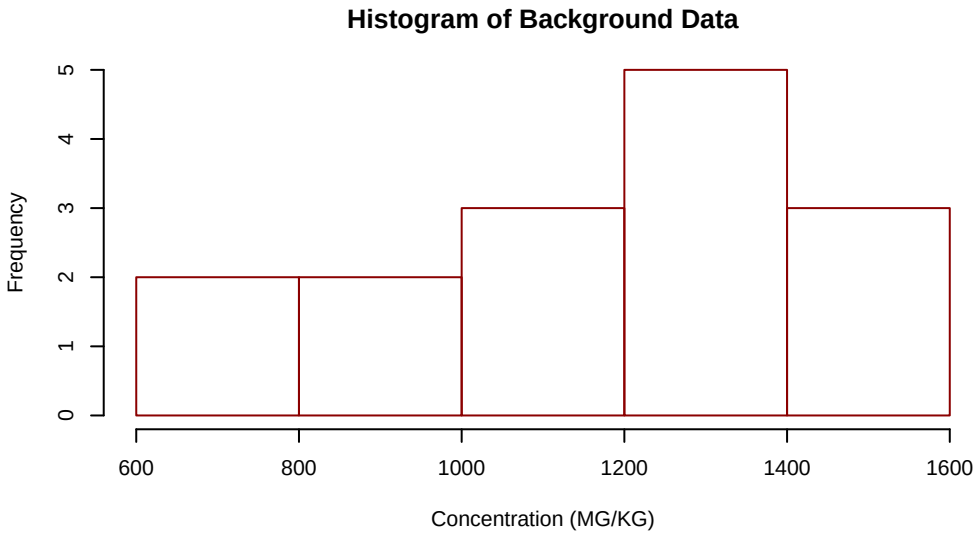


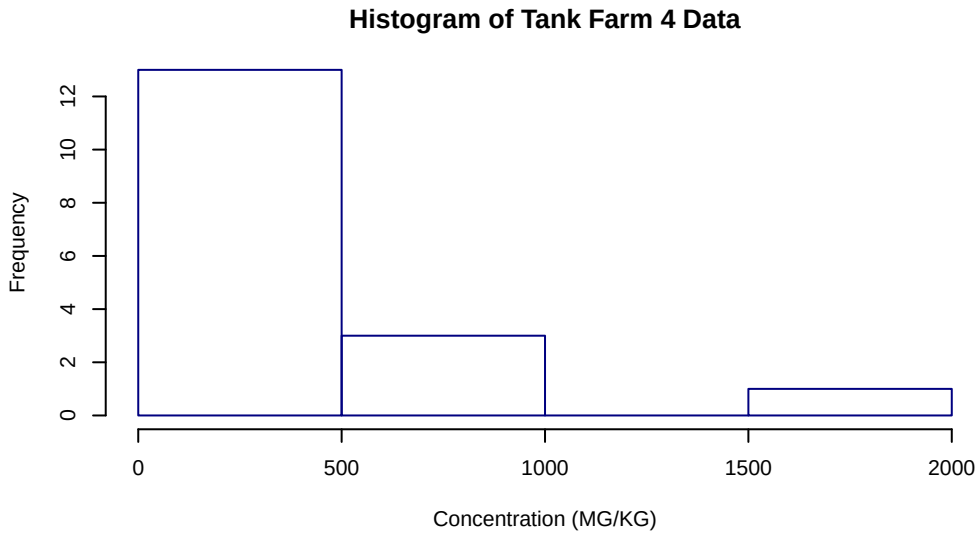


CALCIUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

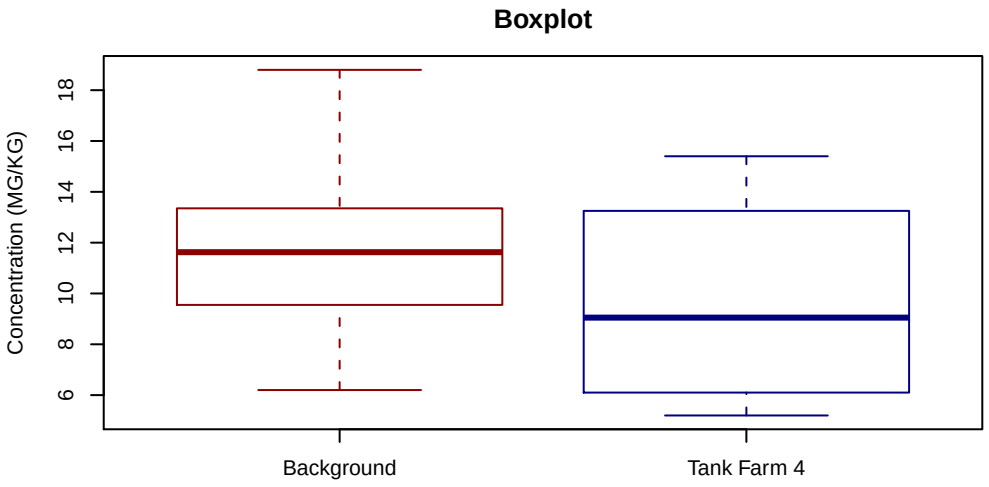


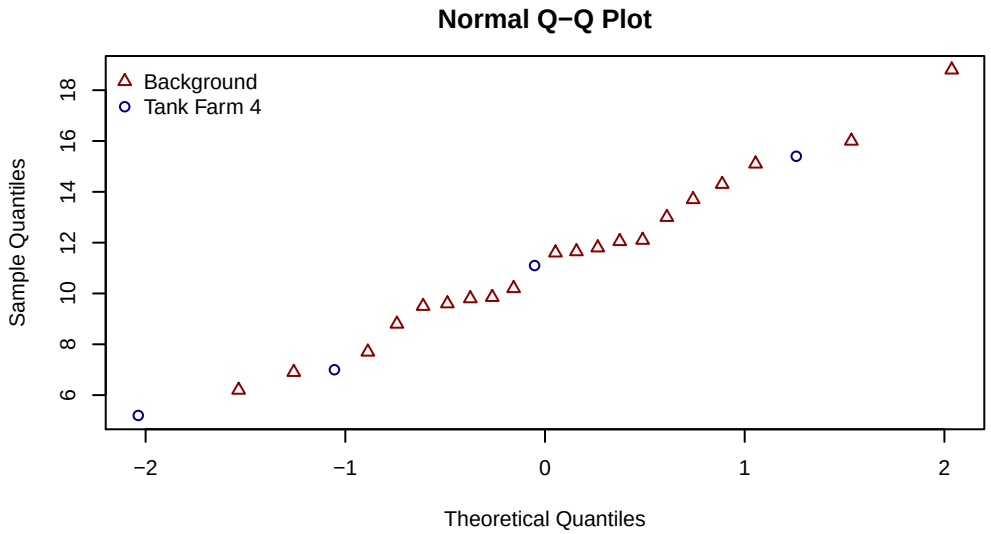


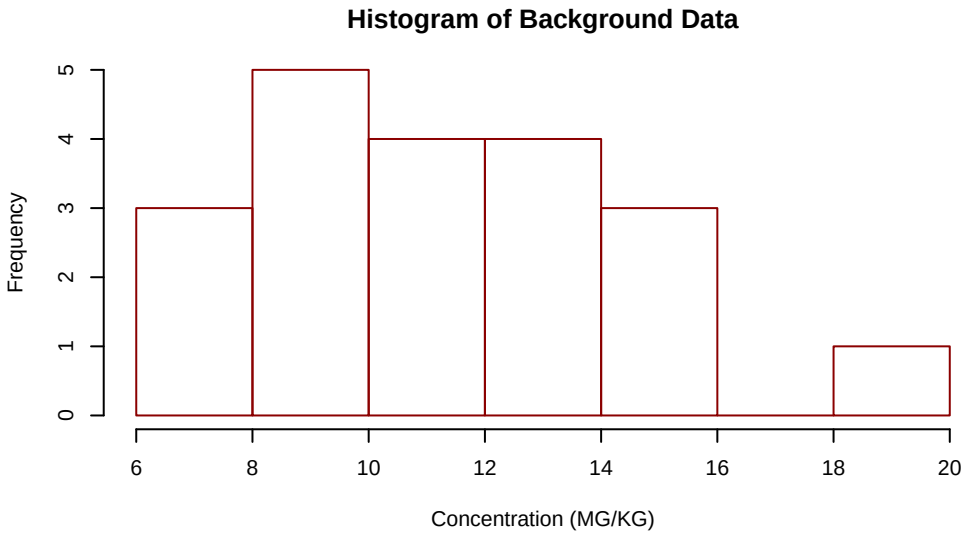


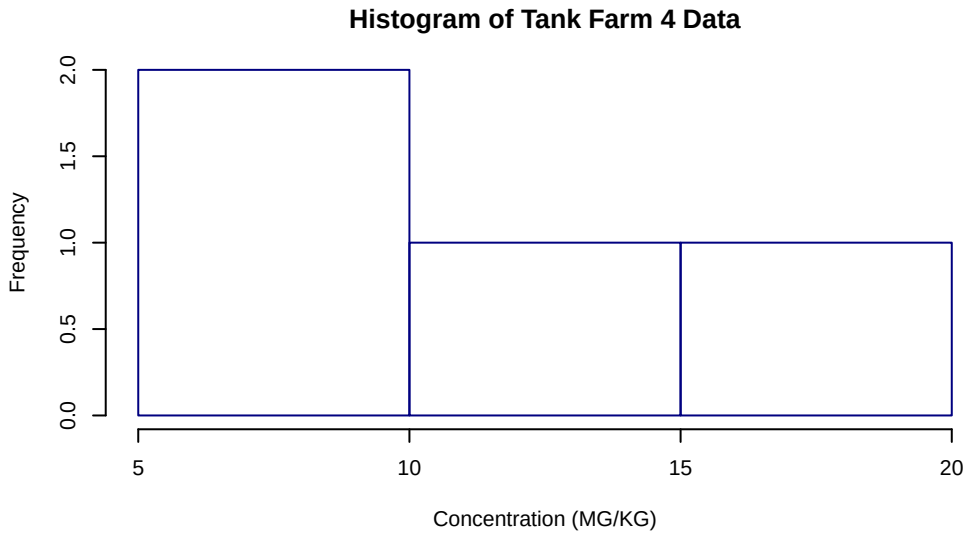


CHROMIUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









CHROMIUM Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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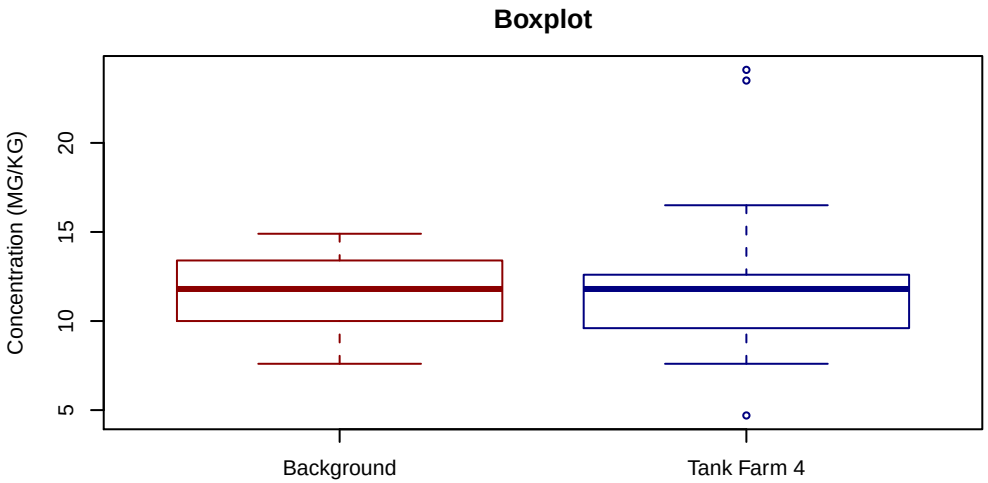
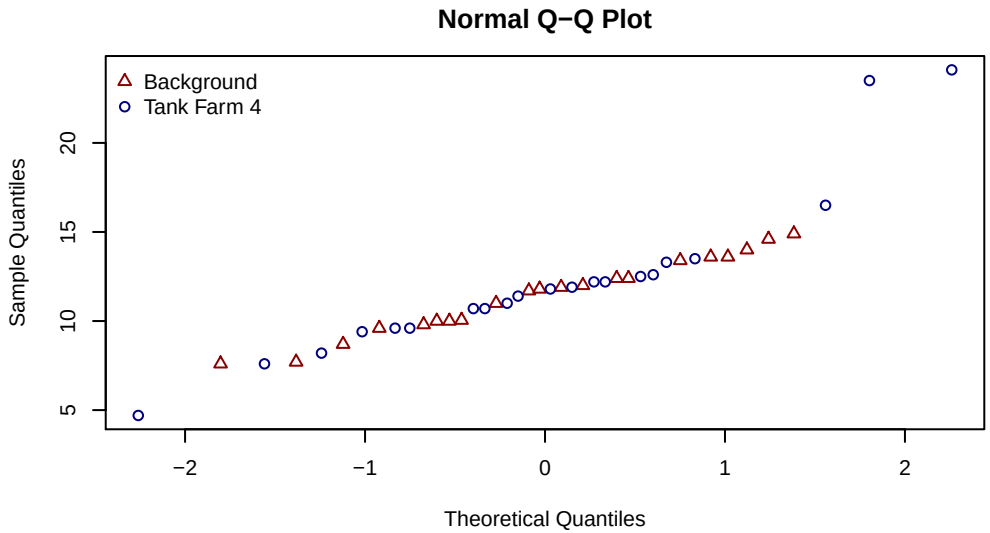
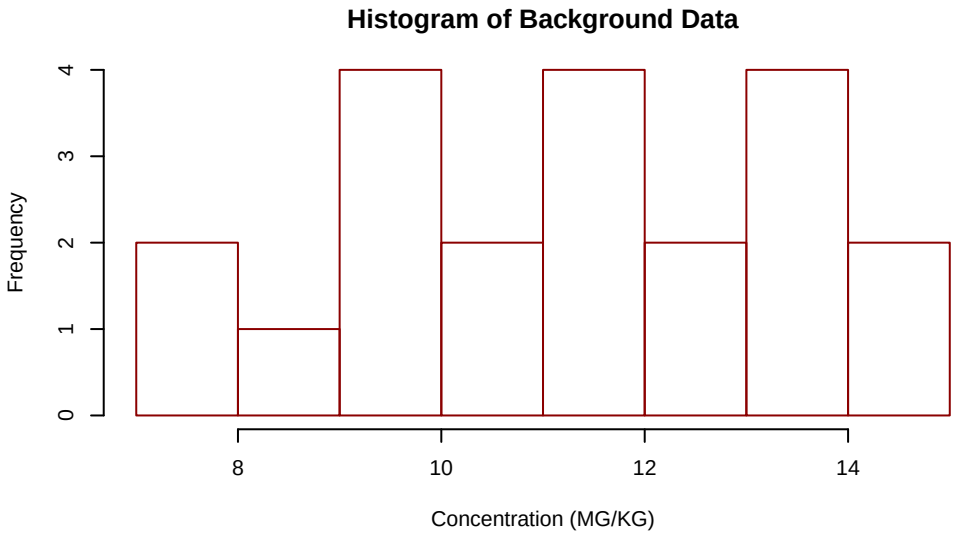
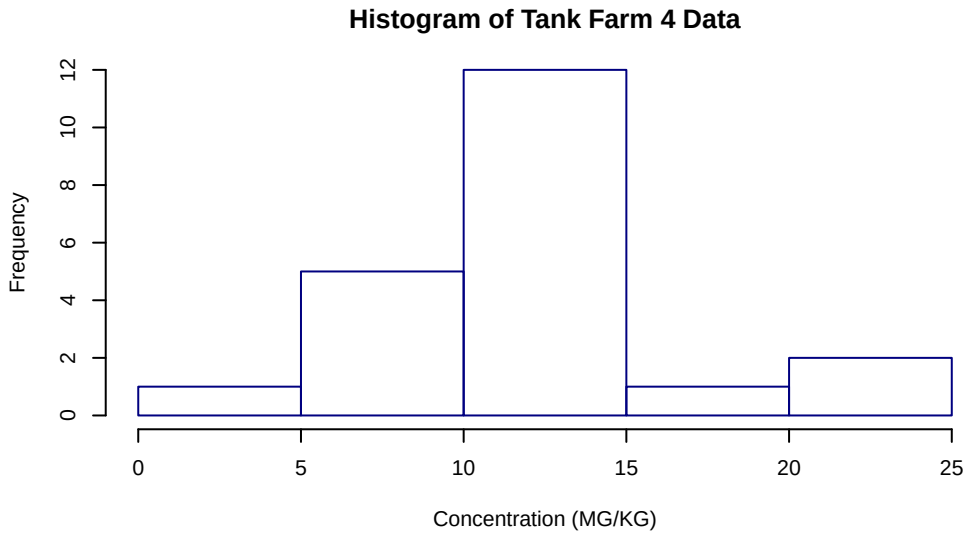
NEWPORT, RHODE ISLAND

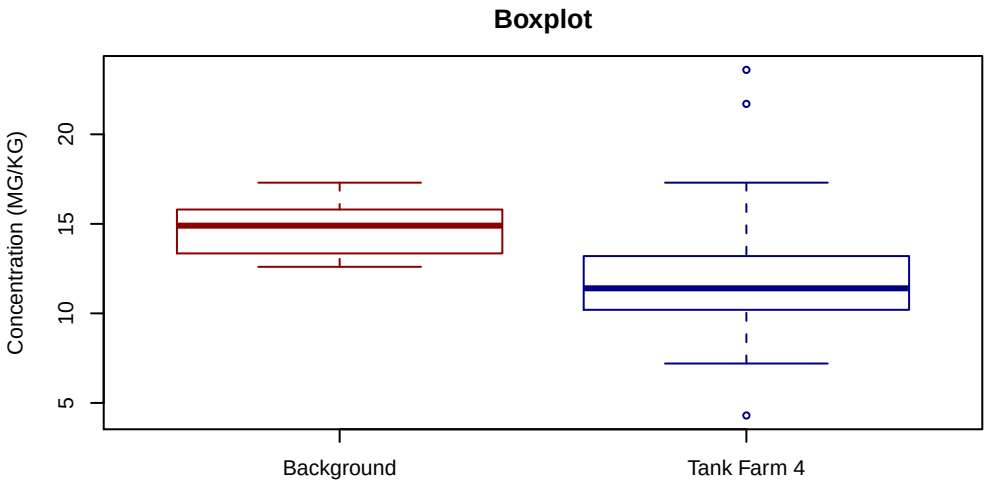


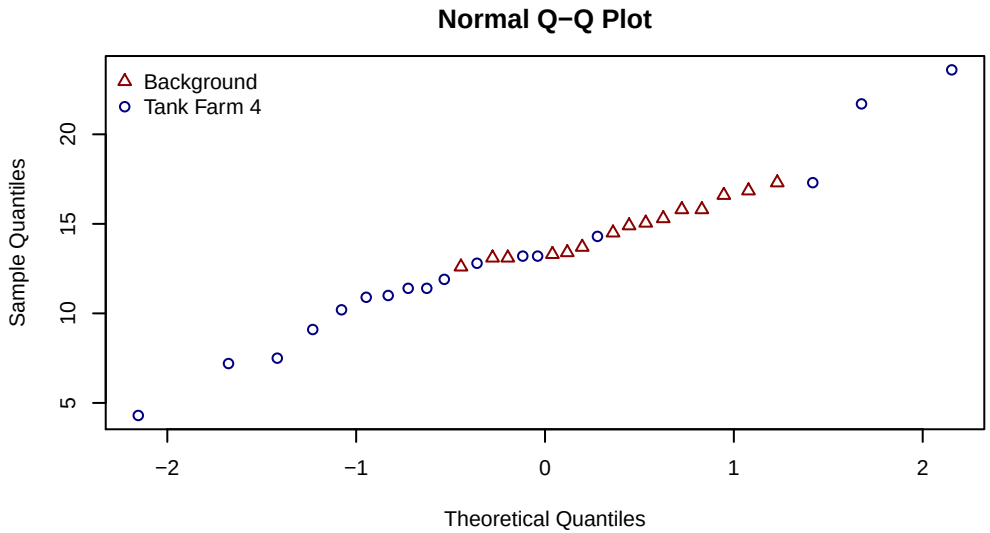


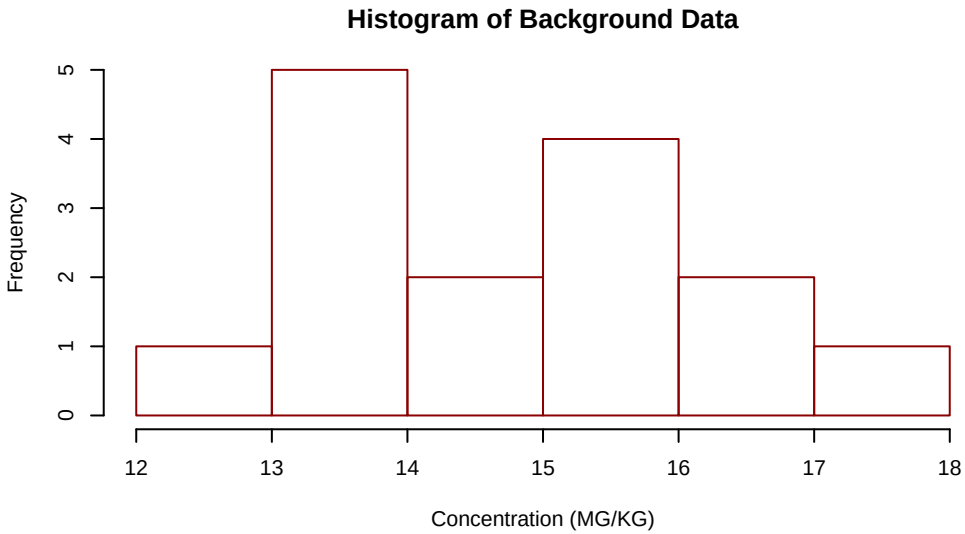


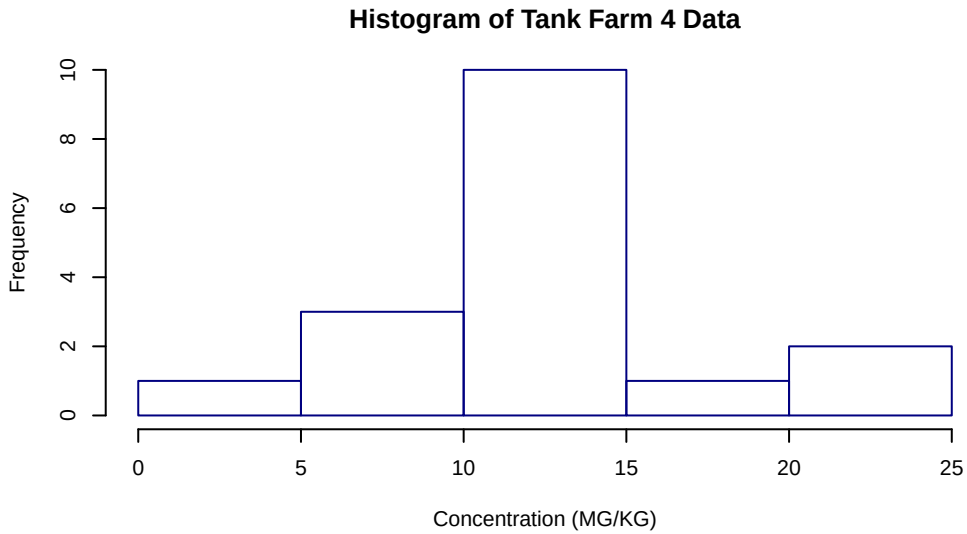


CHROMIUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









COBALT MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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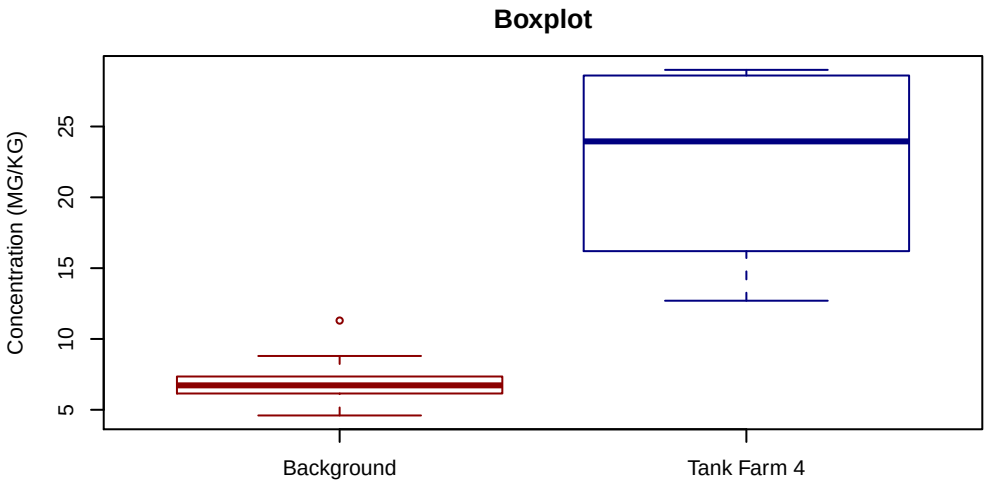
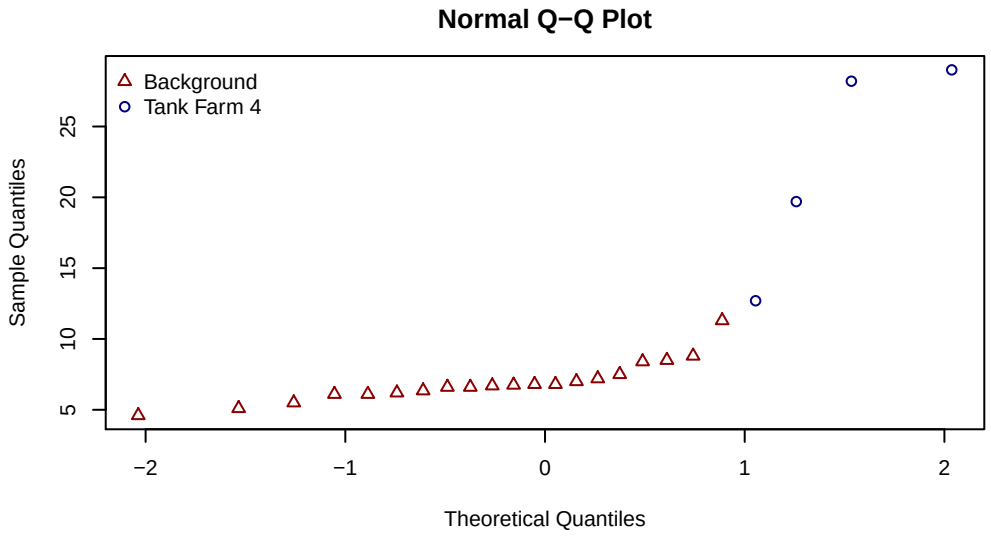
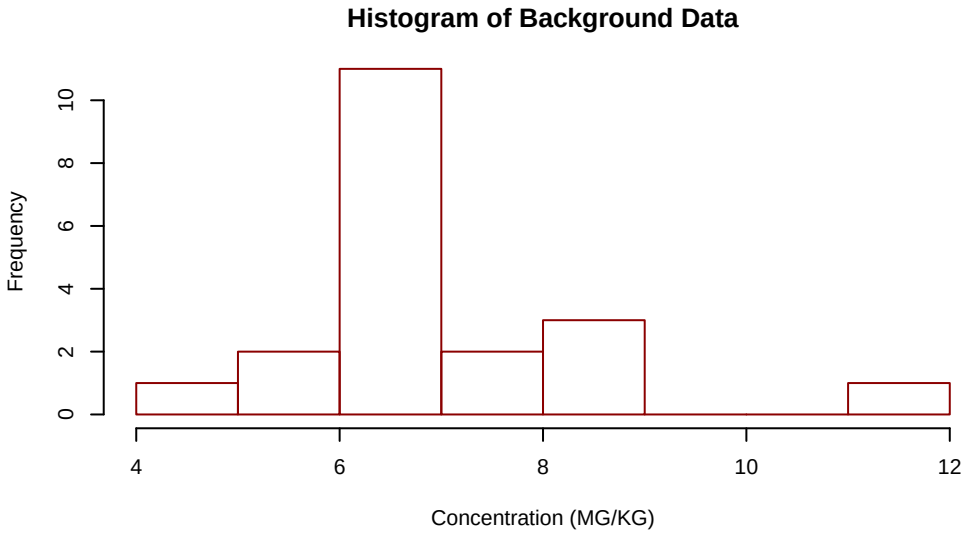
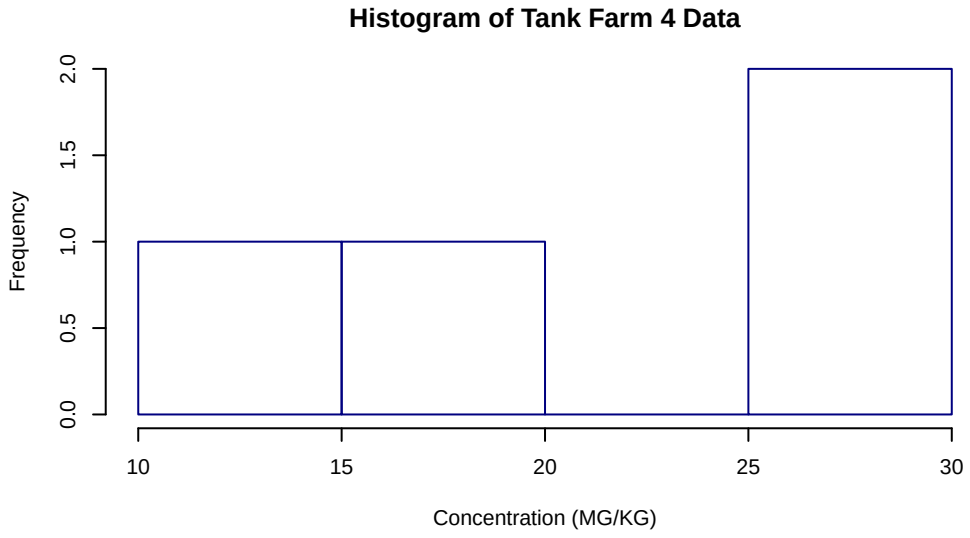
NEWPORT, RHODE ISLAND









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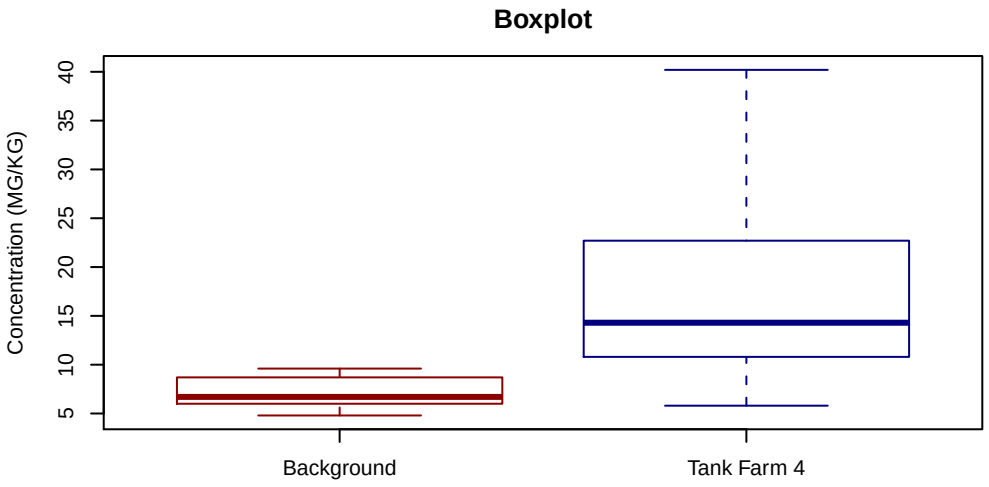

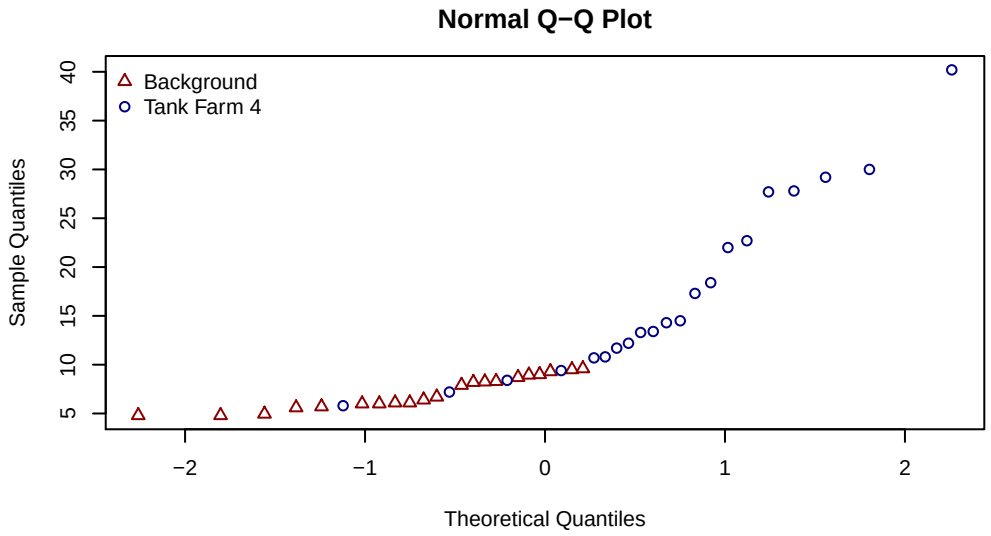

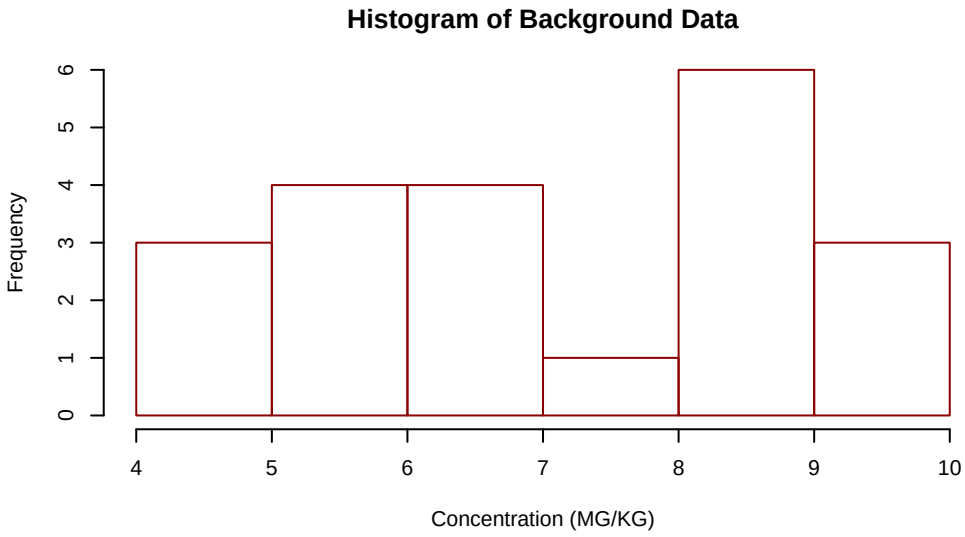

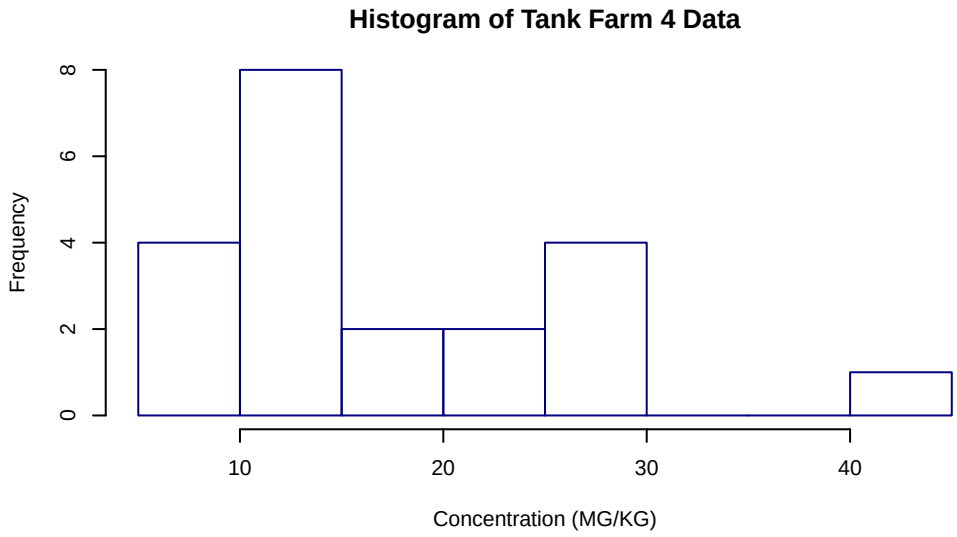

COBALT Se SUBSURFACESOIL
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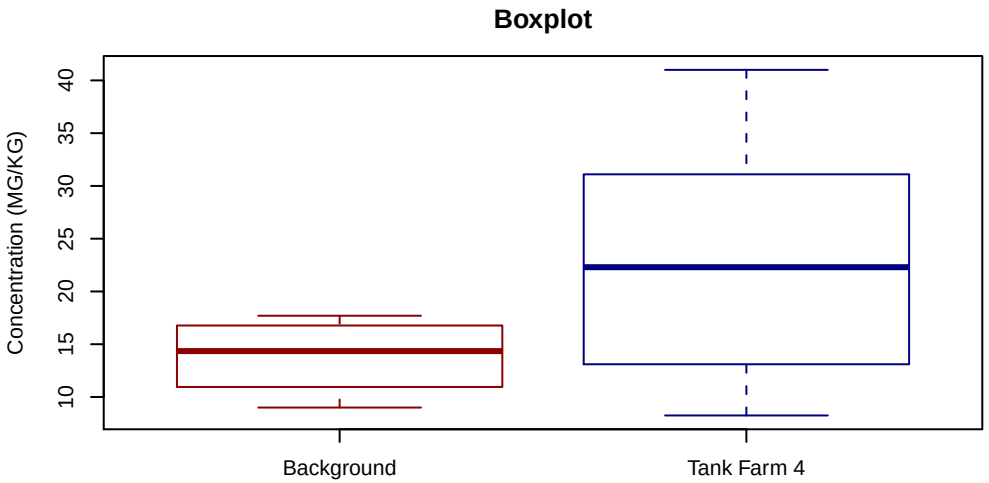

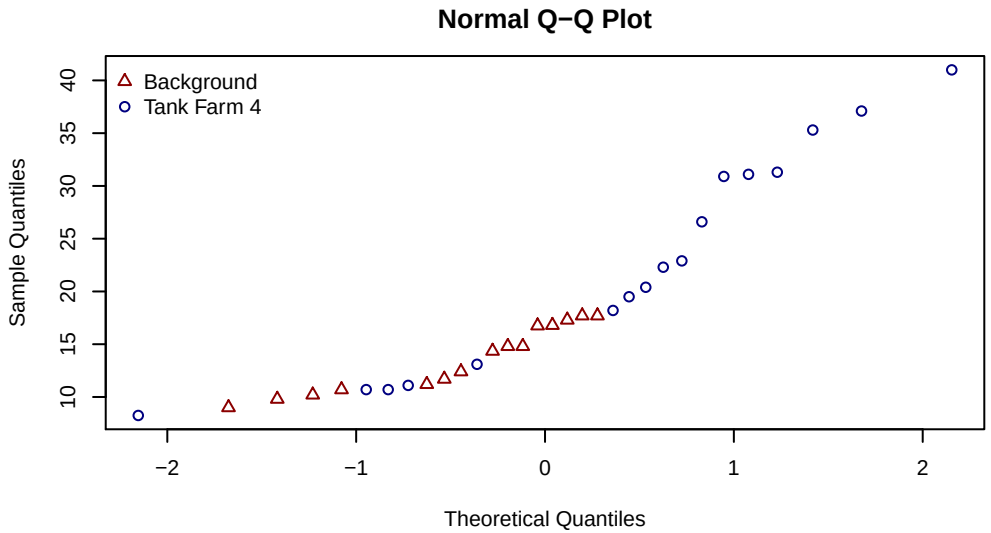

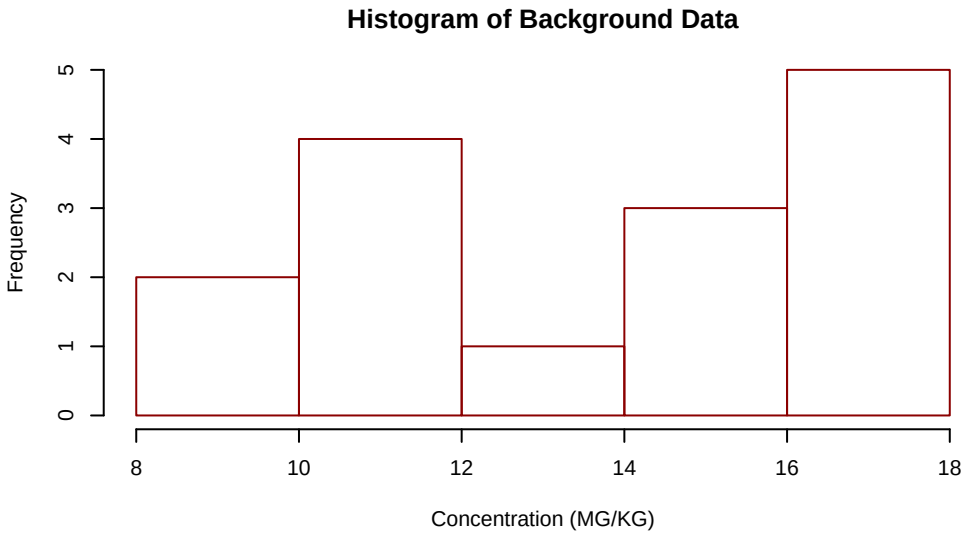

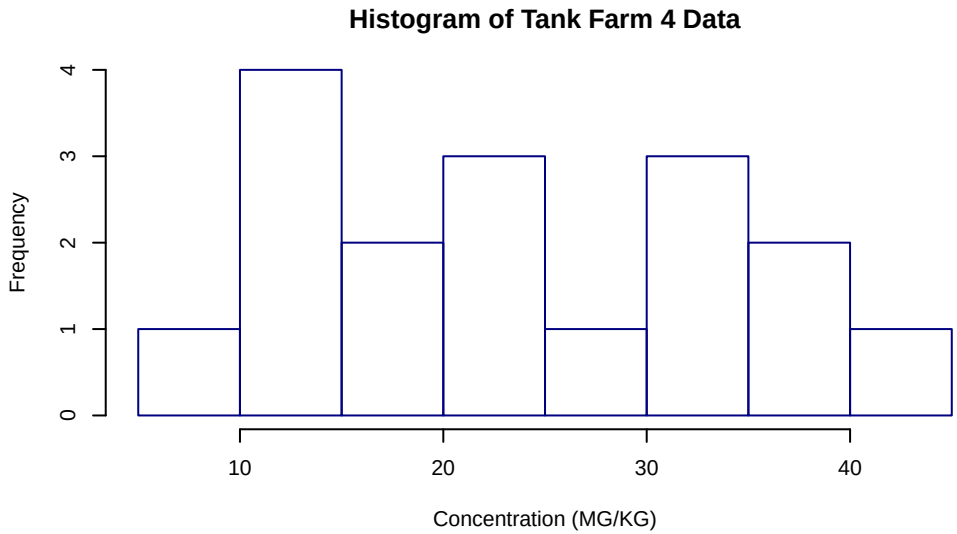

COPPER MmA SUBSURFACESOIL
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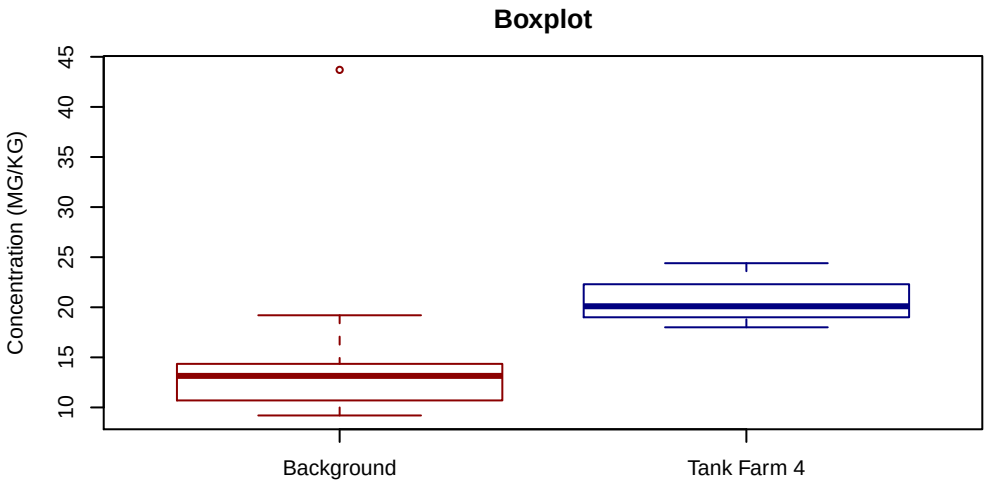

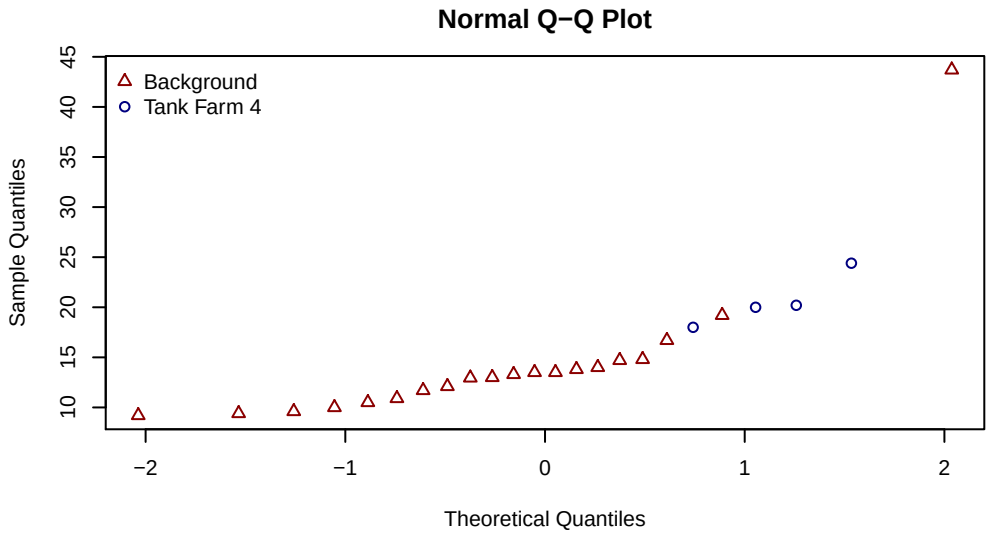

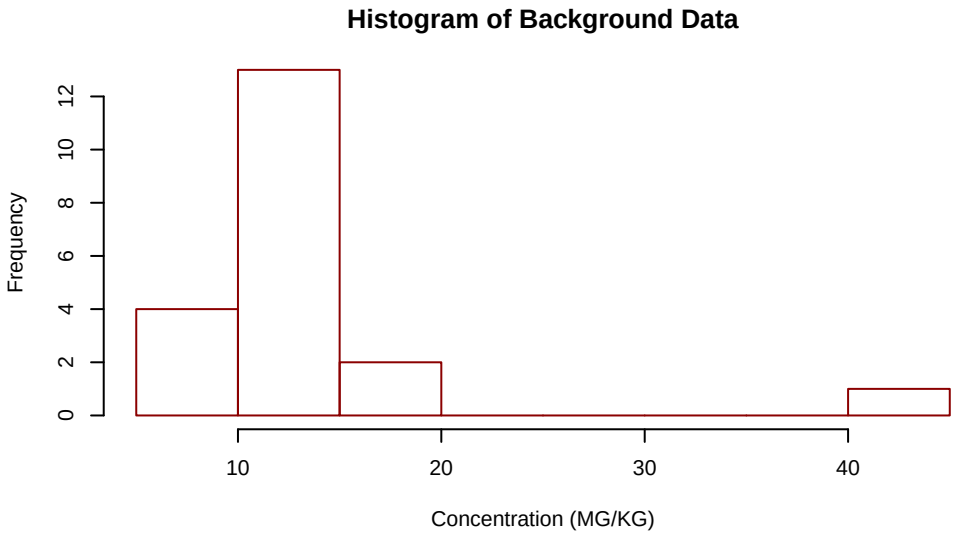

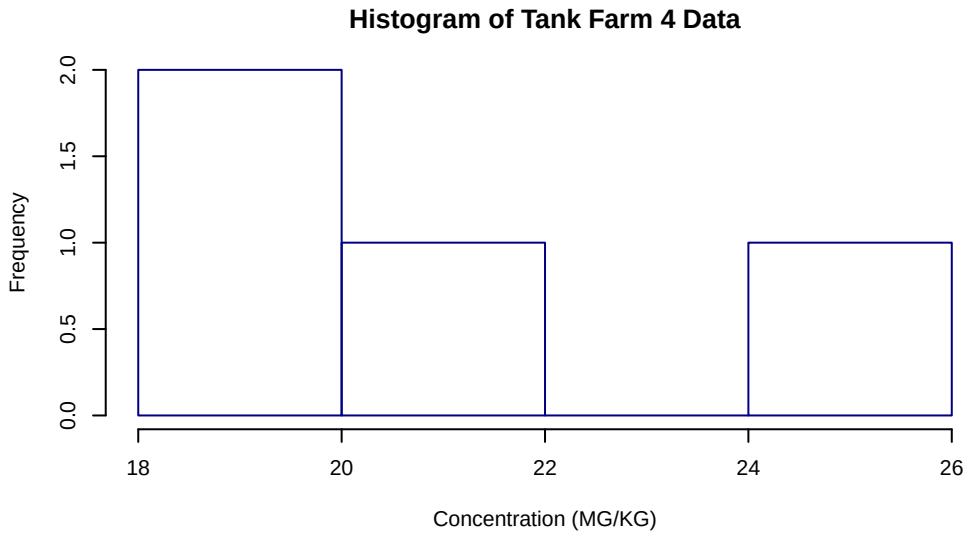

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TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
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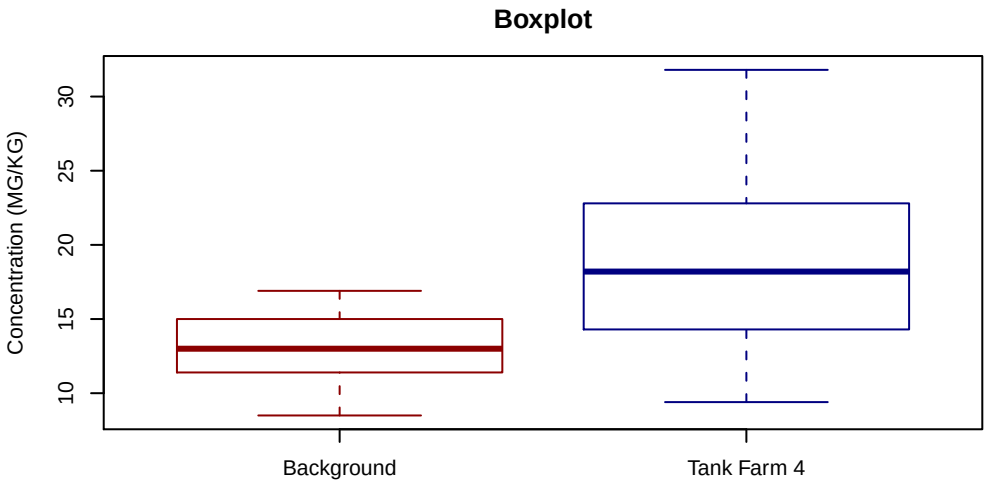

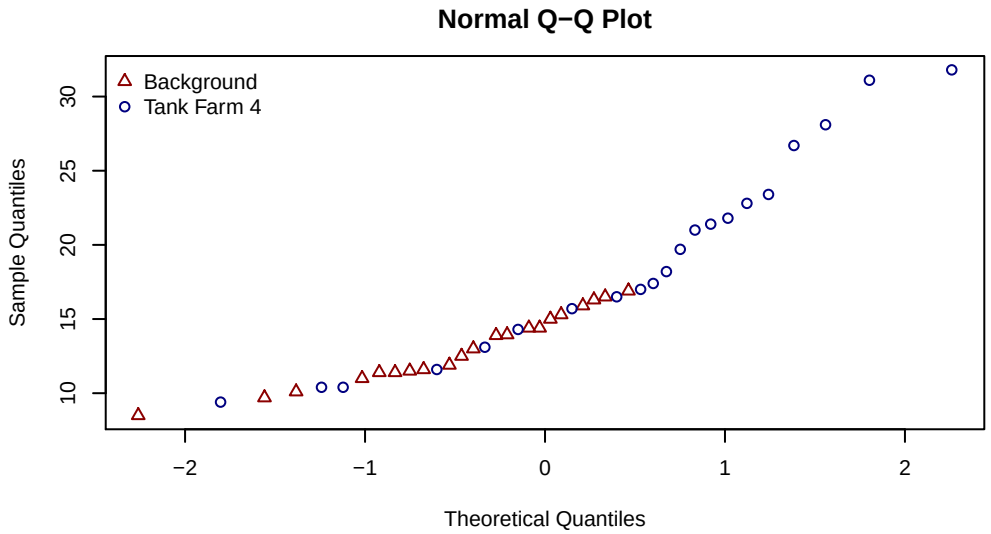

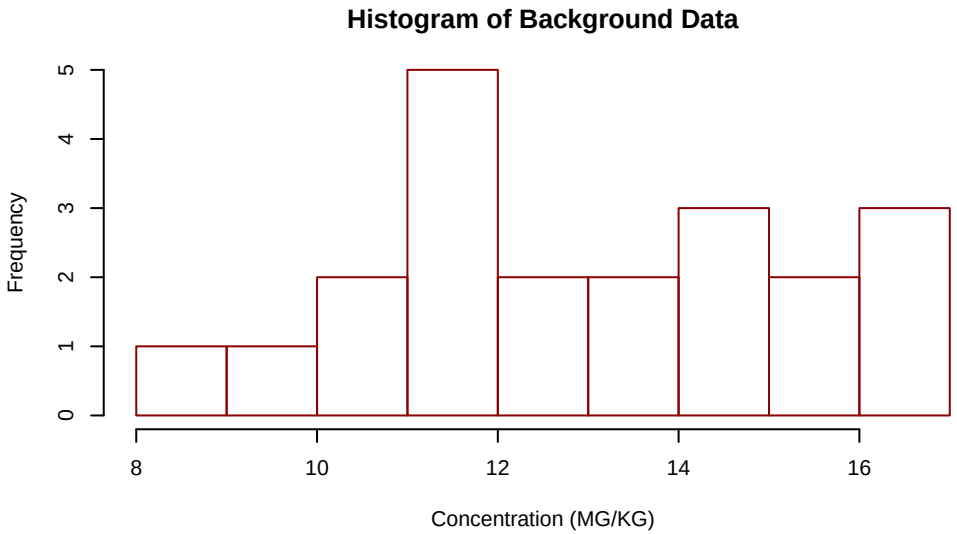

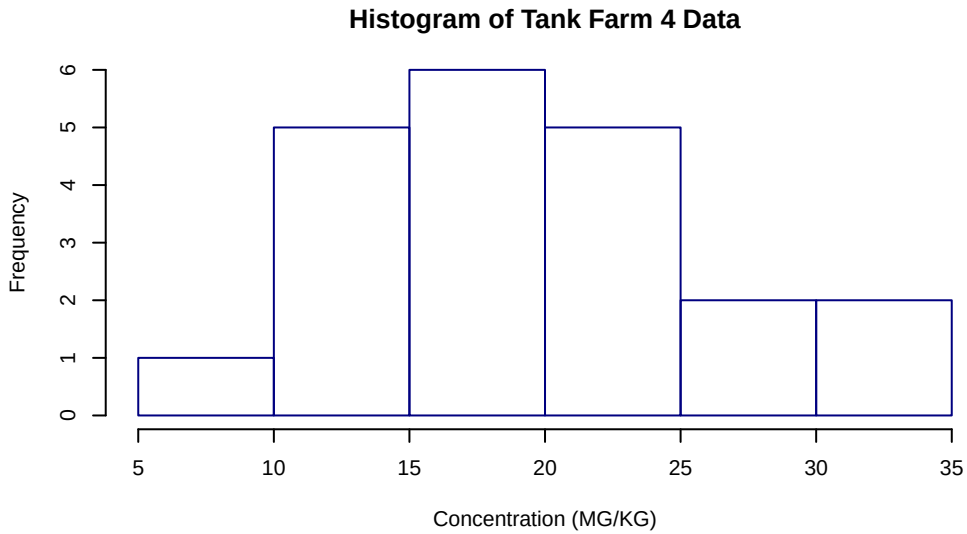

COPPER Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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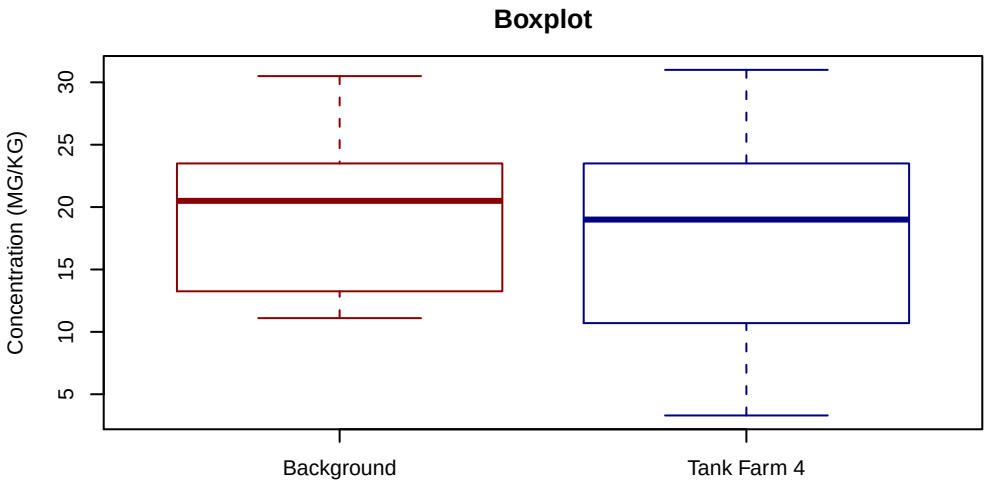

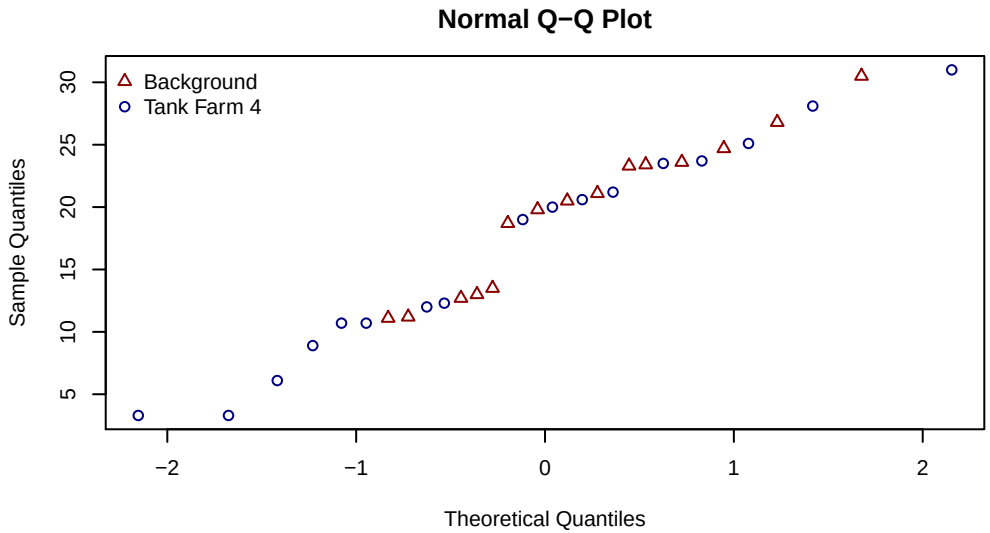

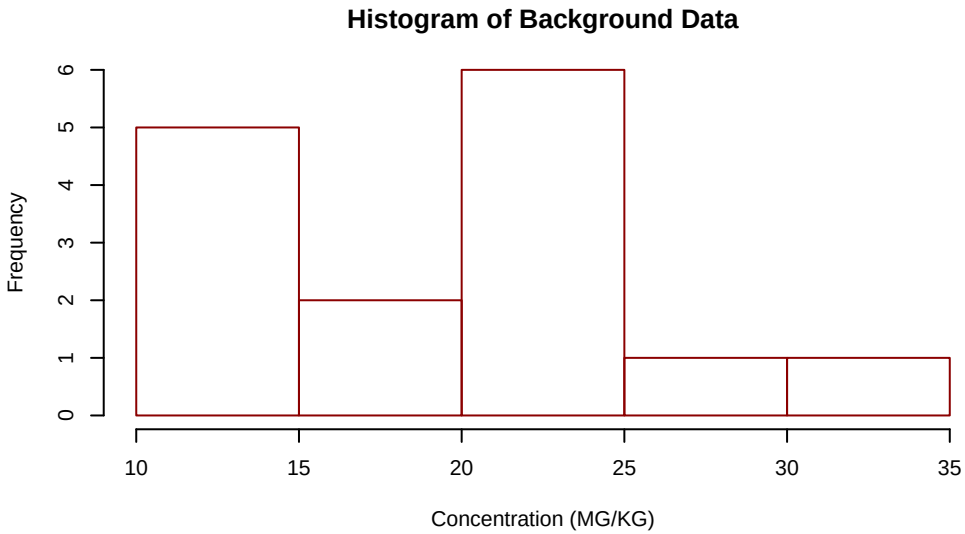

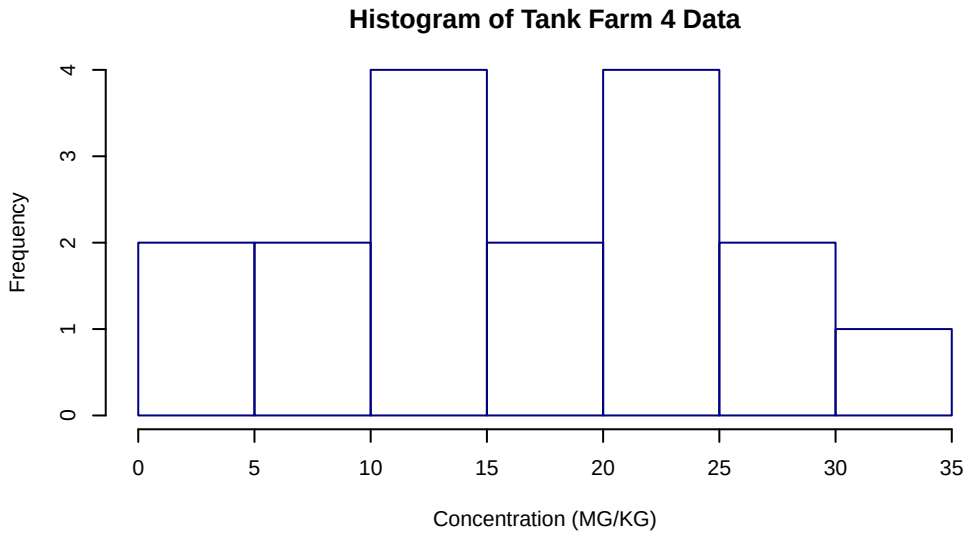

IRON MmA SUBSURFACESOIL
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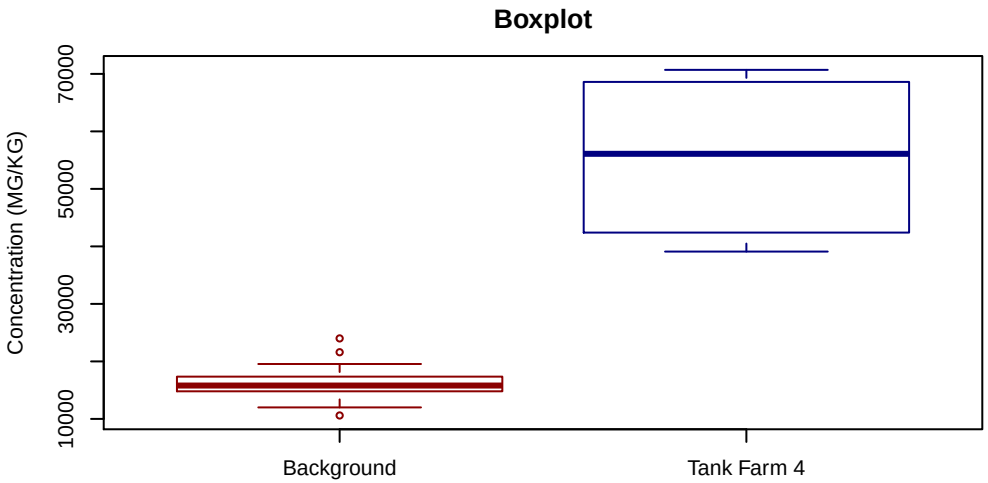

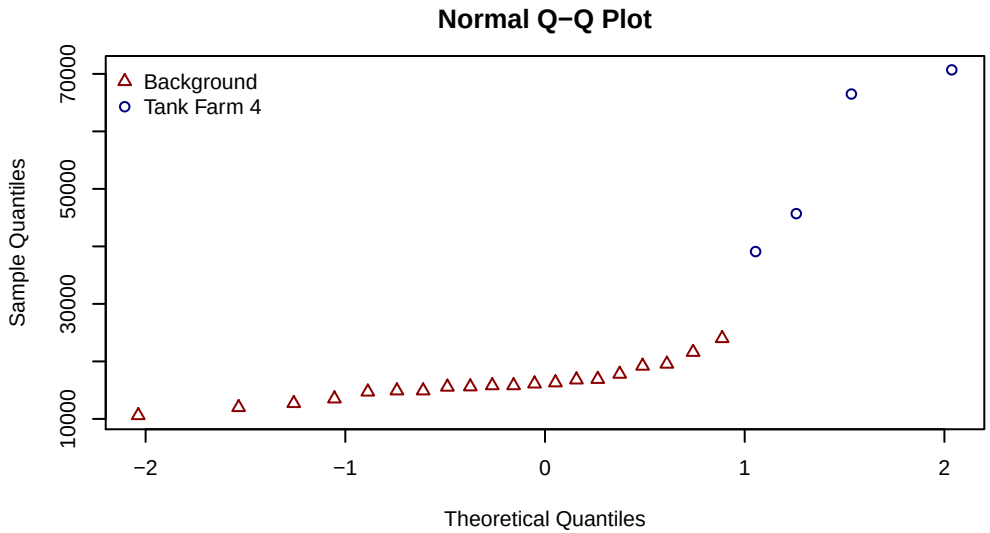

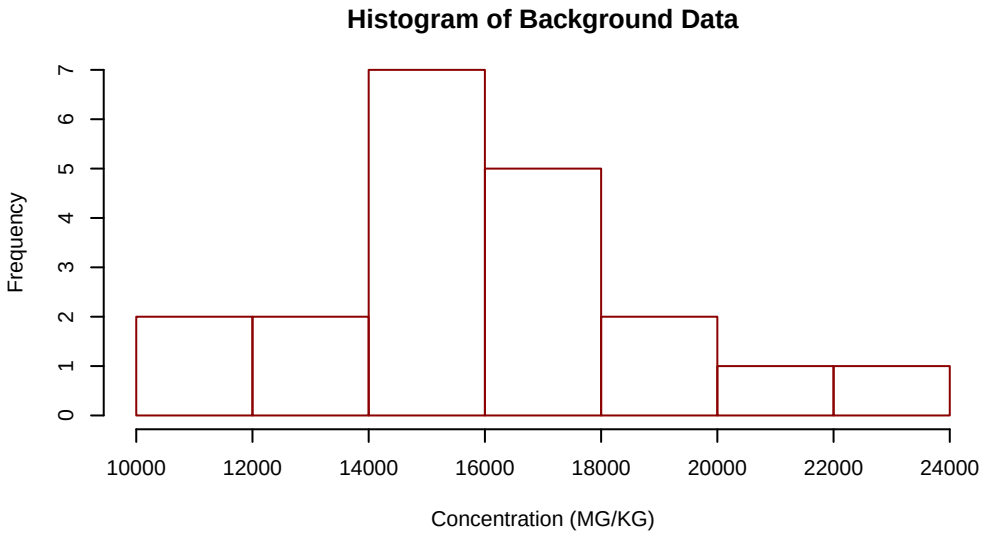

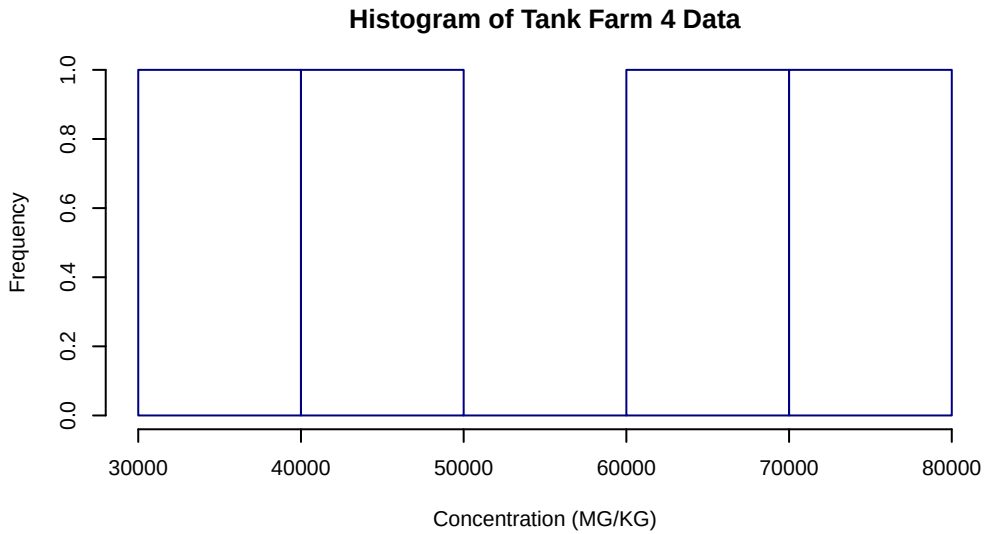

IRON Ne SUBSURFACESOIL
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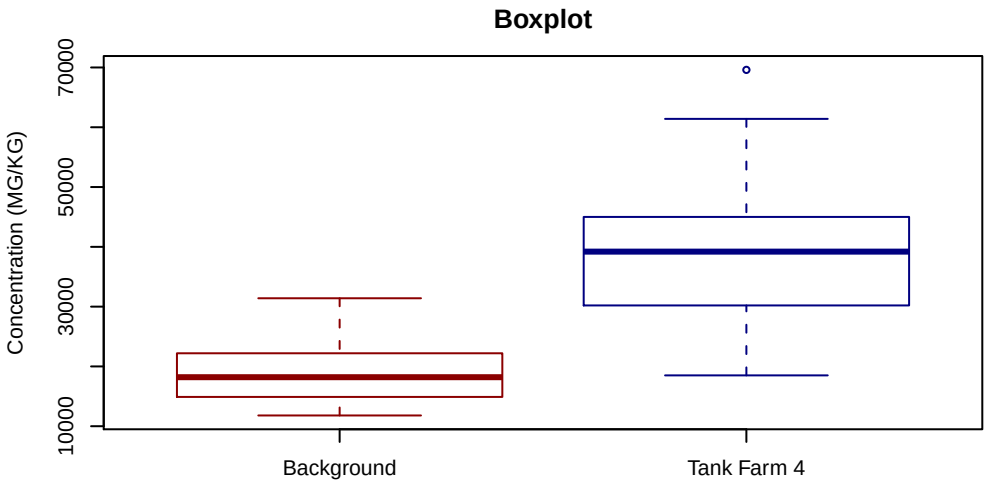

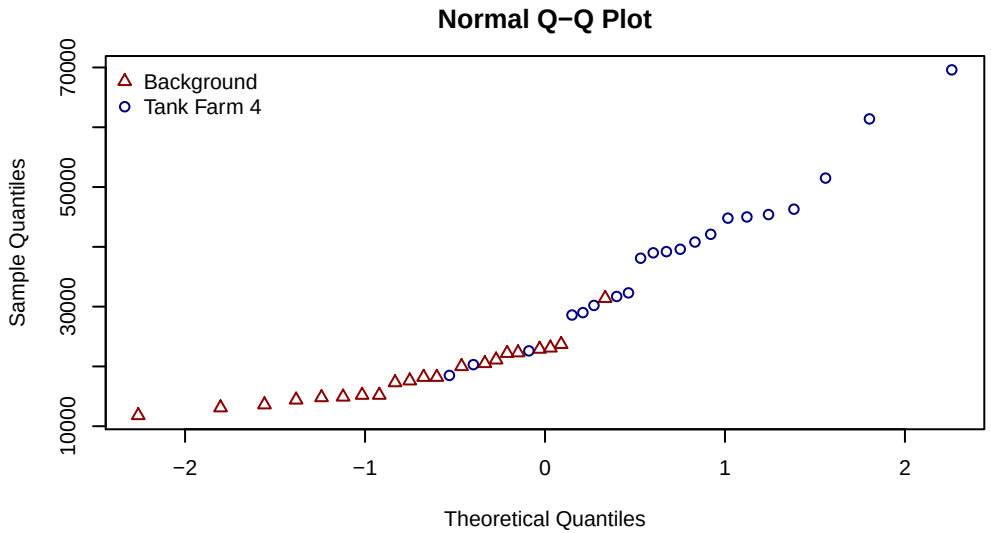

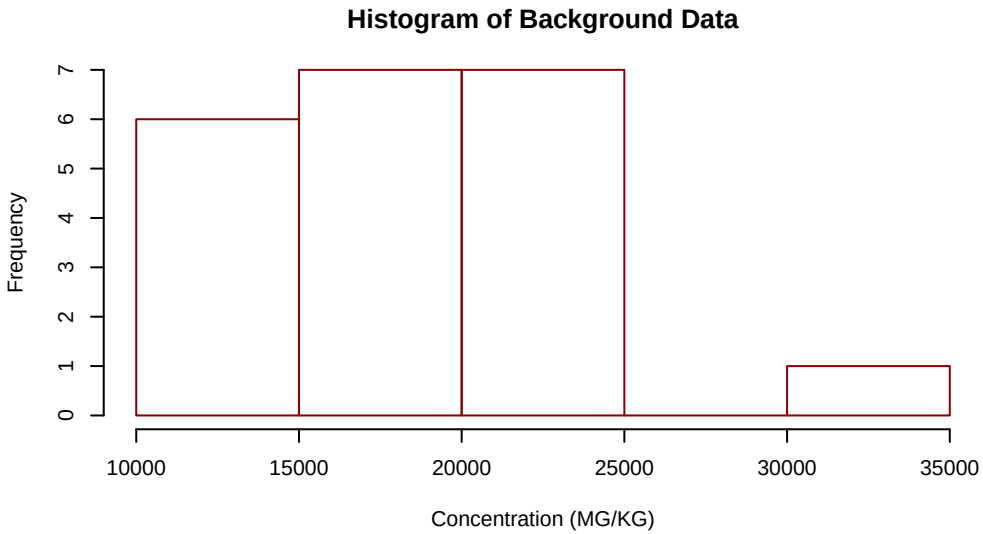

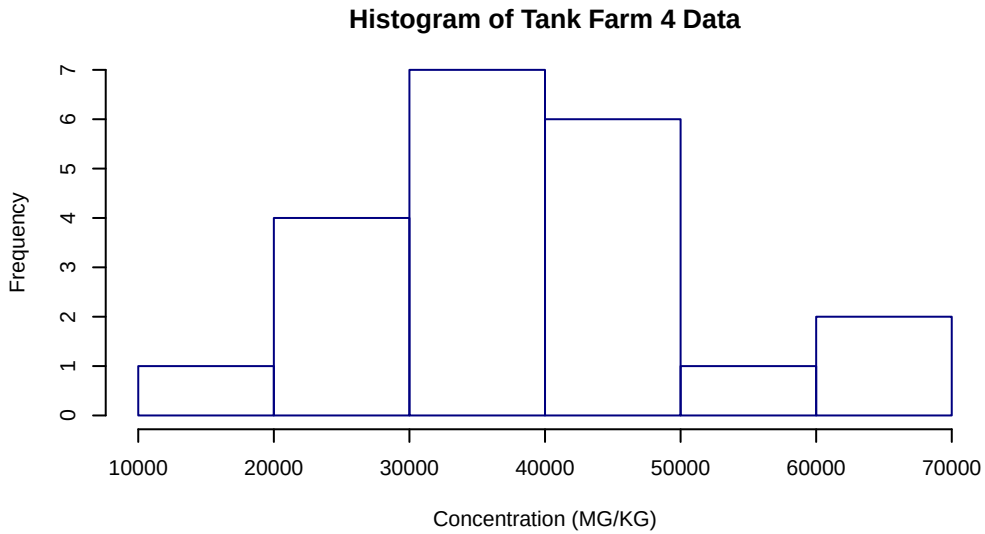

IRON Se SUBSURFACESOIL
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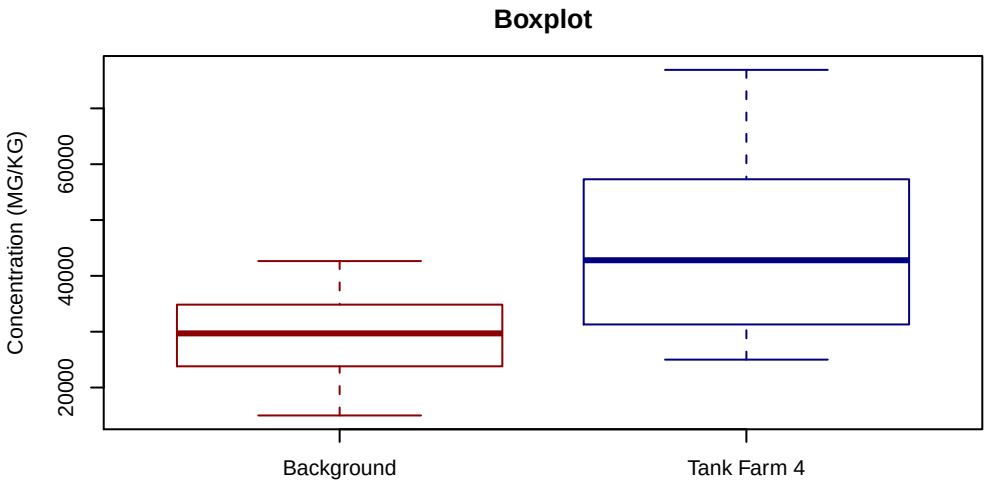

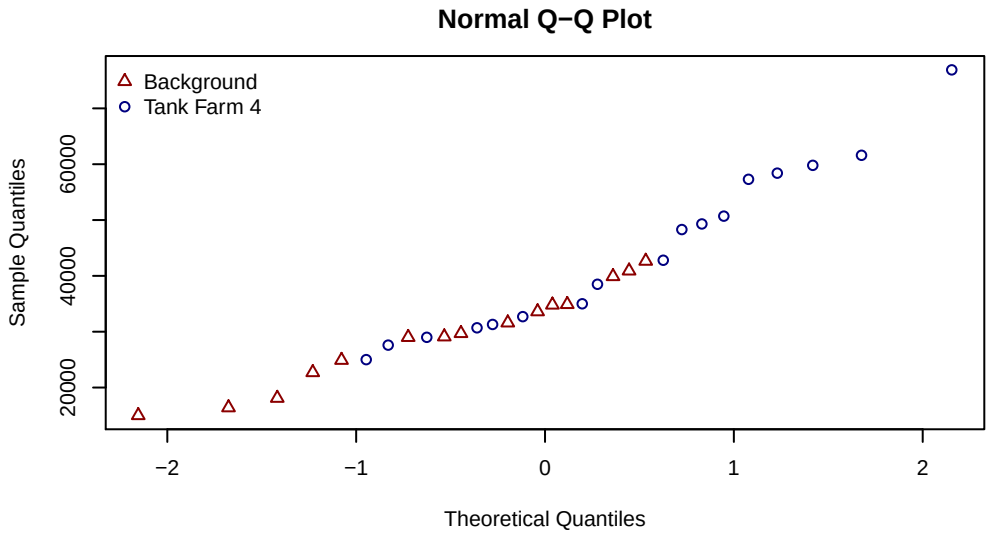

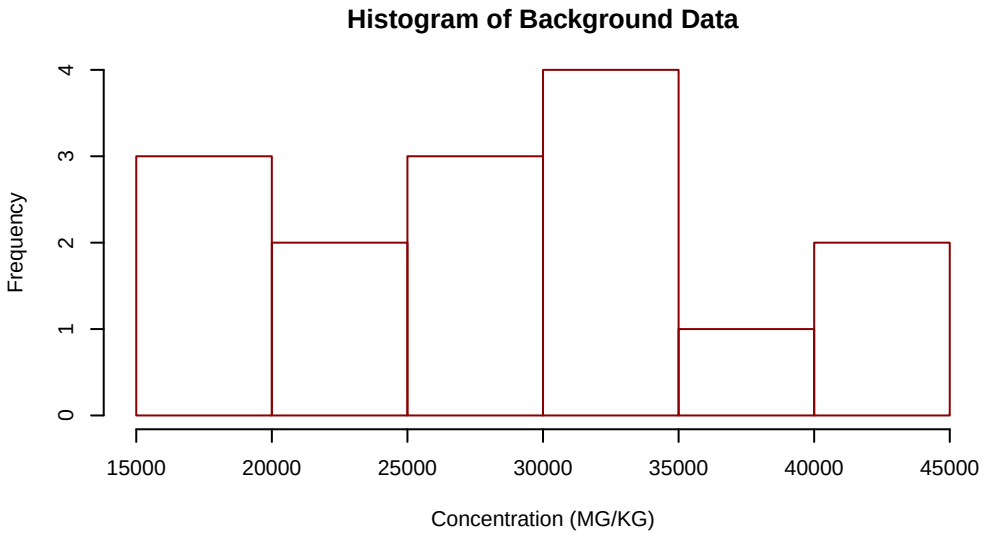

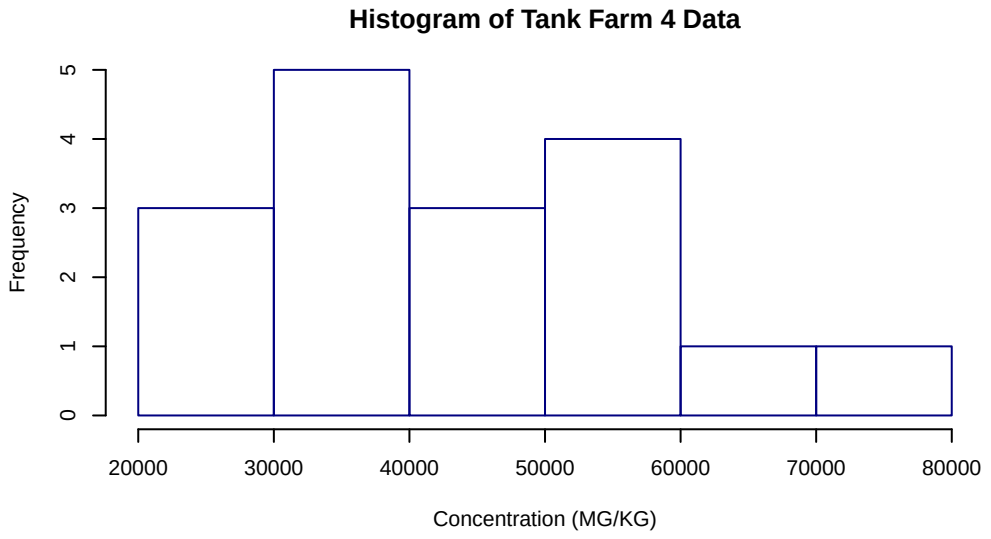

LEAD MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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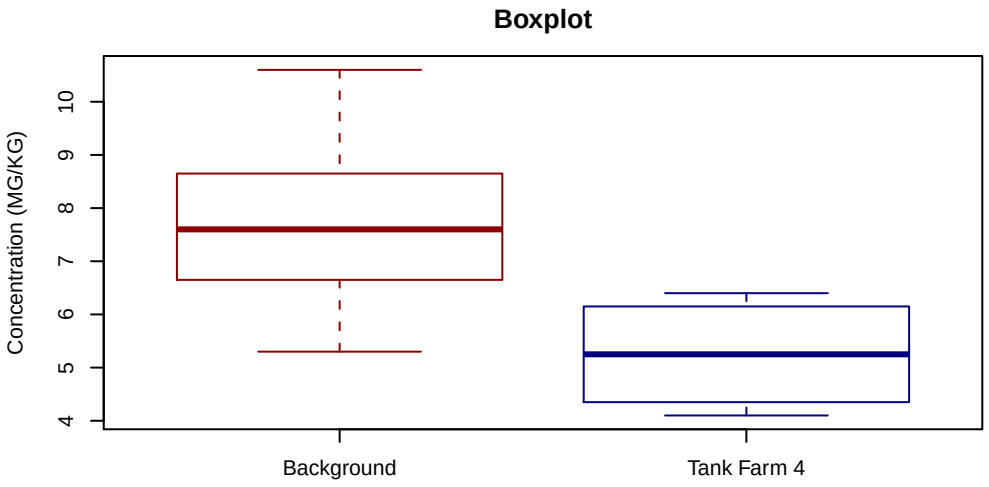

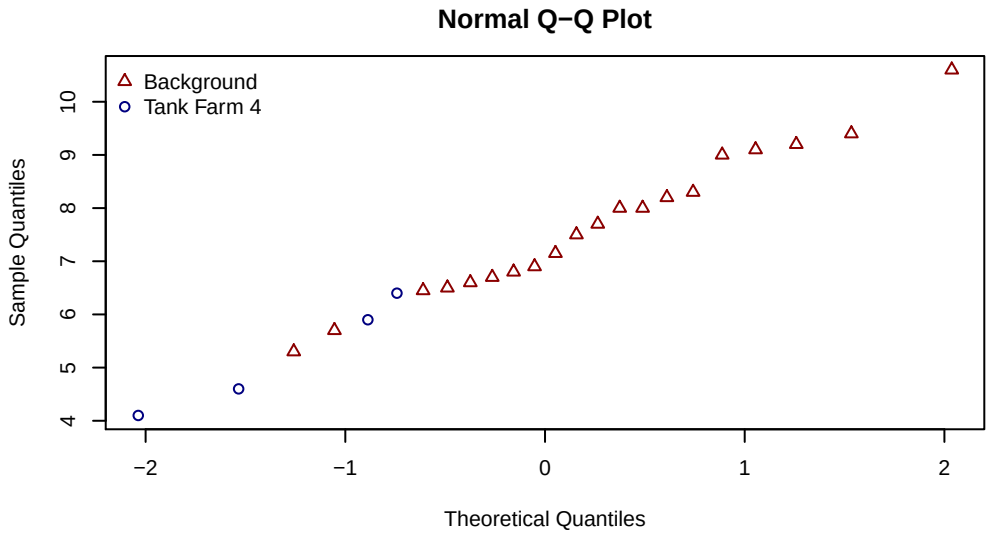

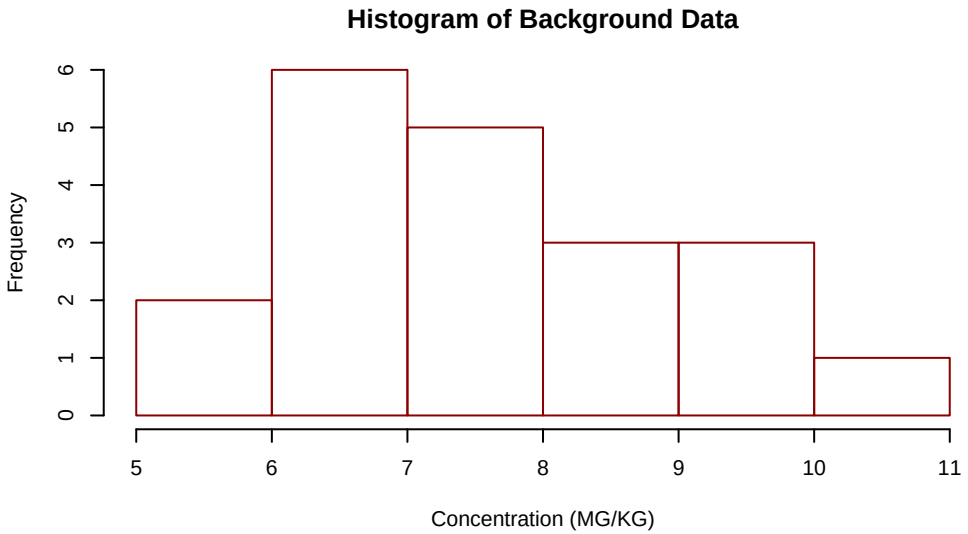

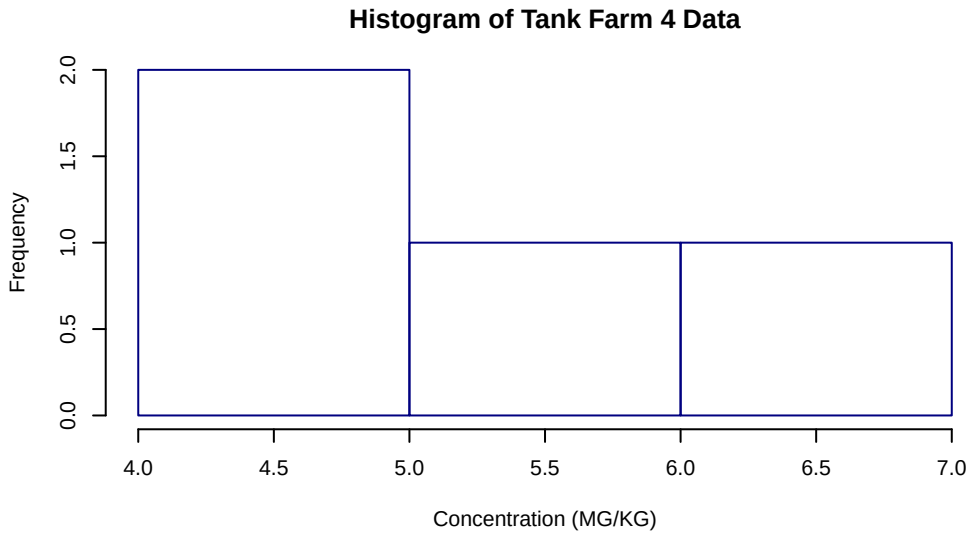

LEAD Ne SUBSURFACESOIL
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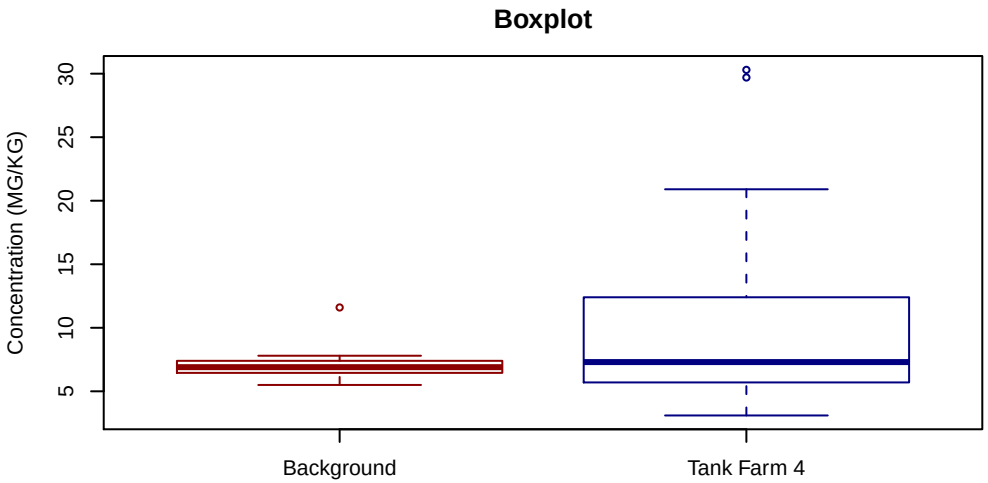

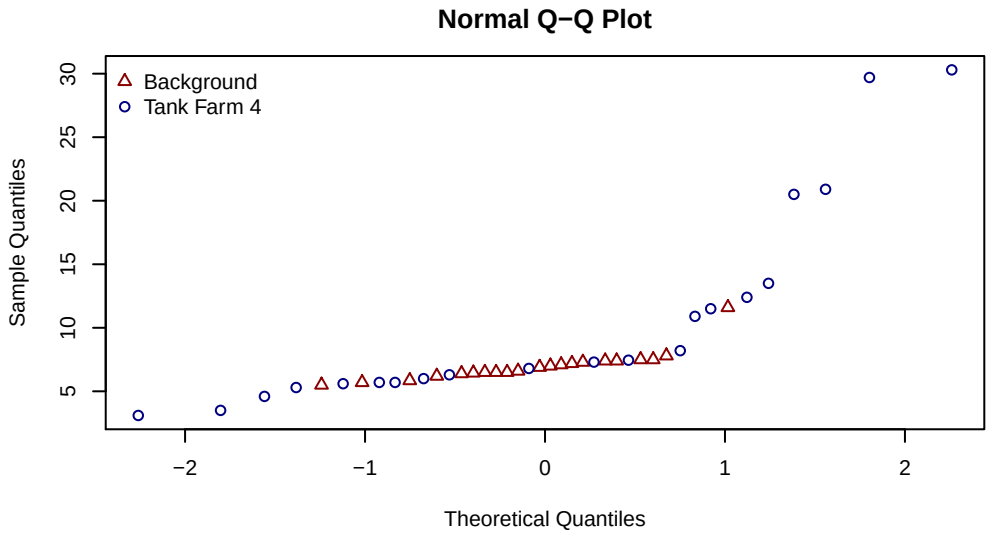

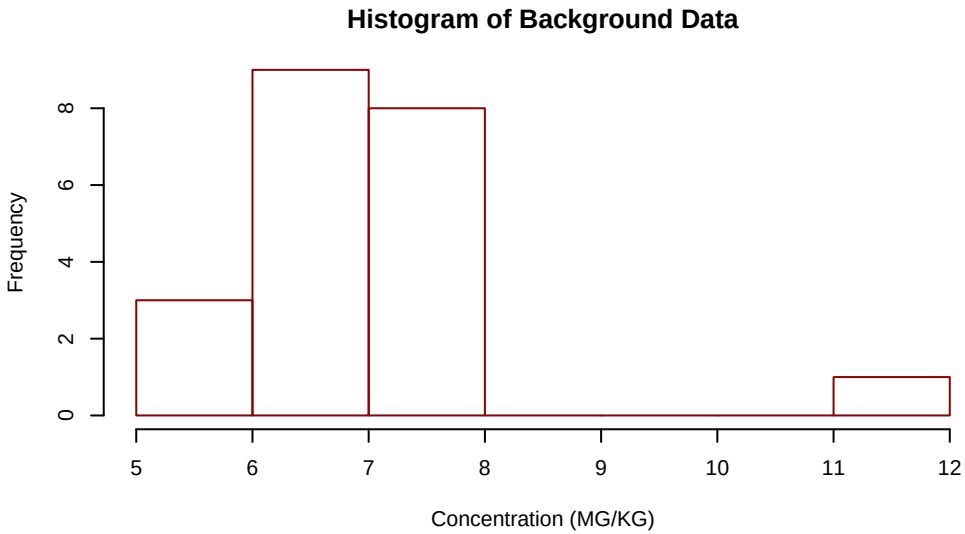

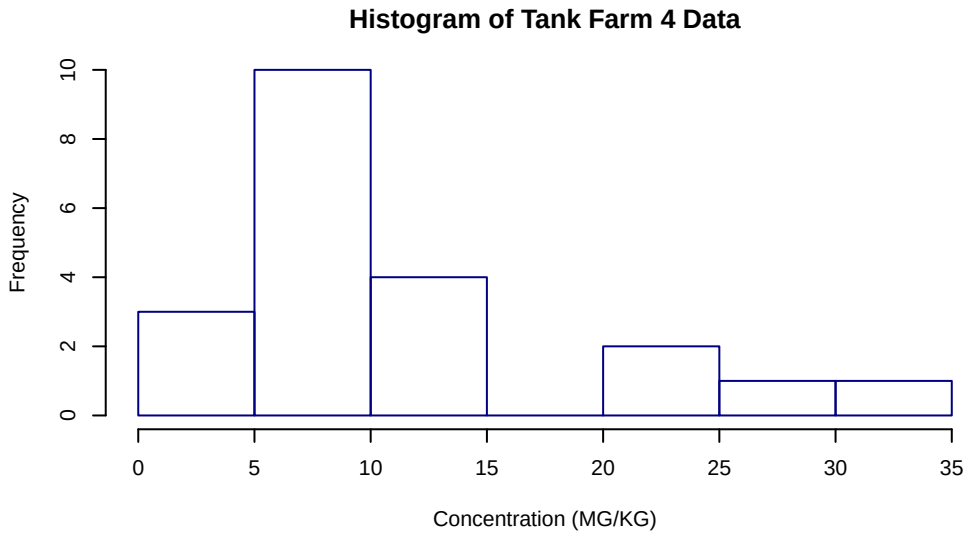

LEAD Se SUBSURFACESOIL
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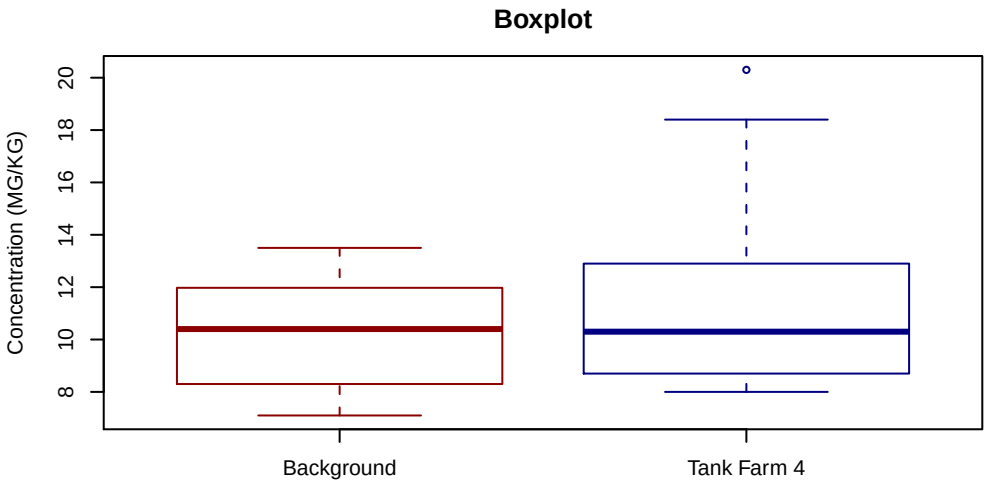
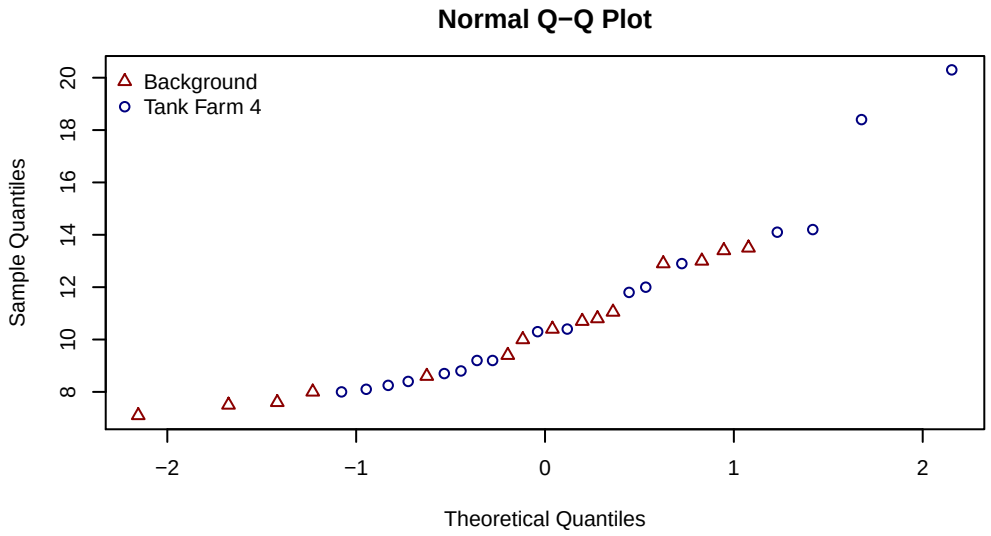
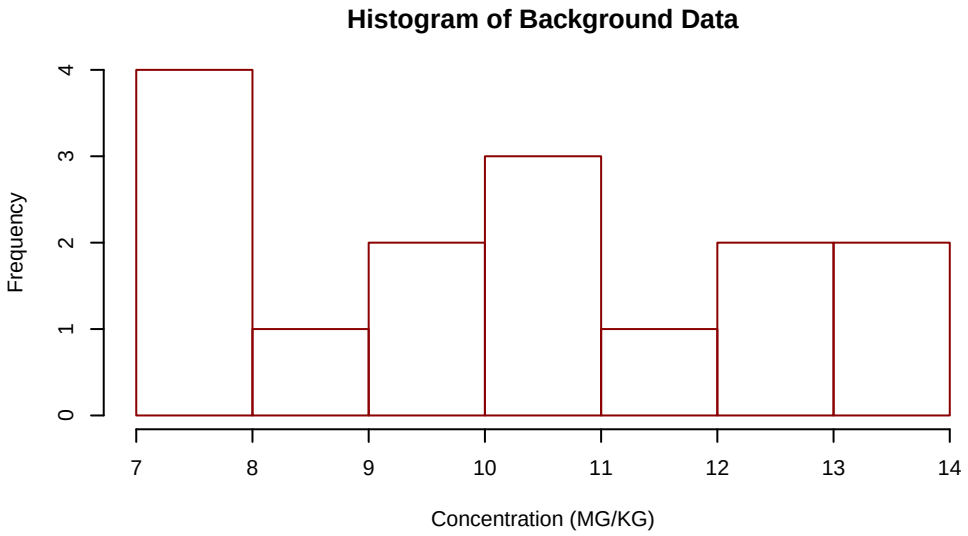
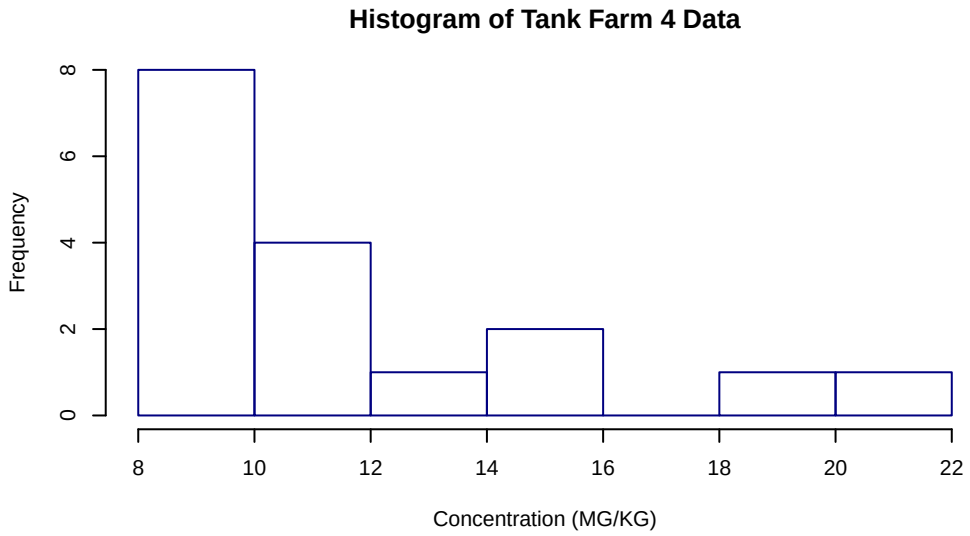
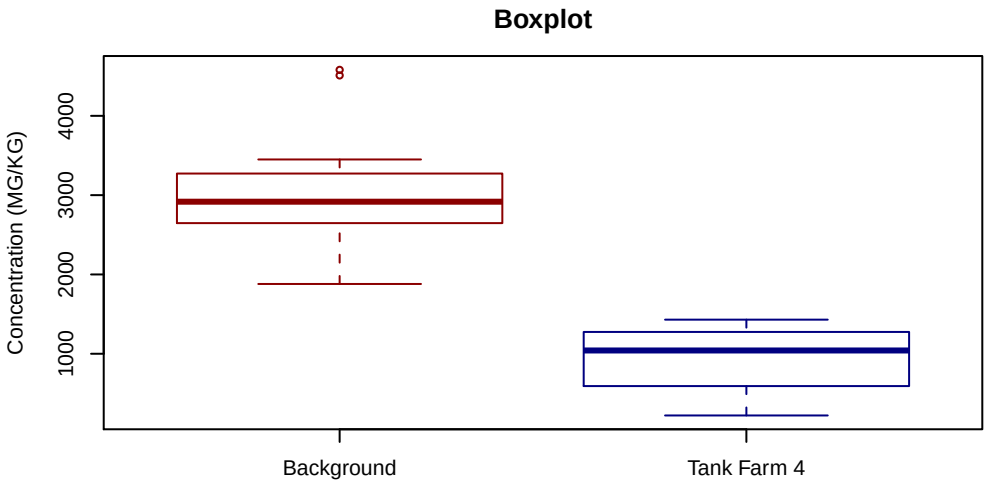


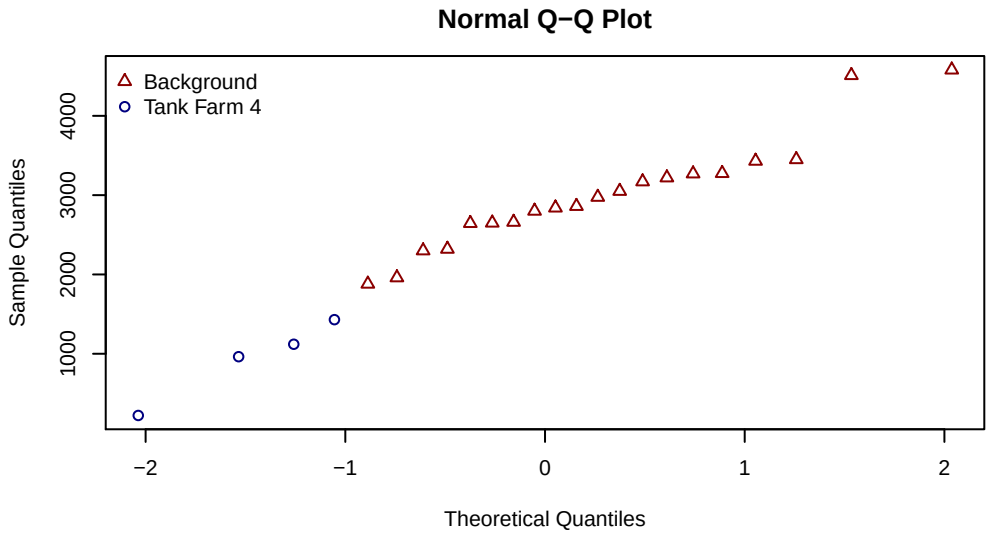


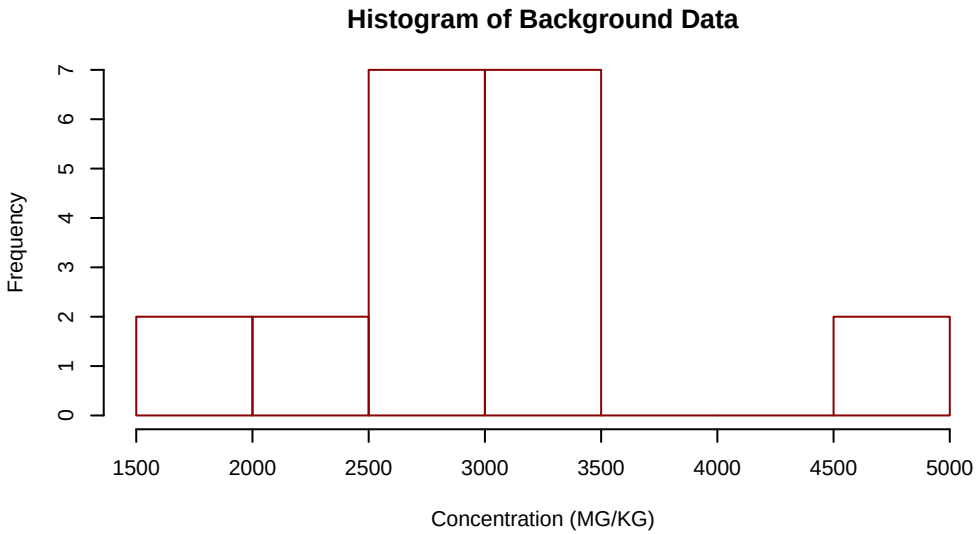


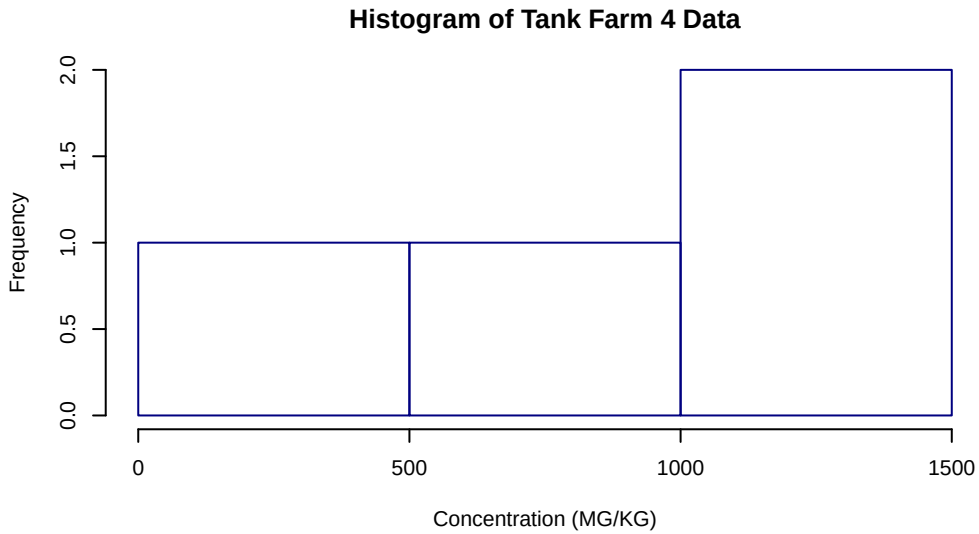


MAGNESIUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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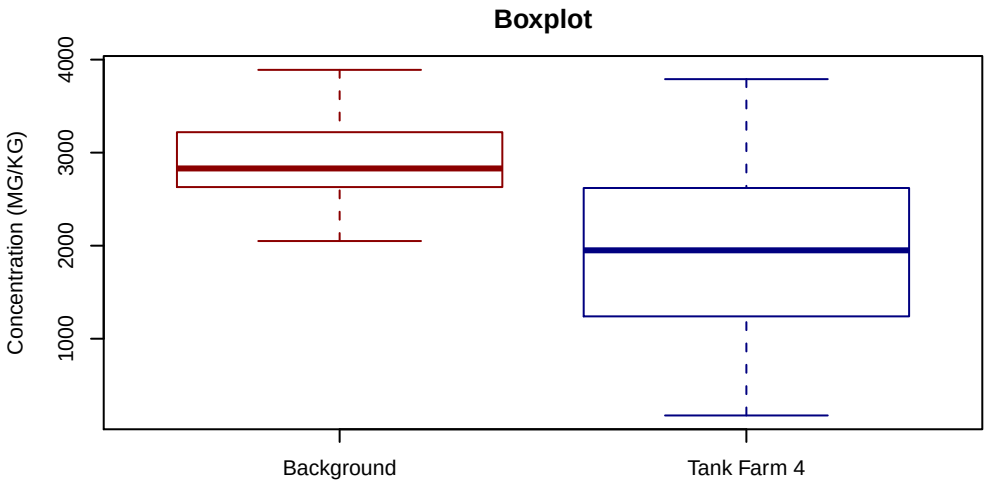
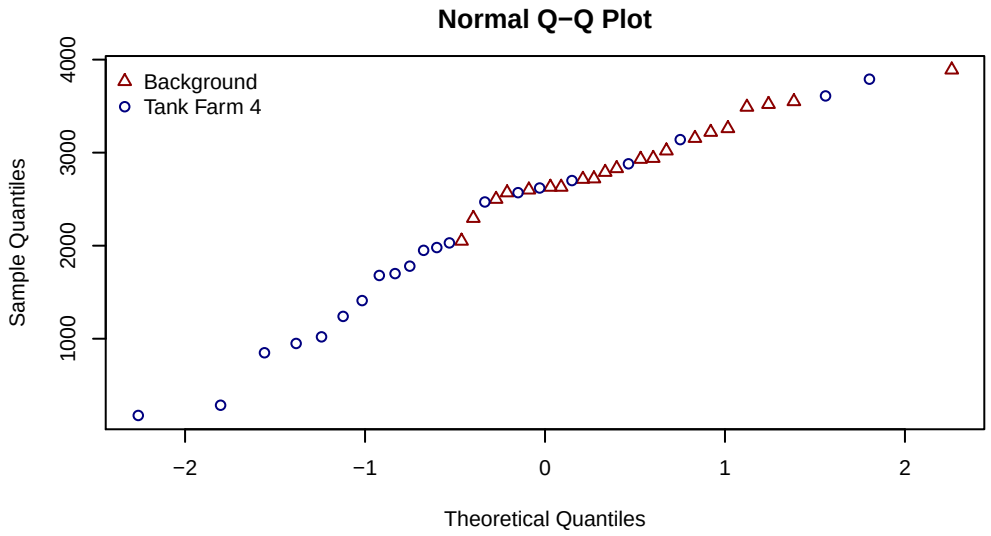
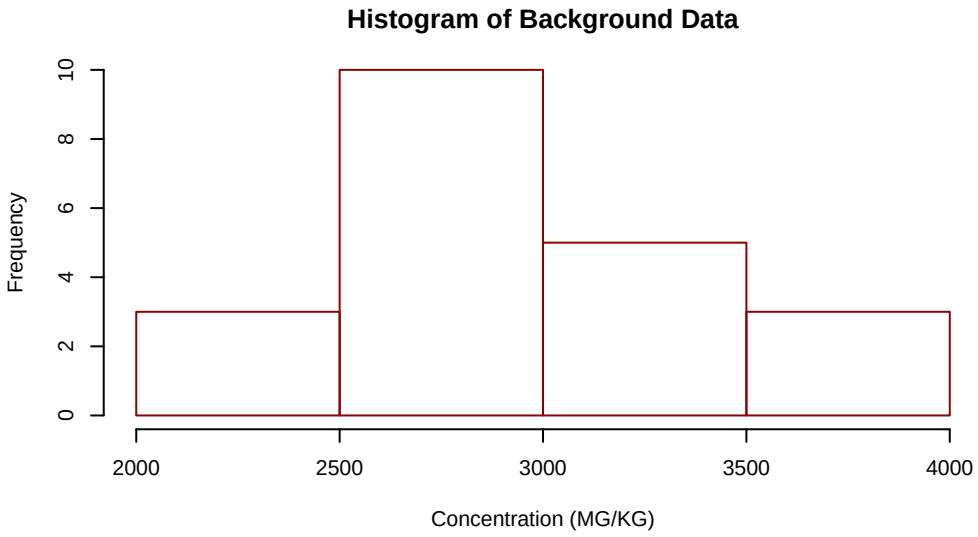
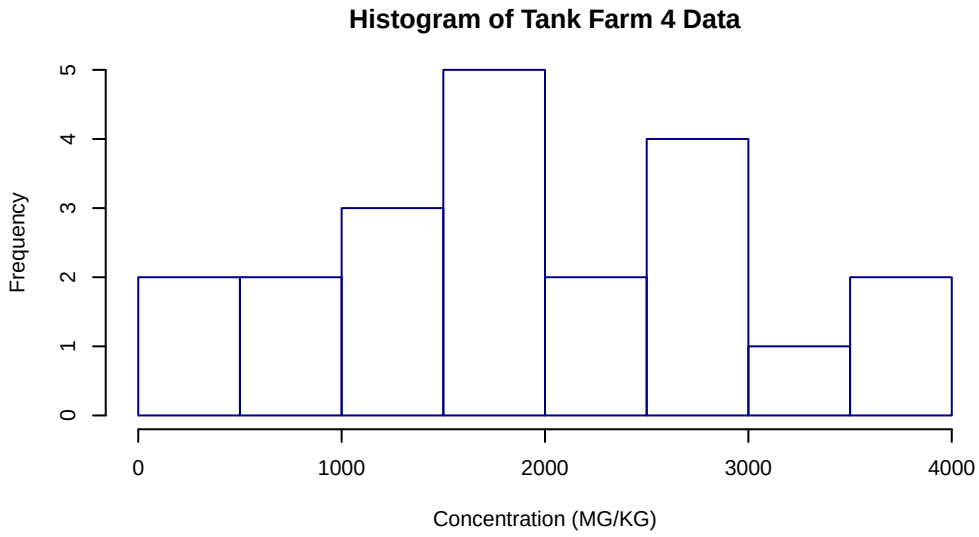
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

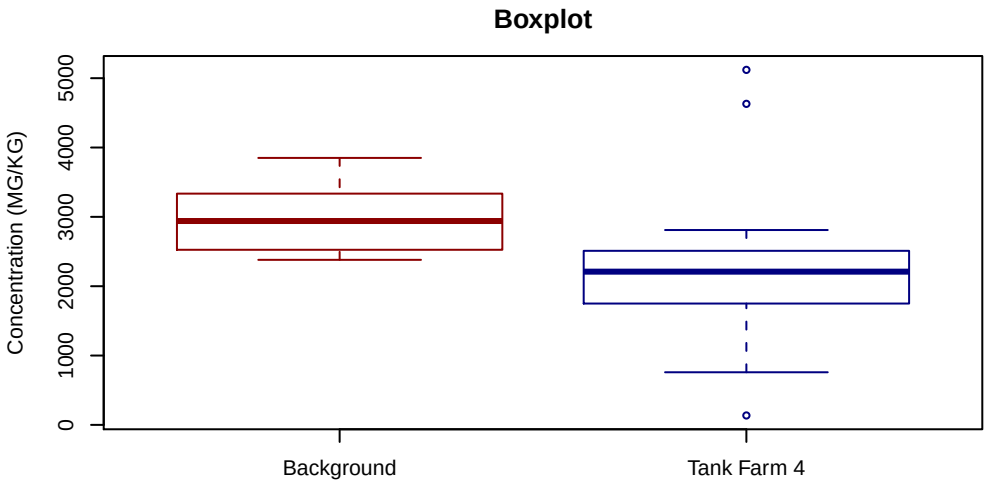


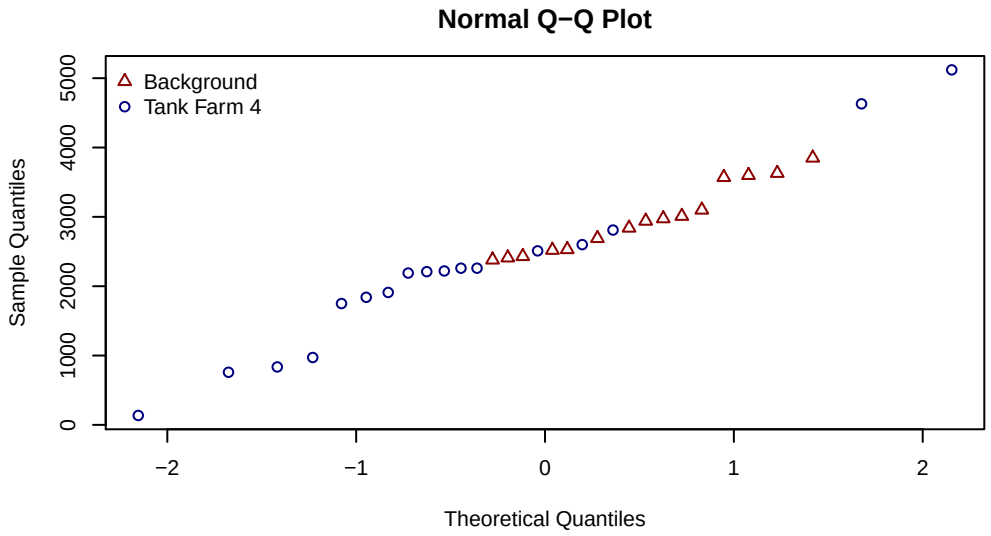


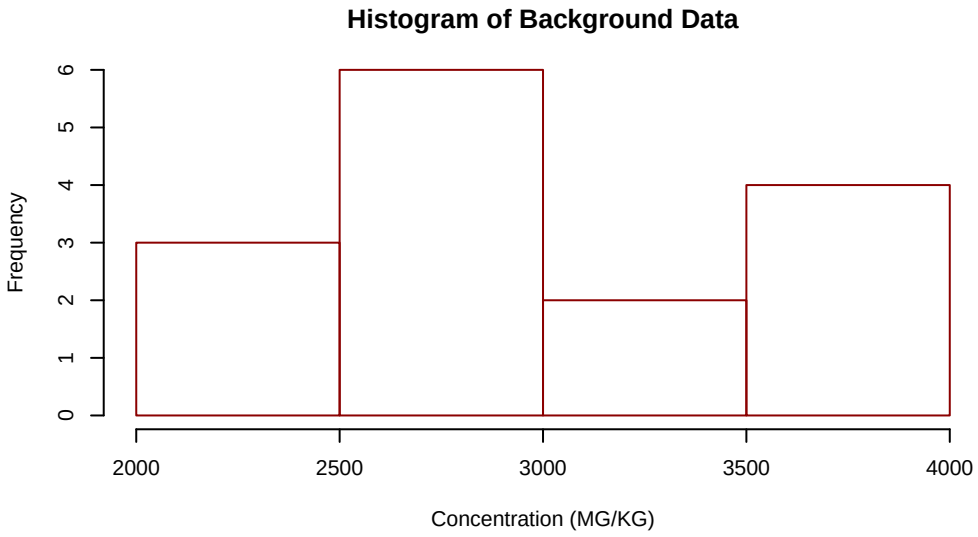


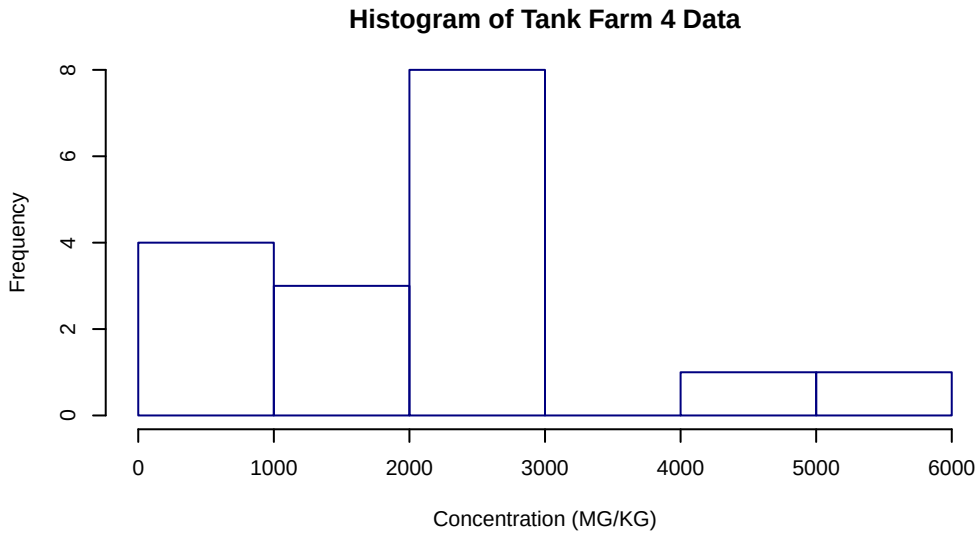


MAGNESIUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

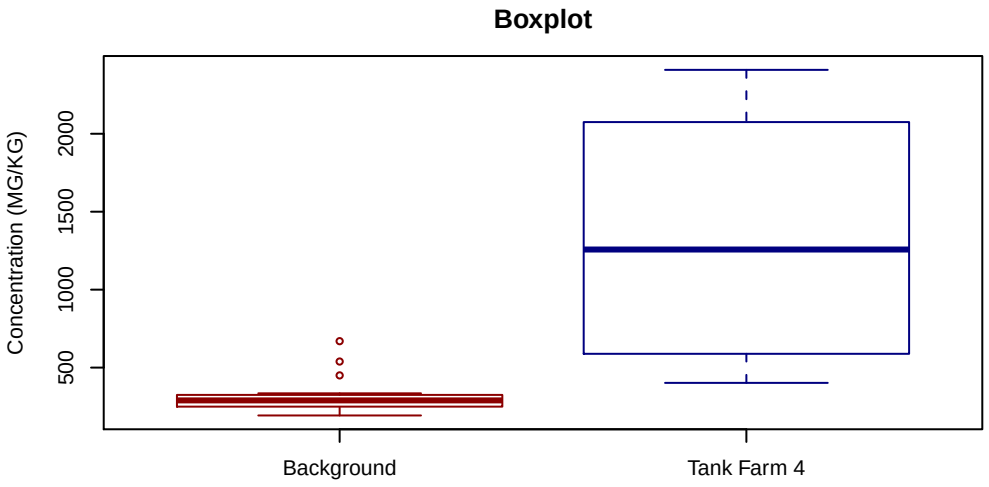


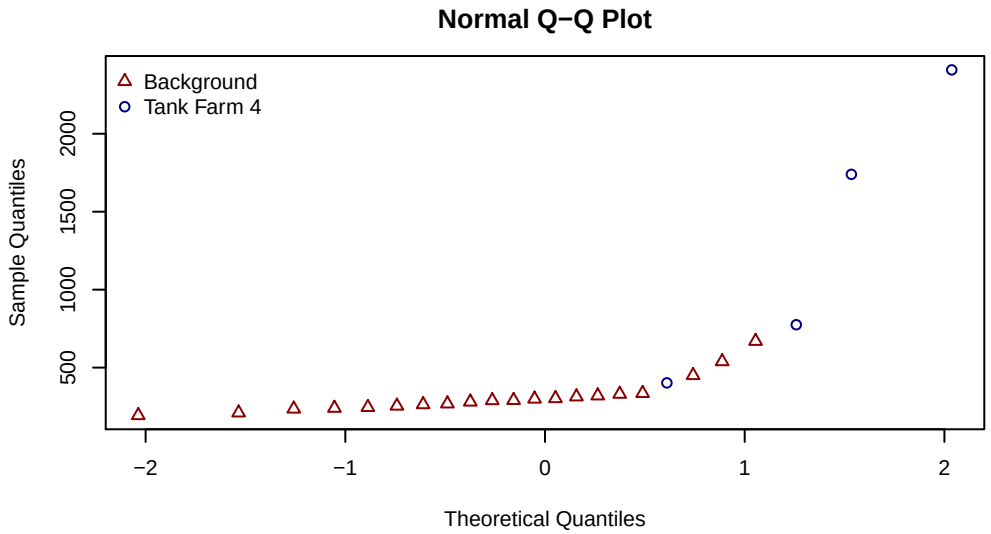


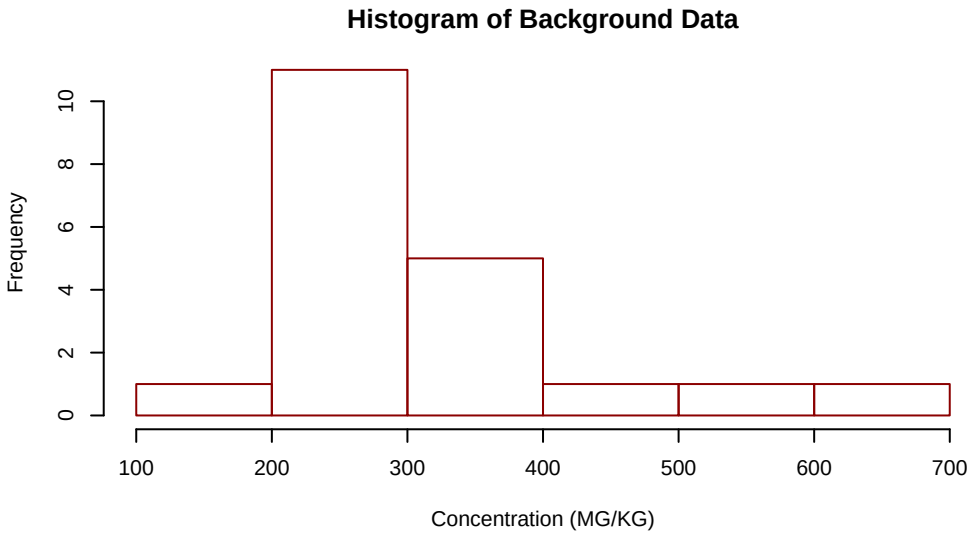


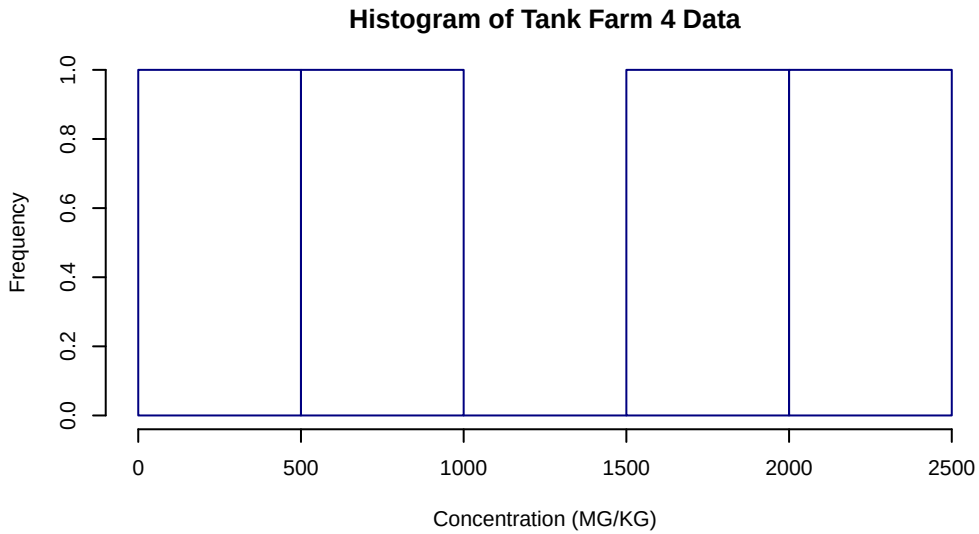


MANGANESE MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MANGANESE Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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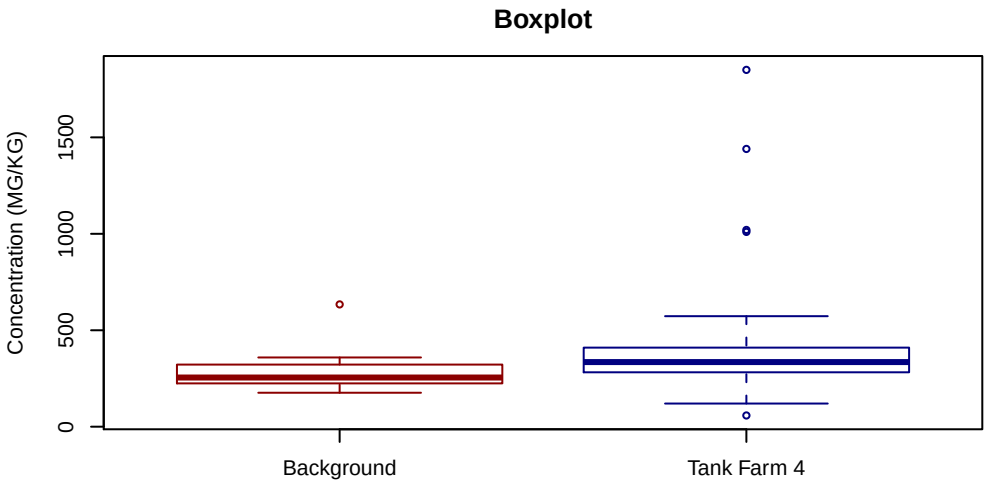

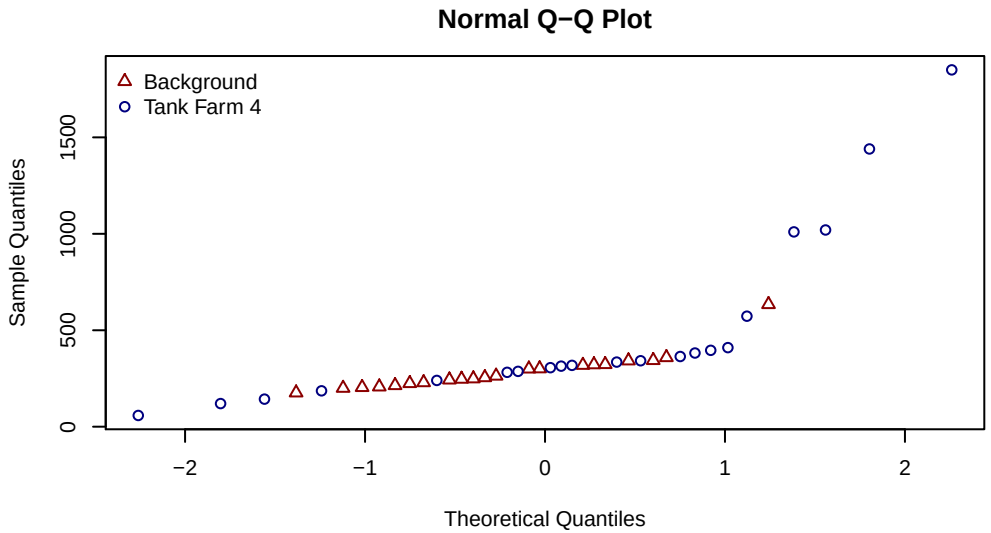

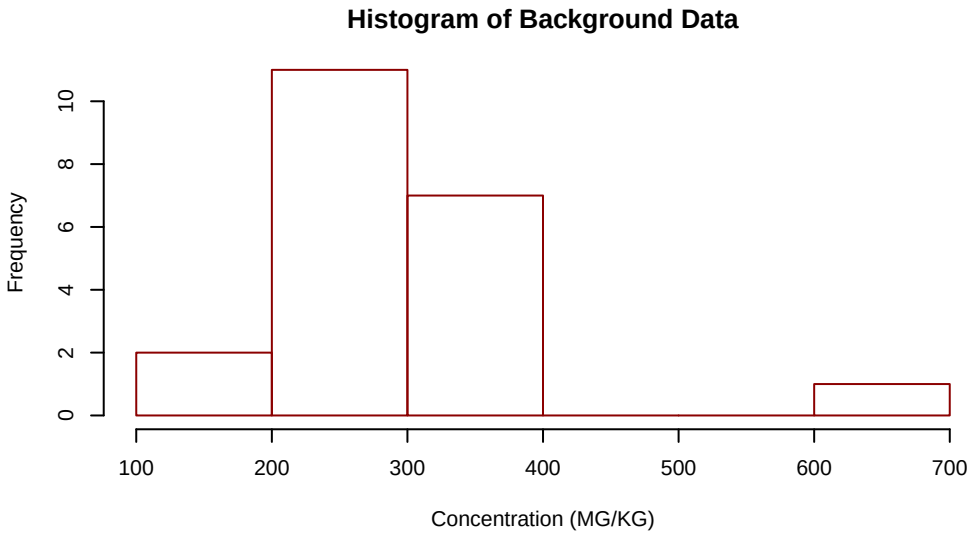

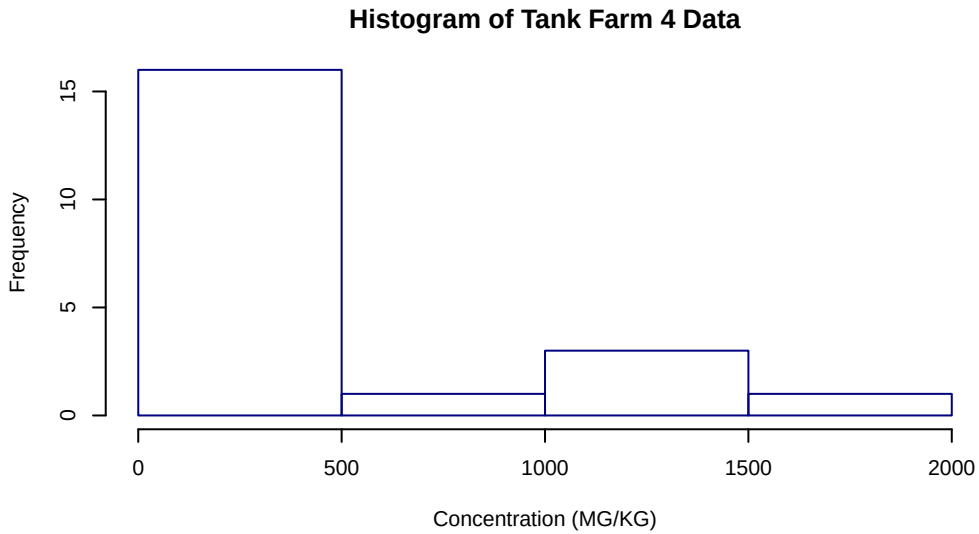

MANGANESE Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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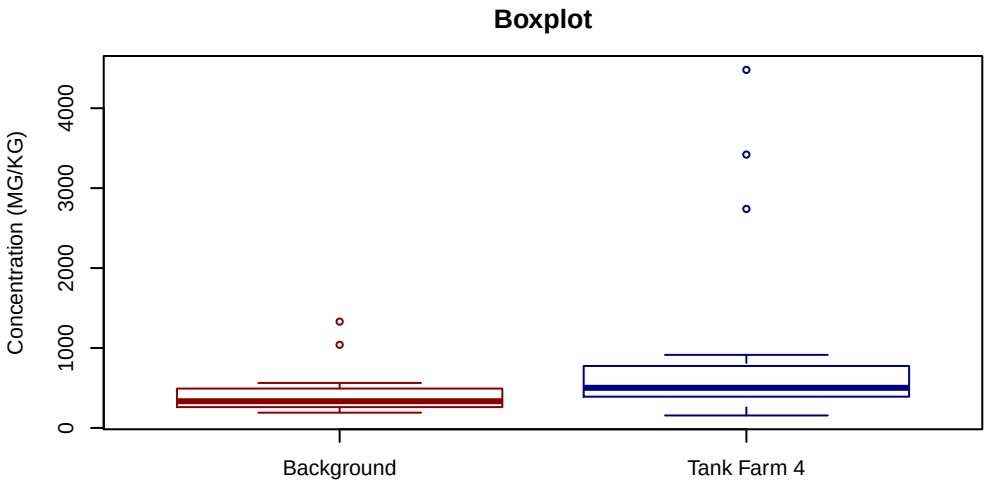
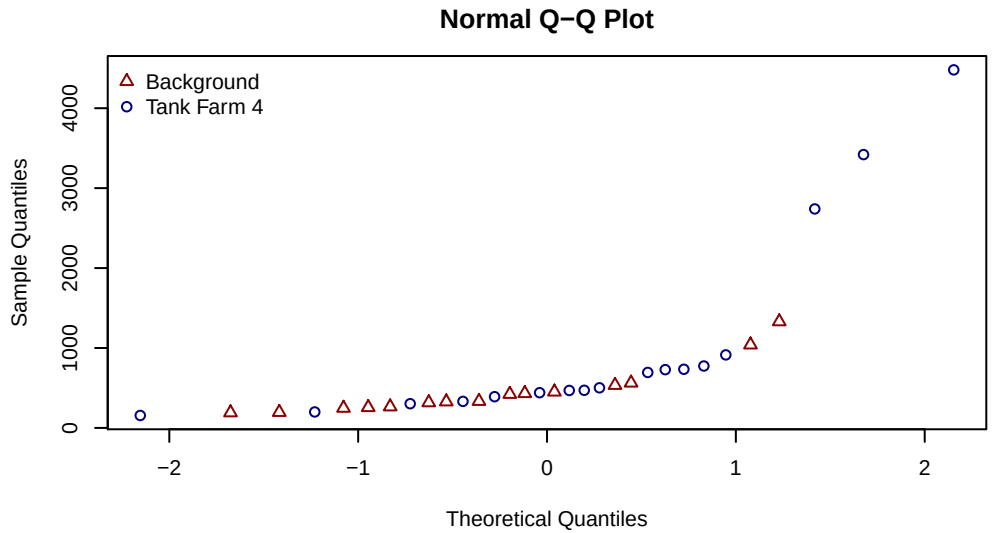
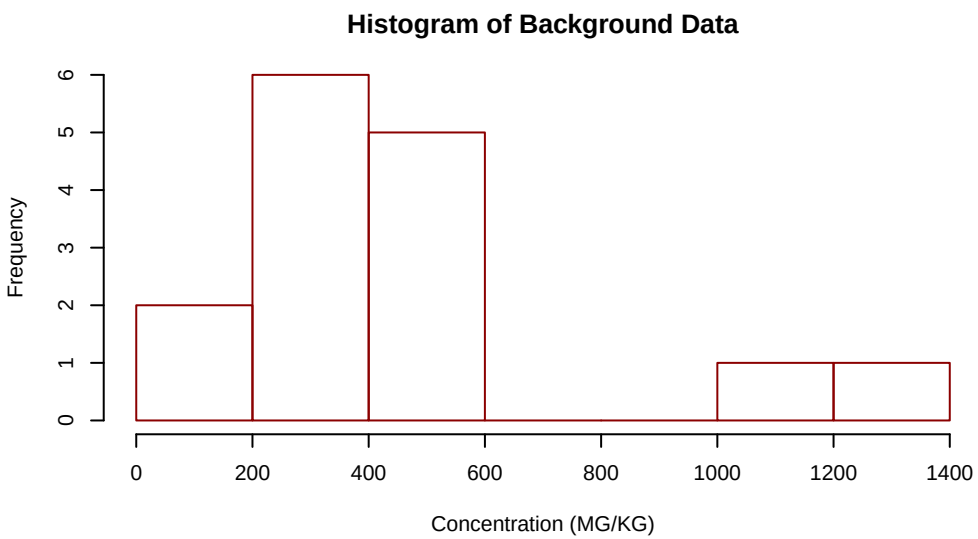
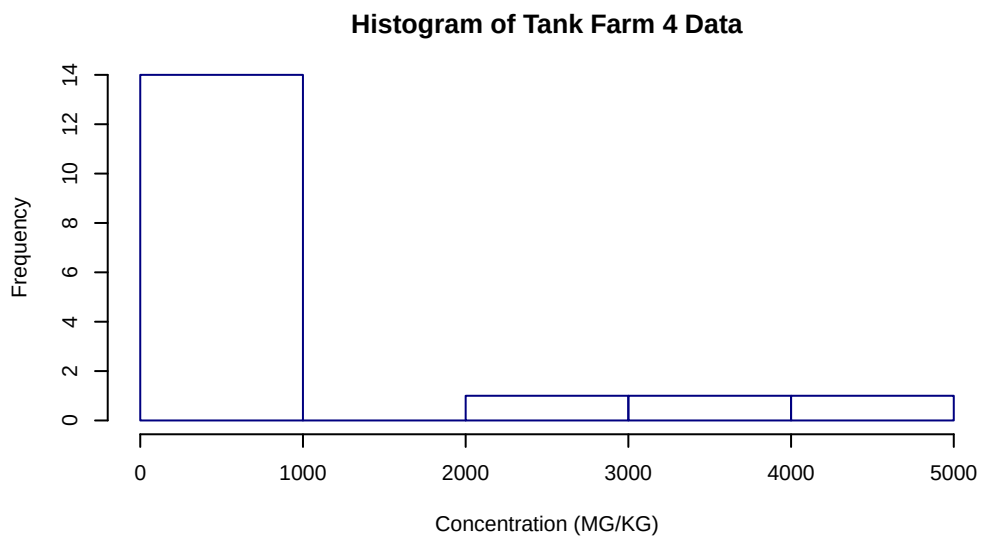
NEWPORT, RHODE ISLAND

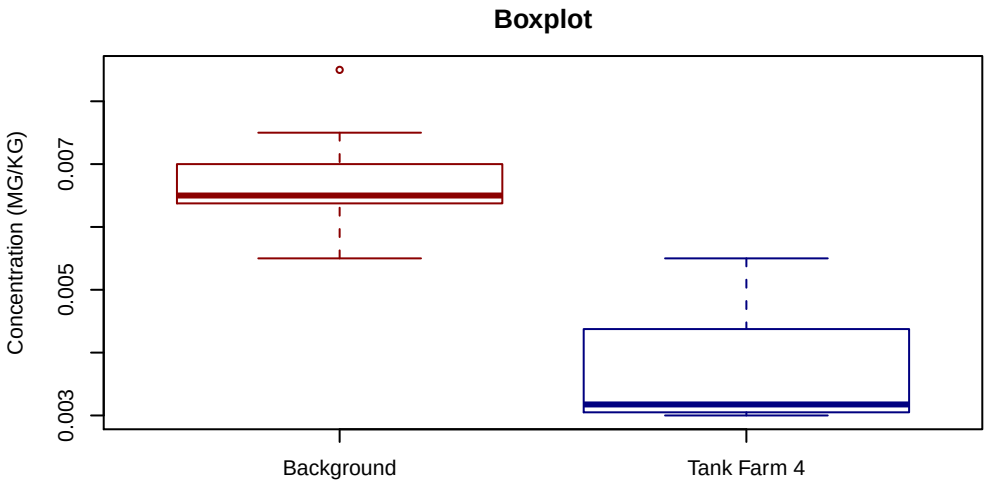


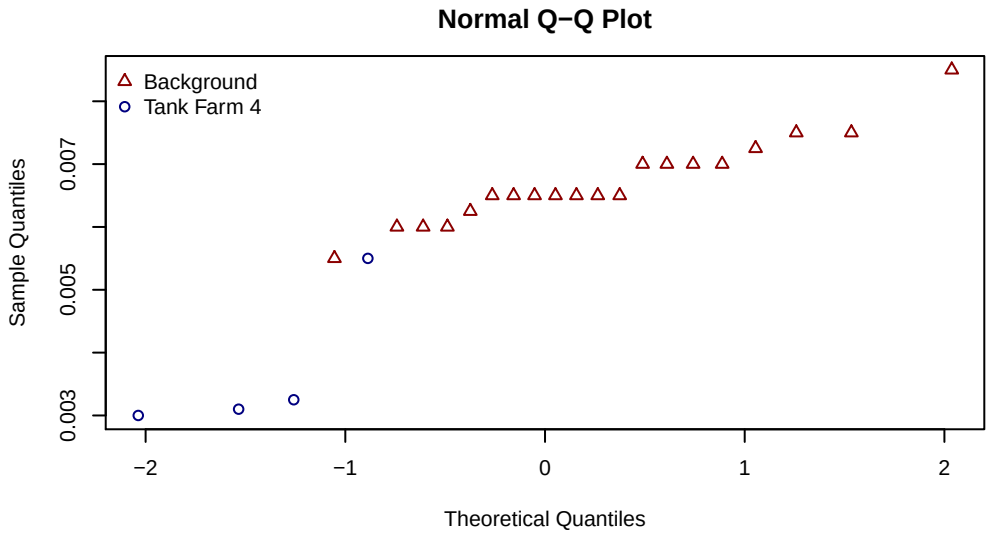


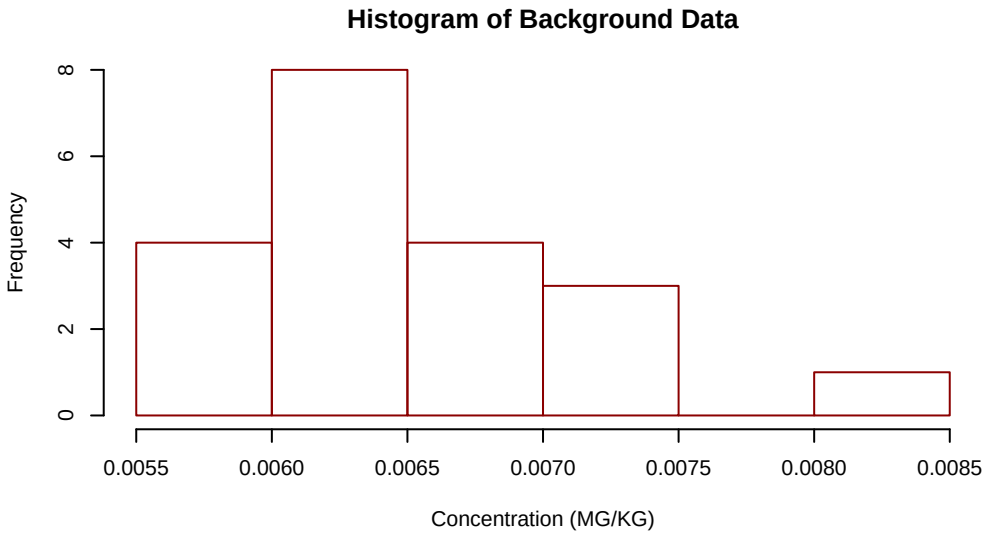


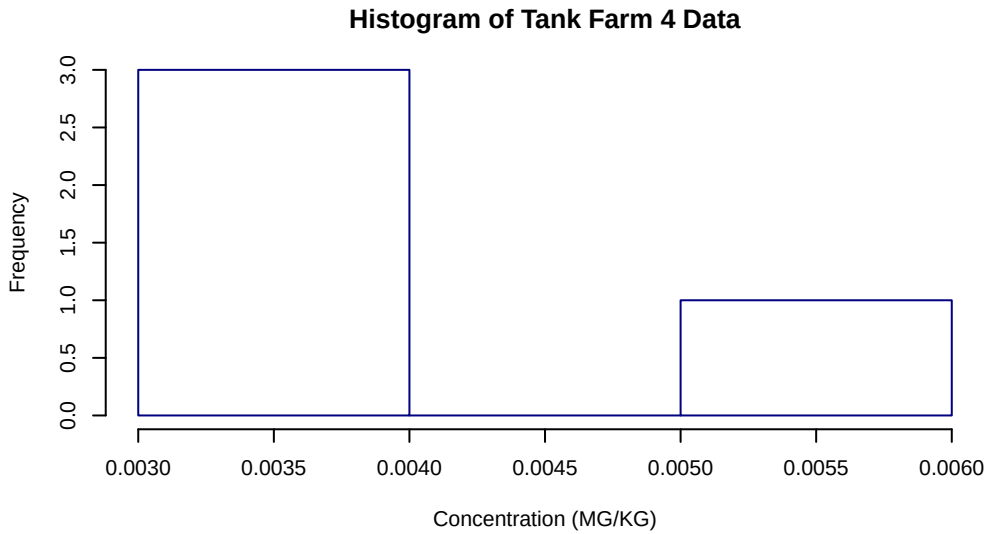


MERCURY MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MERCURY Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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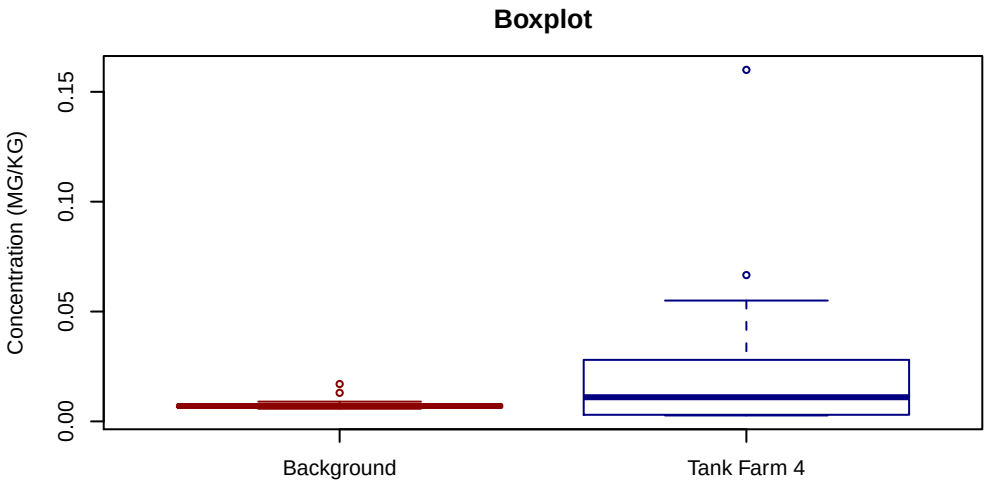

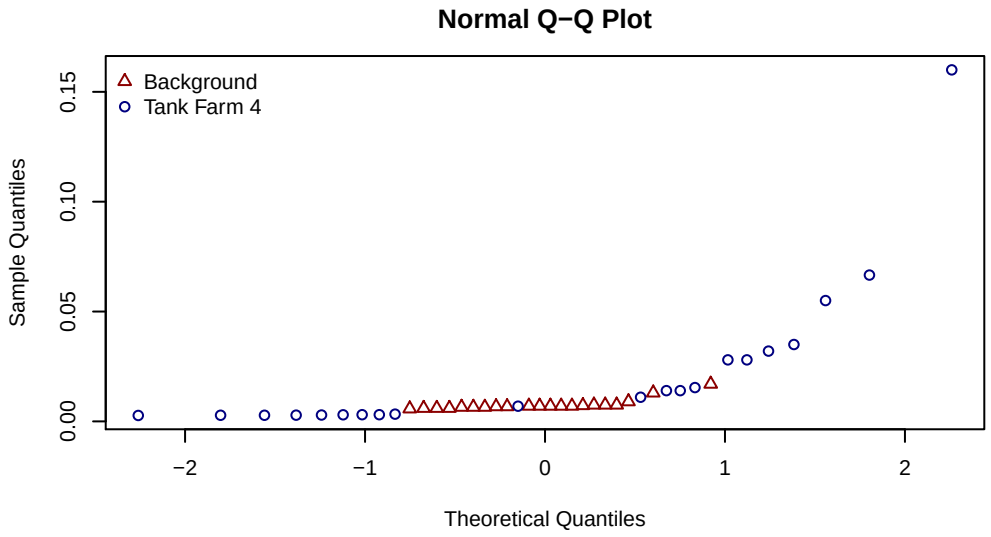

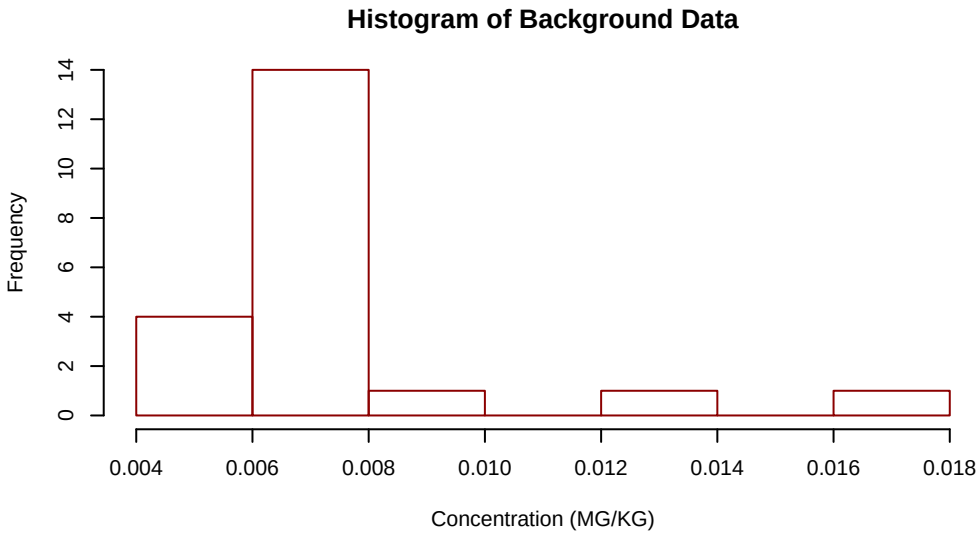

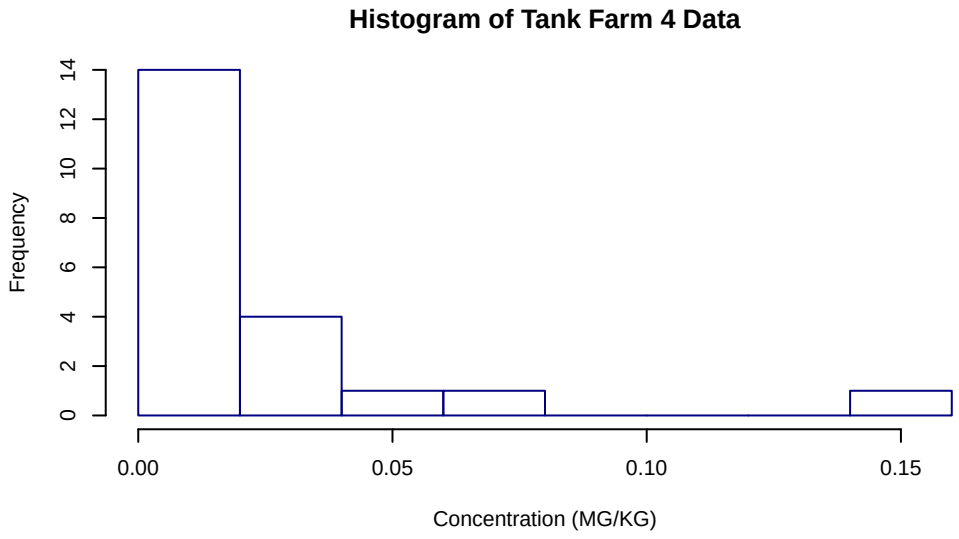

MERCURY Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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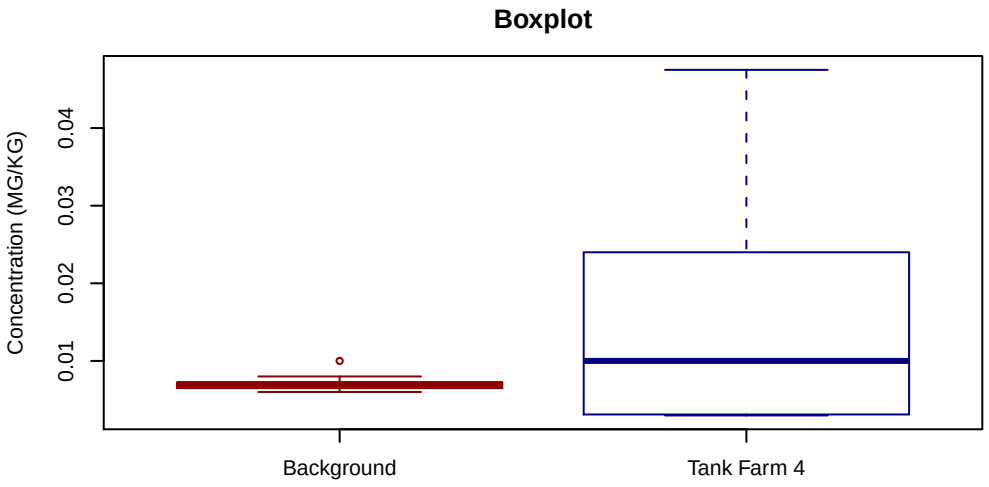
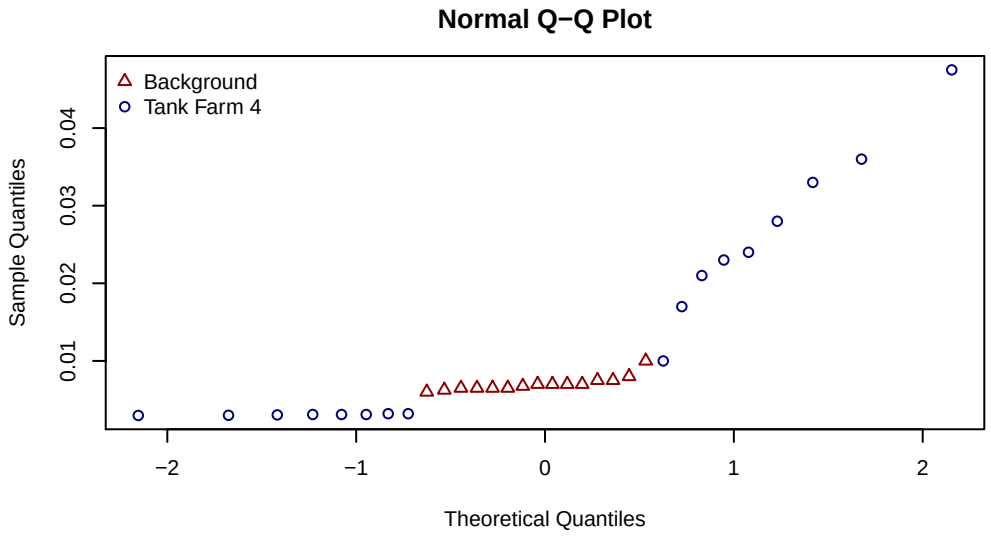
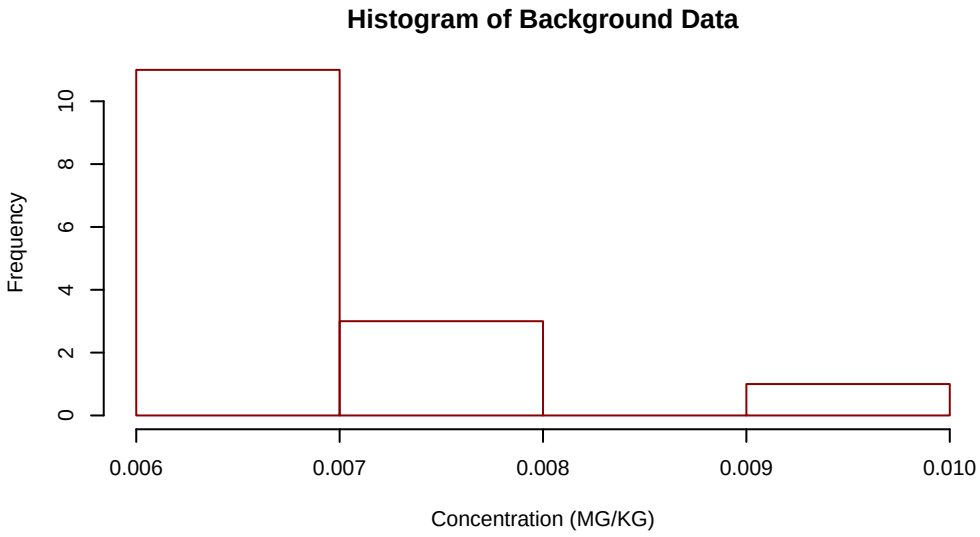
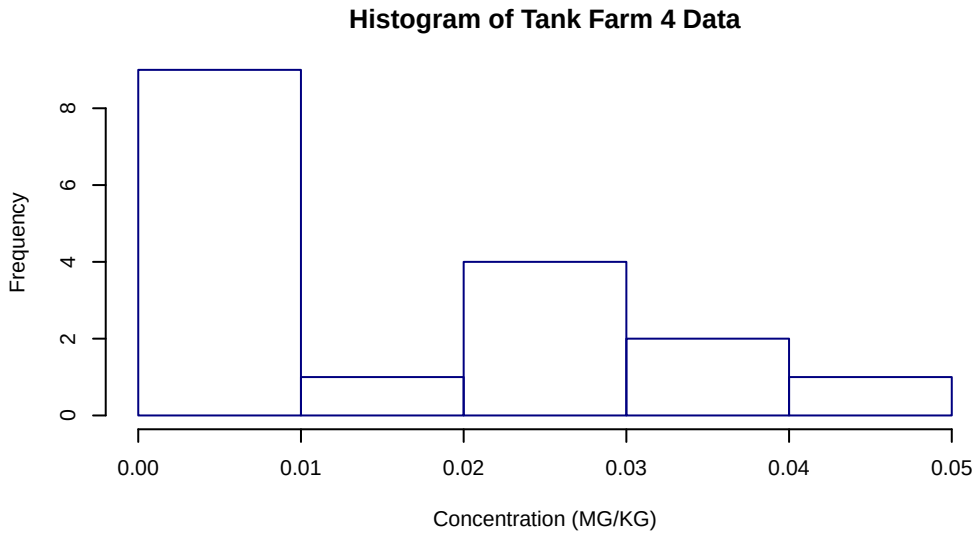
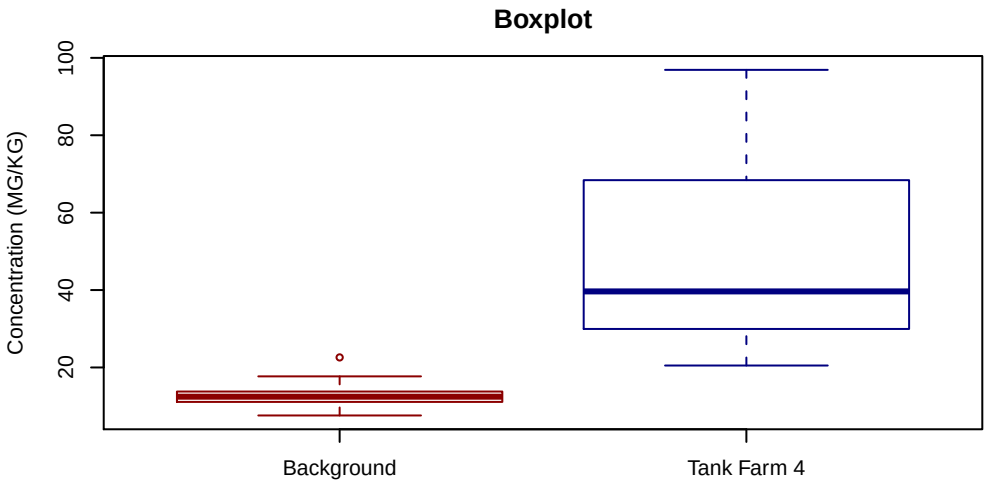


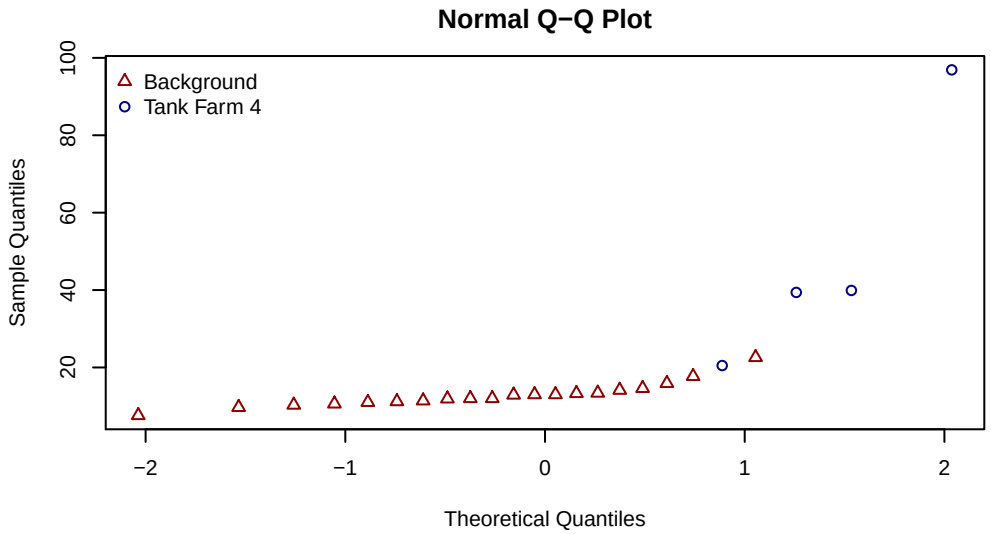


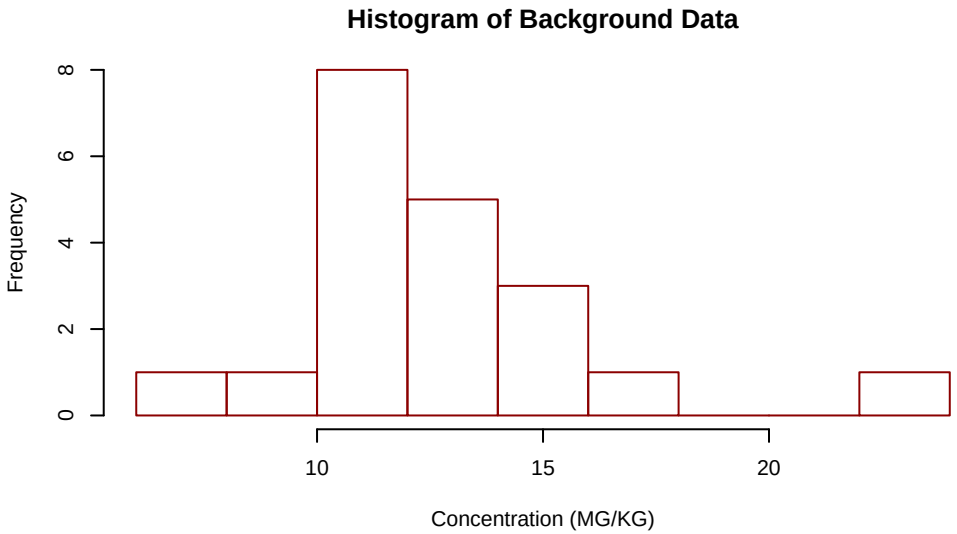


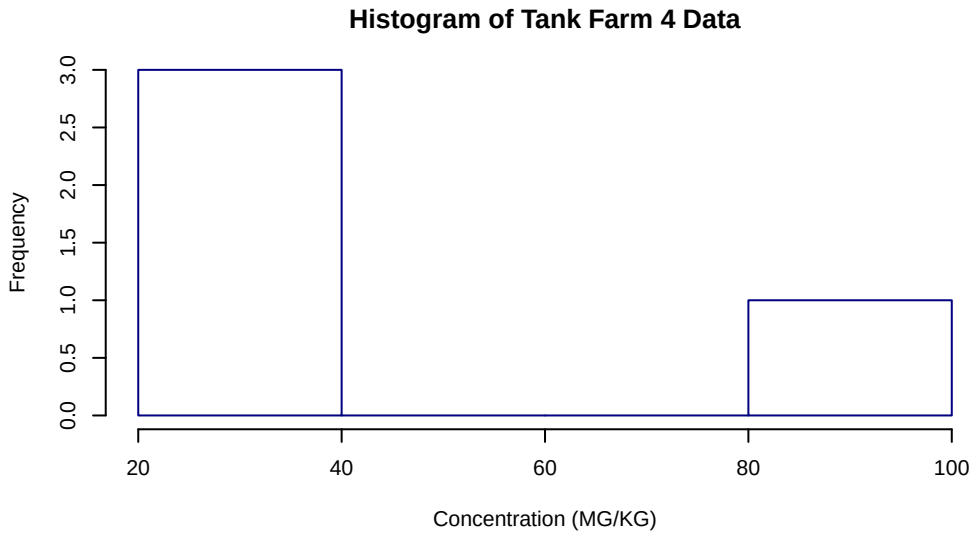


NICKEL MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









NICKEL Ne SUBSURFACESOIL
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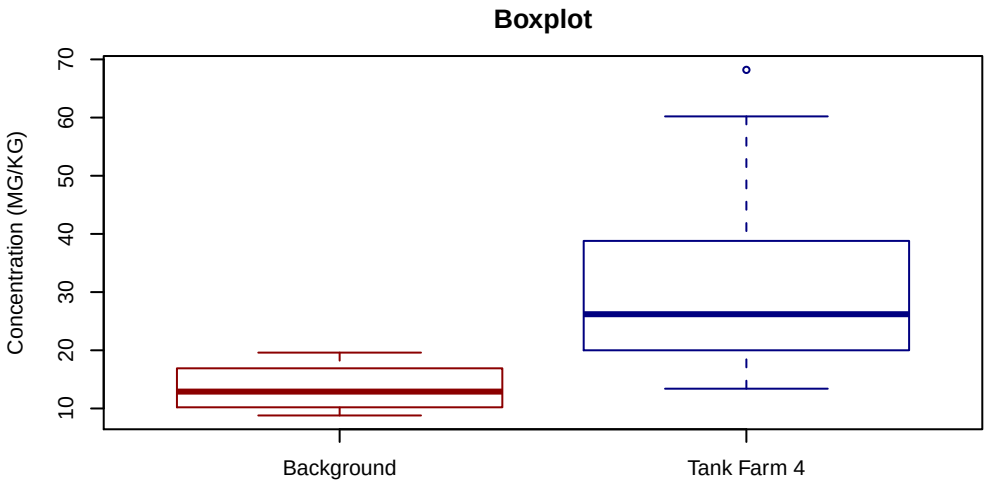

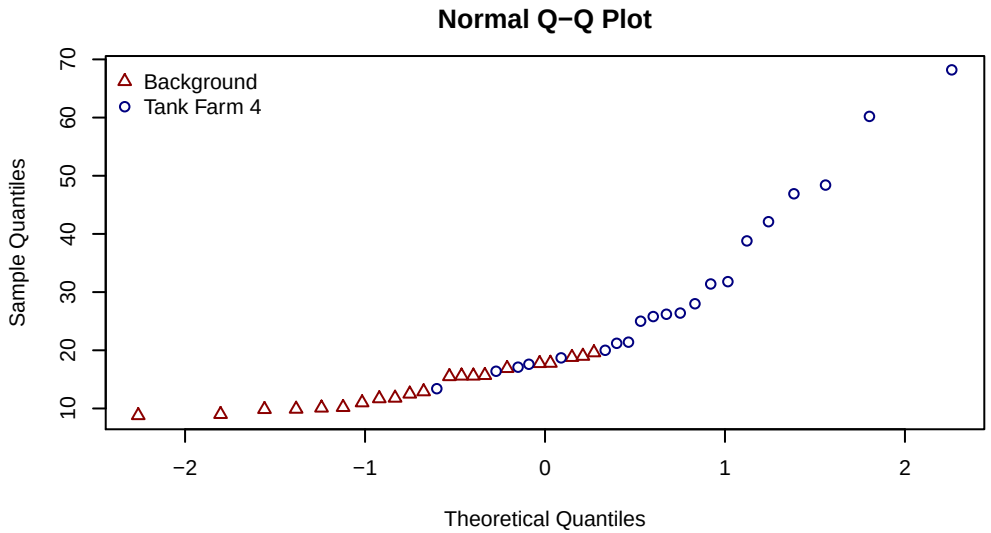

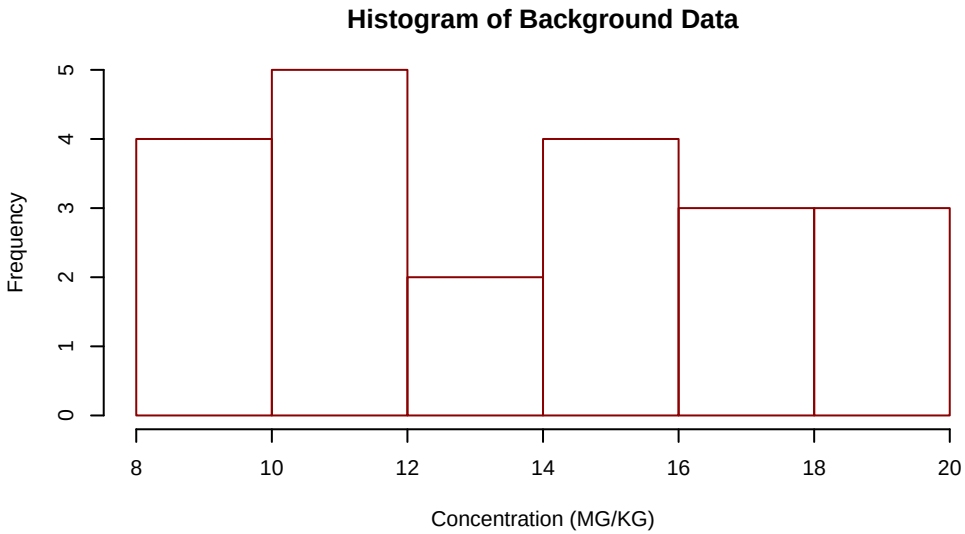

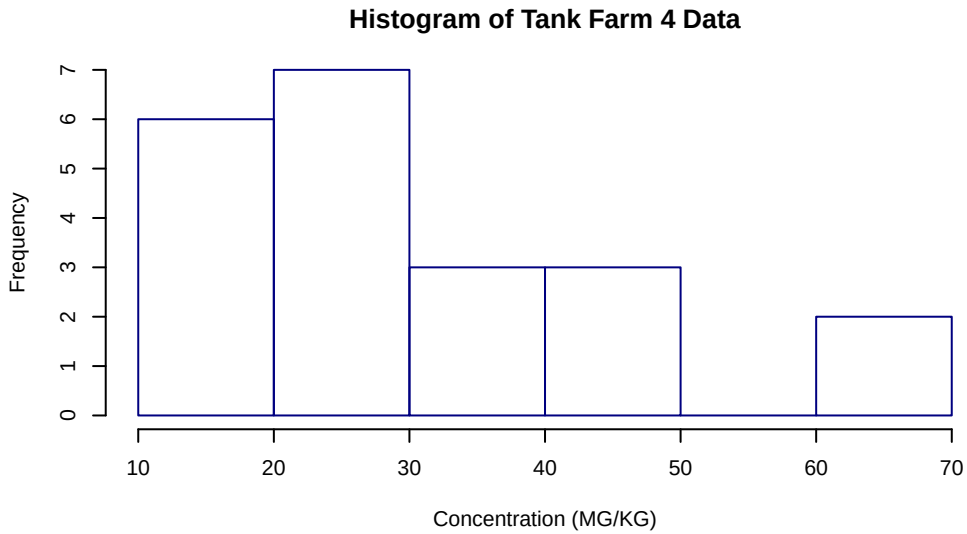

NICKEL Se SUBSURFACESOIL
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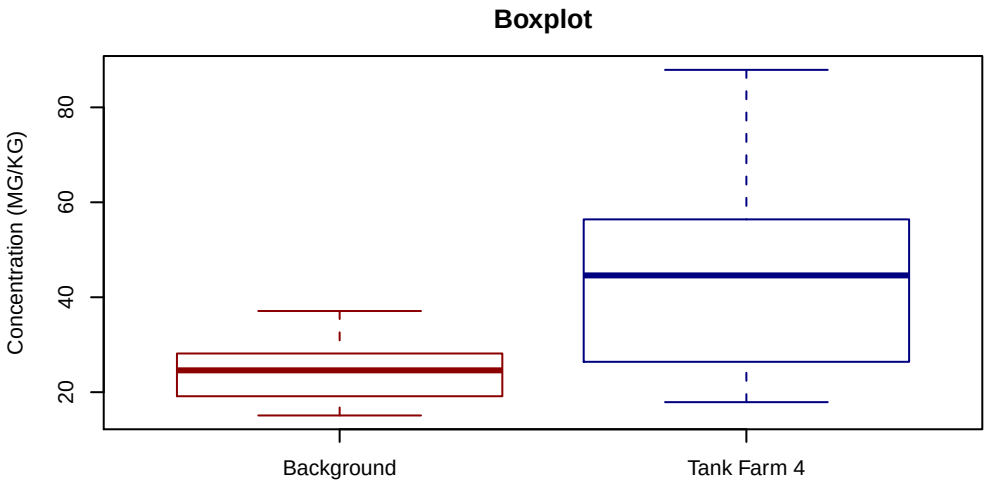

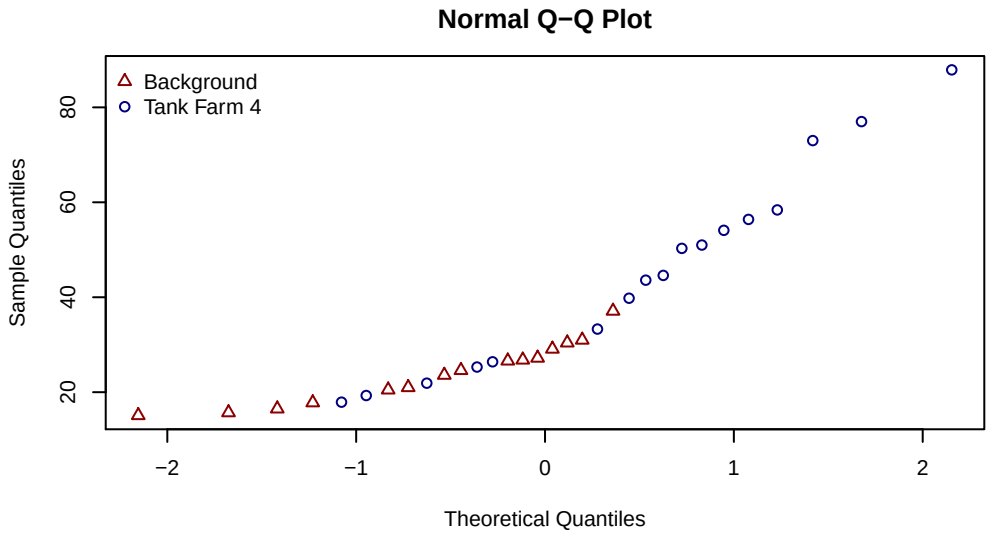

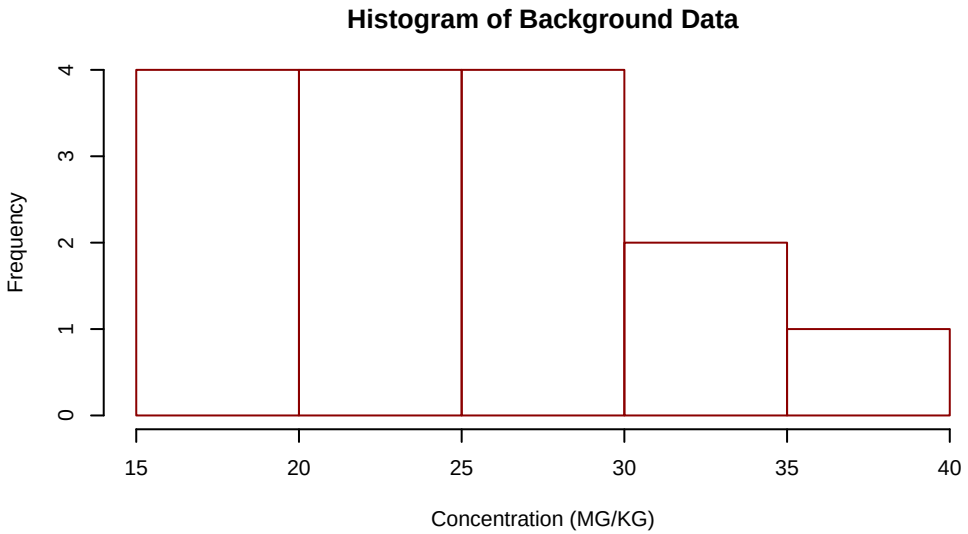

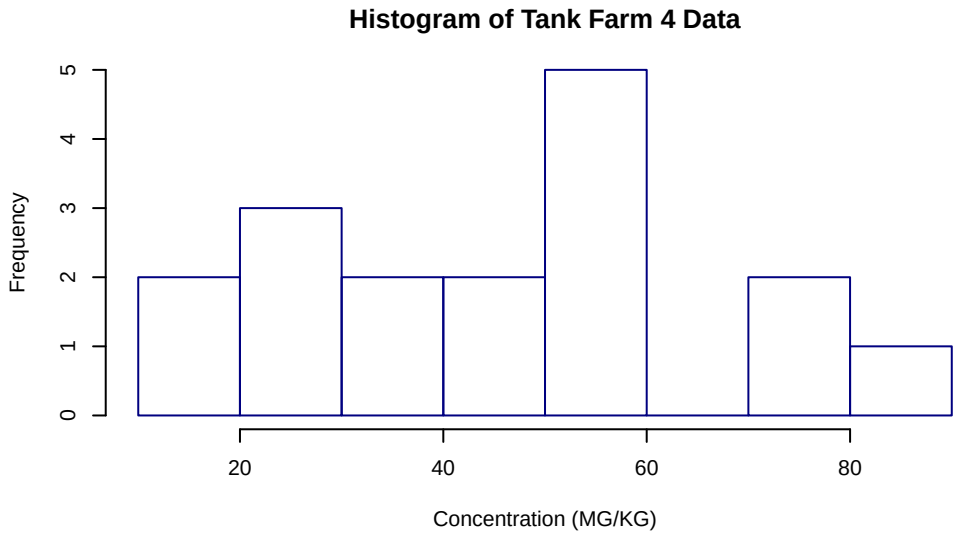

POTASSIUM MmA SUBSURFACESOIL
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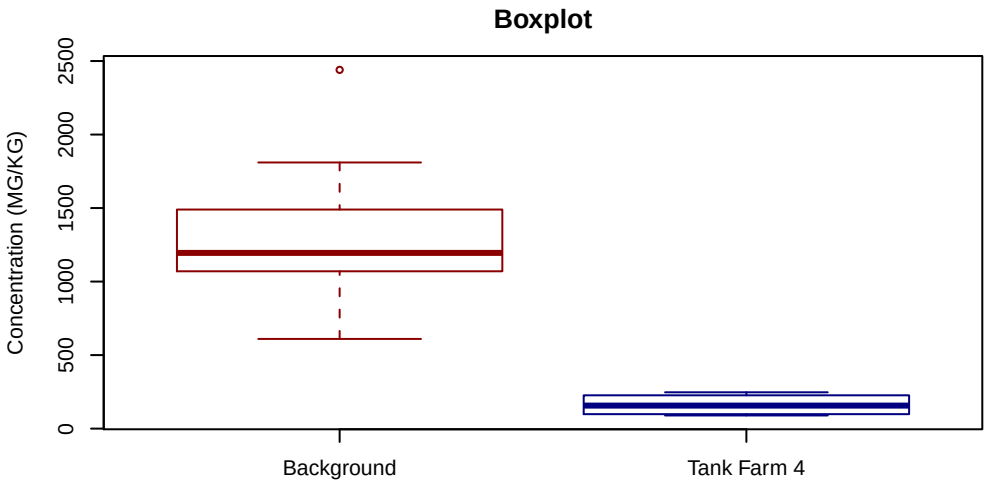

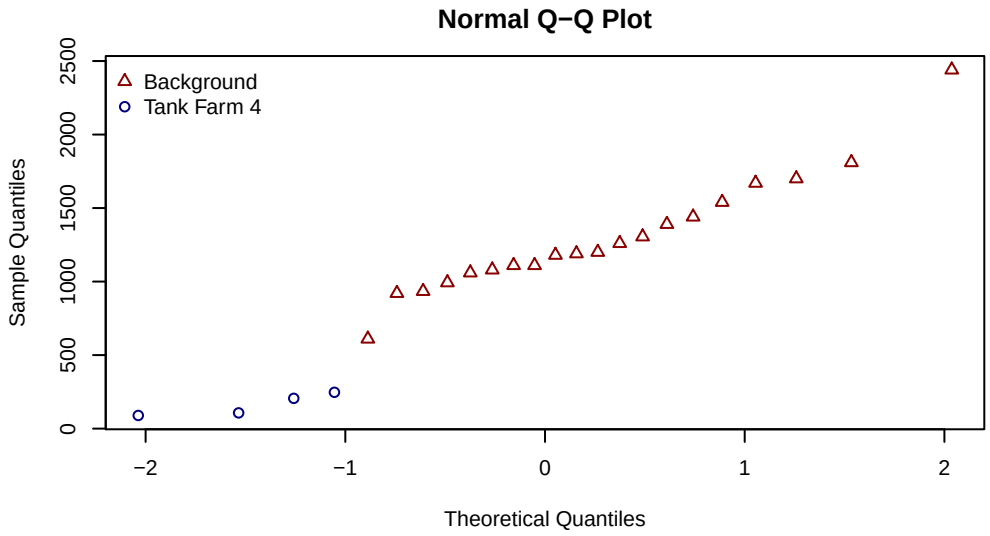

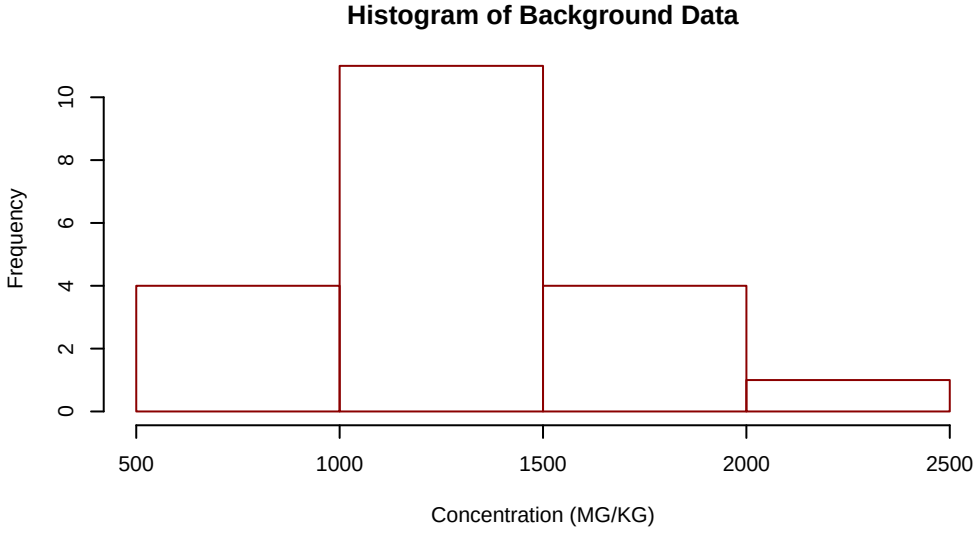

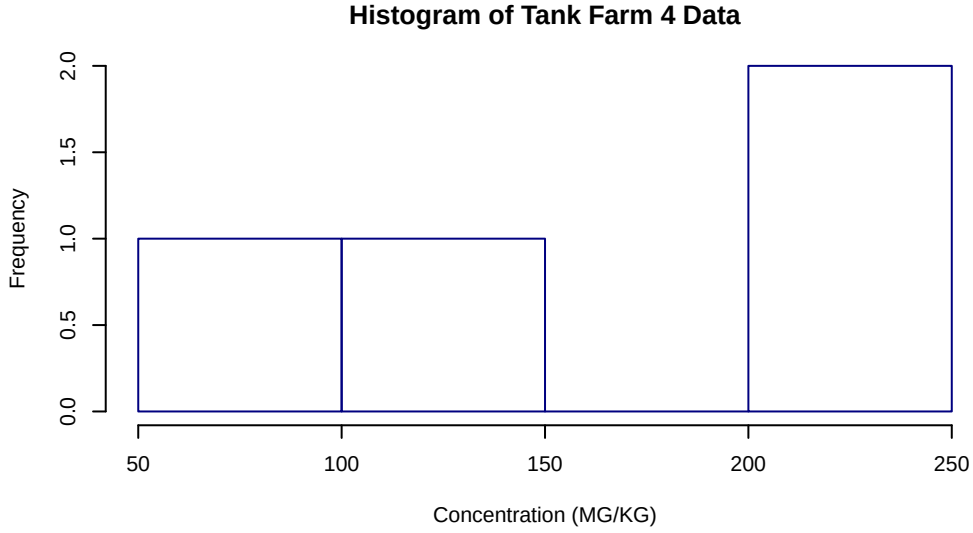

POTASSIUM Ne SUBSURFACESOIL
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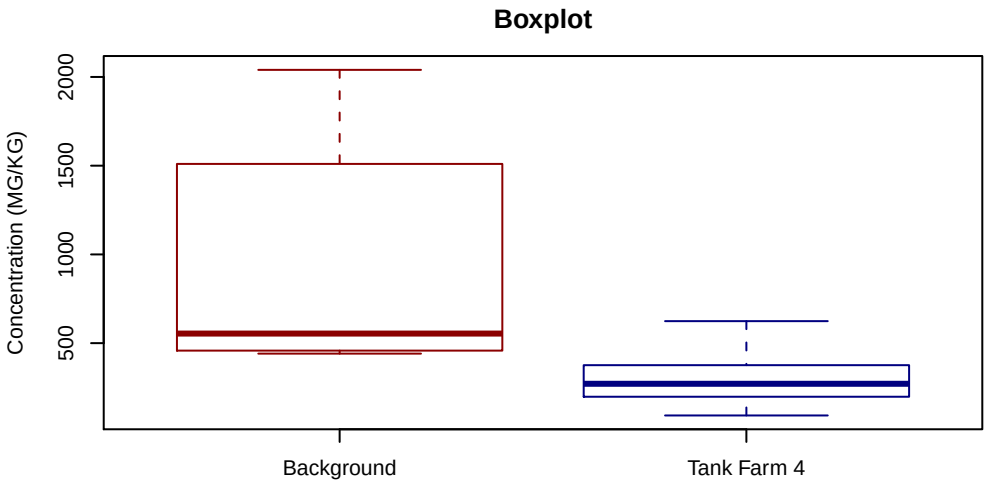
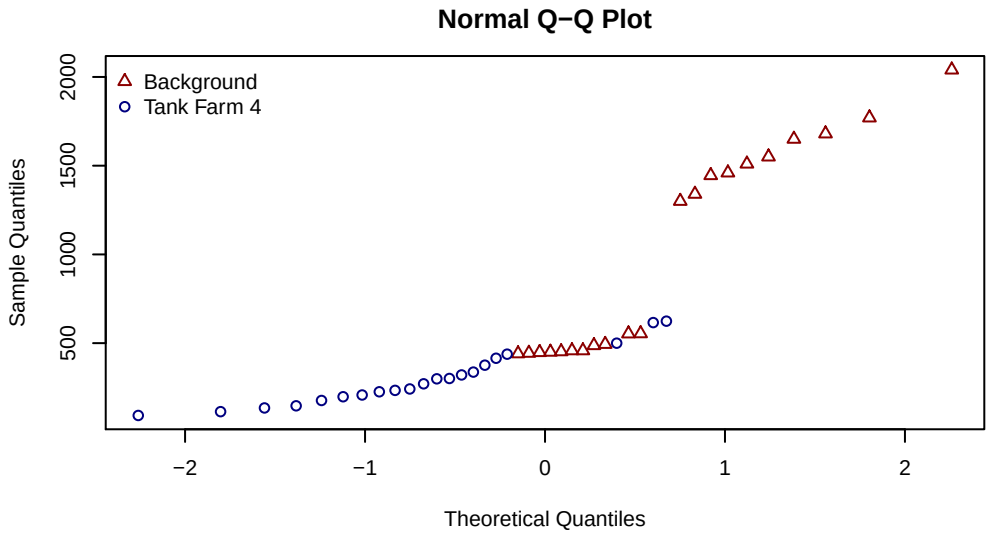
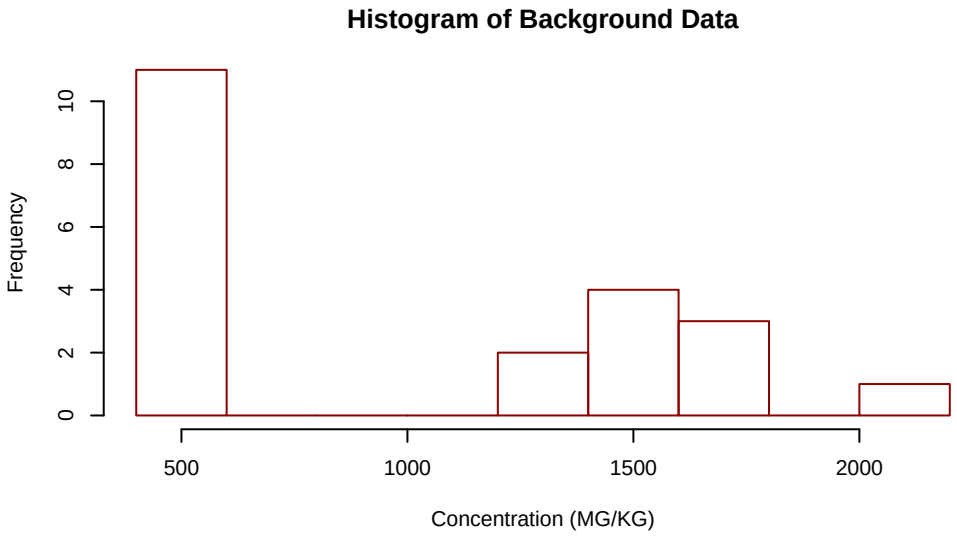
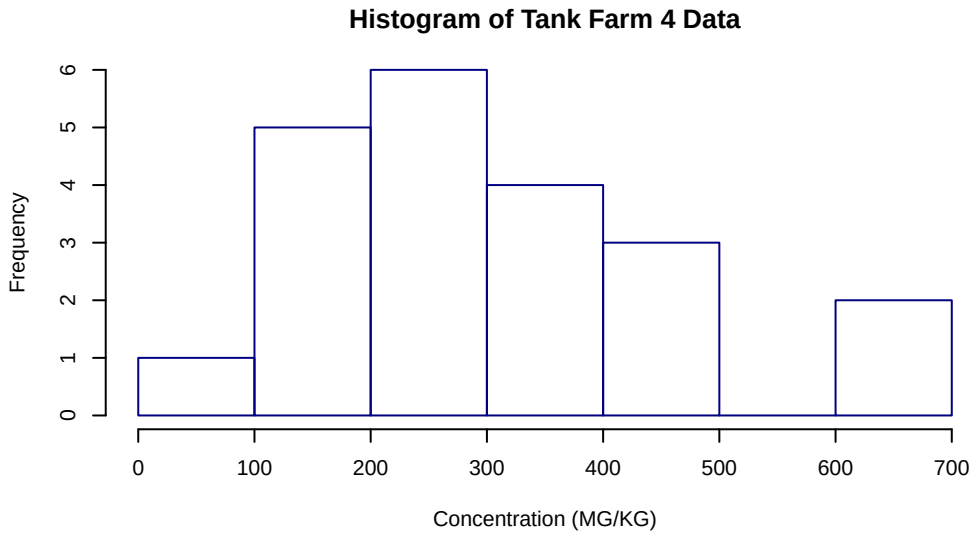
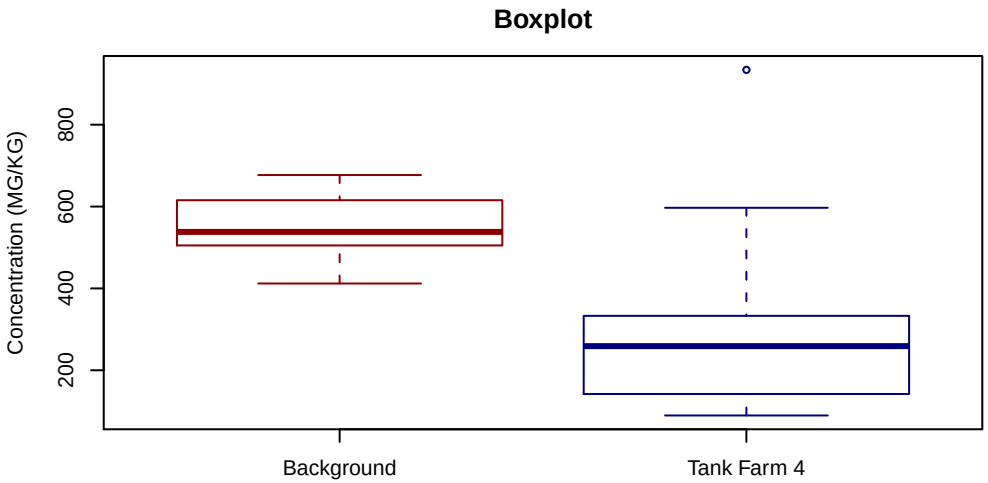


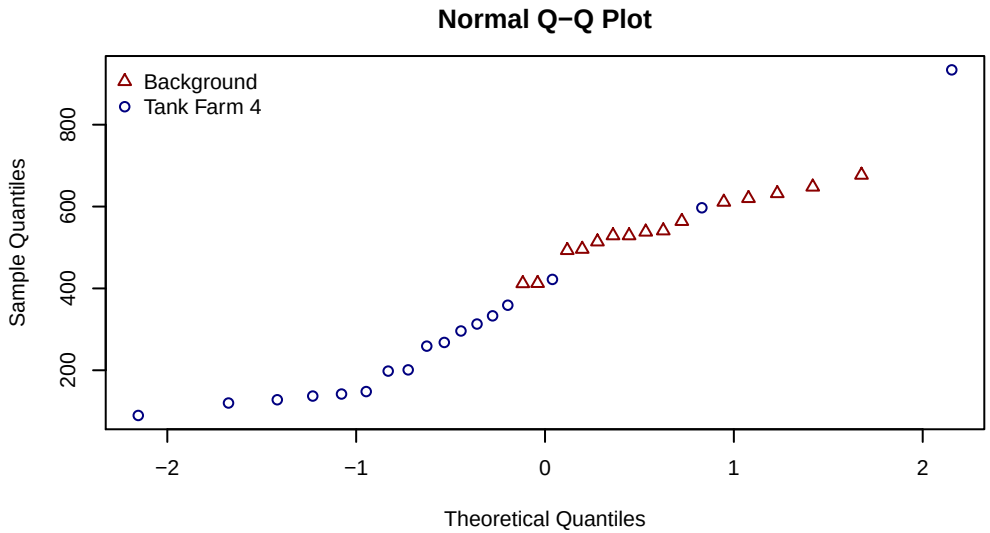


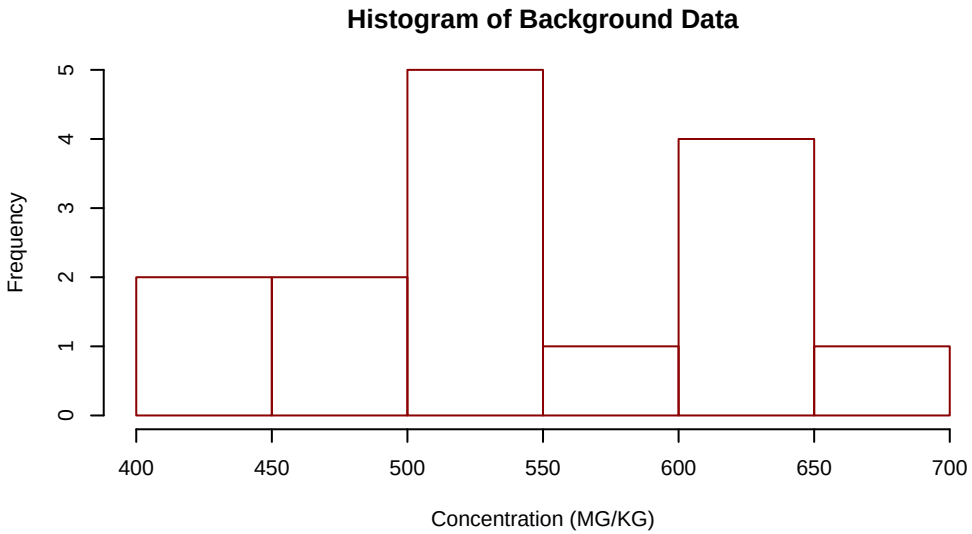


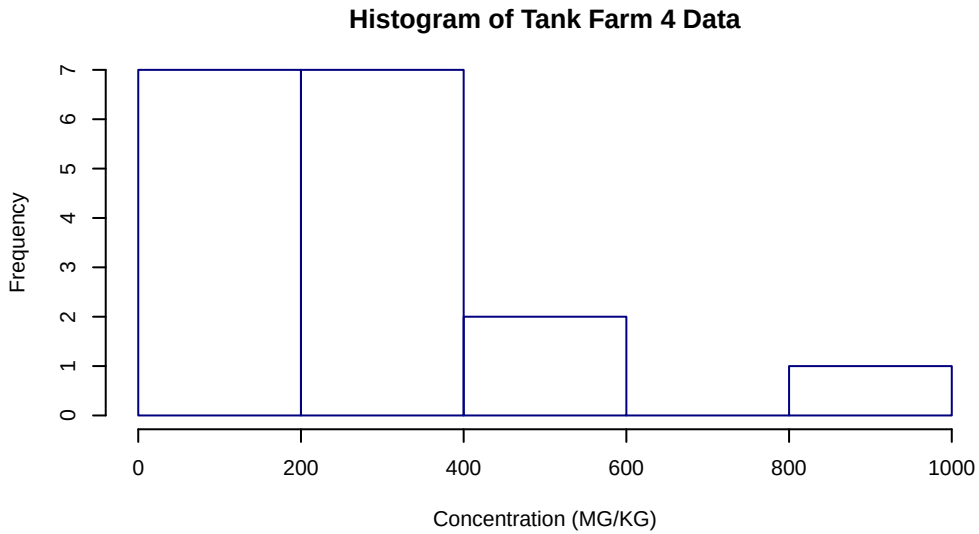


POTASSIUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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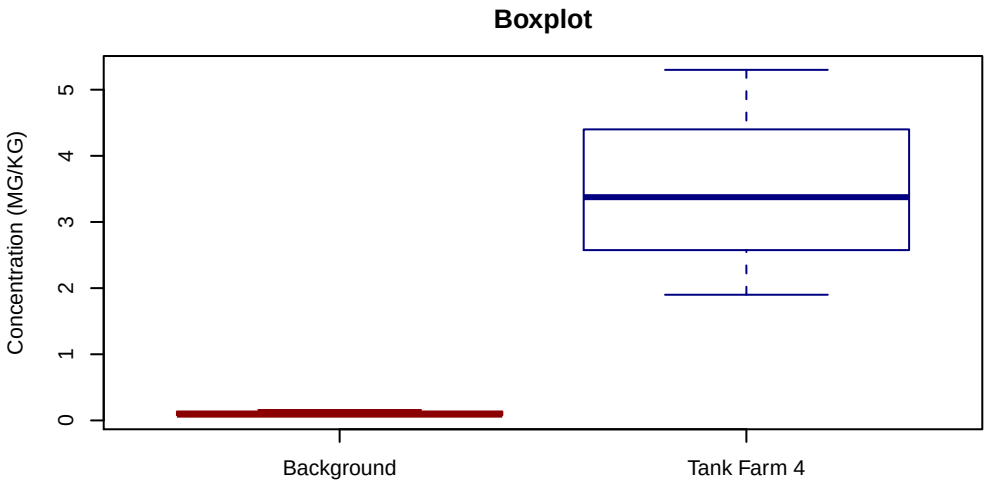
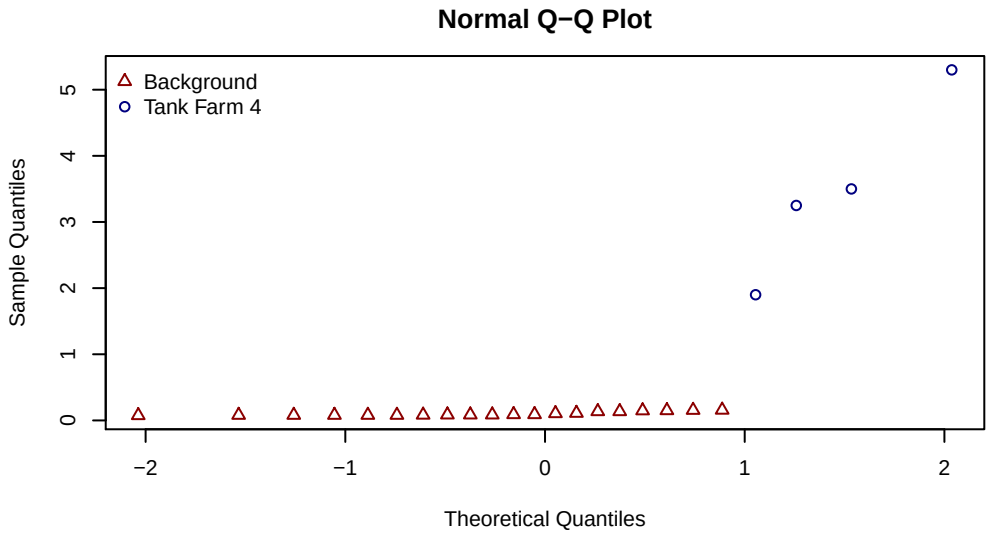
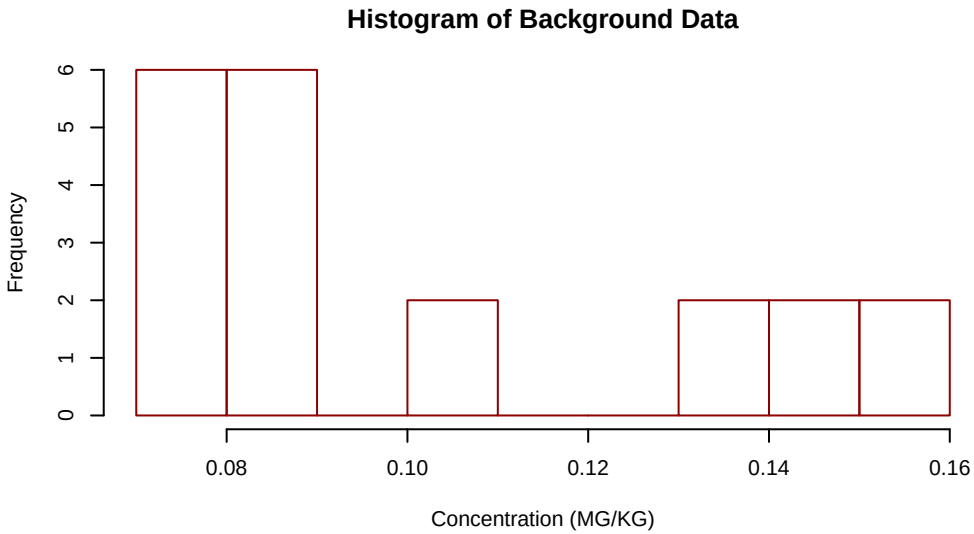
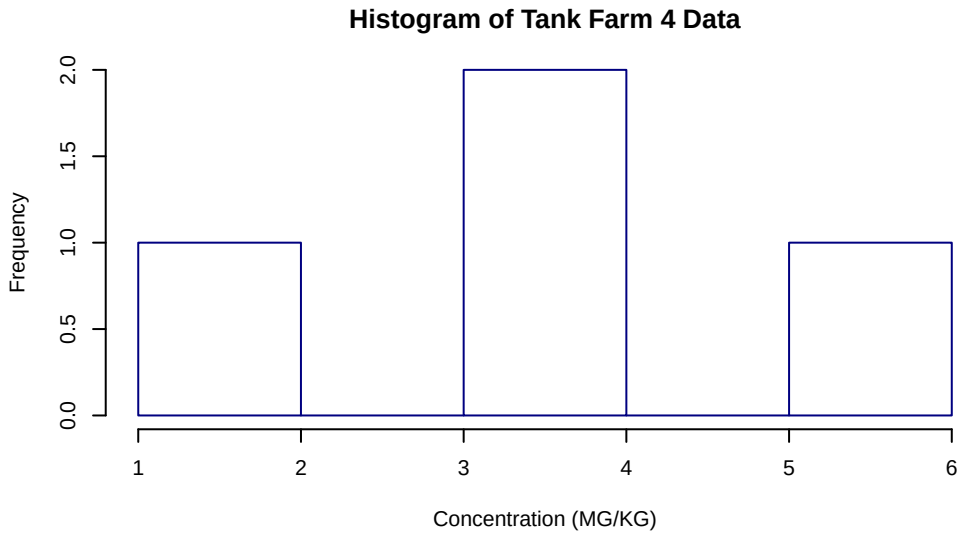
NEWPORT, RHODE ISLAND

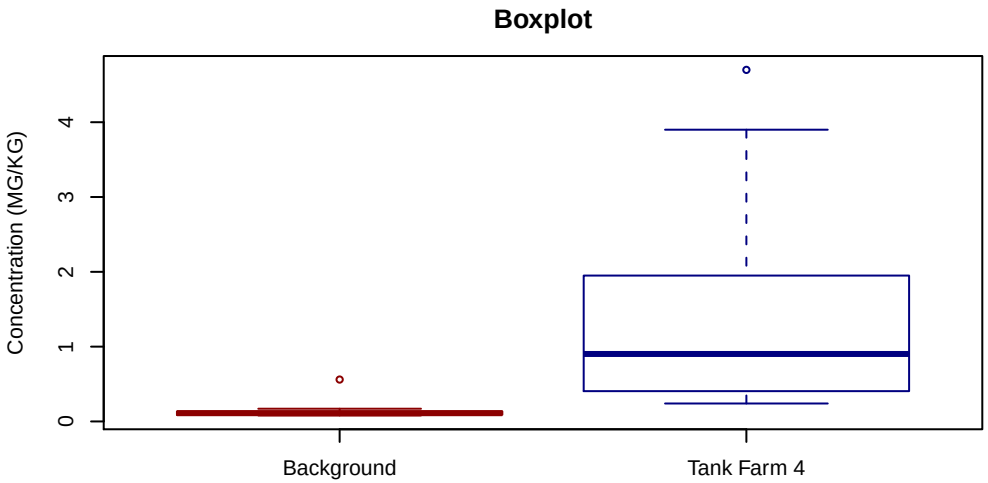


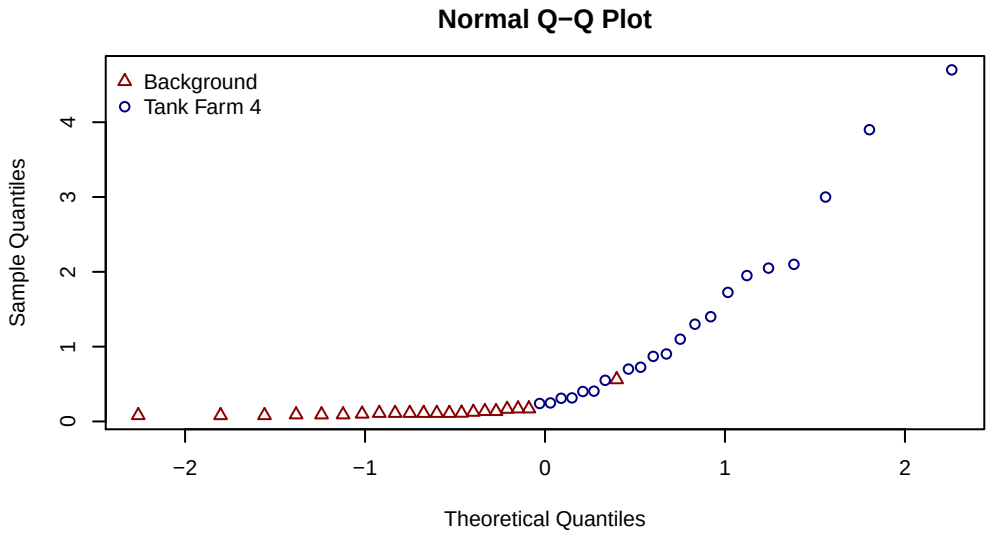


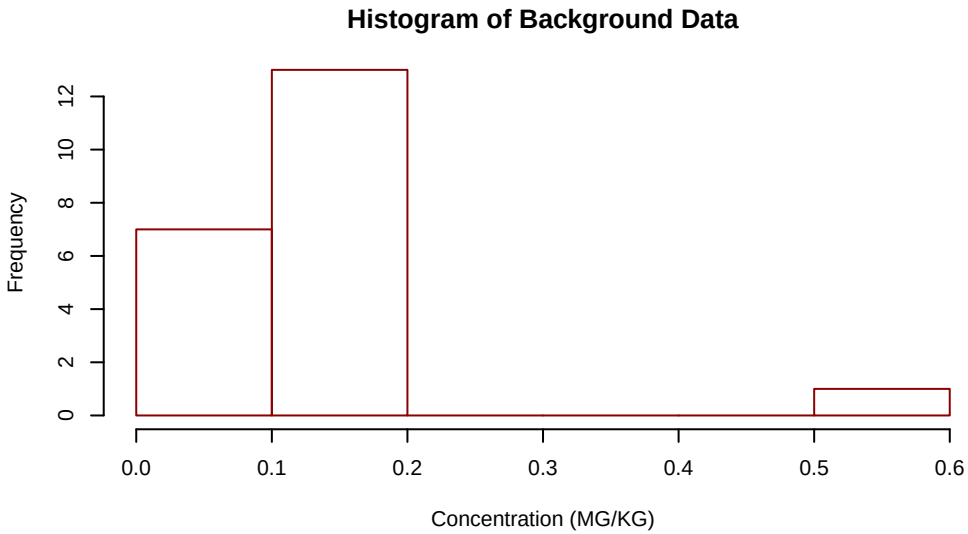


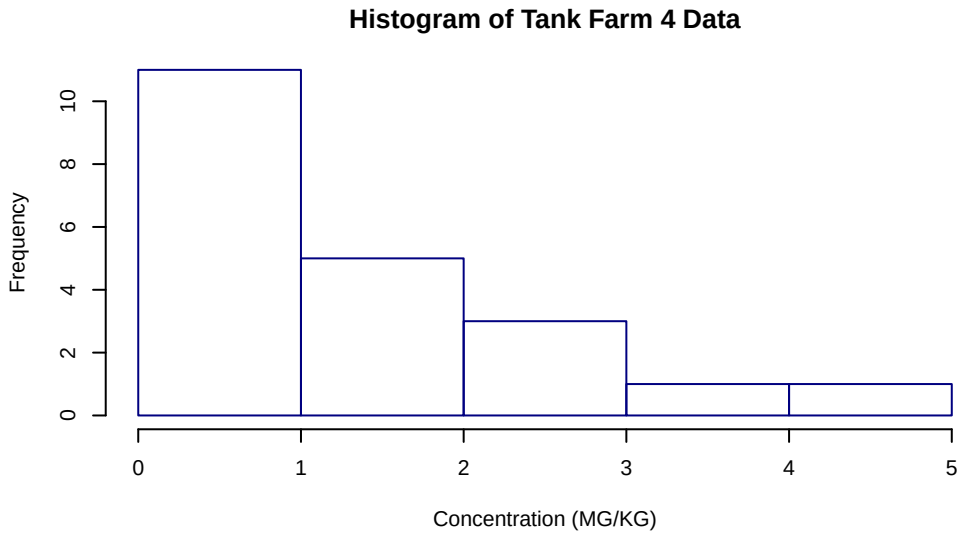


SELENIUM Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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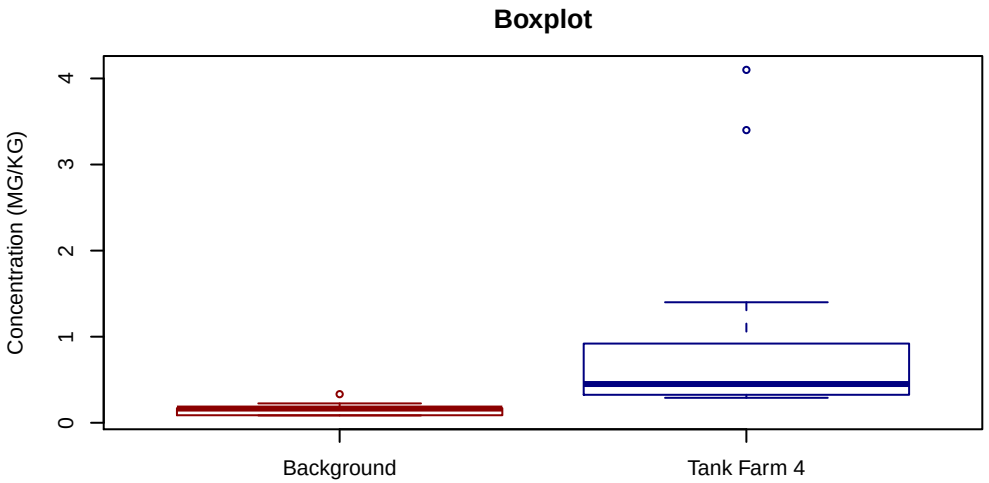
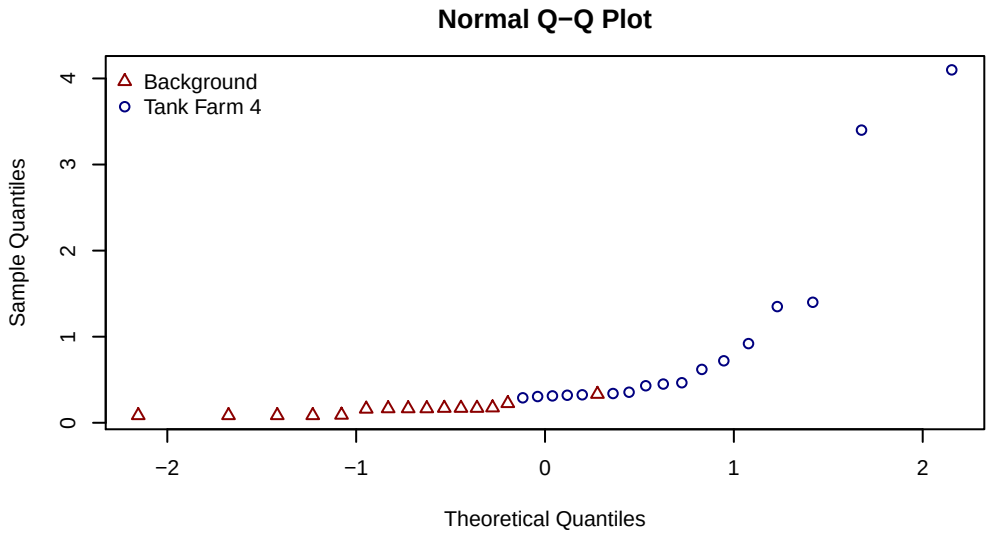
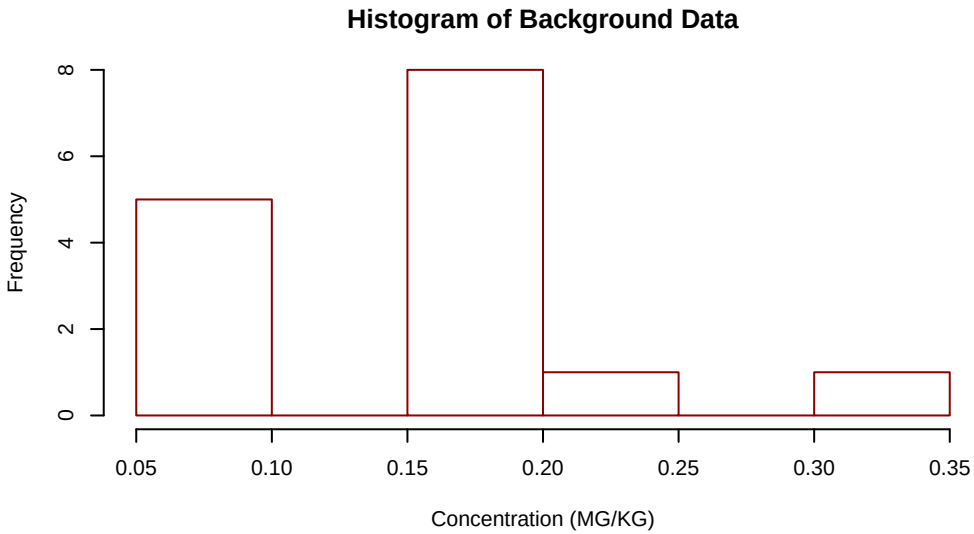
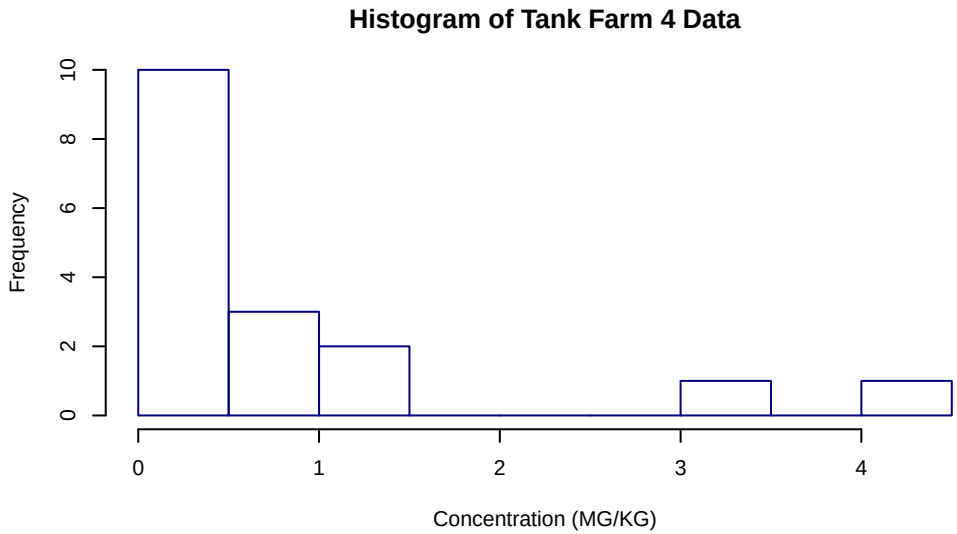
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









SILVER MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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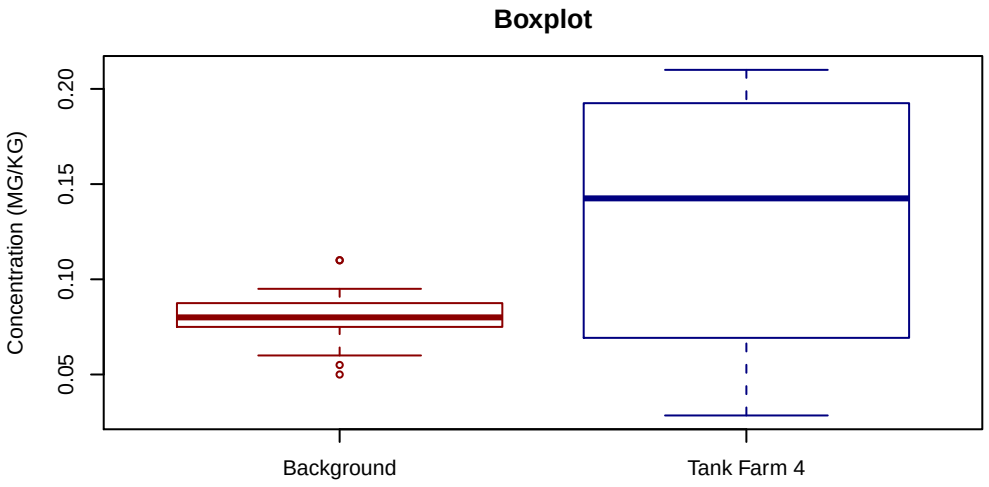
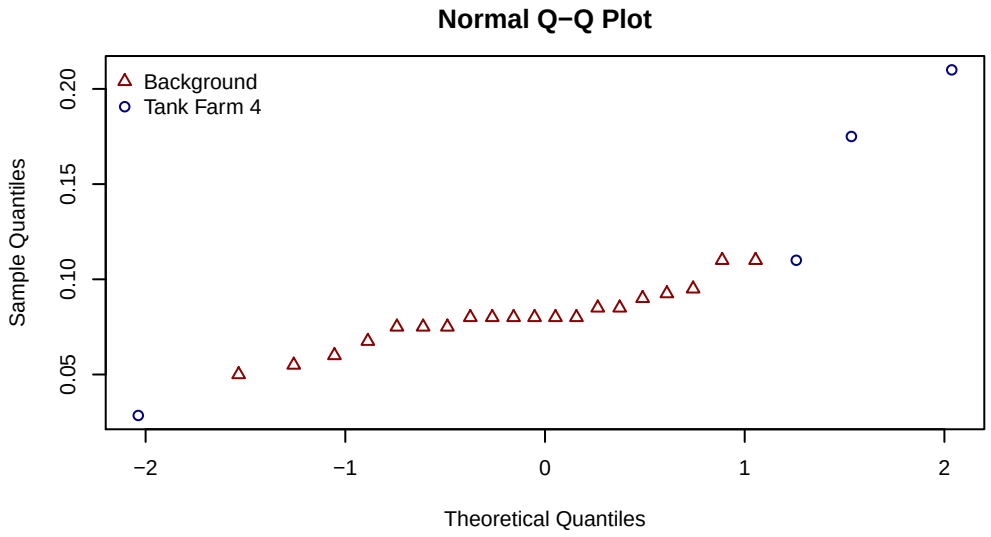
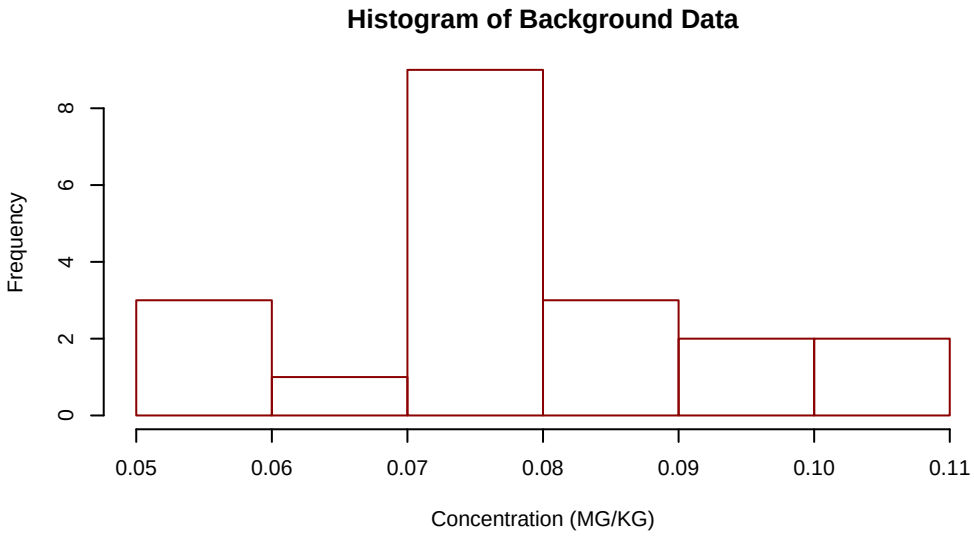
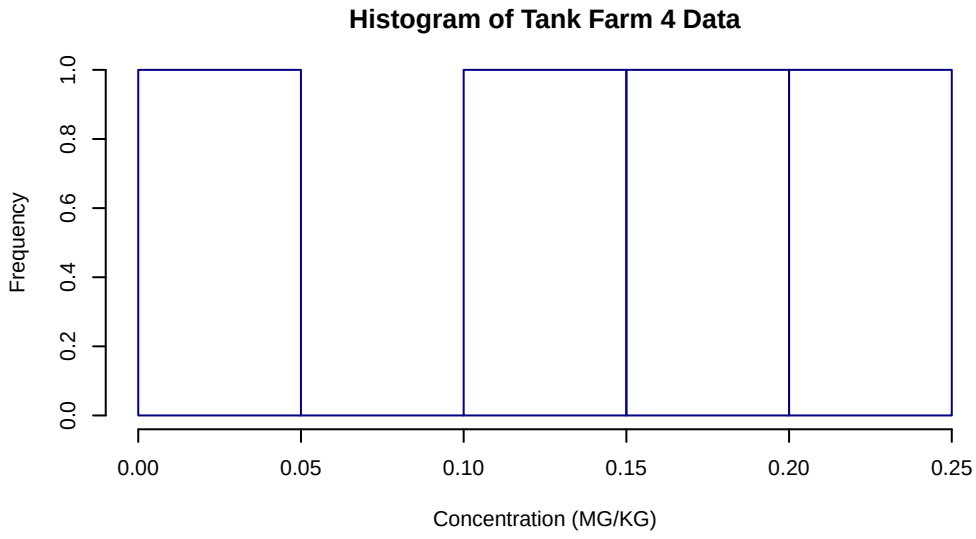
NEWPORT, RHODE ISLAND









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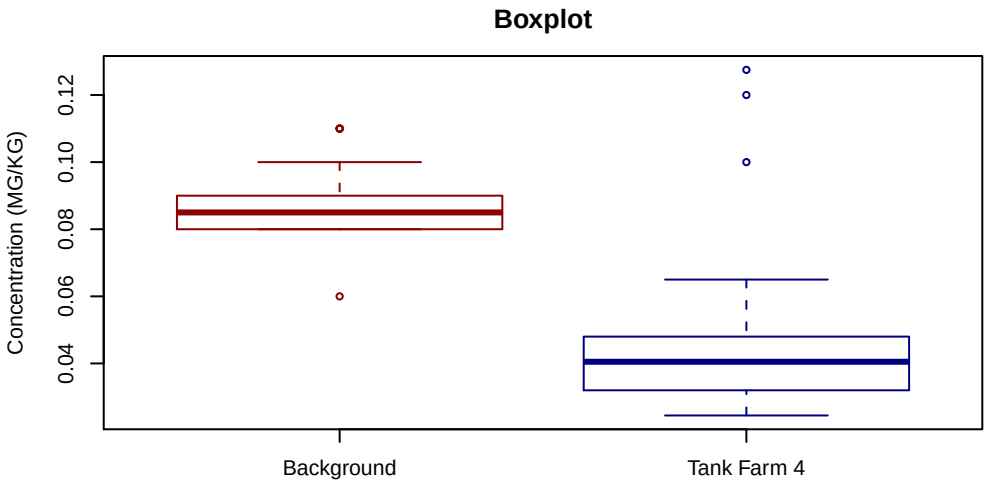
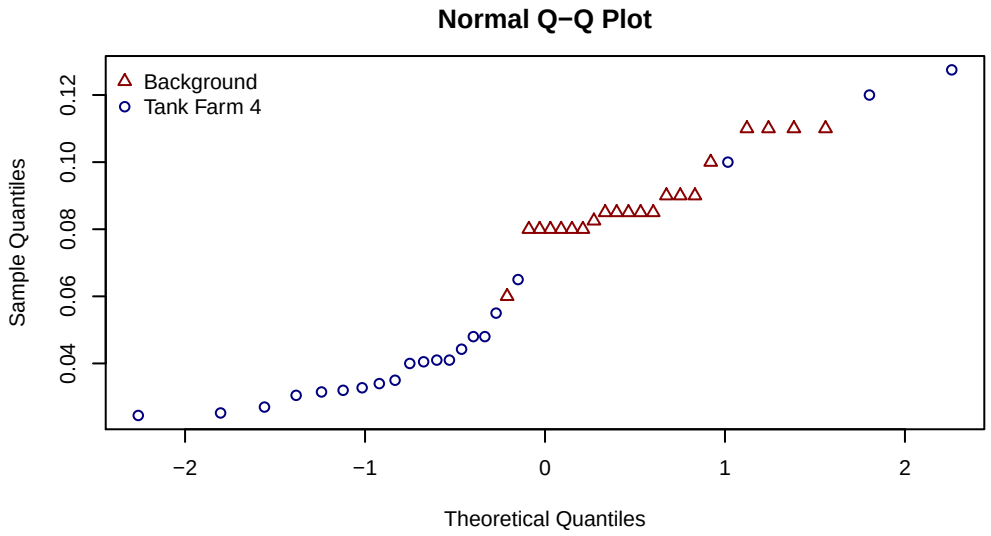
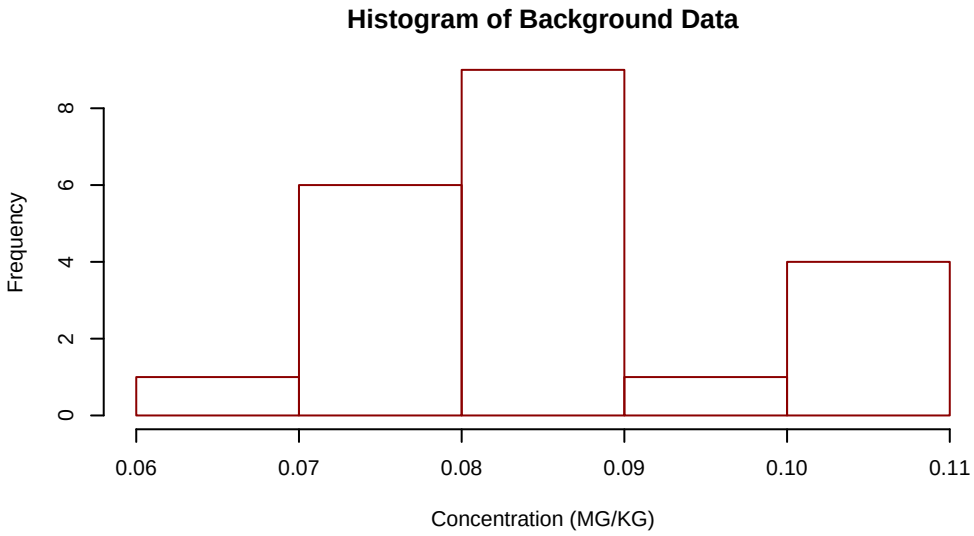
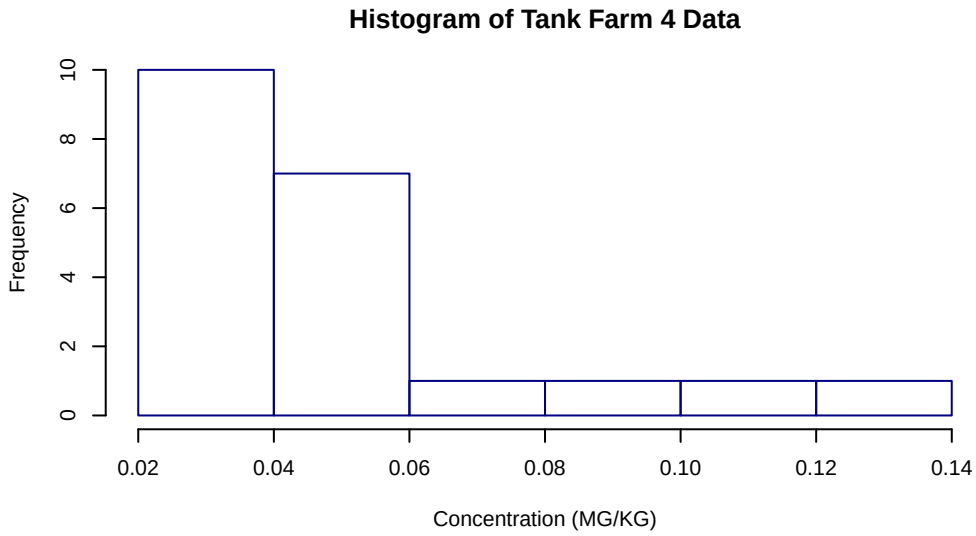
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









SILVER Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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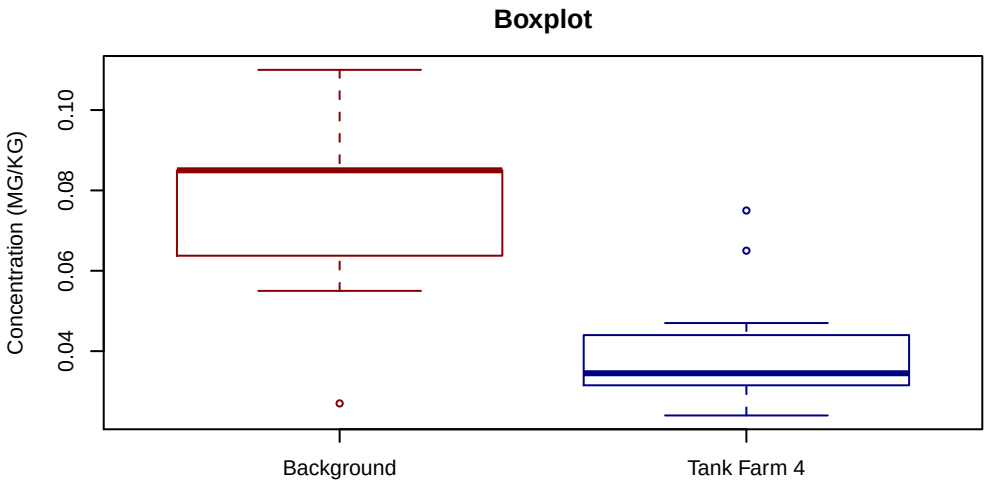
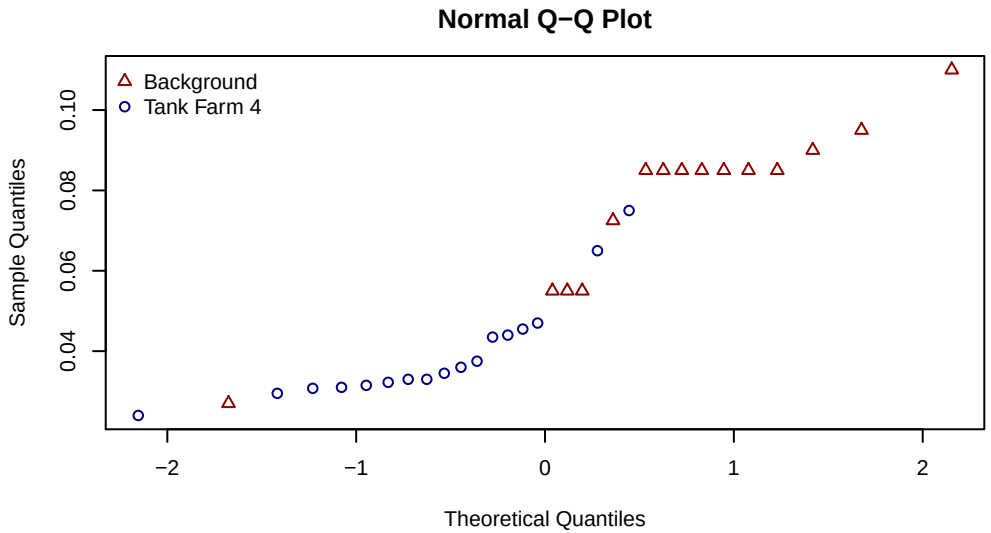
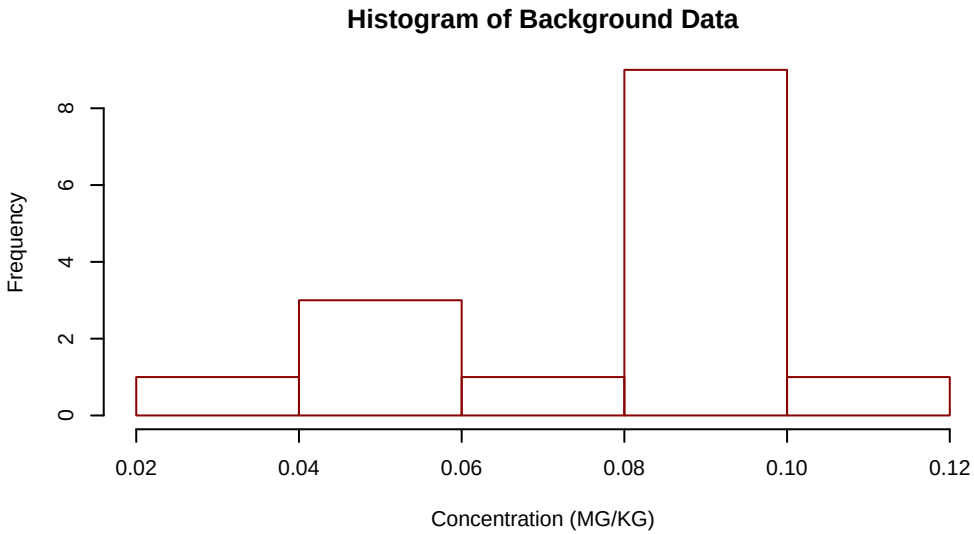
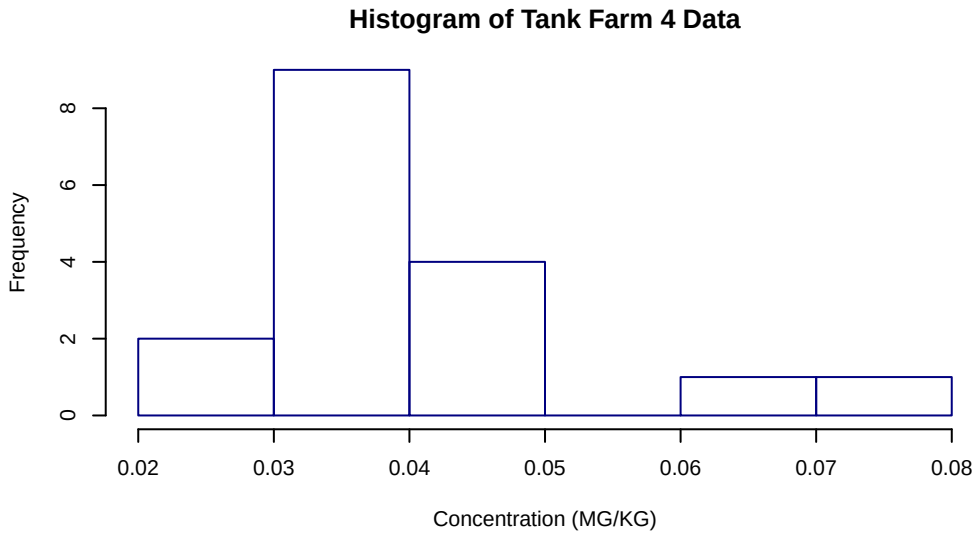
NEWPORT, RHODE ISLAND









SODIUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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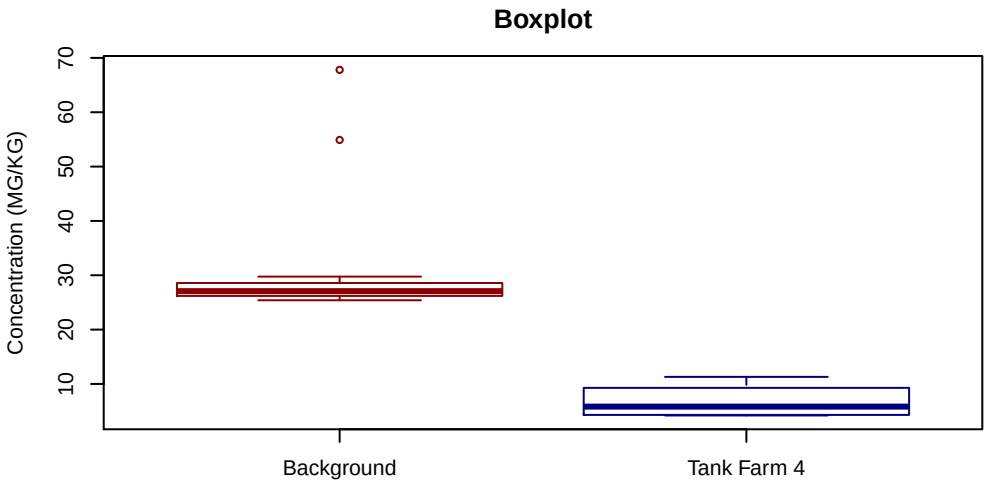
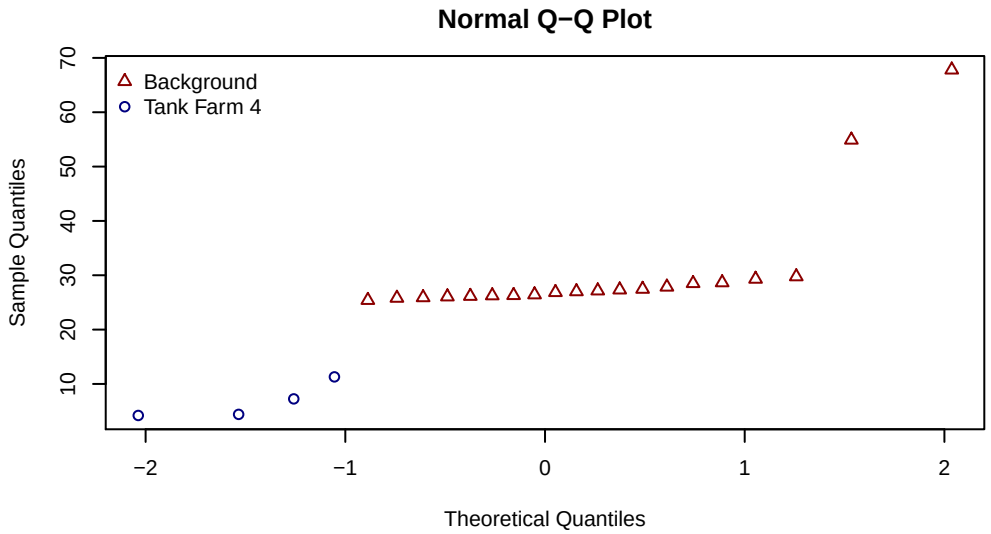
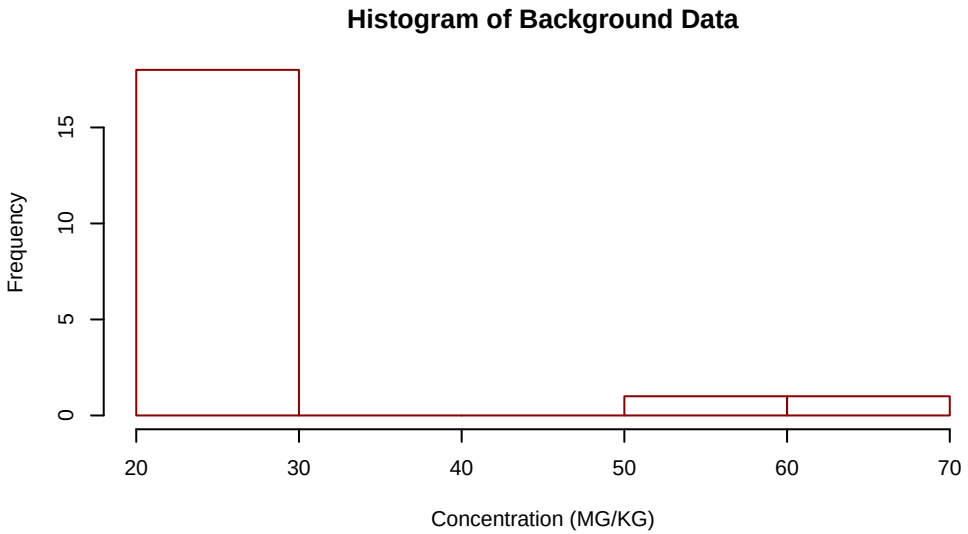
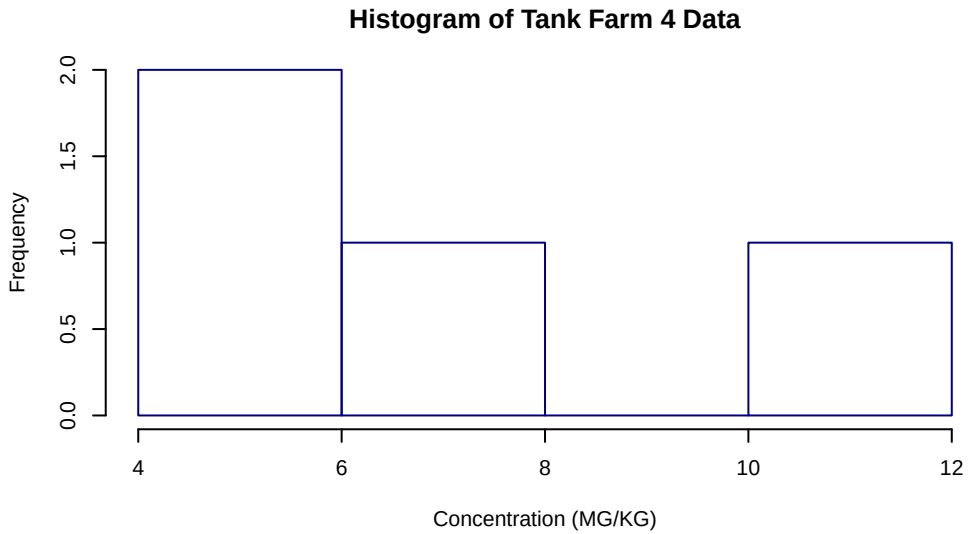
NEWPORT, RHODE ISLAND









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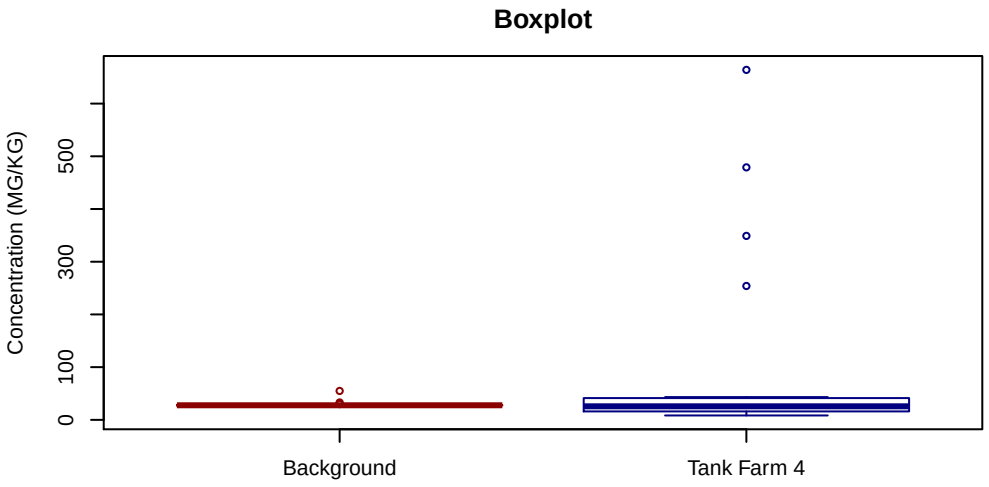
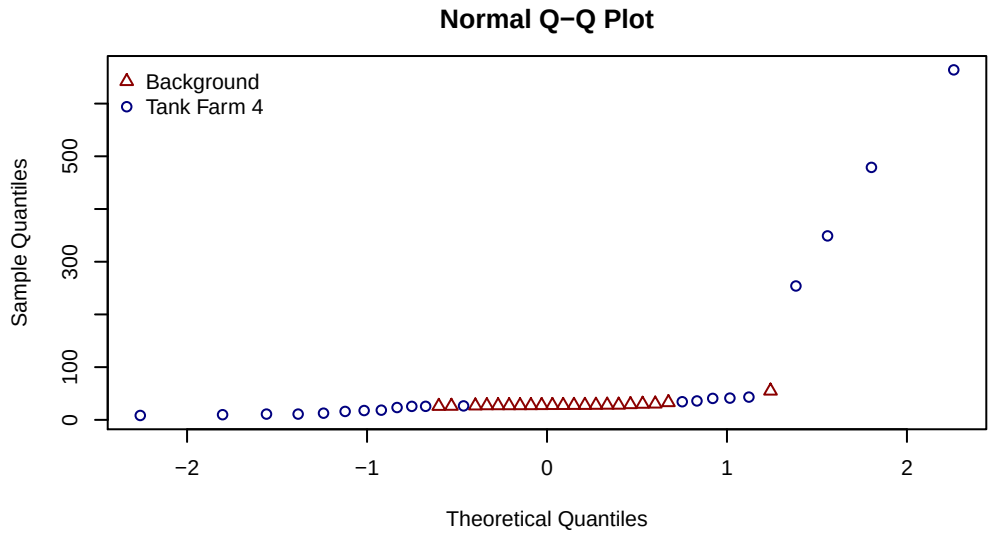
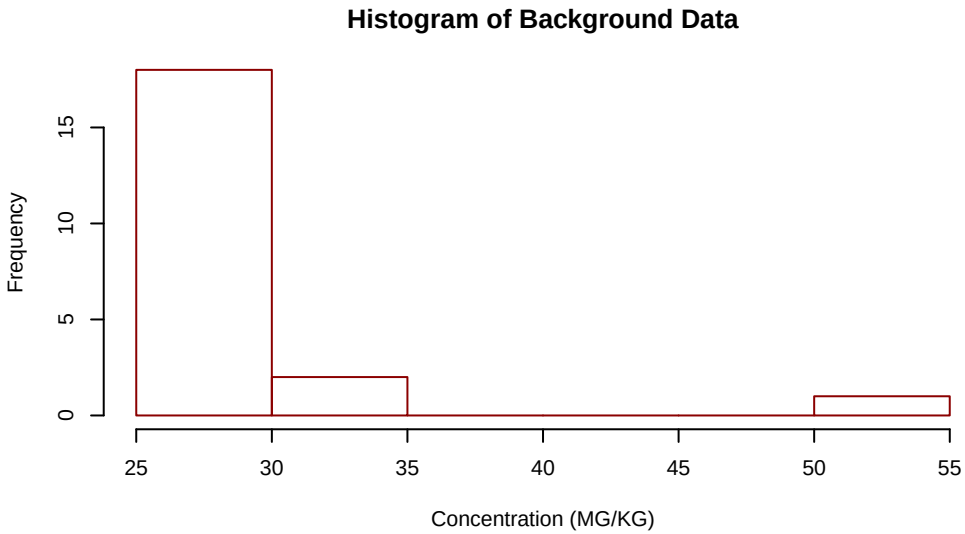
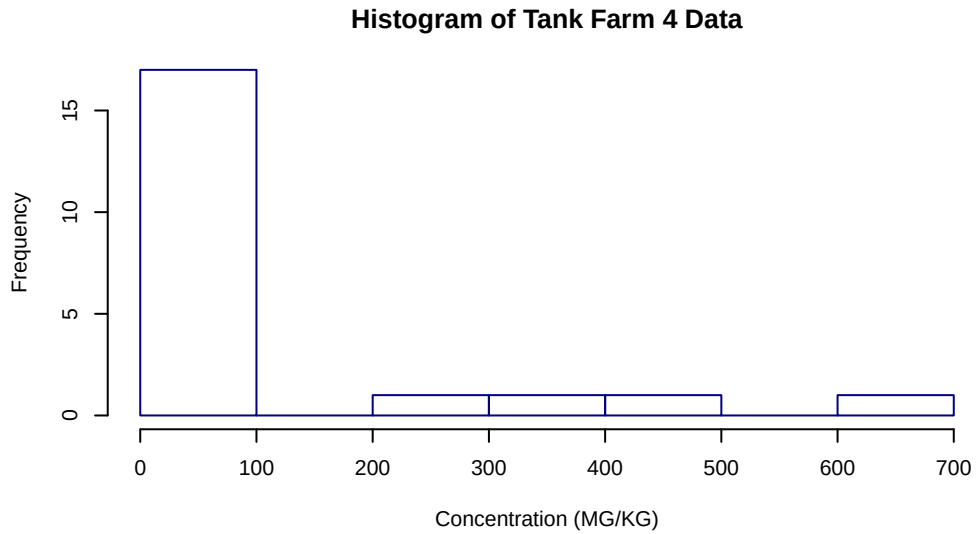
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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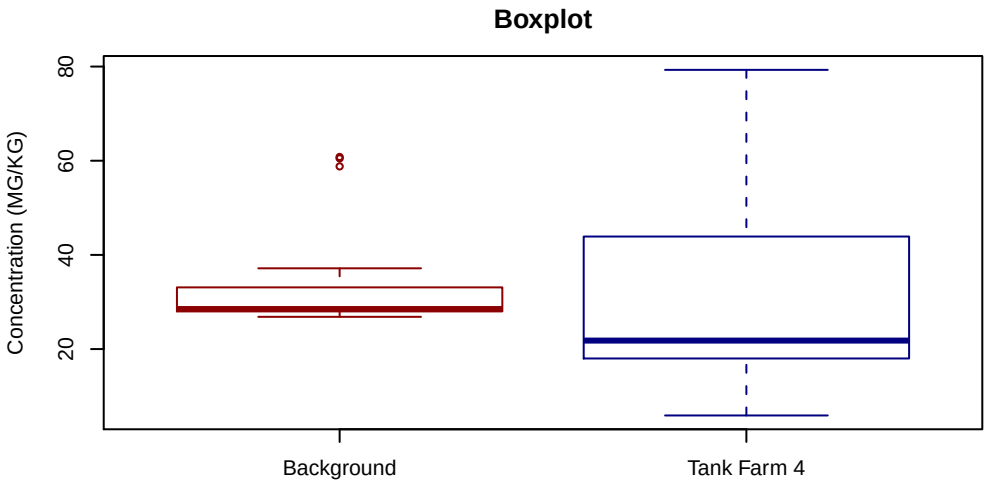
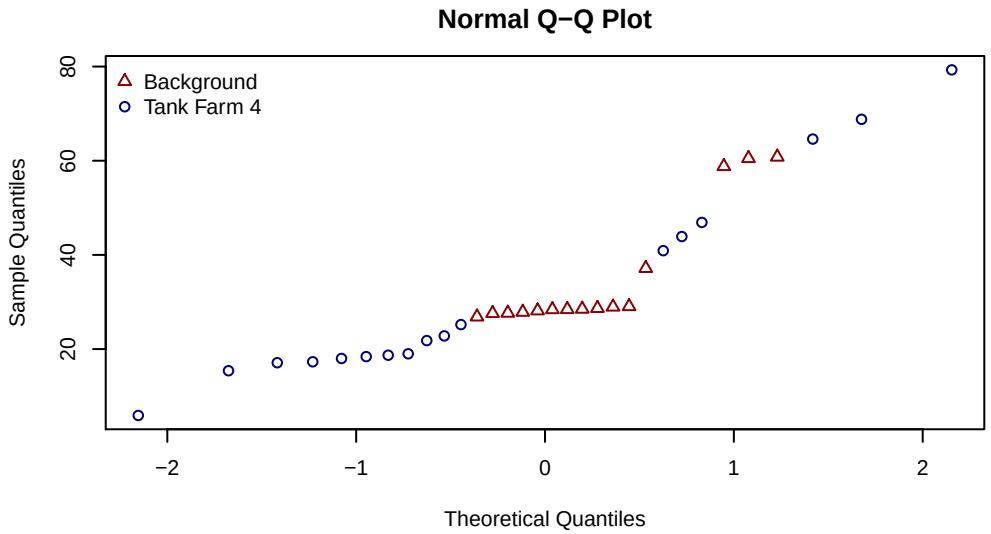
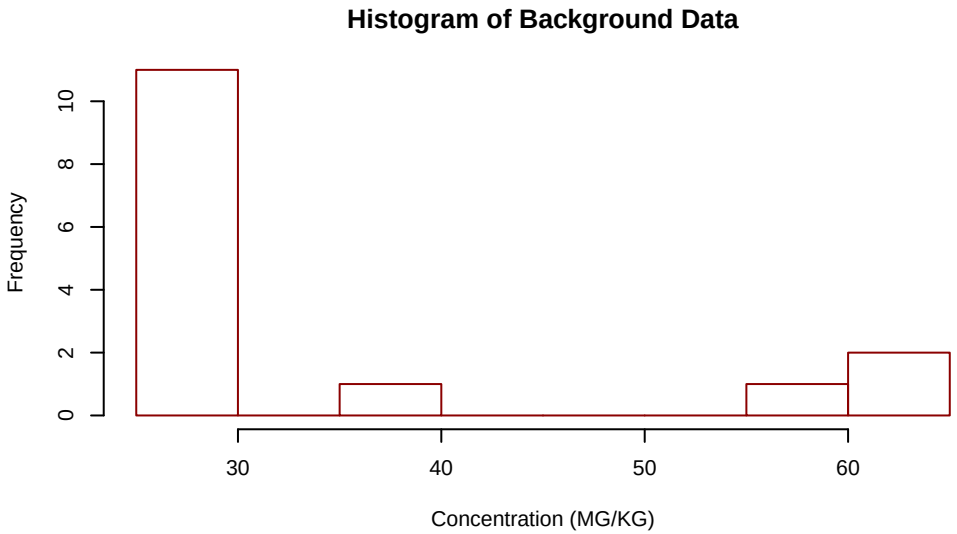
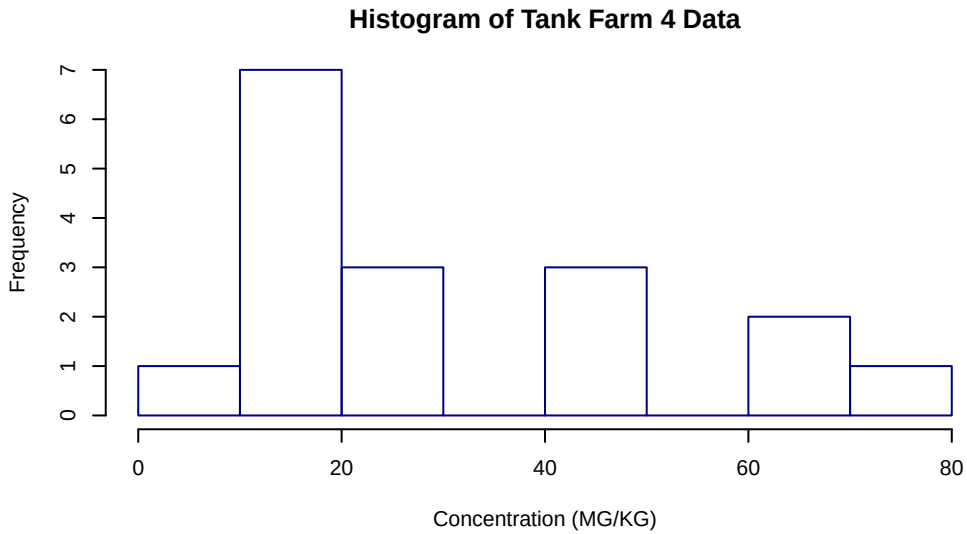
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

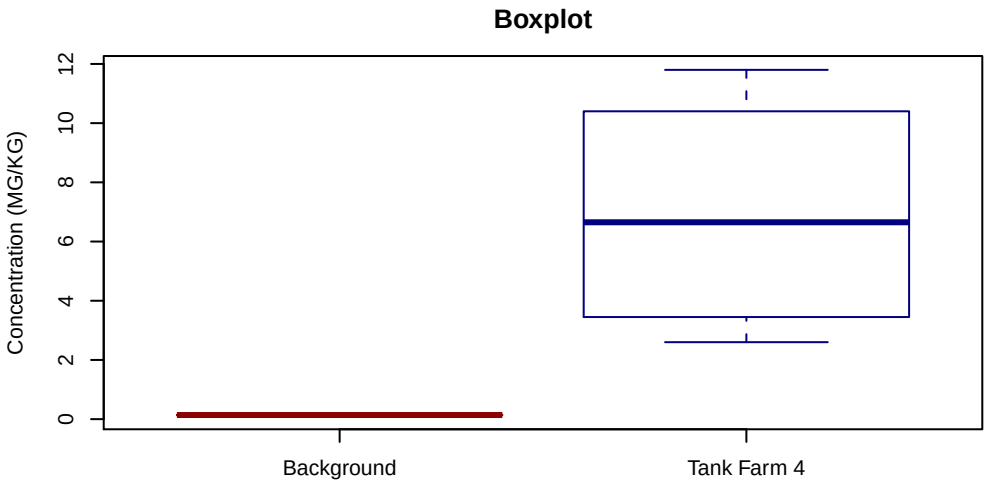


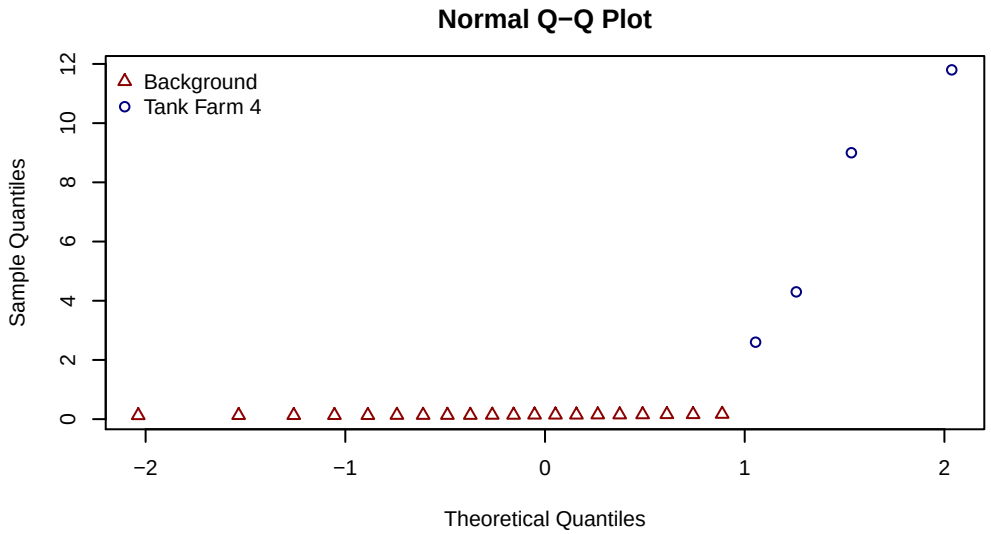


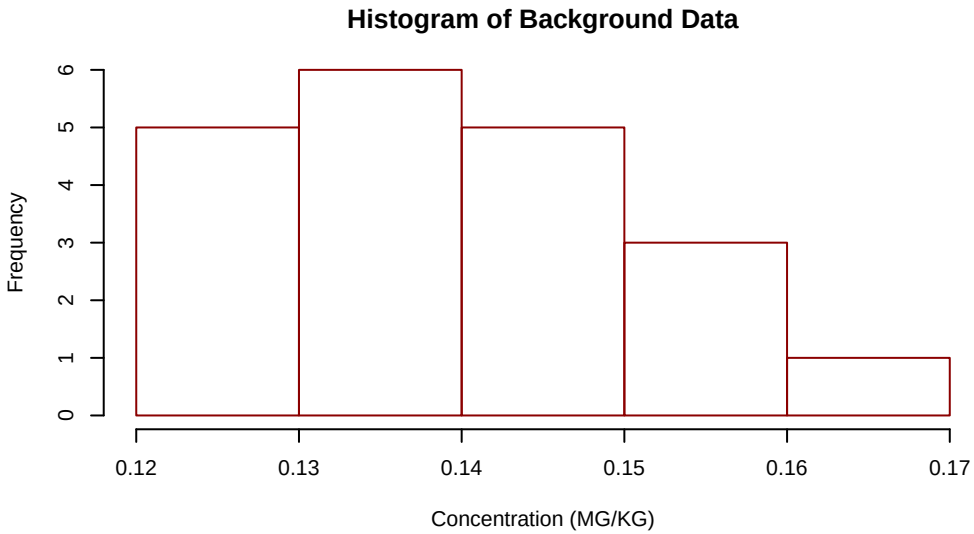


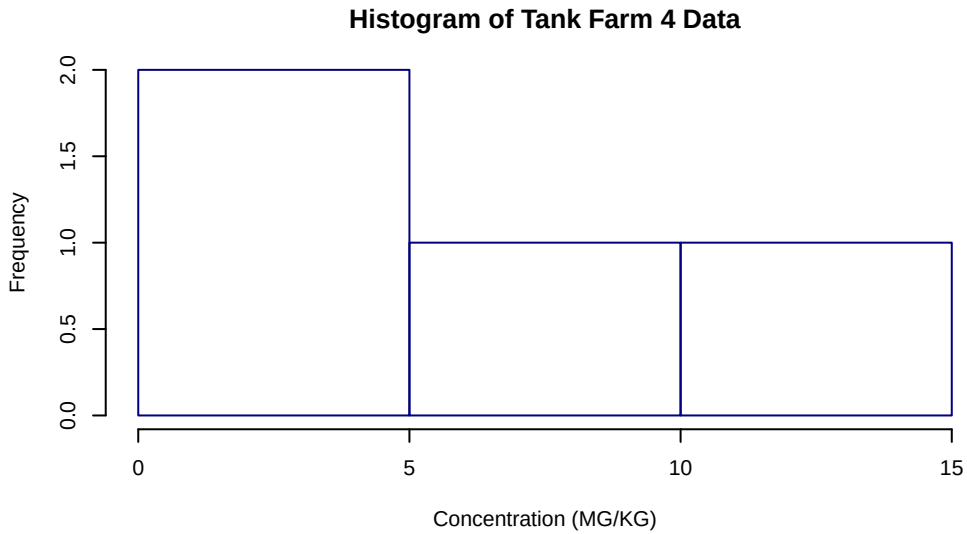


THALLIUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

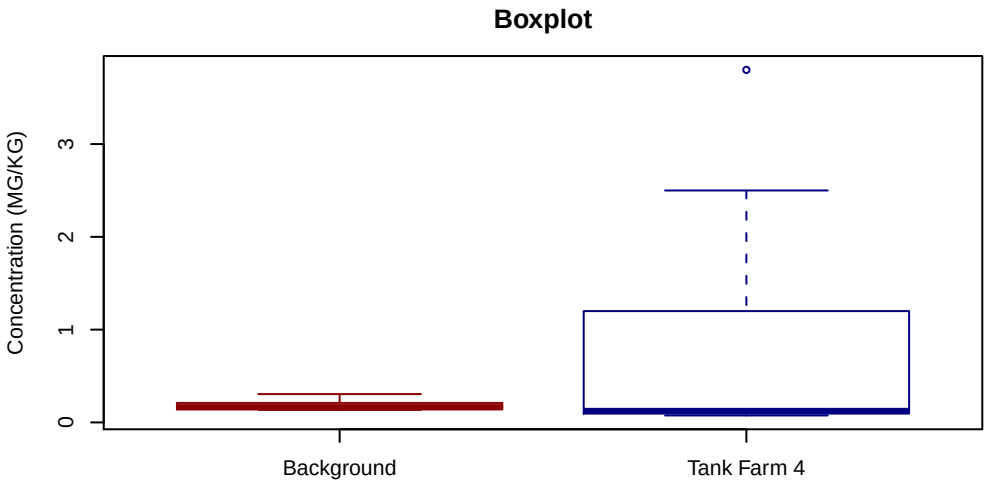


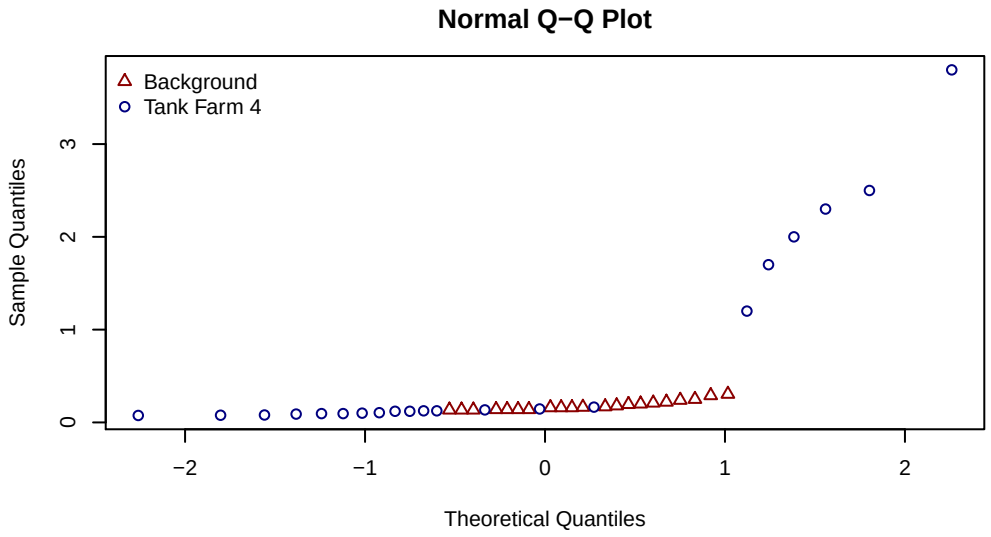


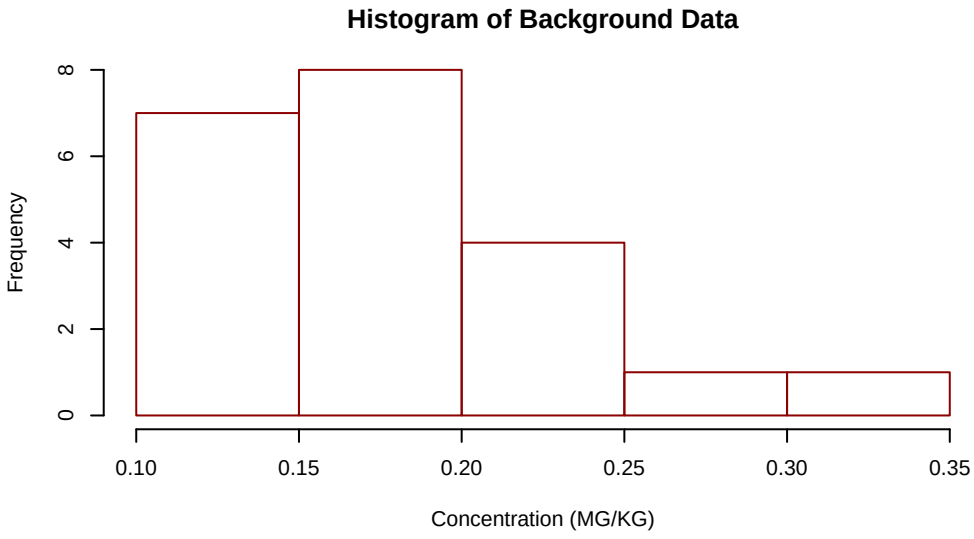


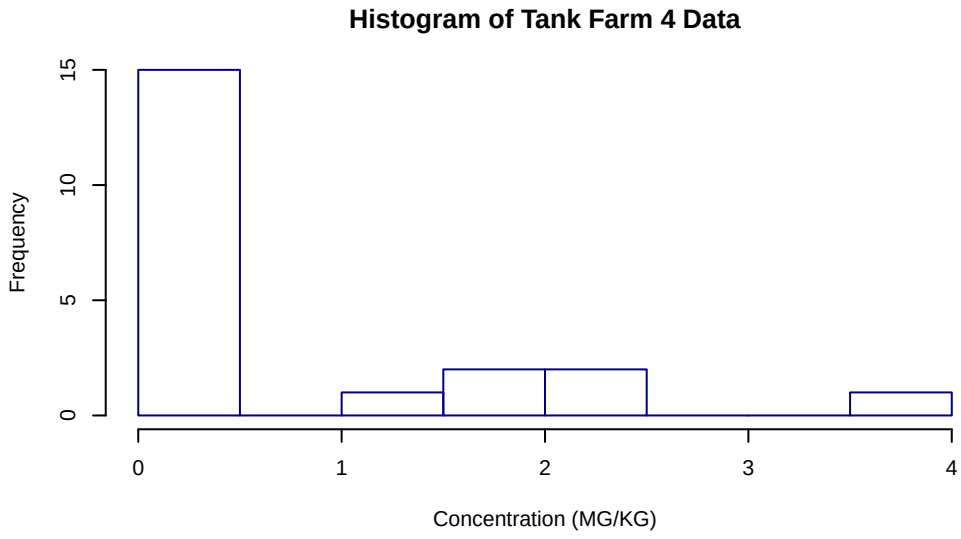


THALLIUM Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

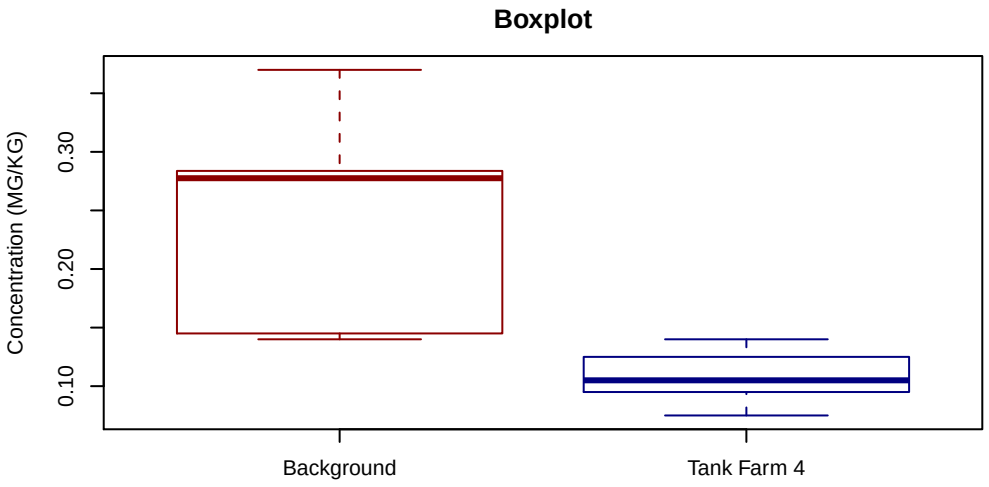


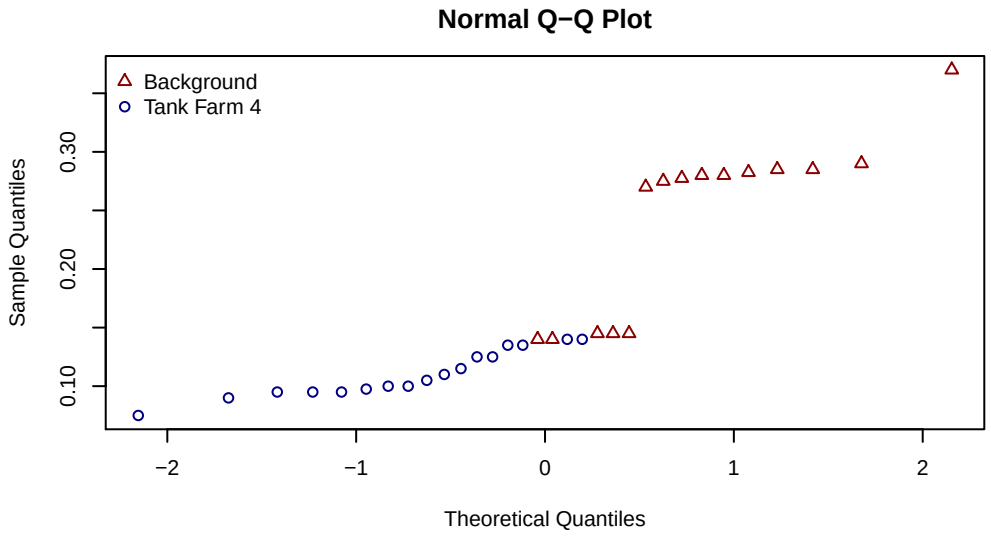


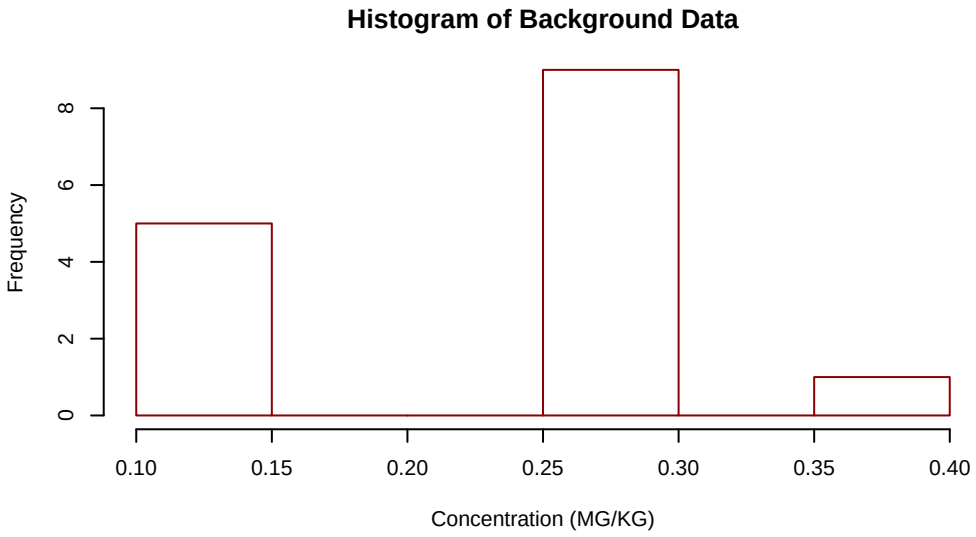


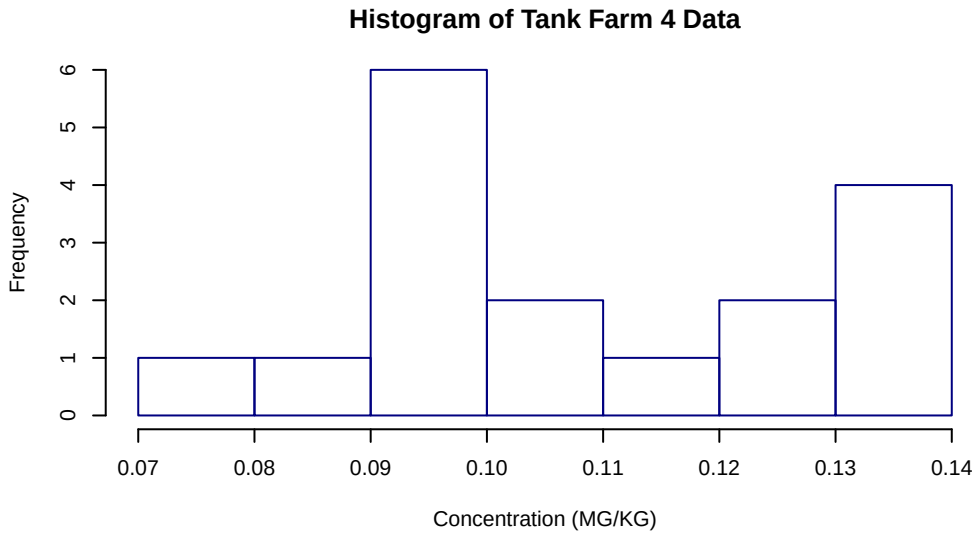


THALLIUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

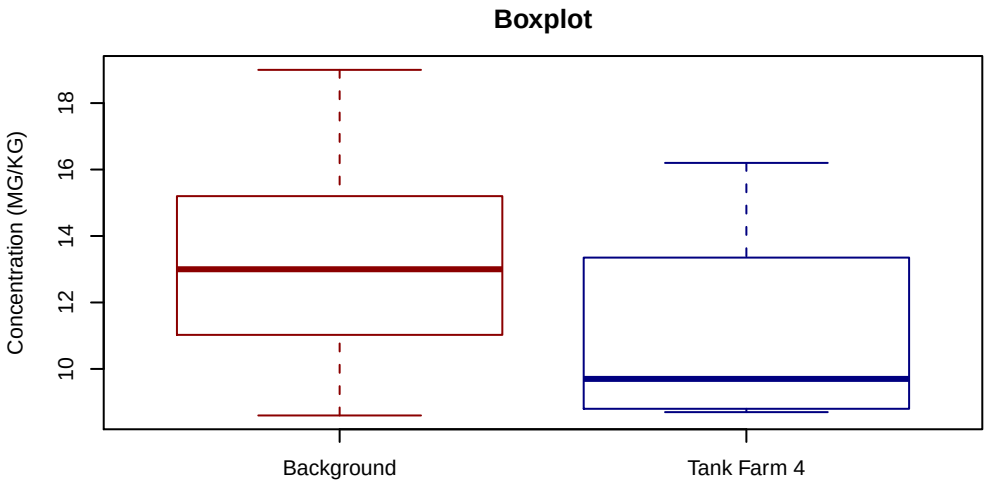


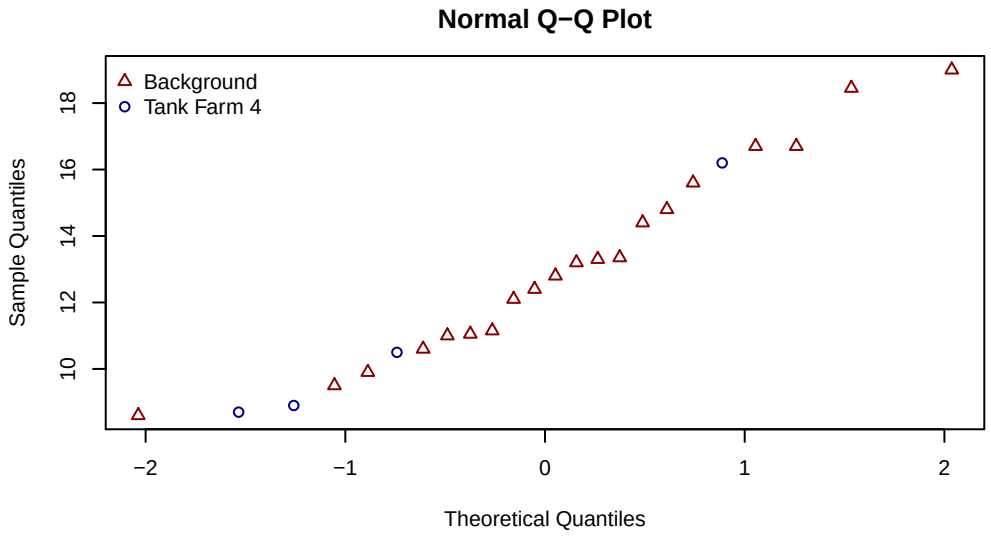


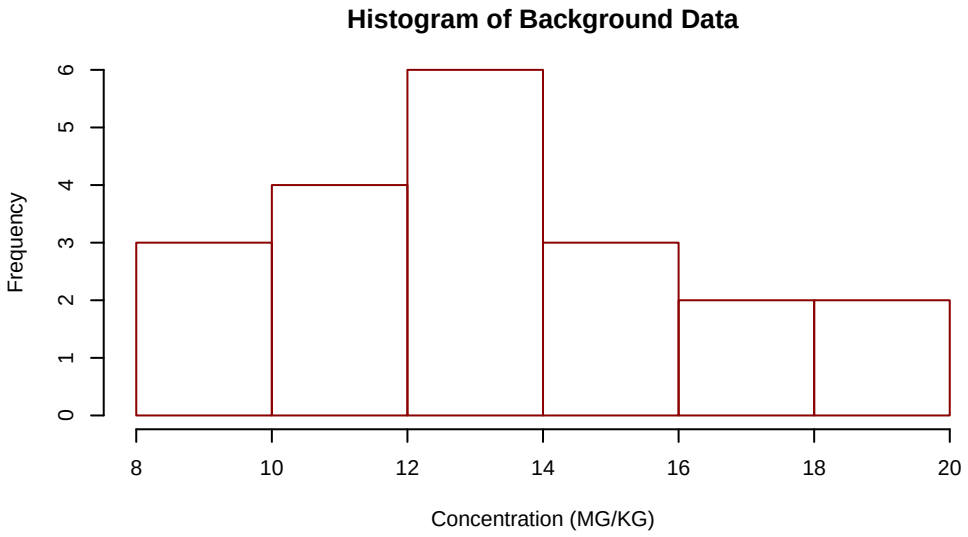


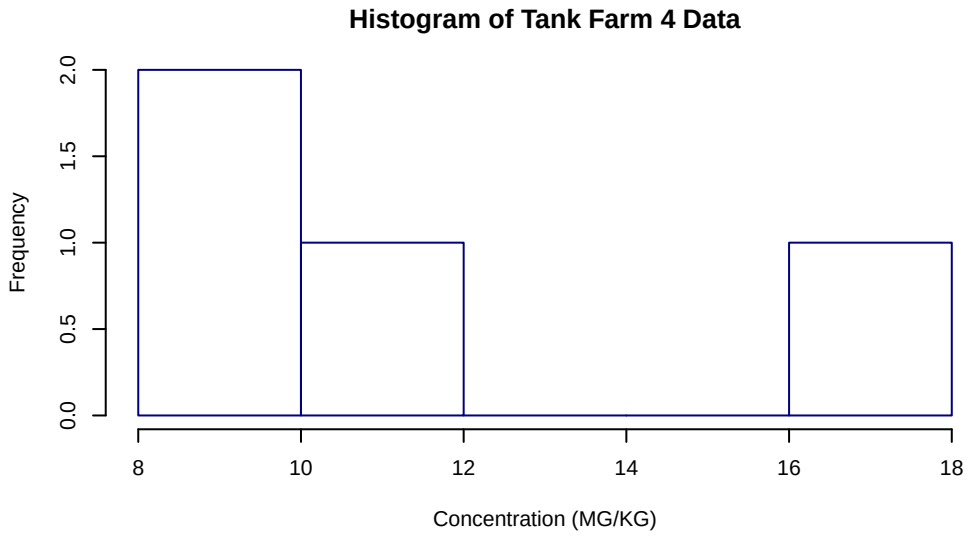


VANADIUM MmA SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

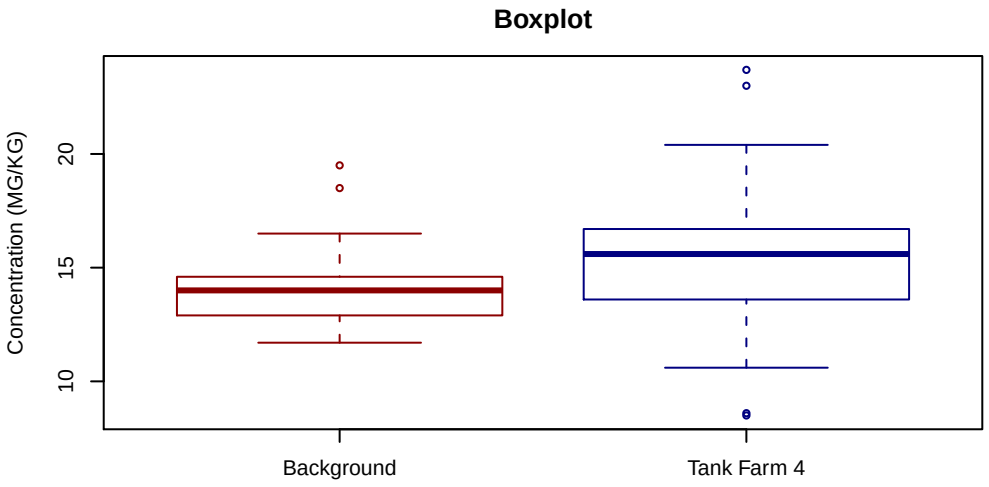


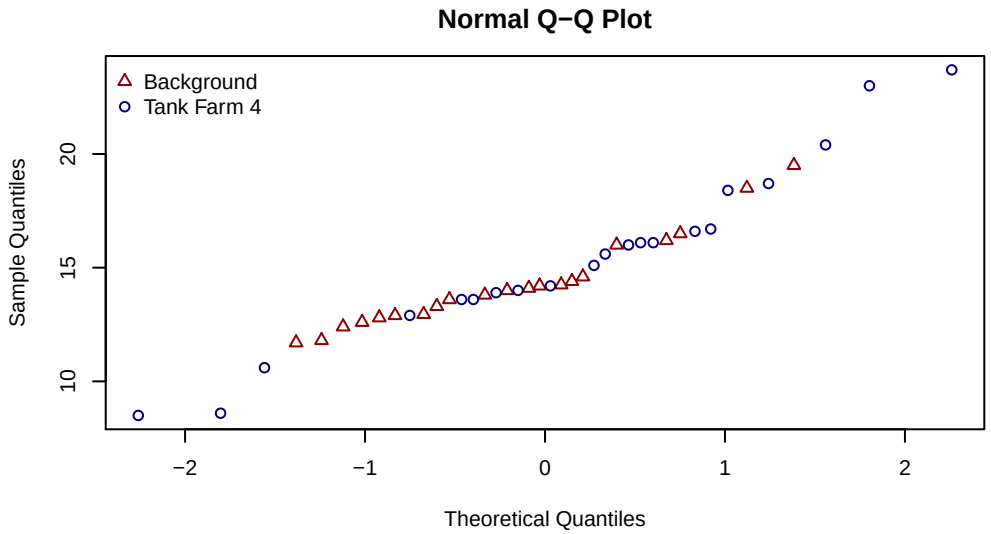


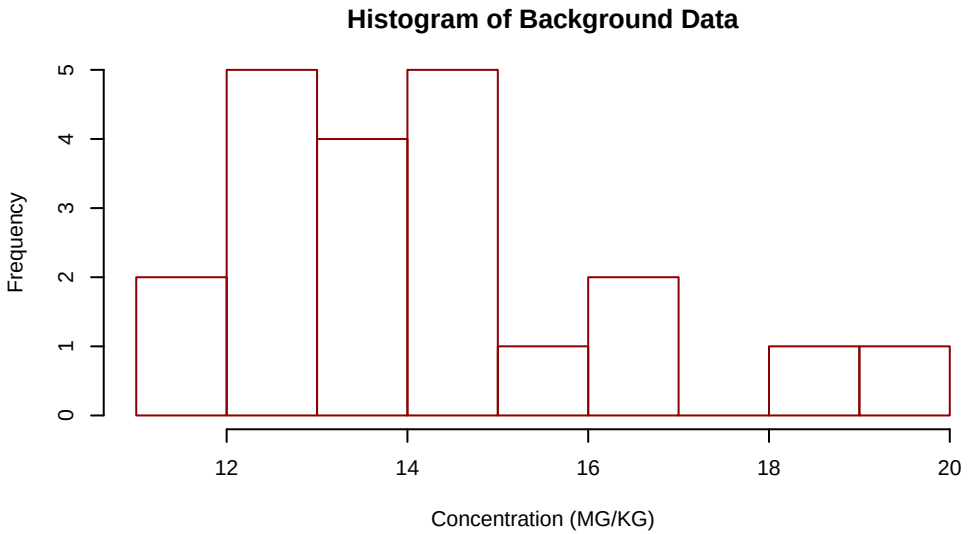


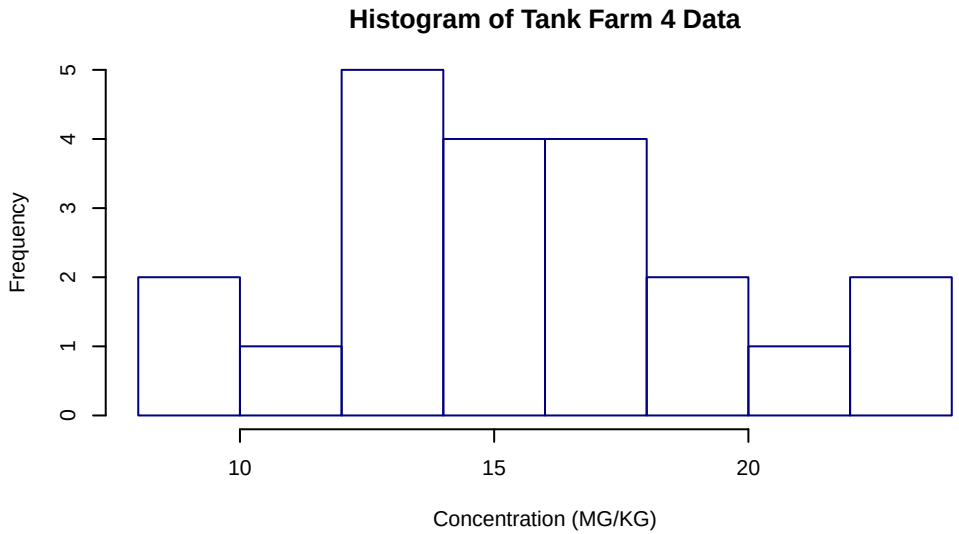


VANADIUM Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

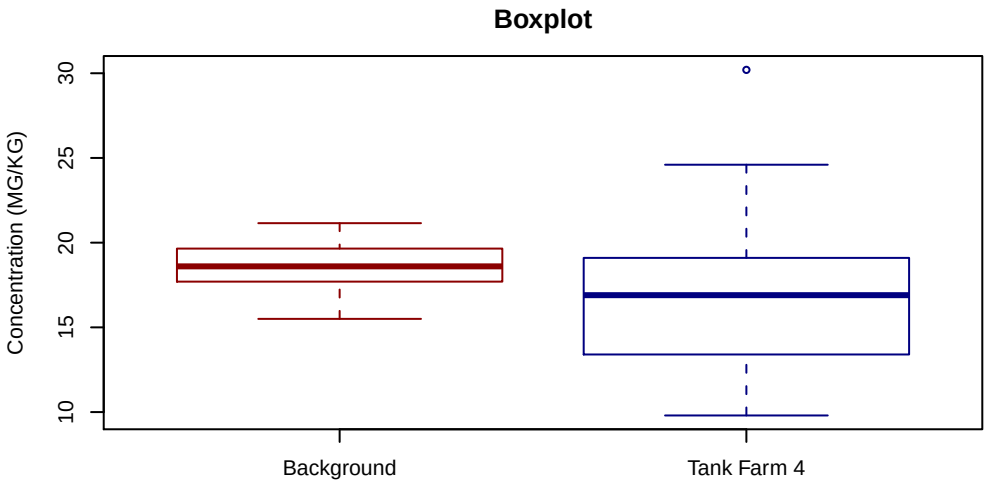


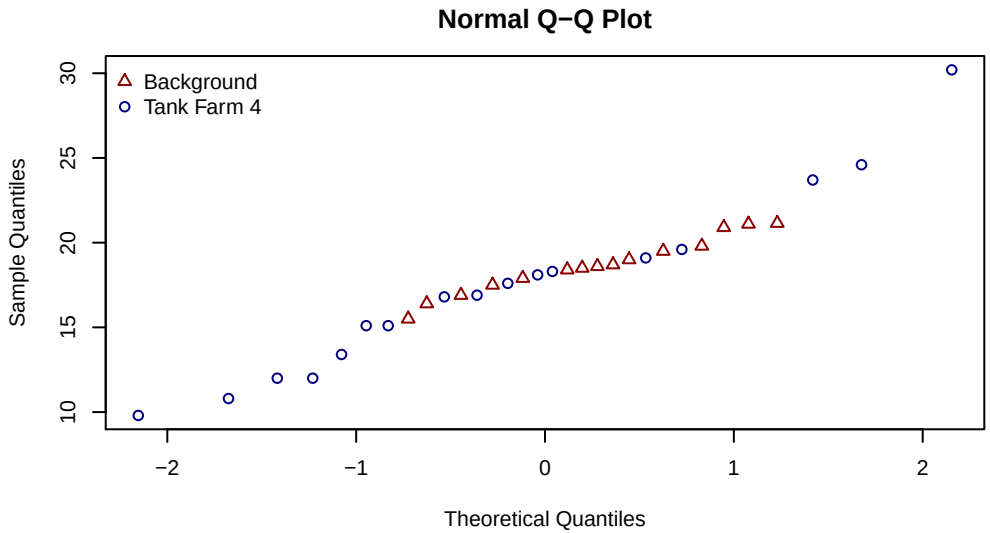


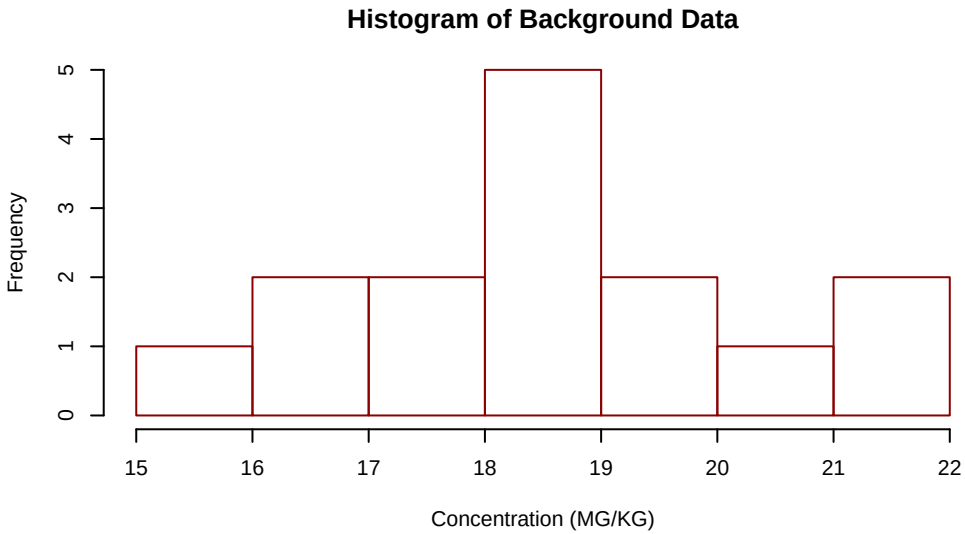


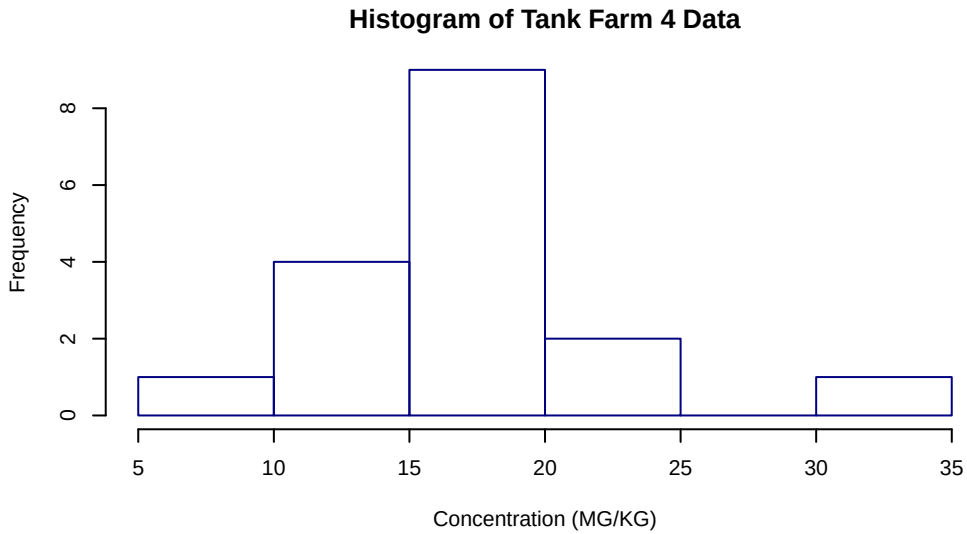


VANADIUM Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









ZINC MmA SUBSURFACESOIL
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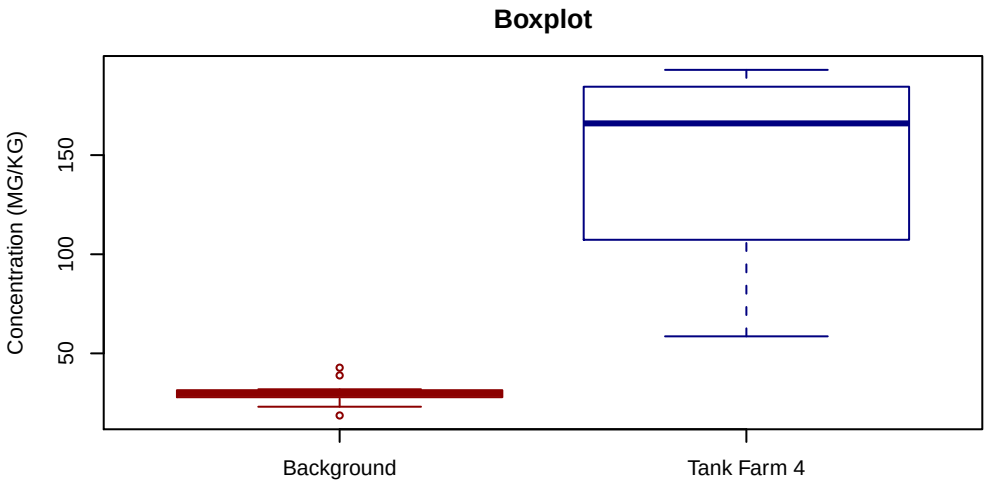
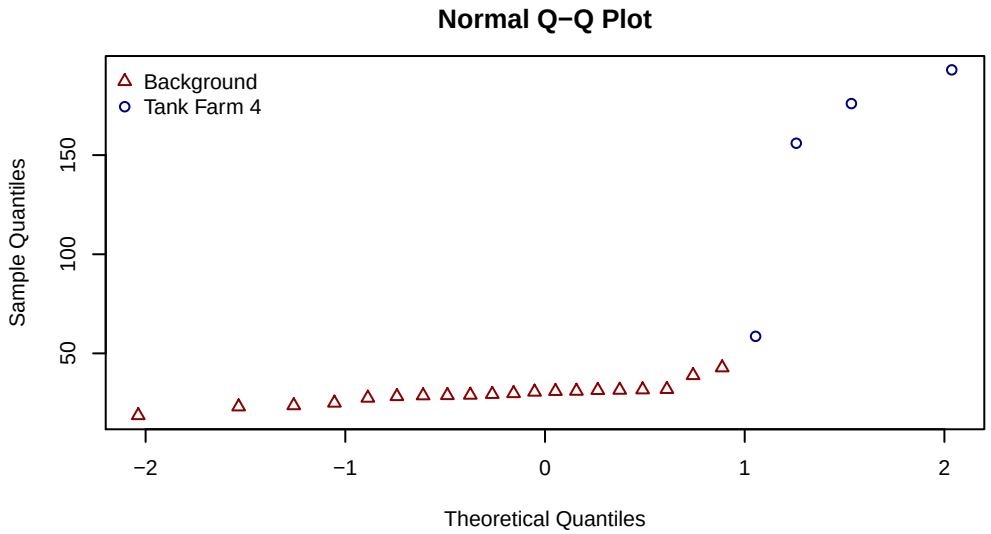
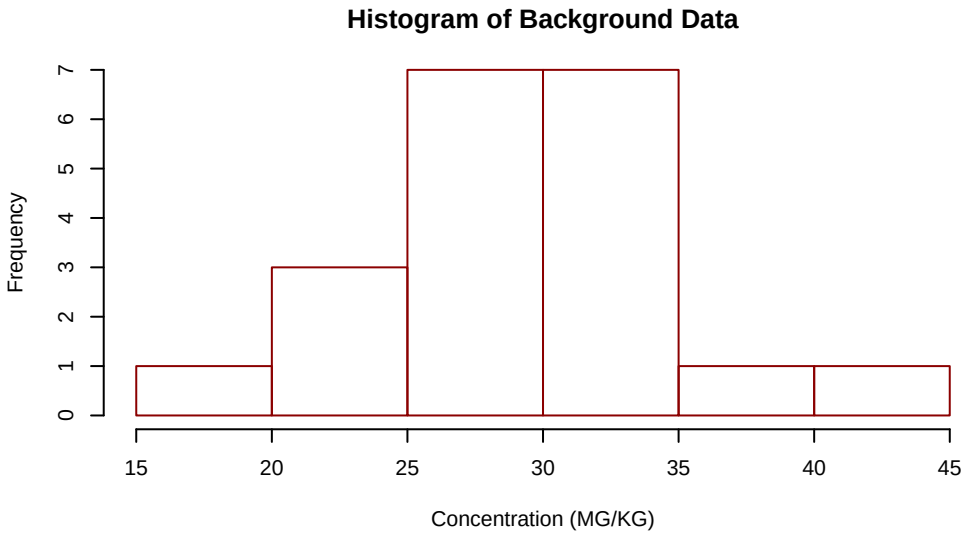
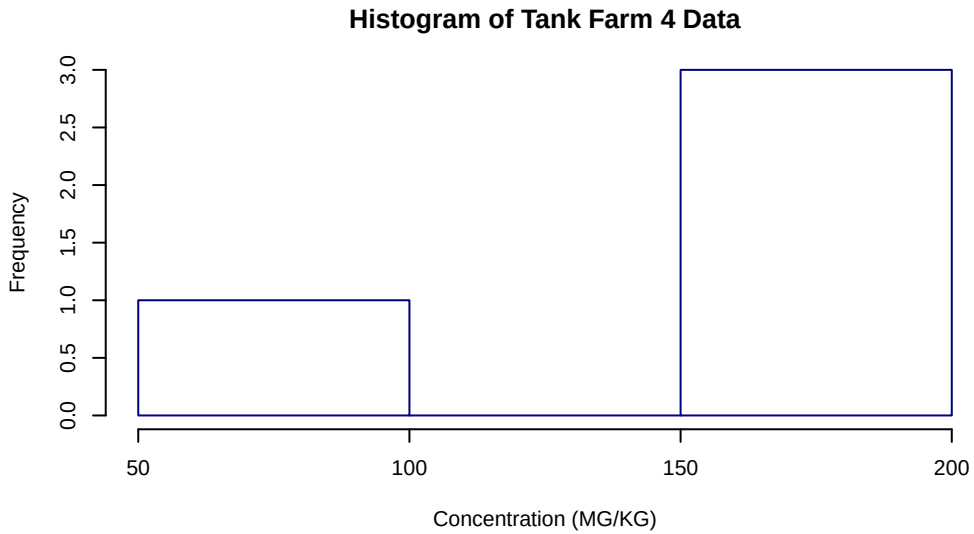
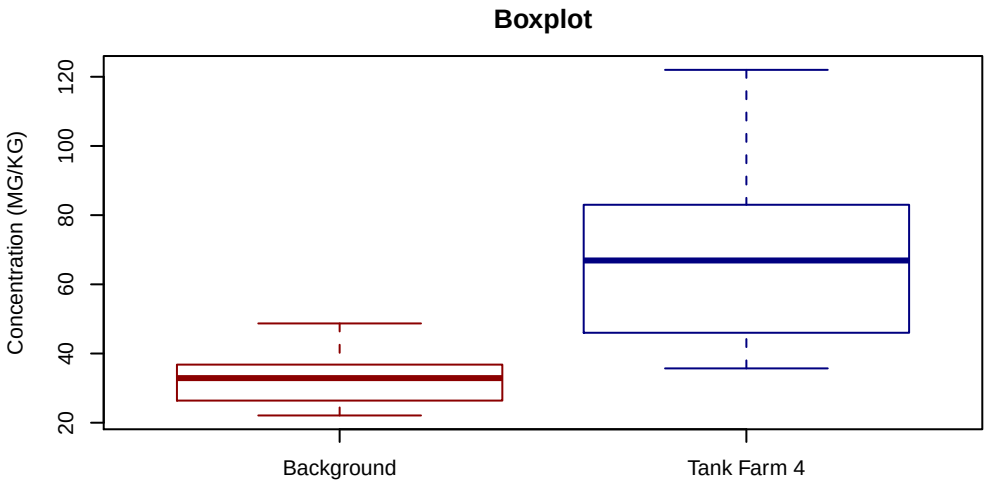


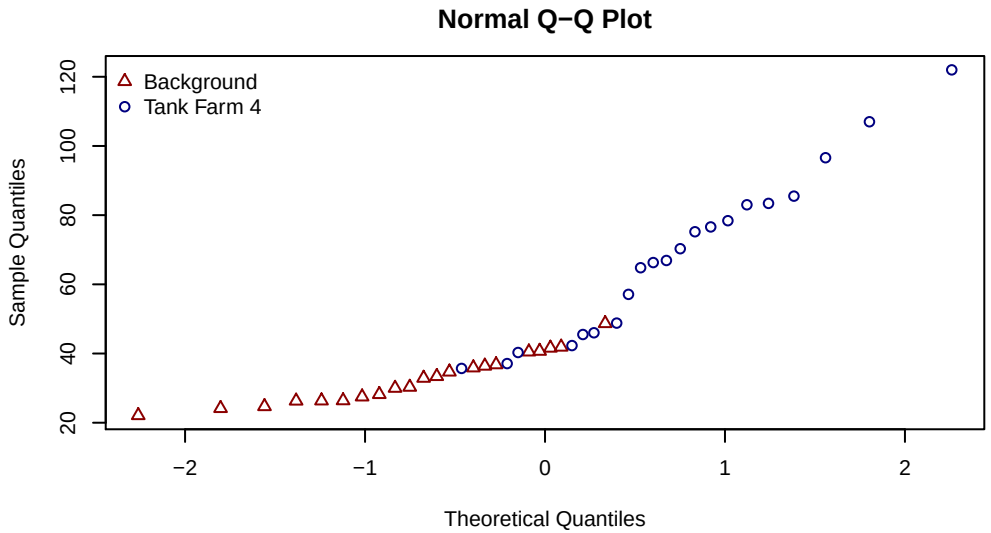


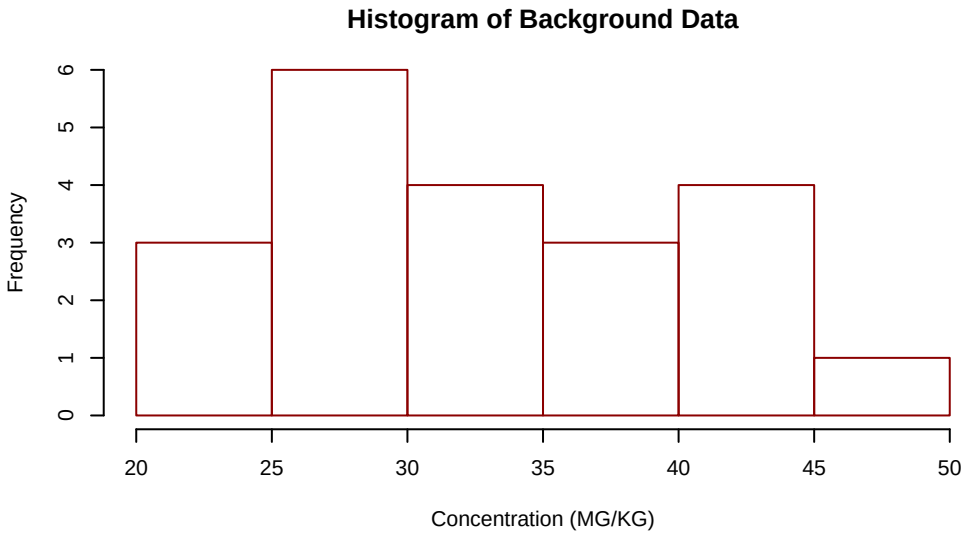


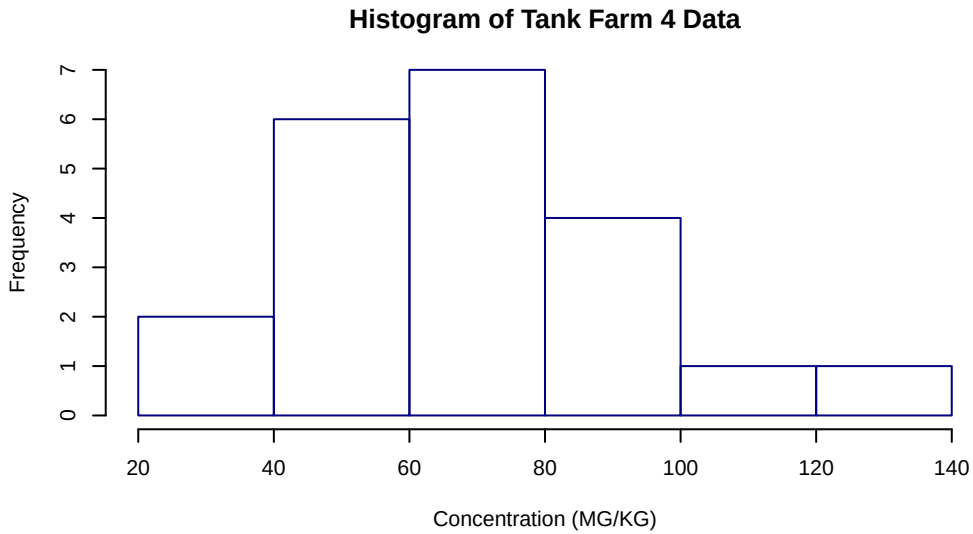


ZINC Ne SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

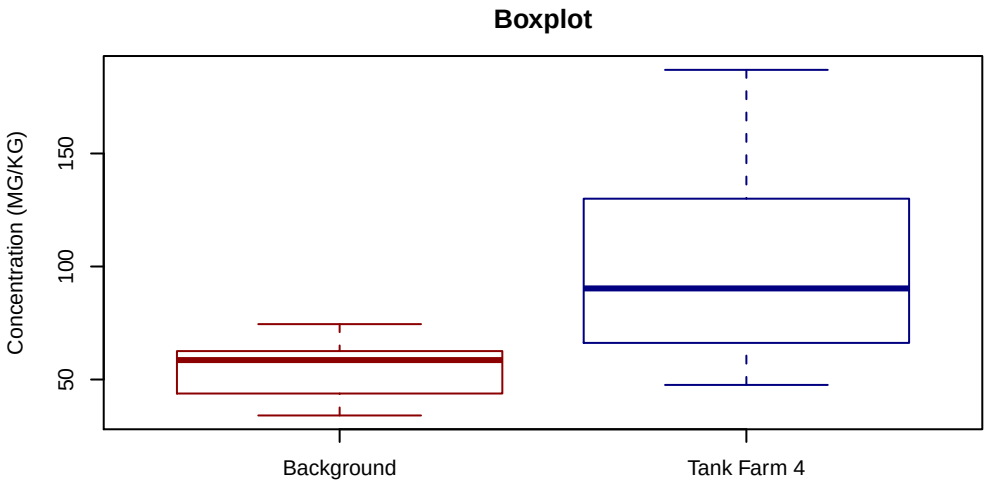


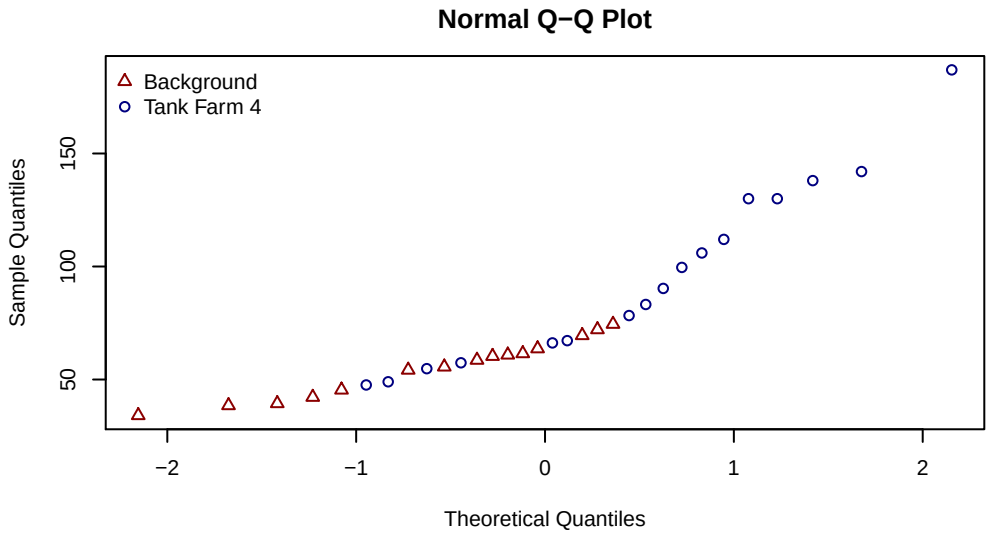


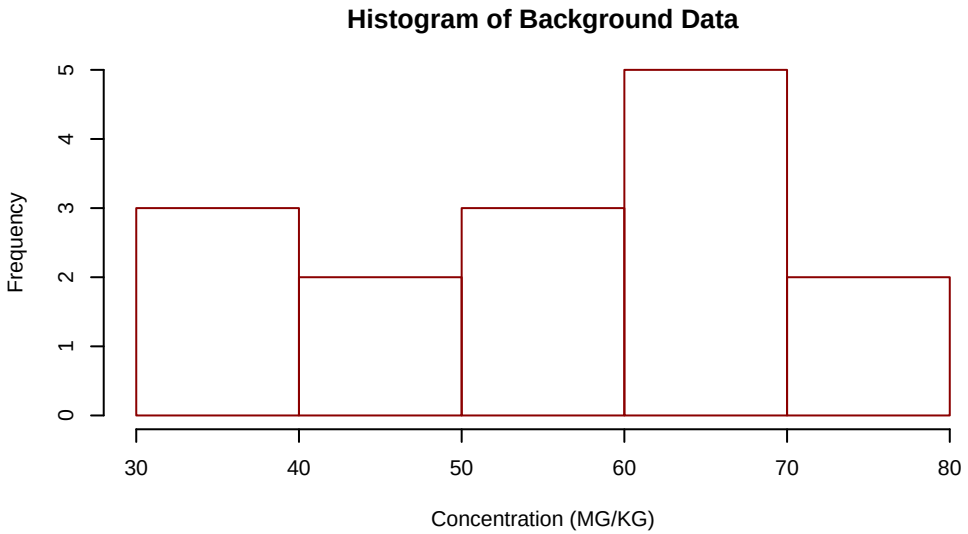


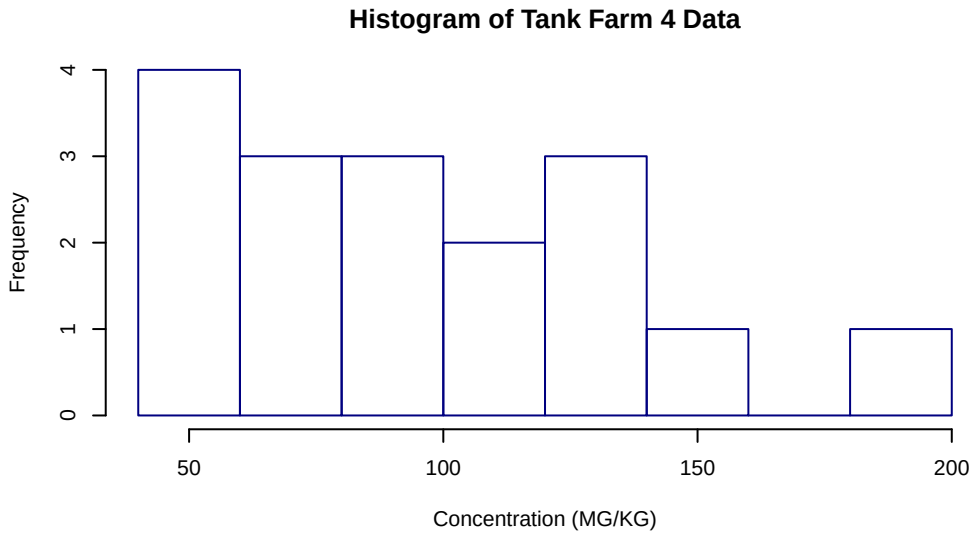


ZINC Se SUBSURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

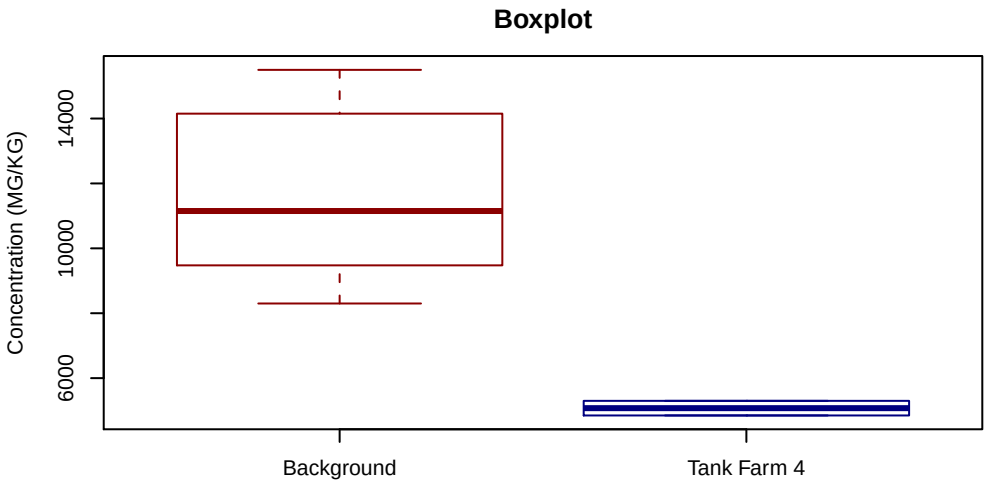


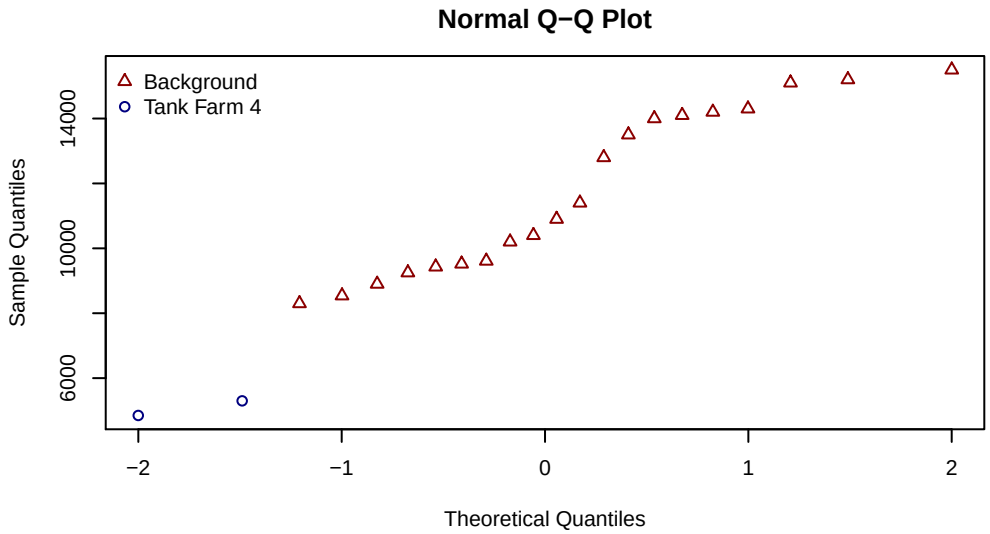


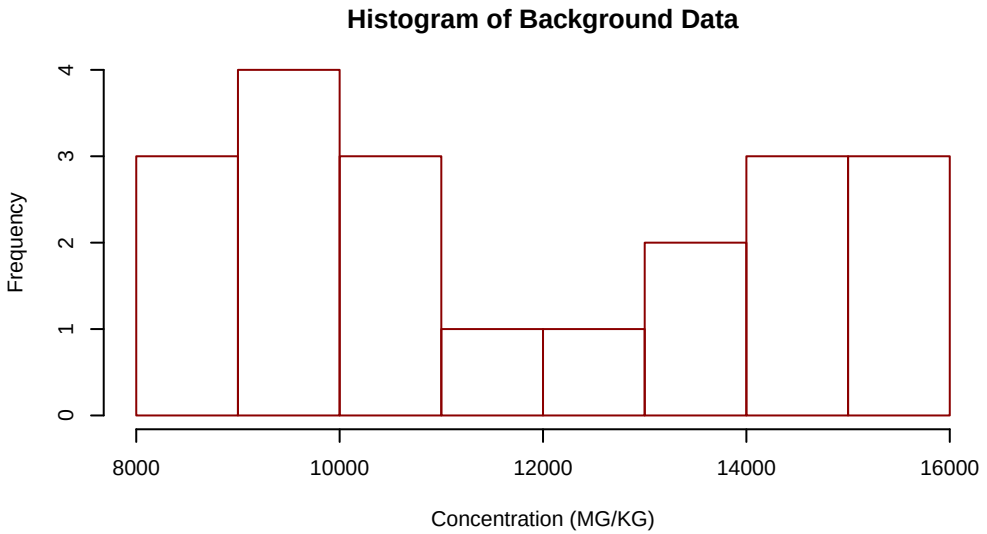


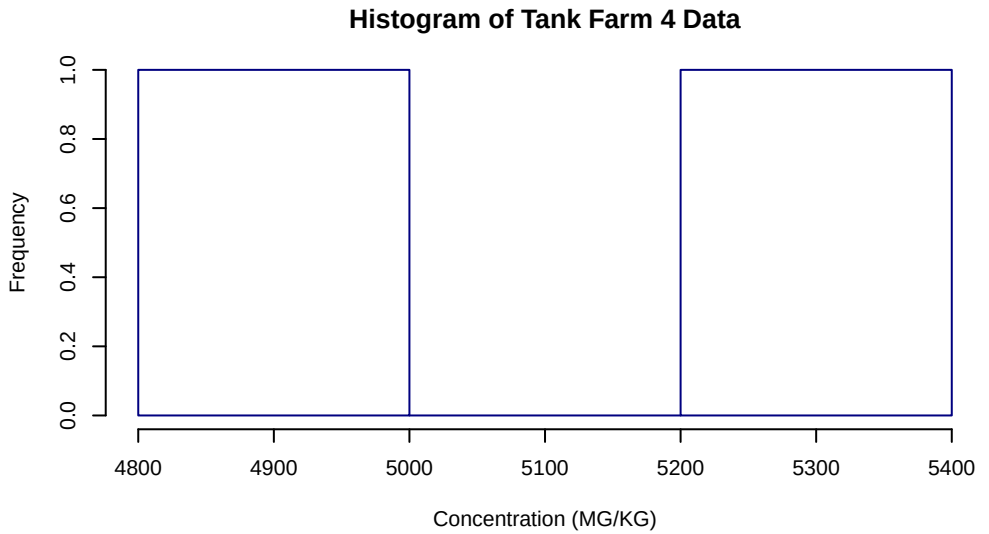


ALUMINUM MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

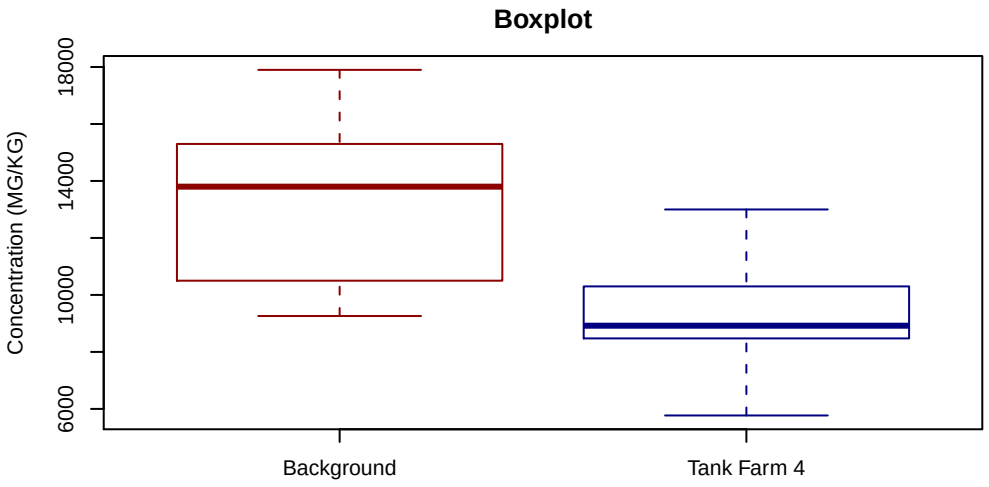


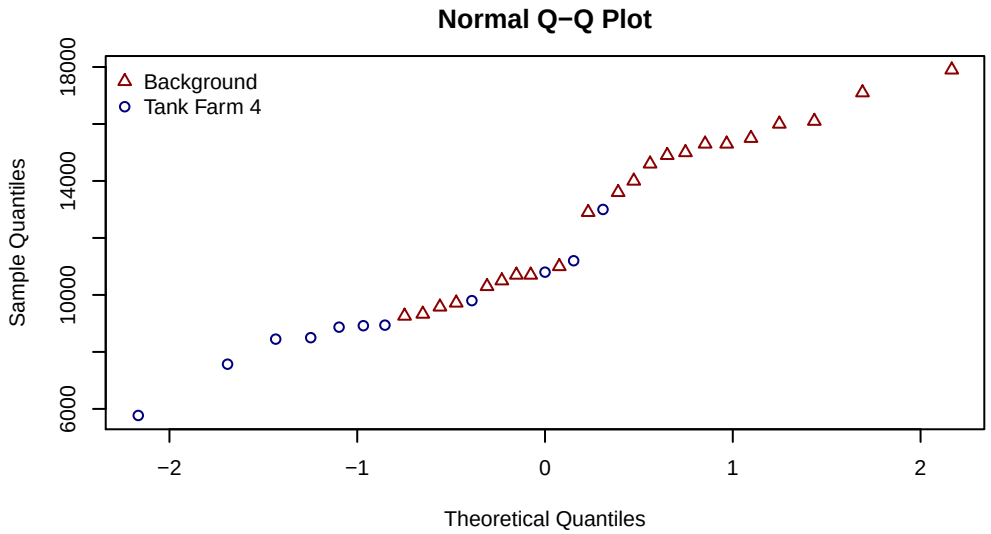


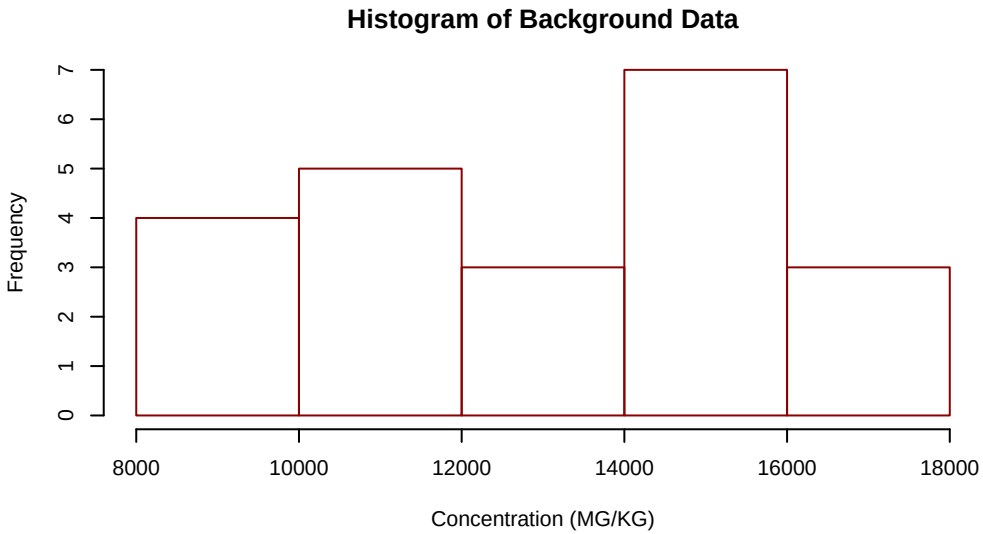


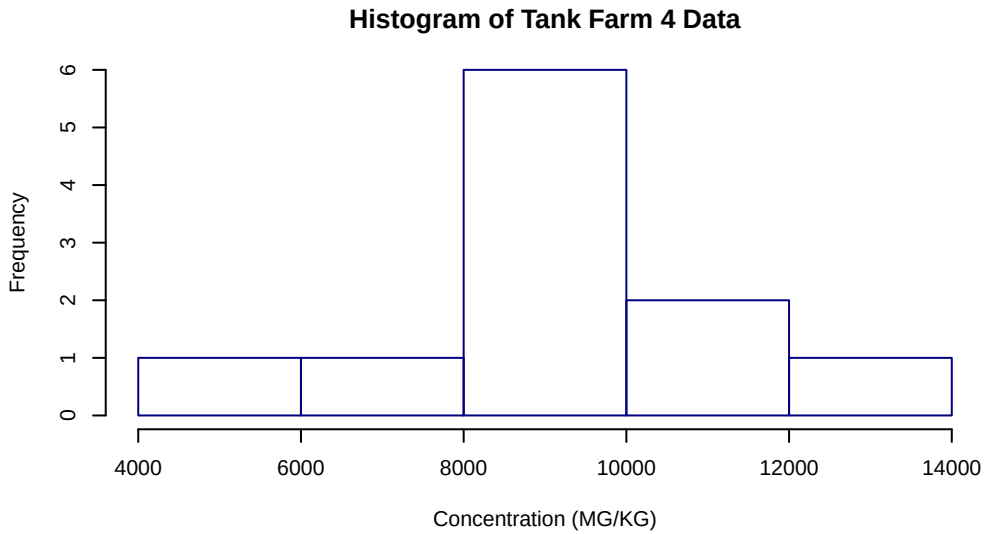


ALUMINUM Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

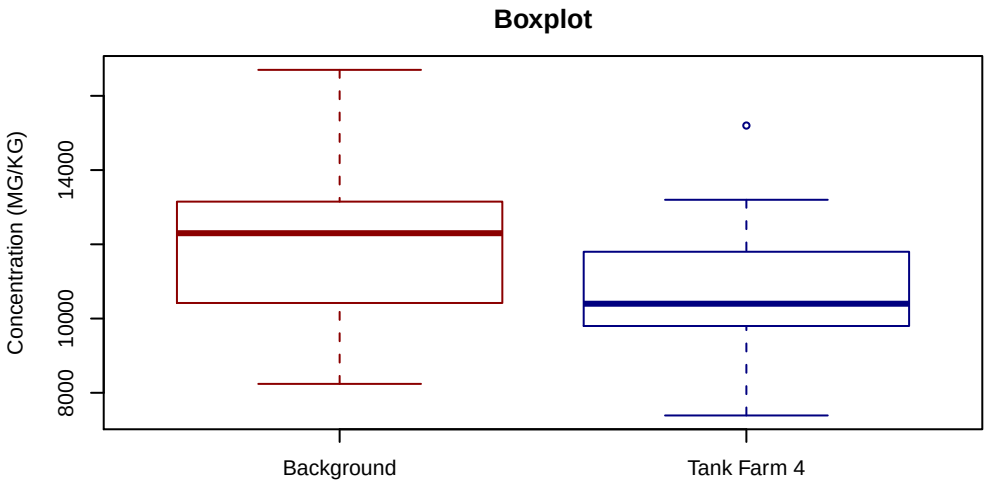


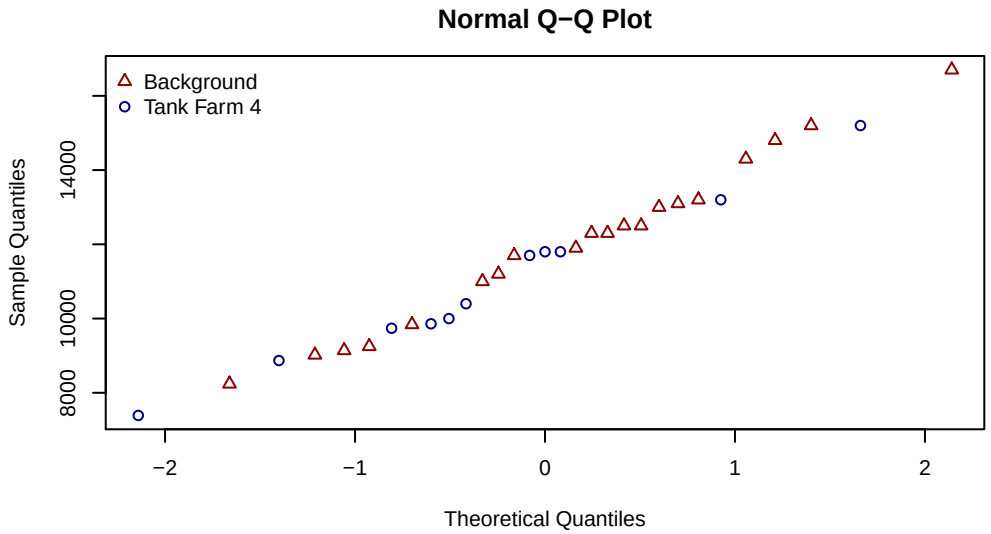


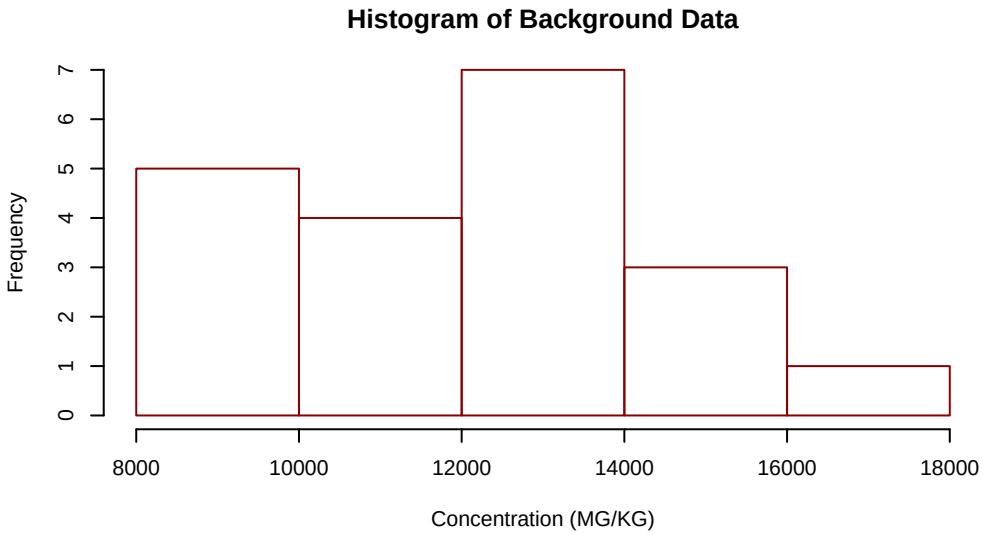


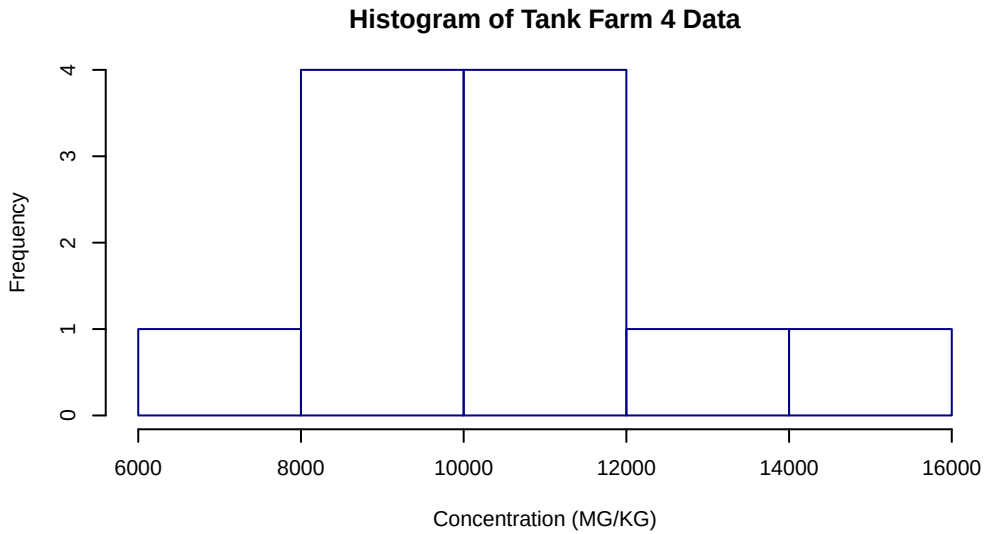


ALUMINUM Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

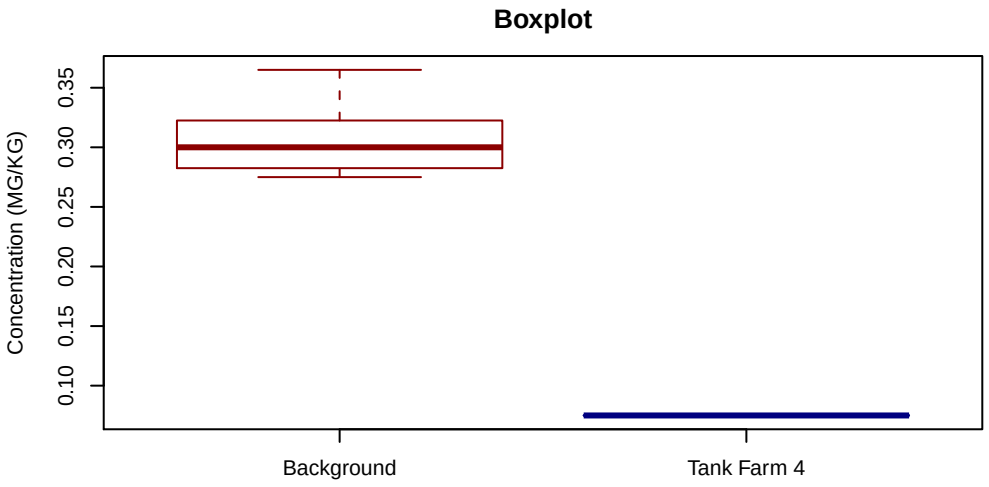


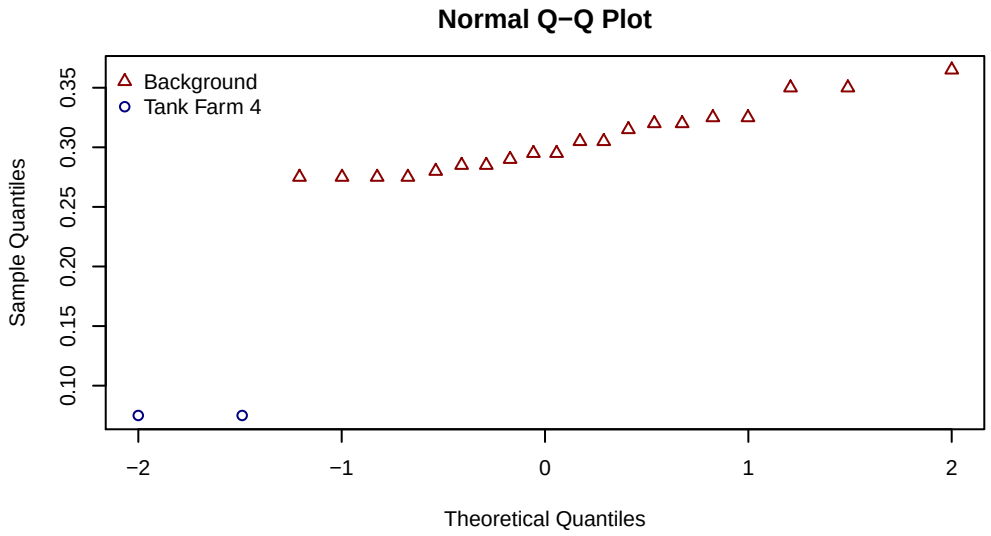


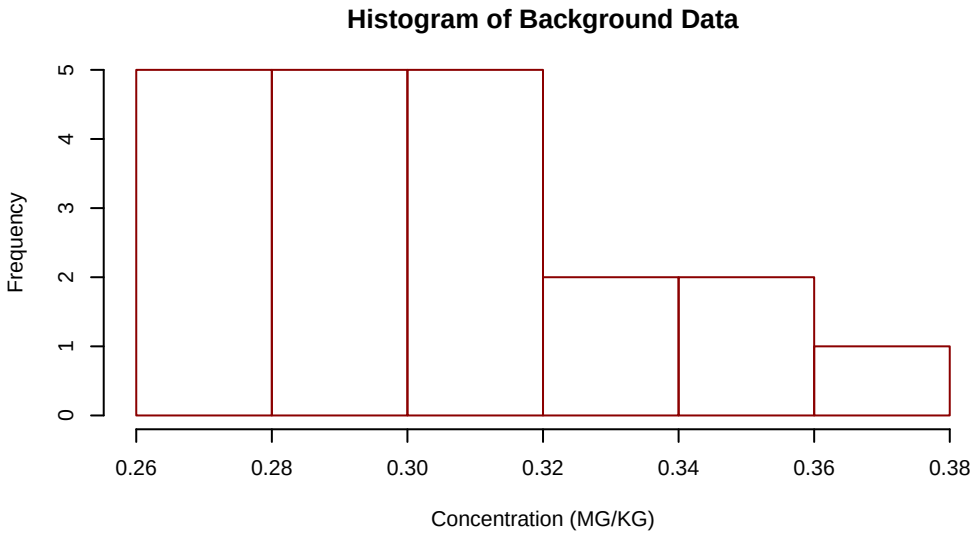


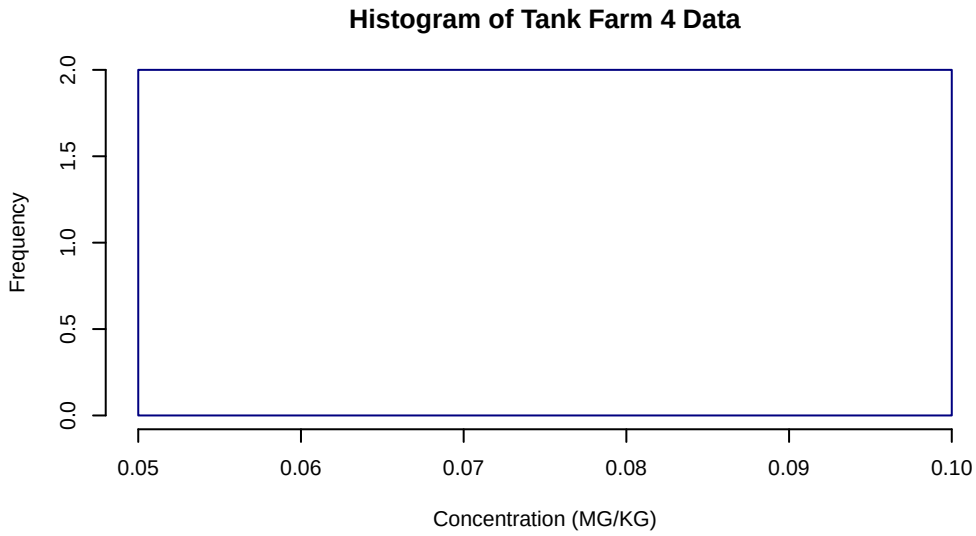


ANTIMONY MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

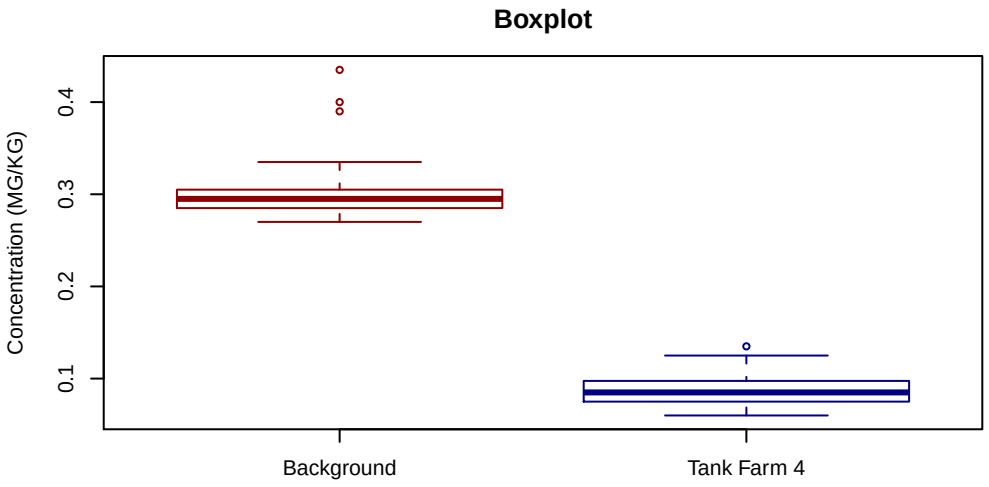


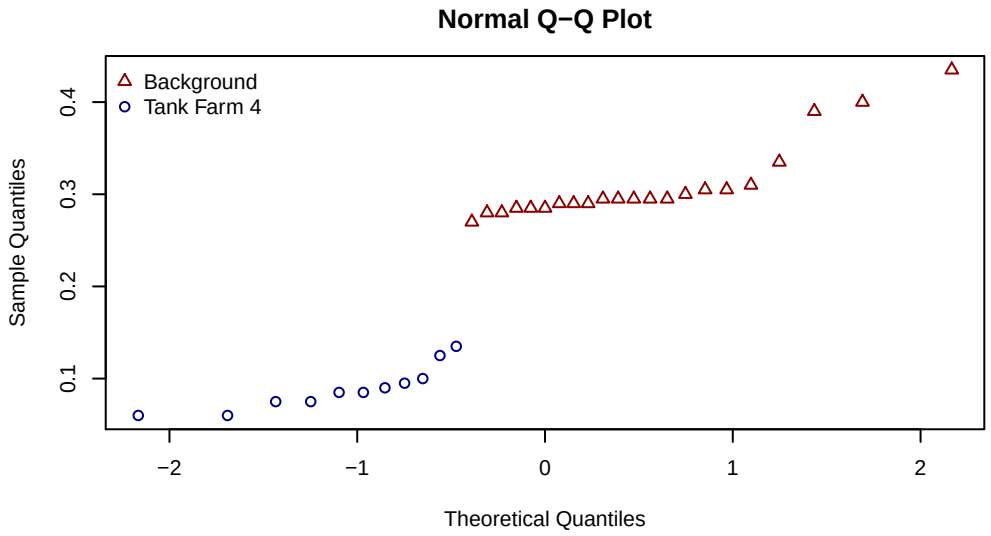


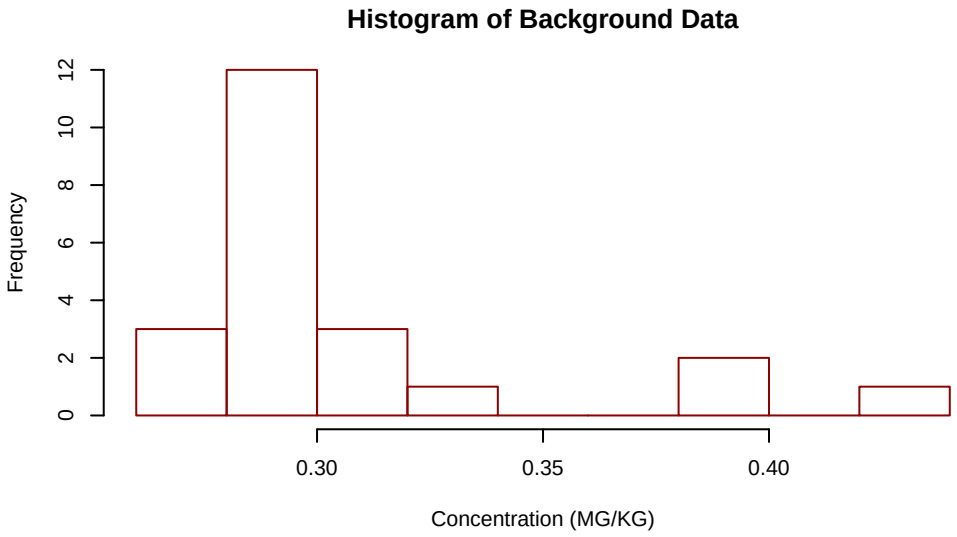


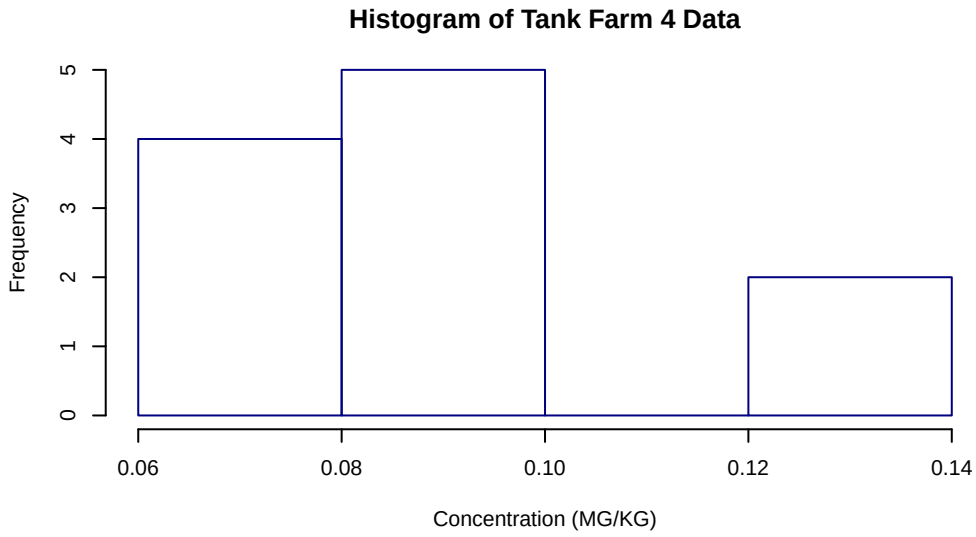


ANTIMONY Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

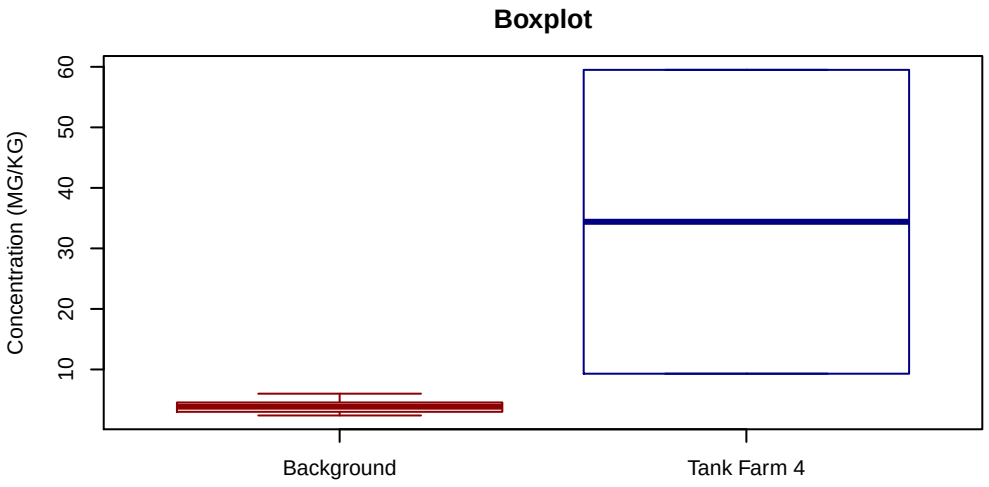


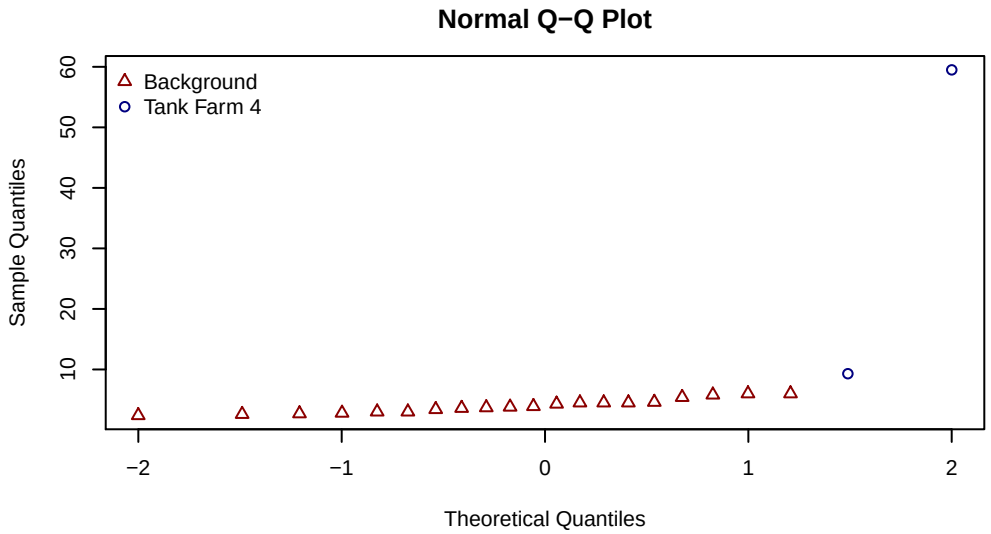


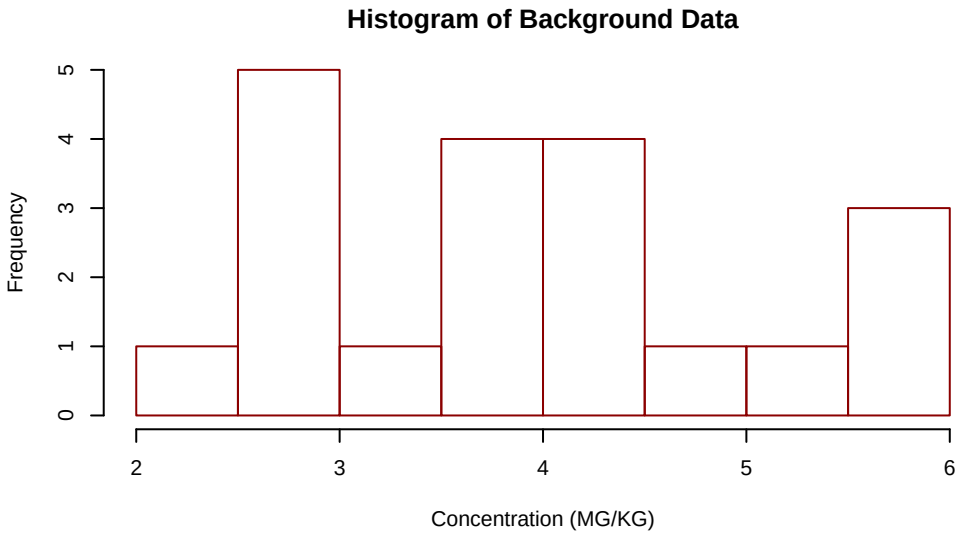


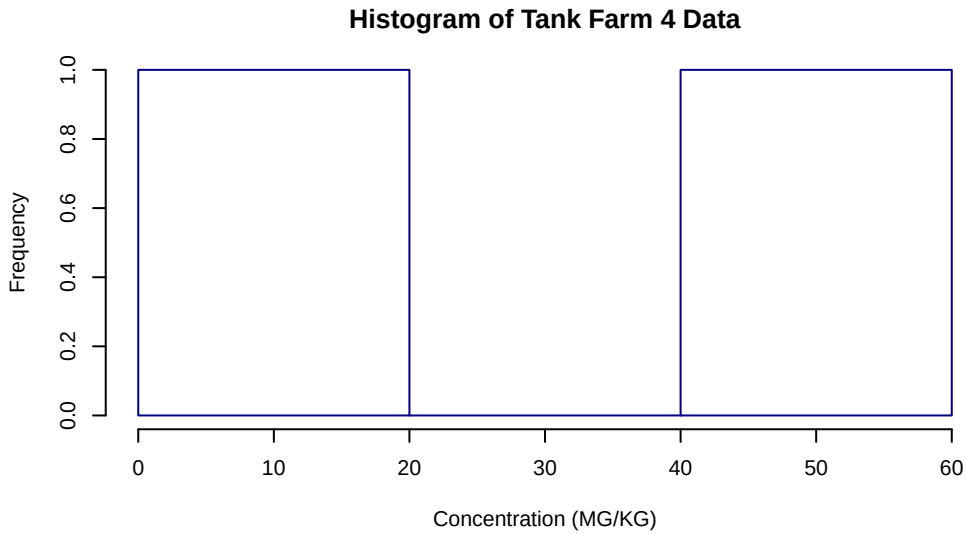


ARSENIC MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

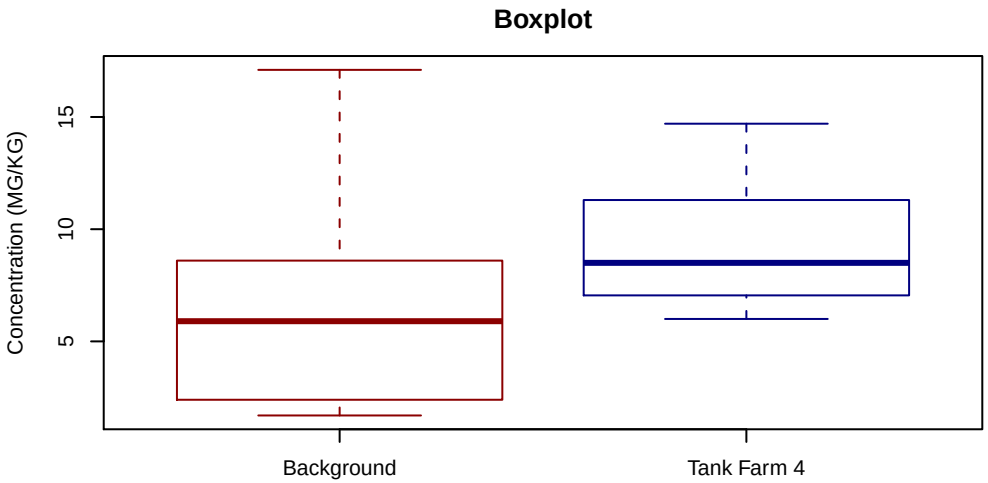


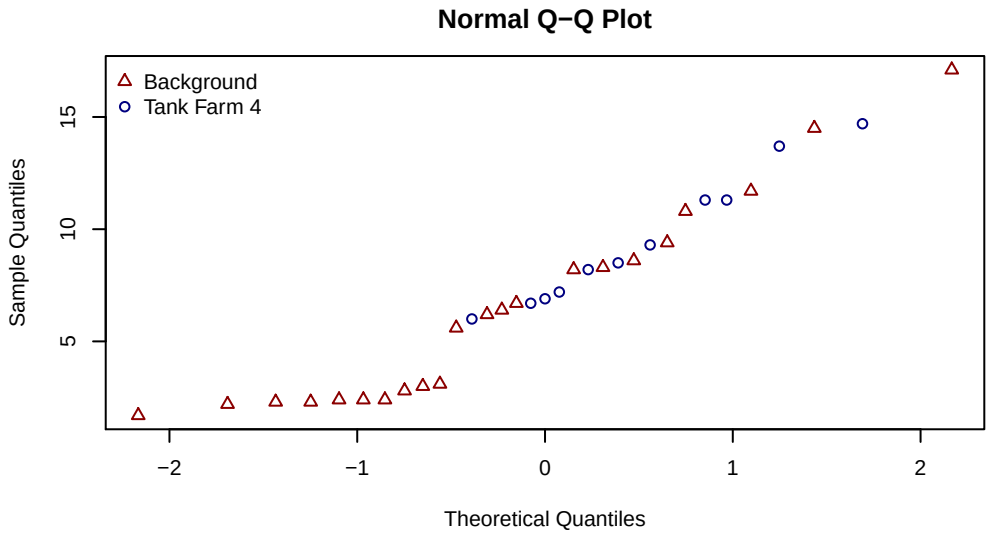


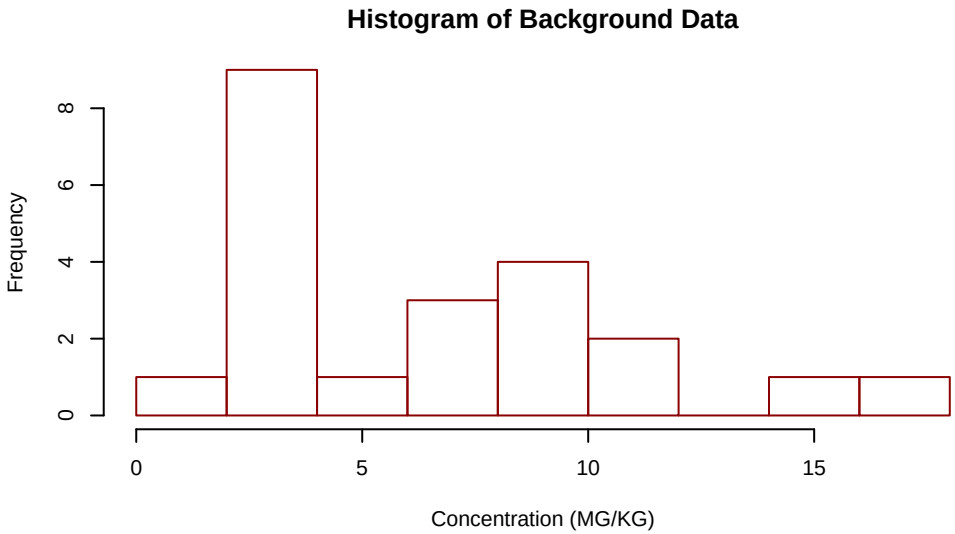


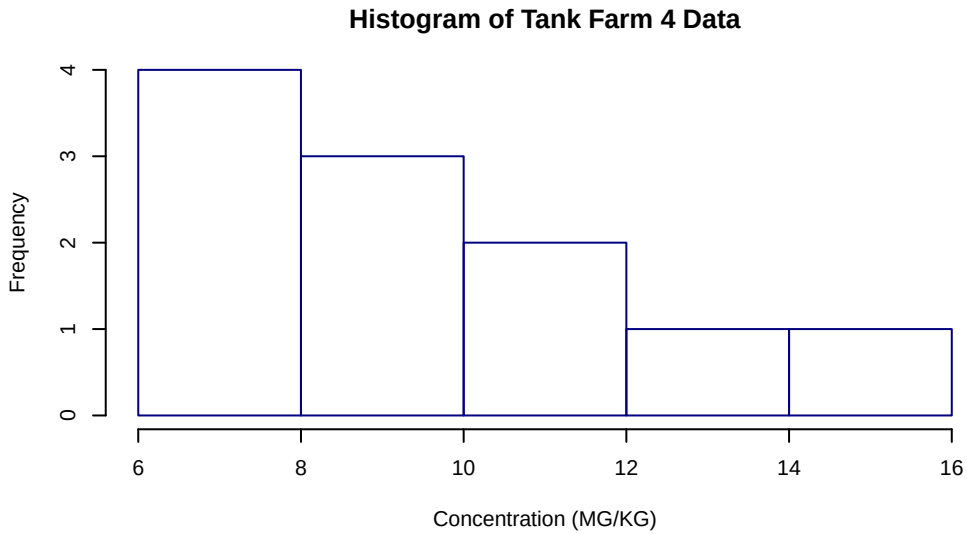


ARSENIC Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

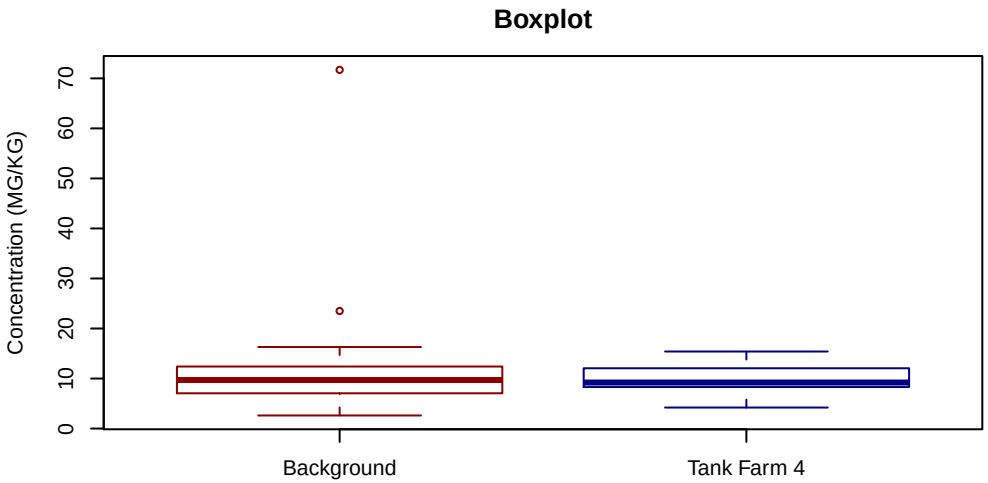


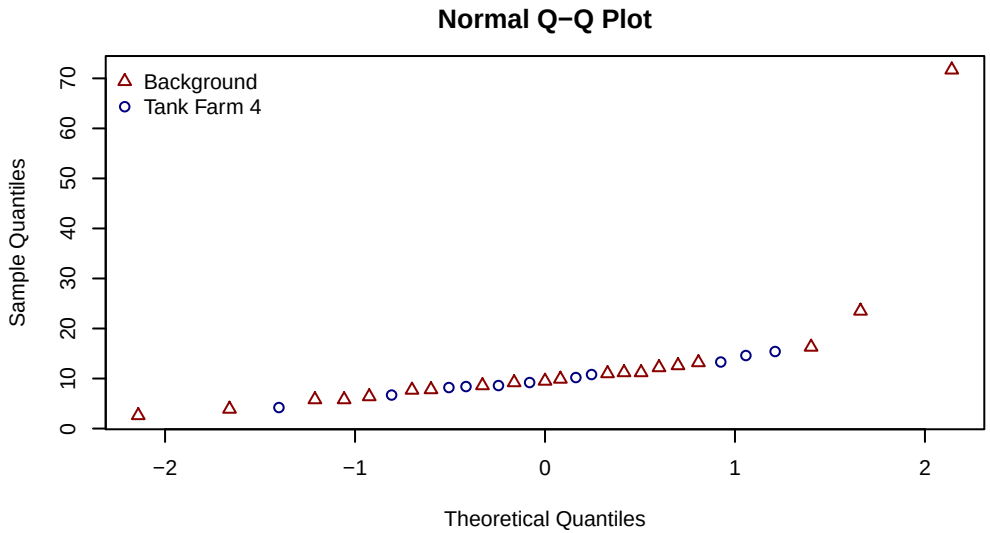


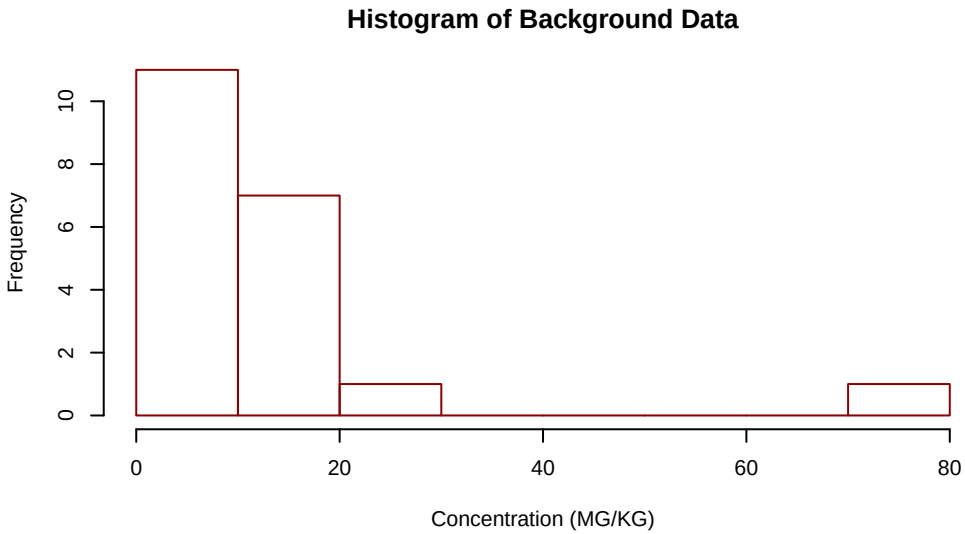


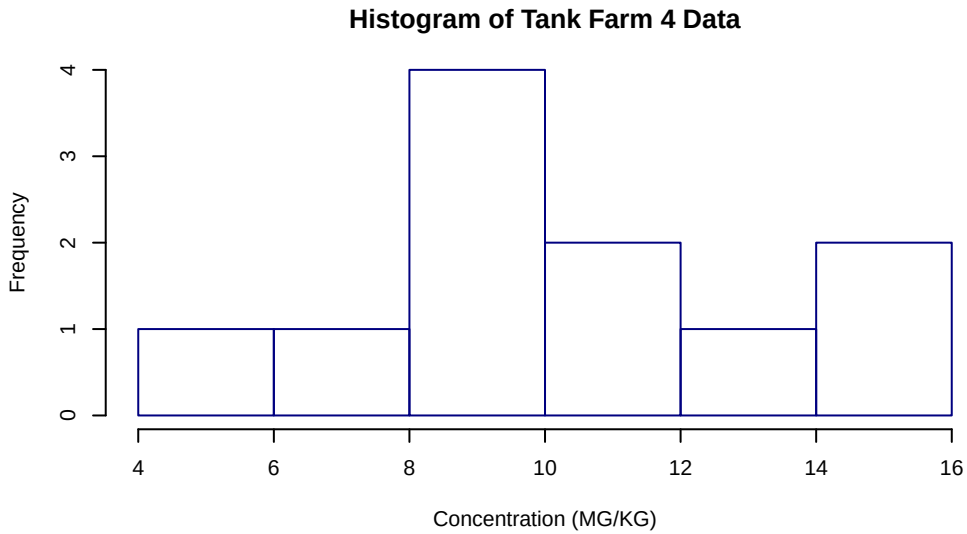


ARSENIC Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

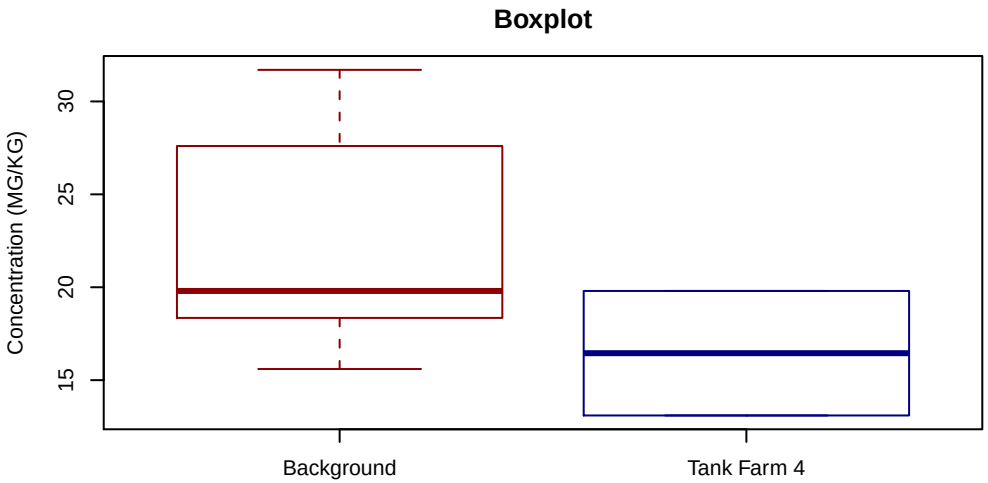


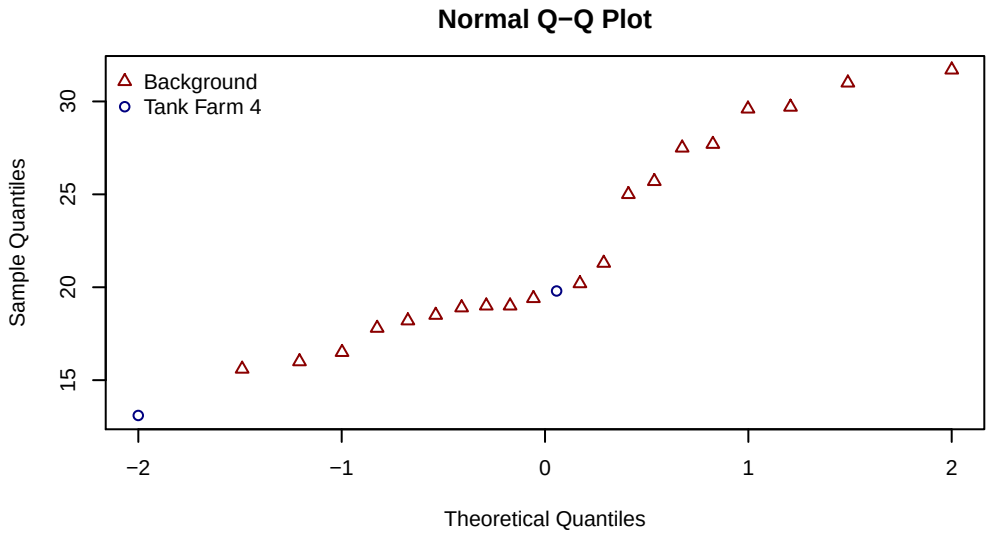


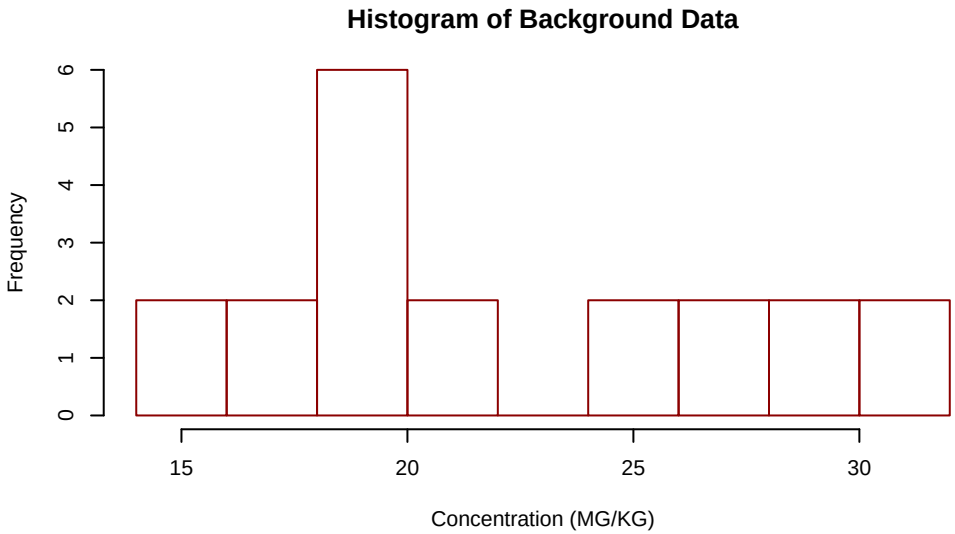


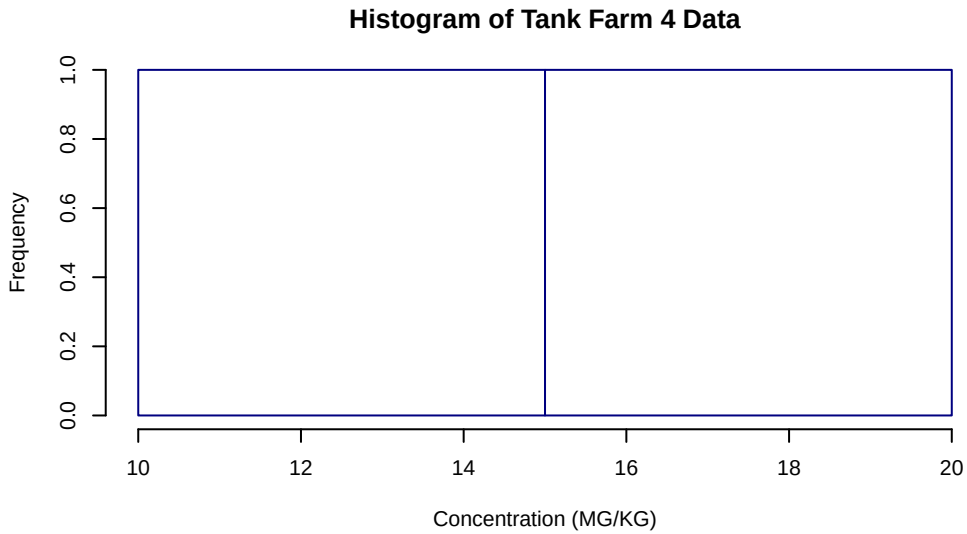


BARIUM MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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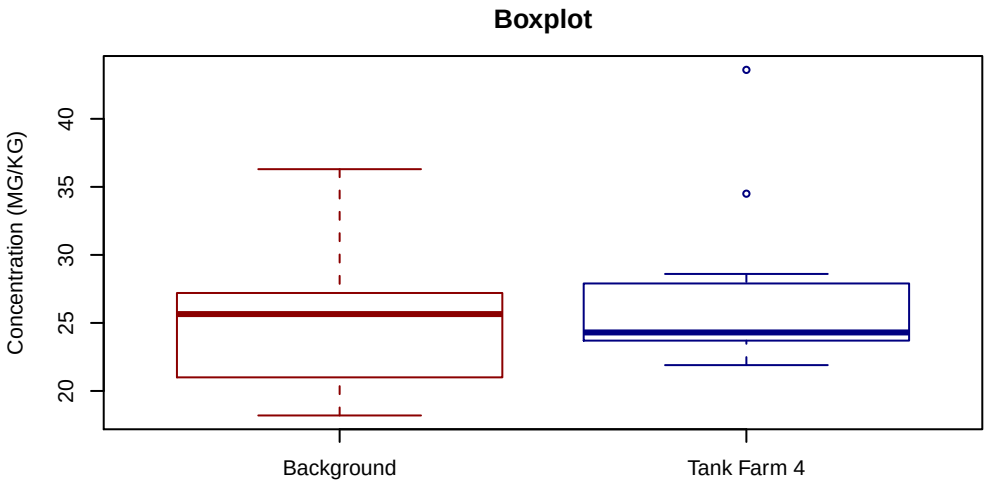

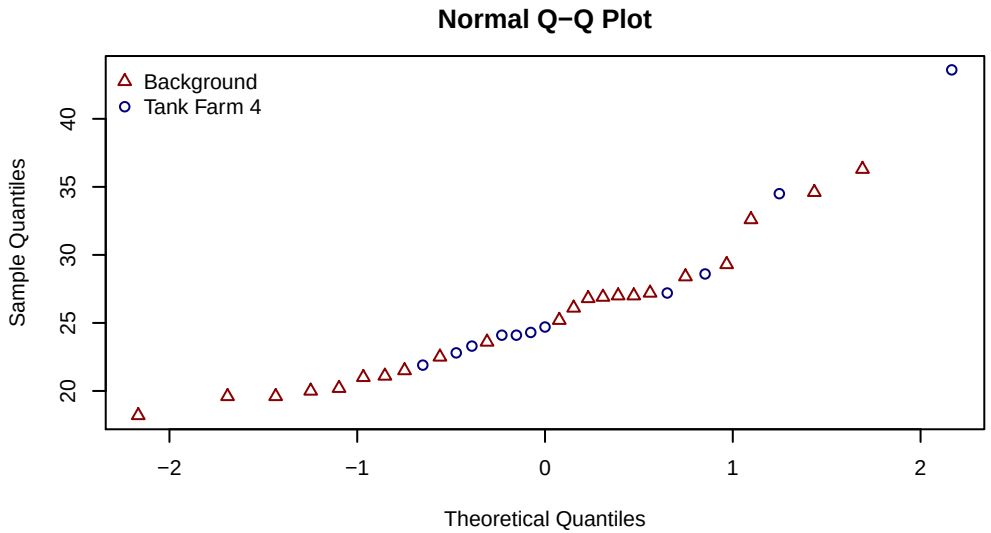

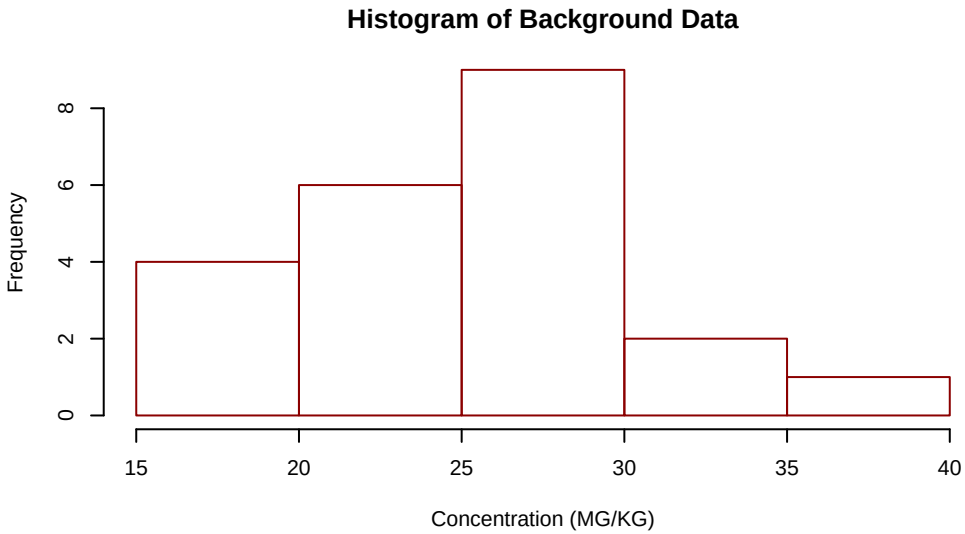

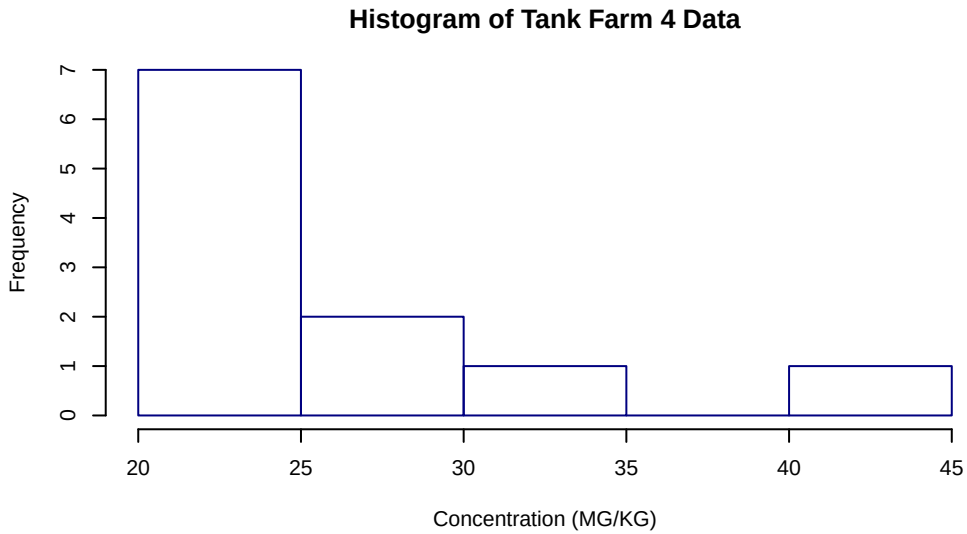

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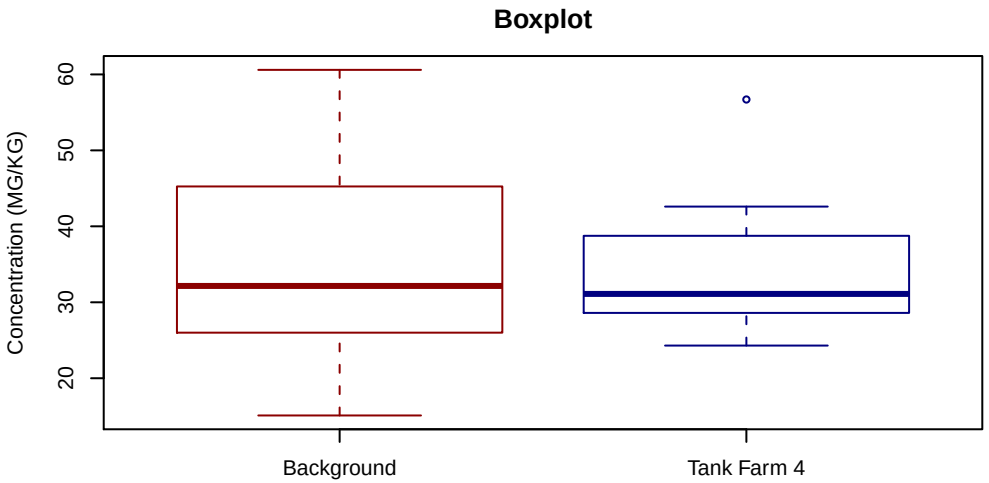

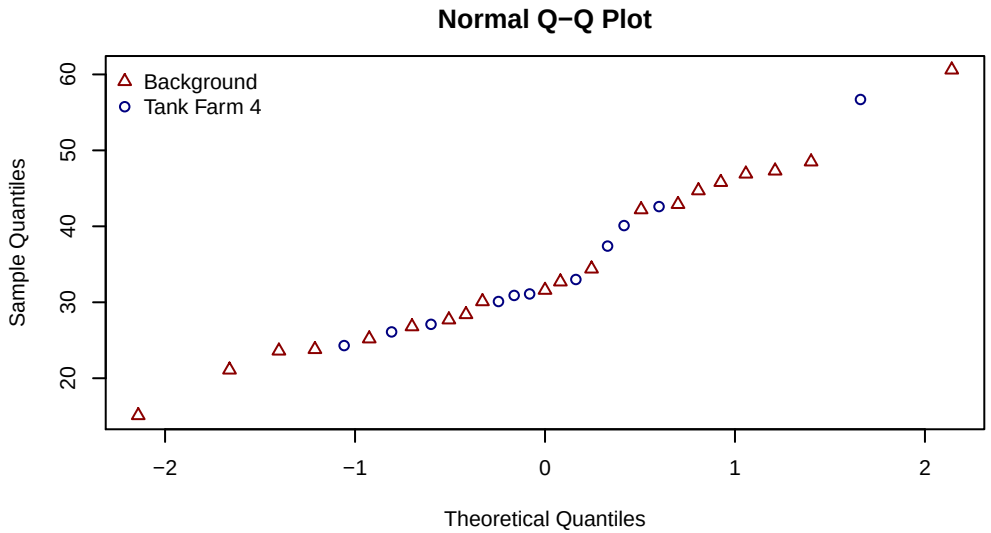

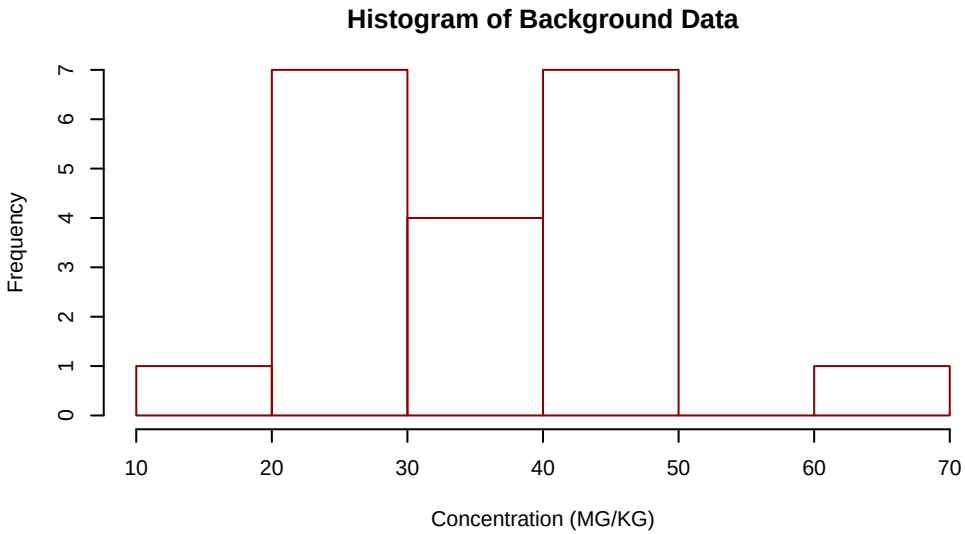

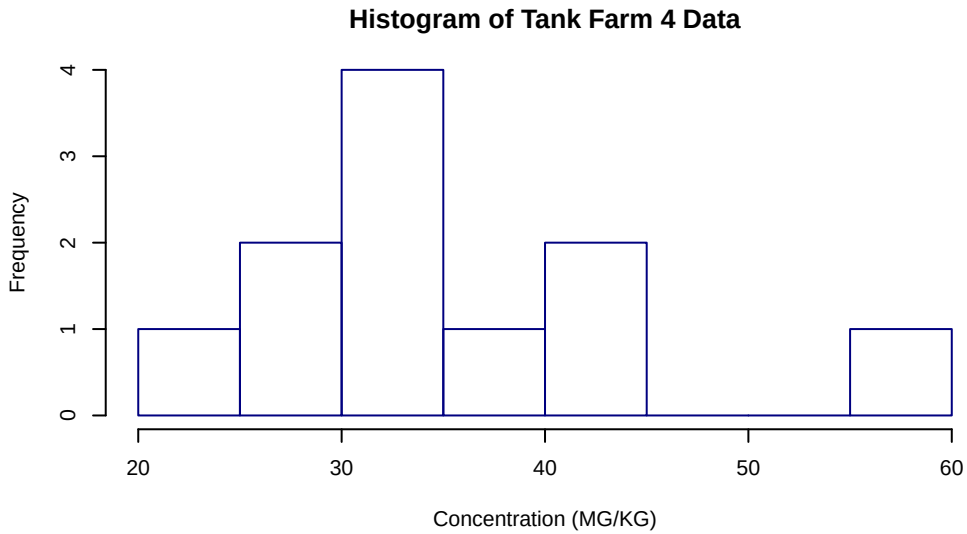

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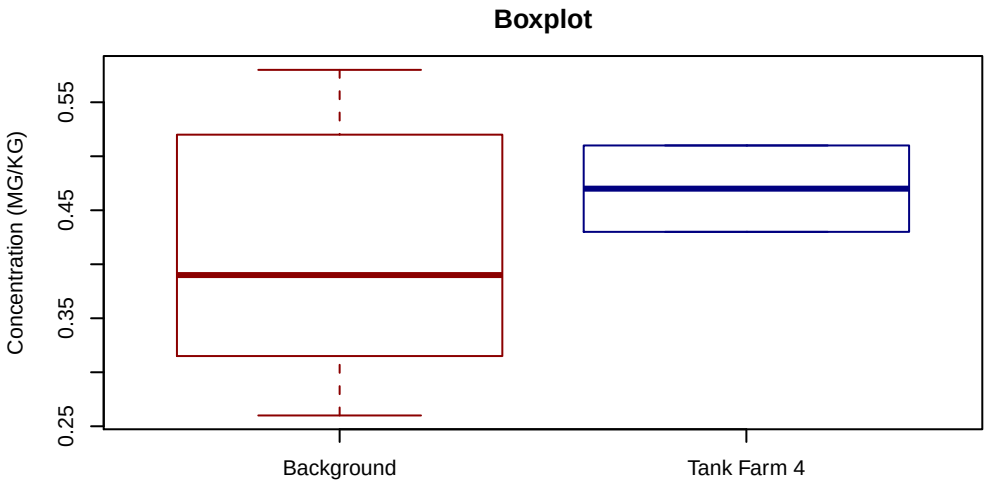

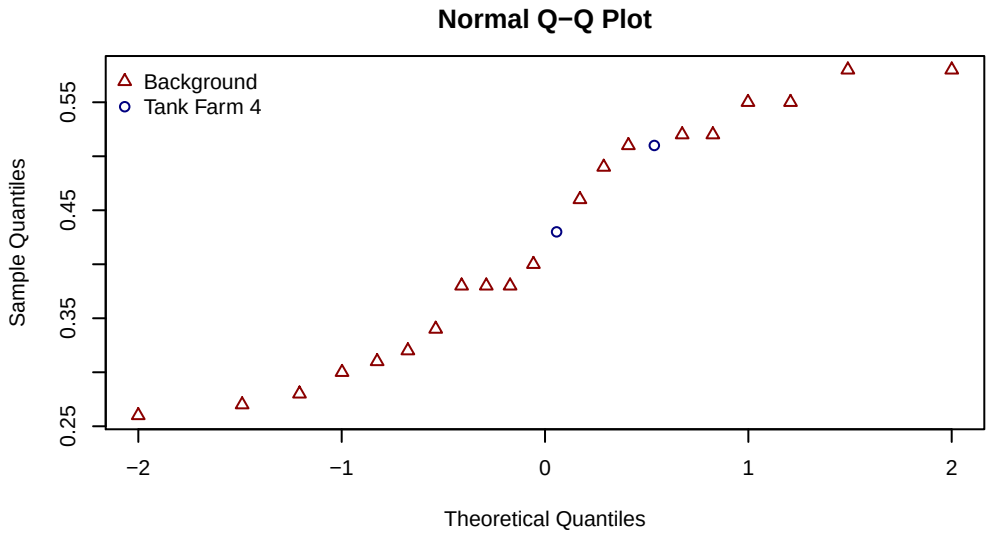

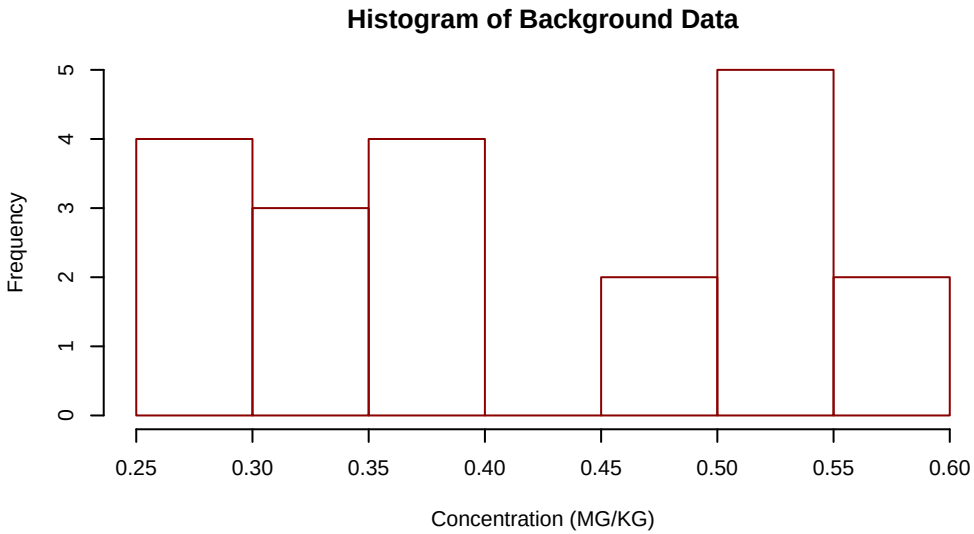

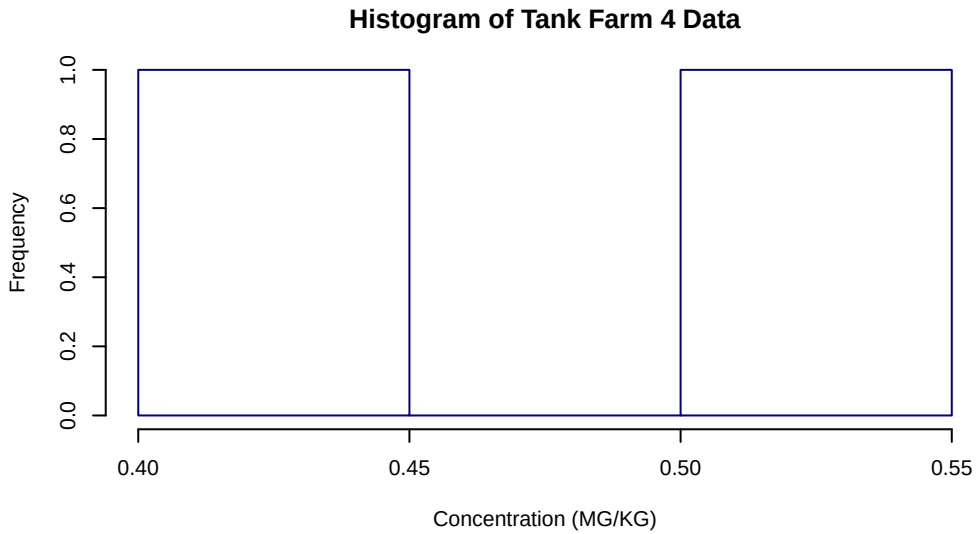

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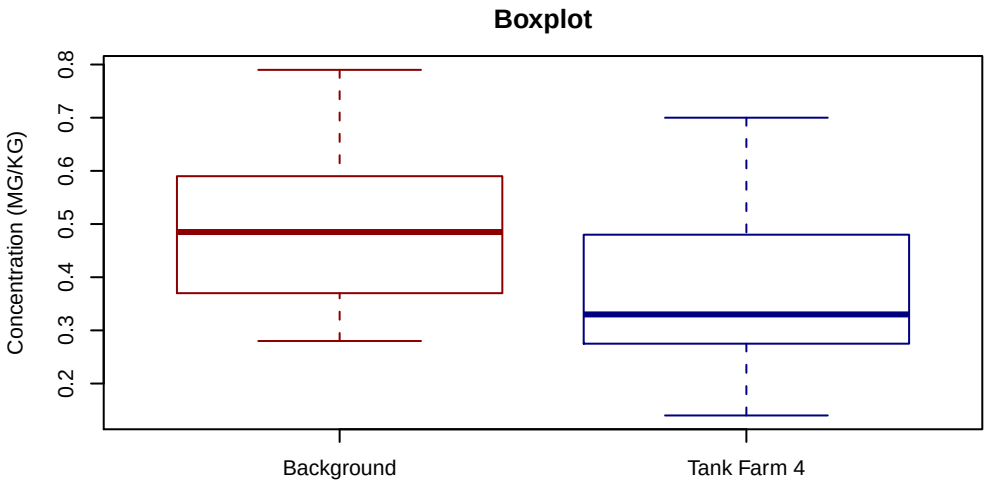

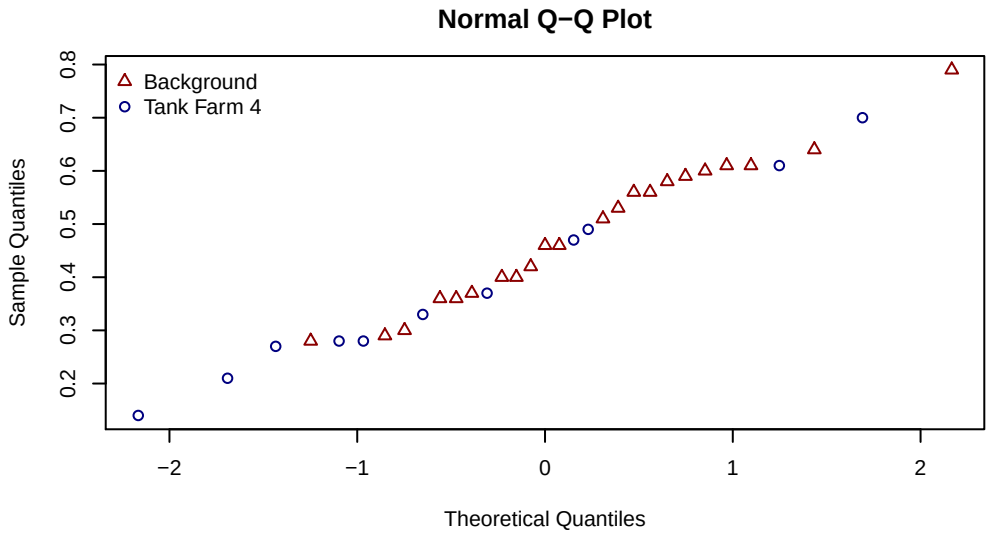

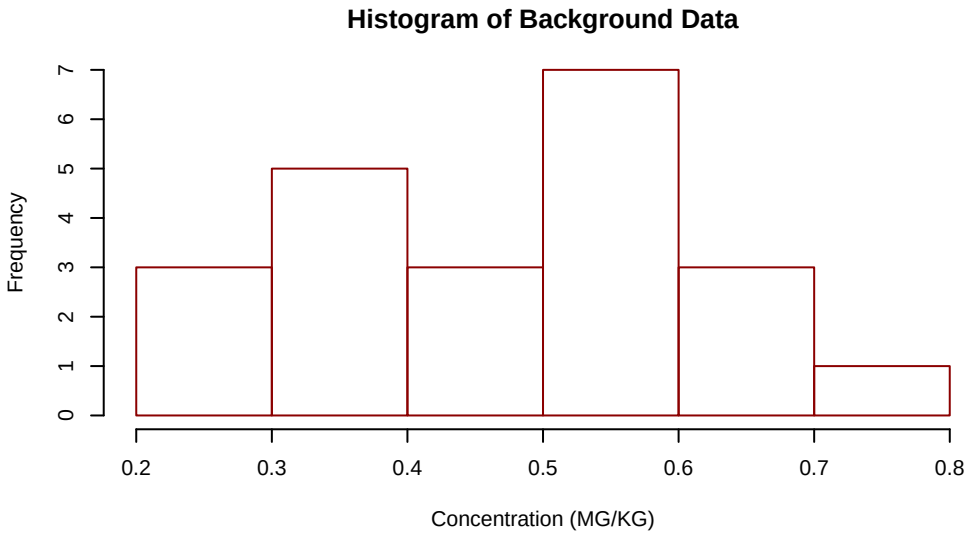

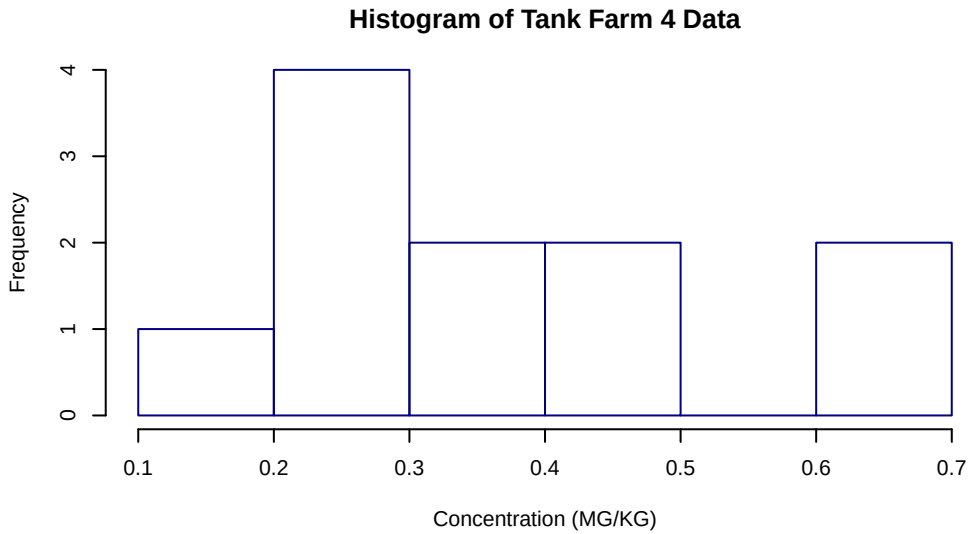

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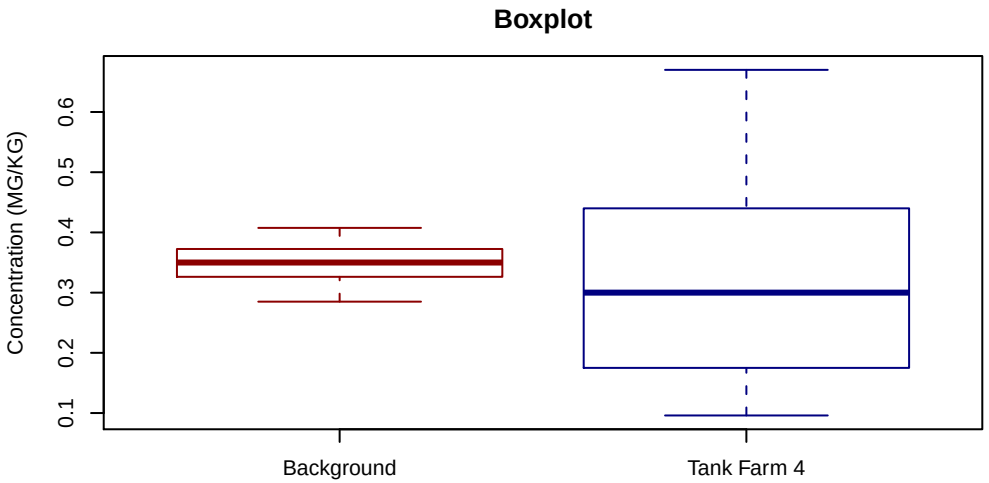

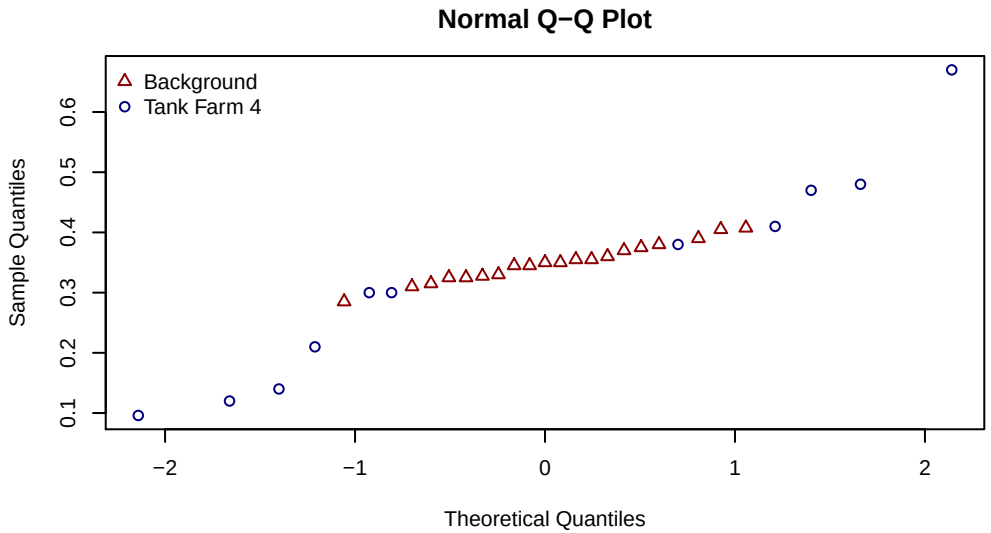

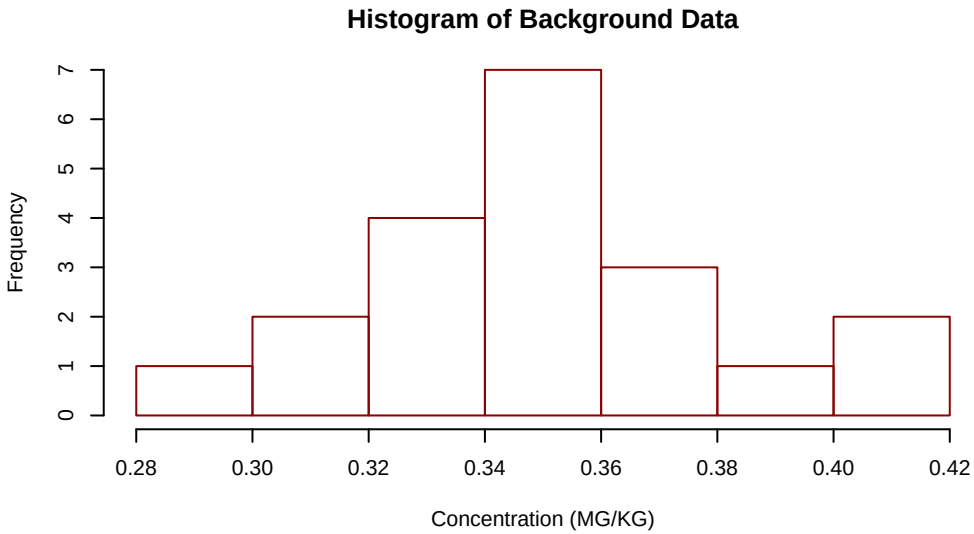

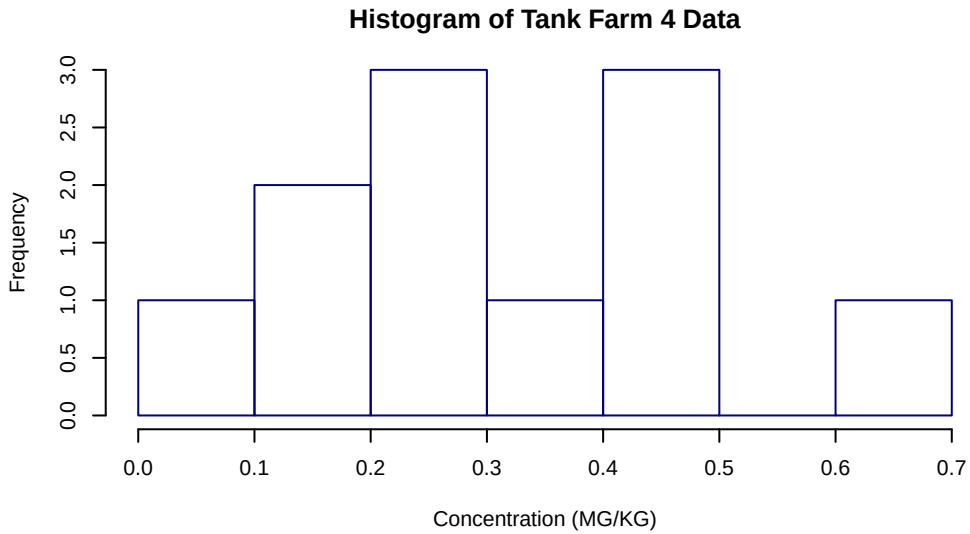

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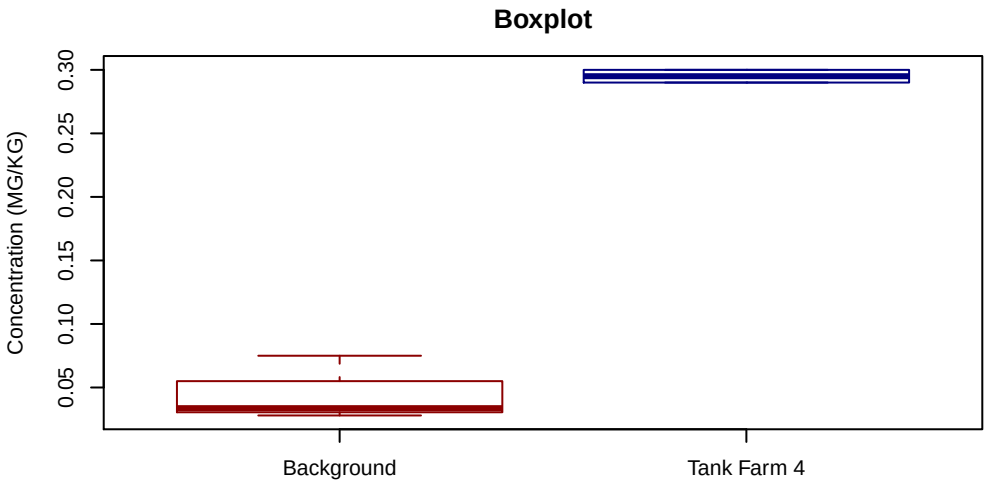

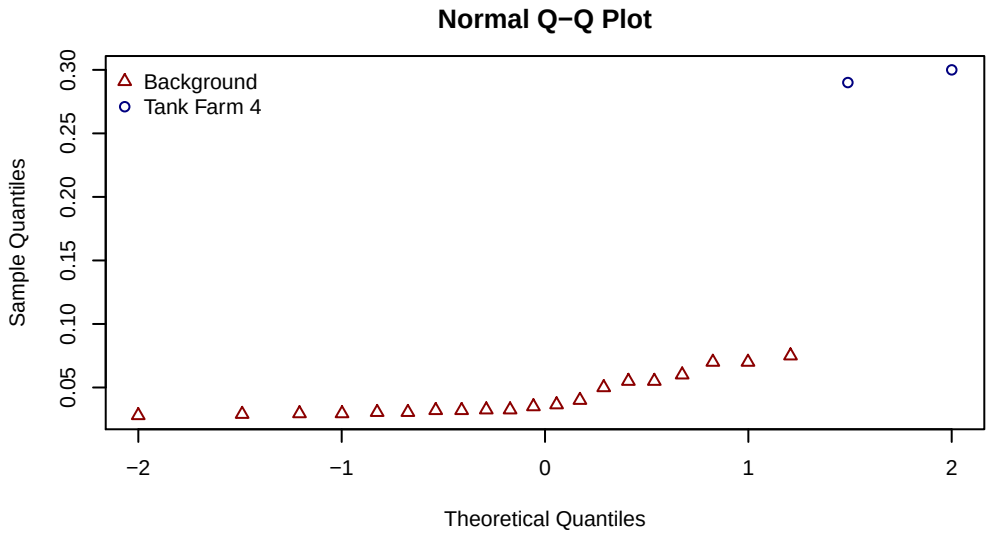

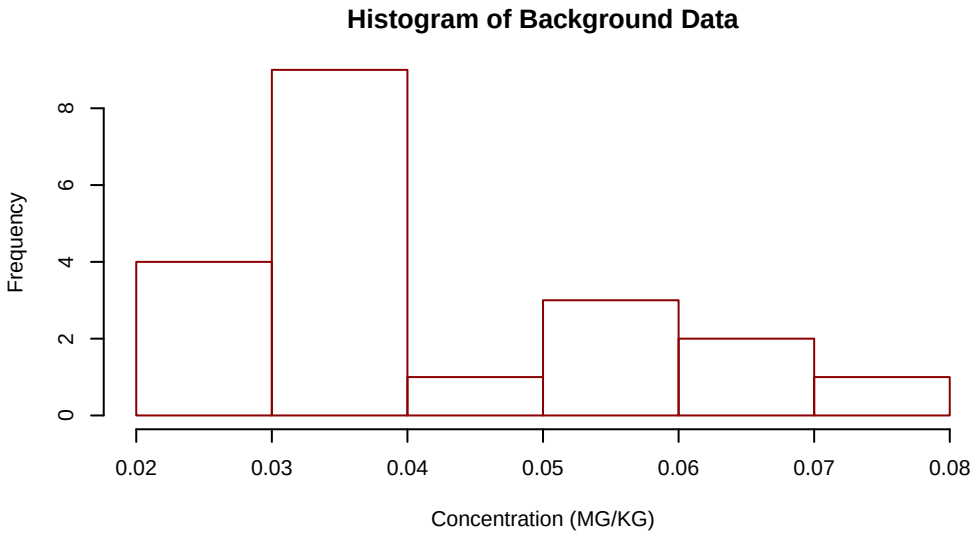

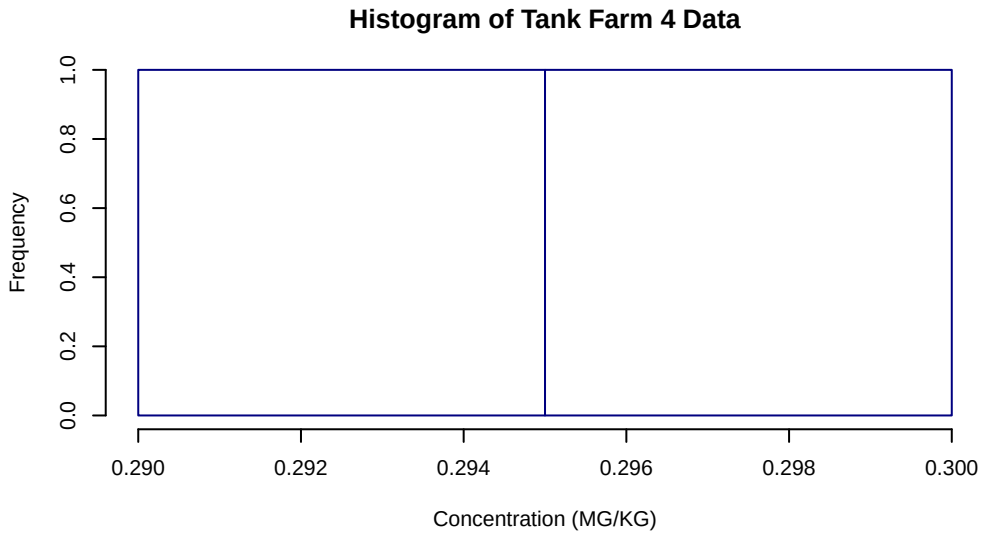

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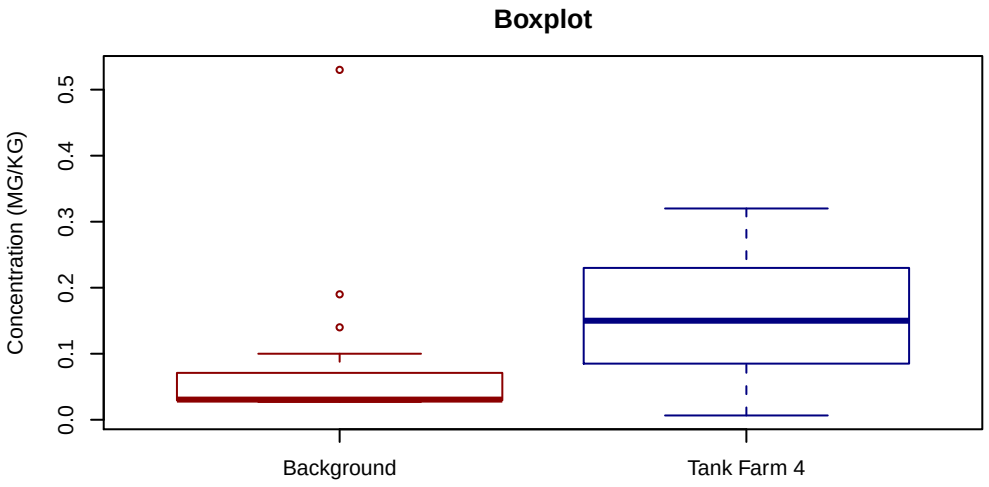

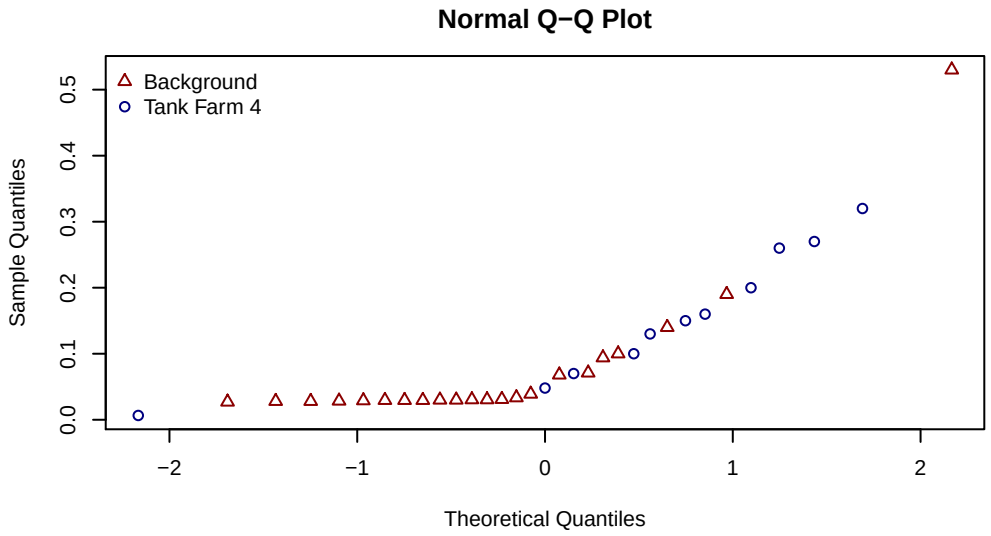

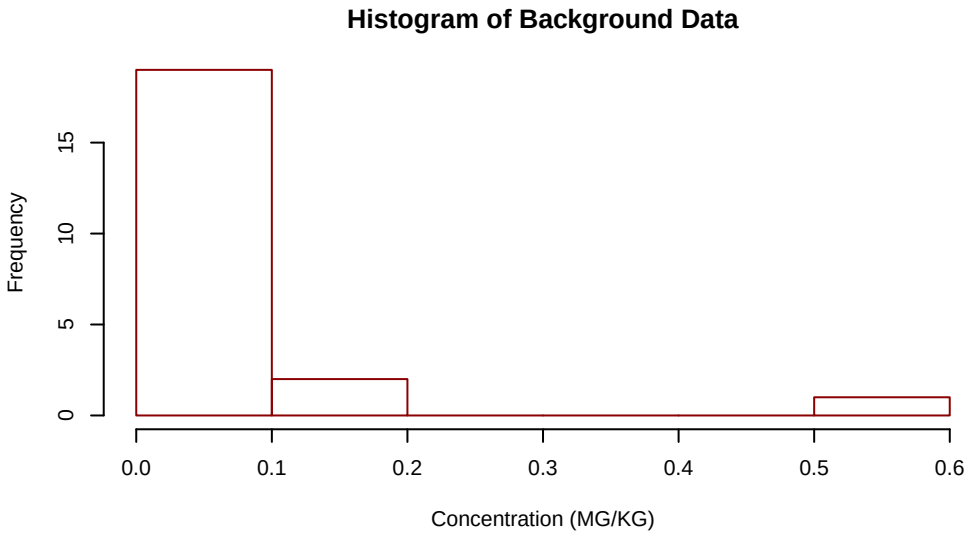

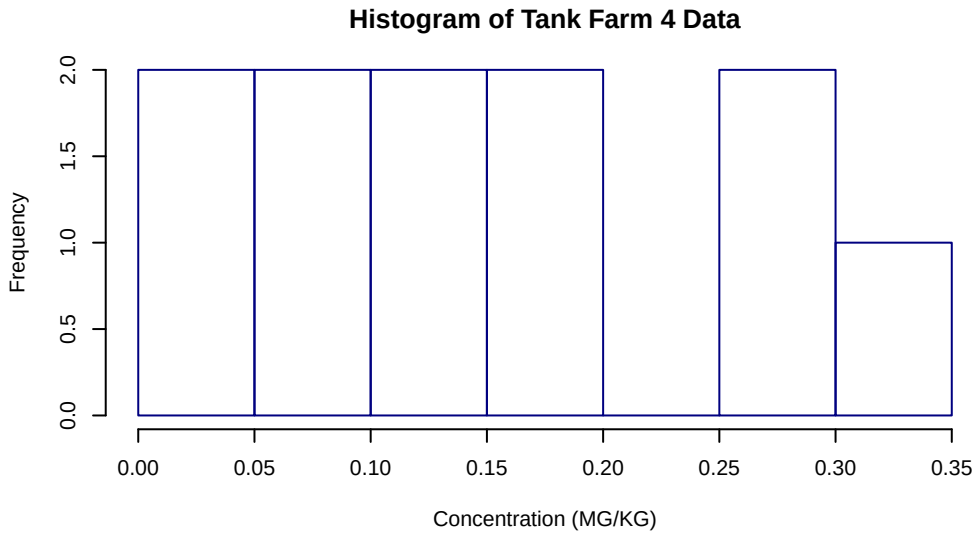

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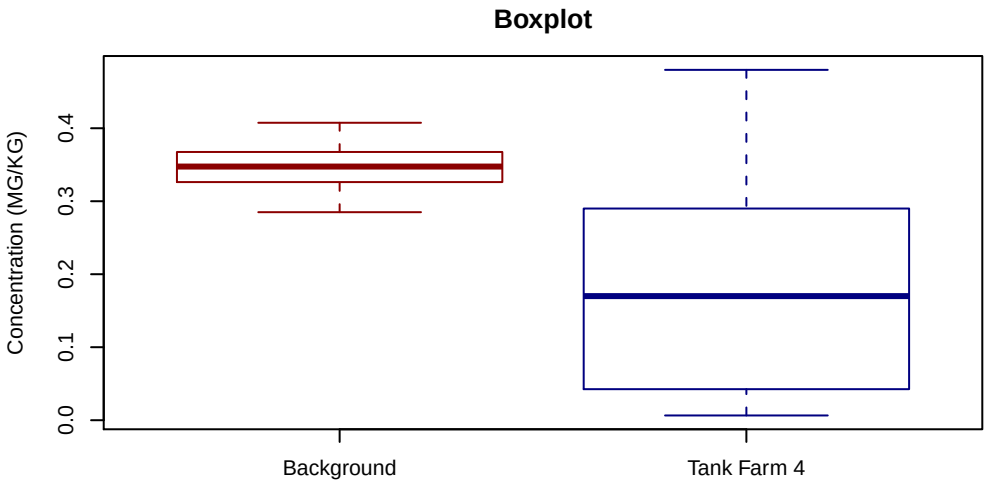

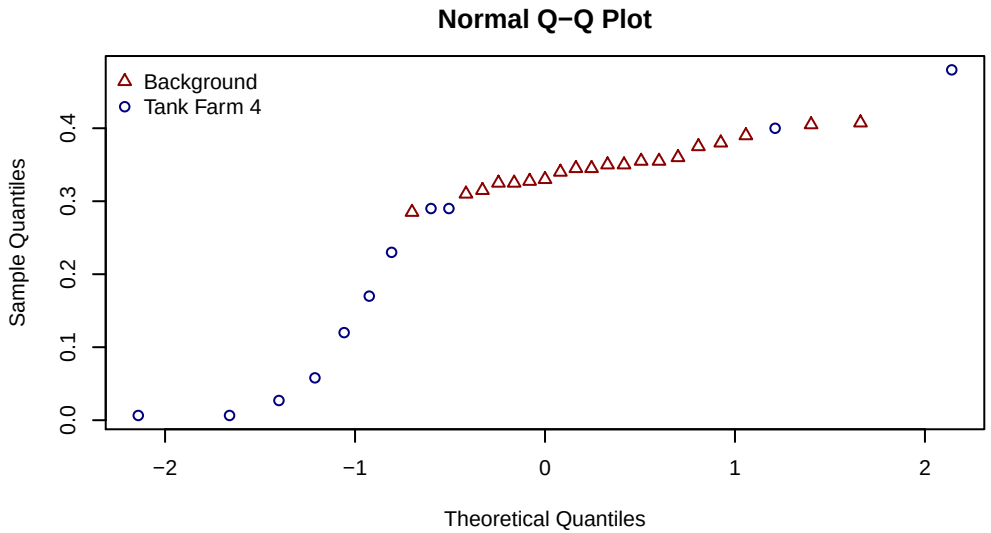

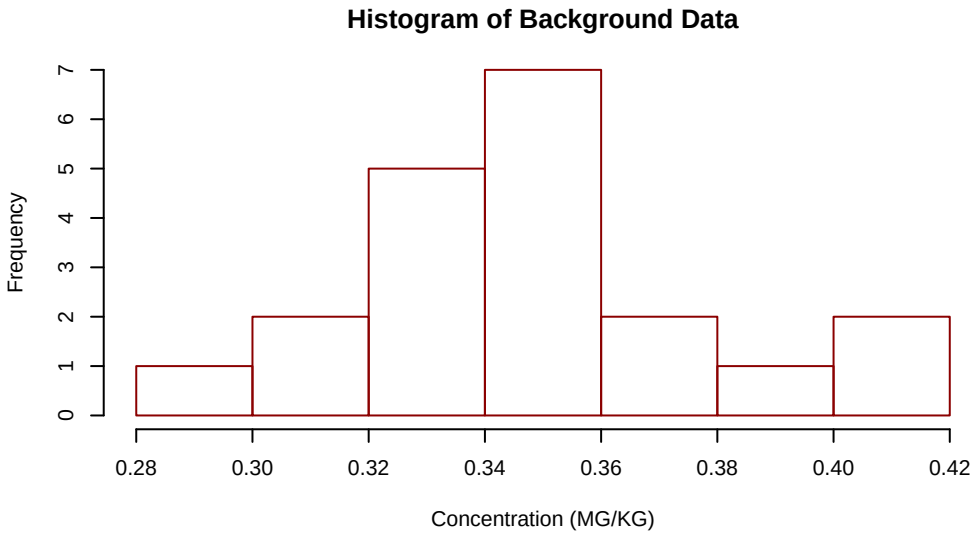

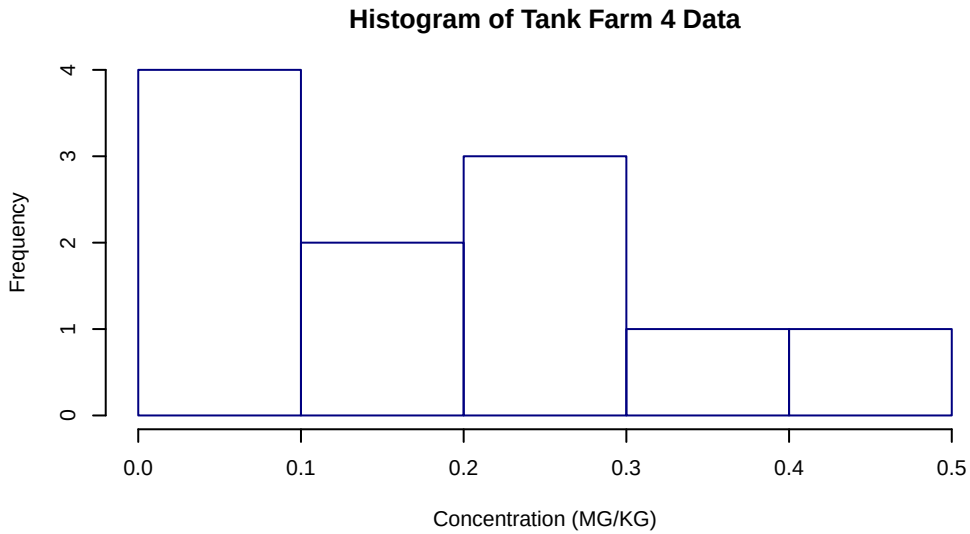

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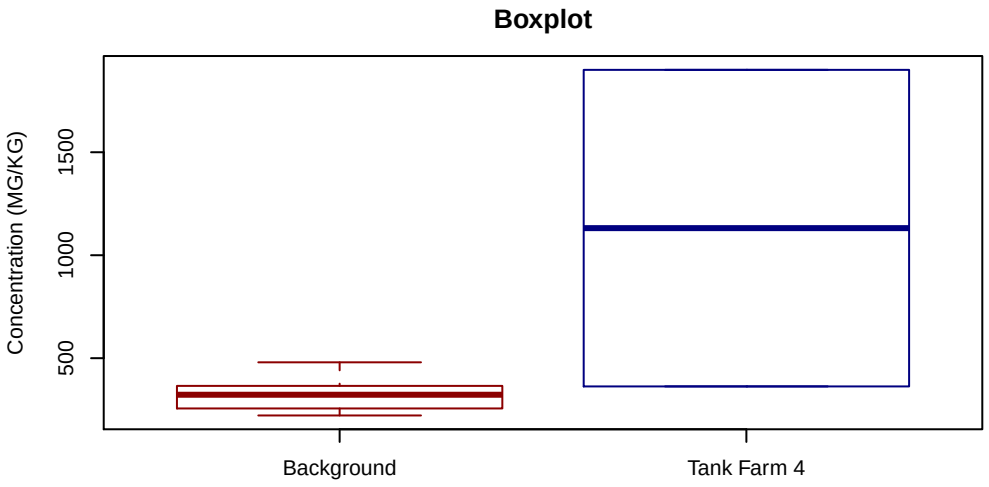

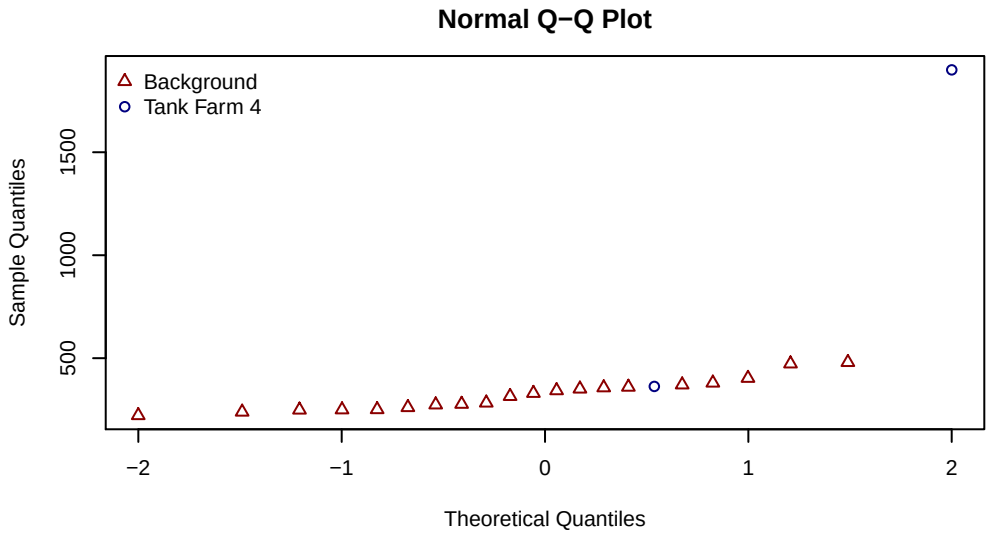

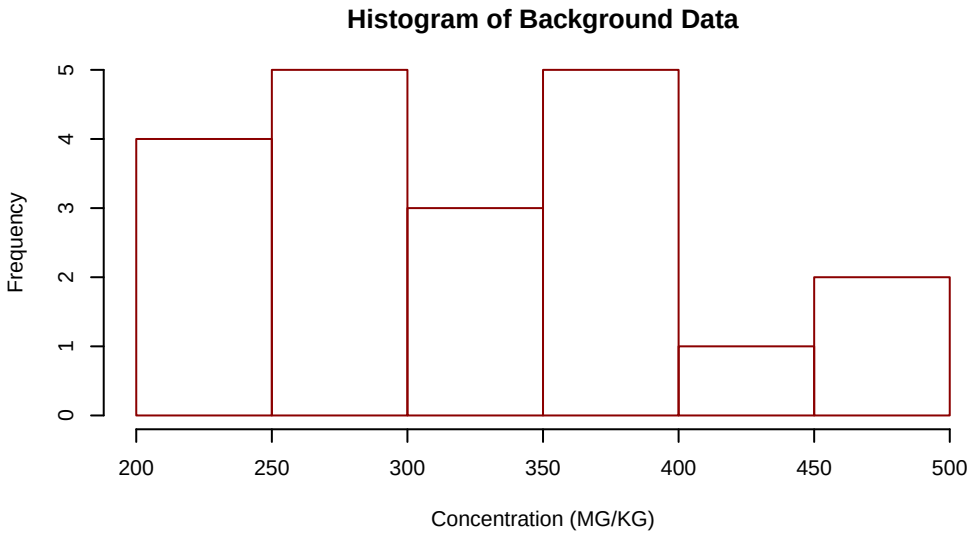

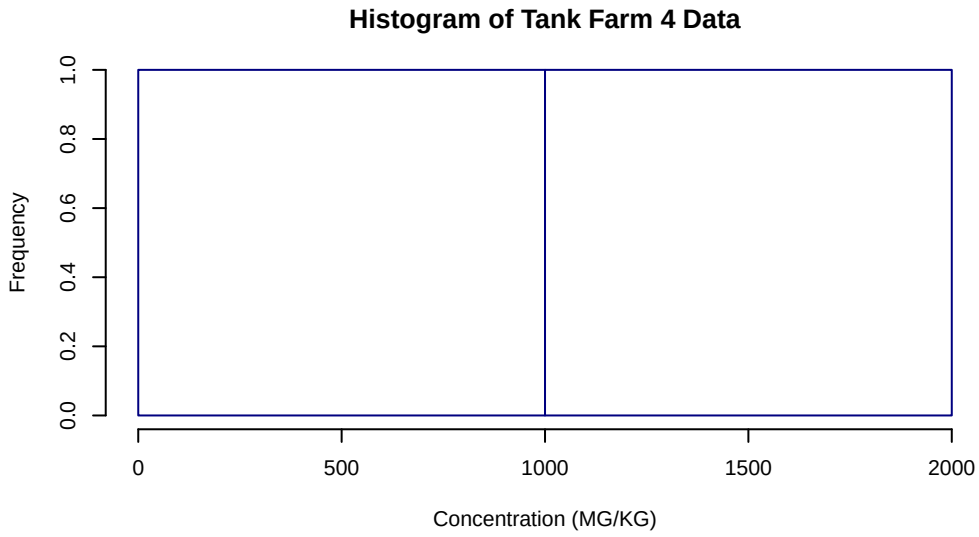

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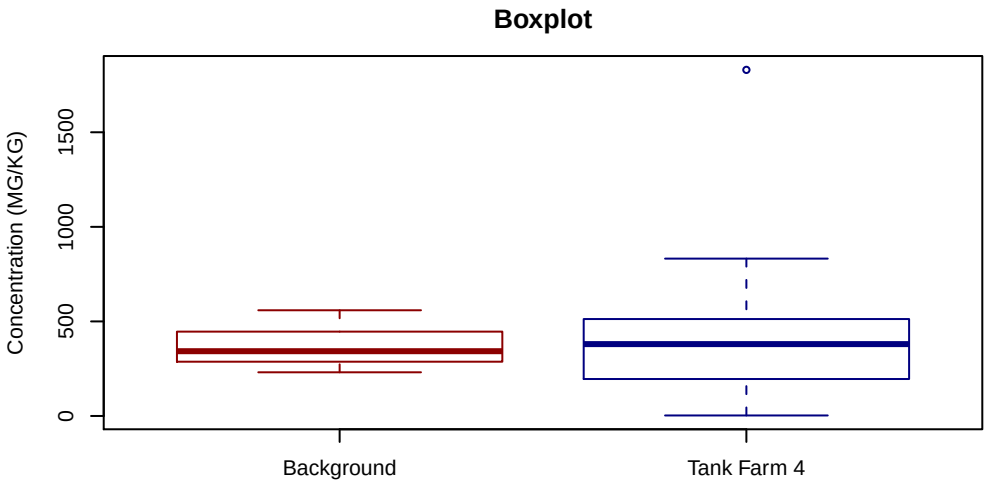

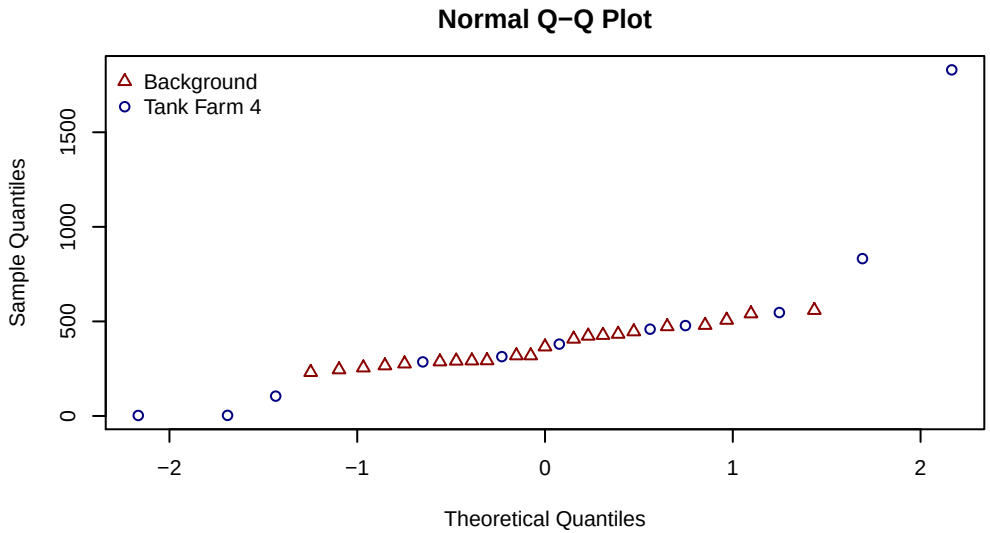

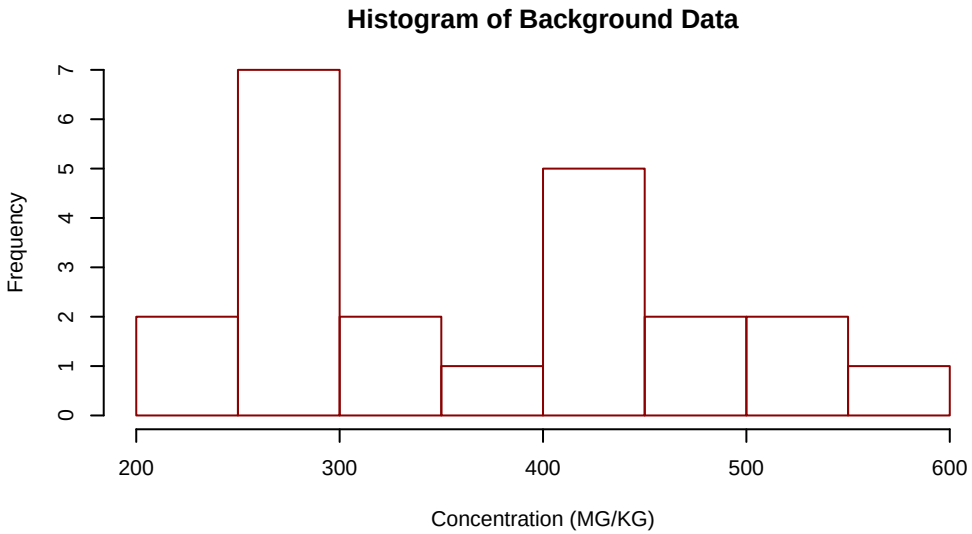

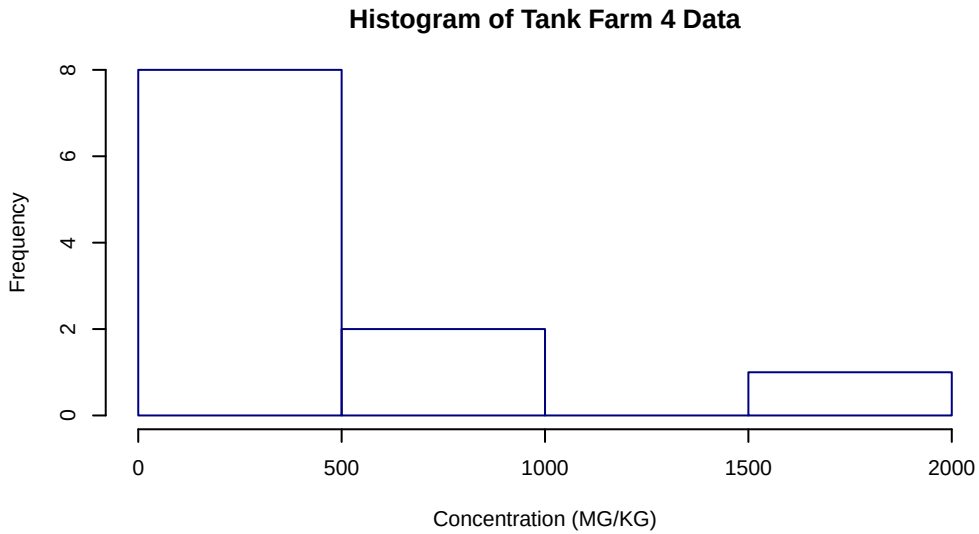

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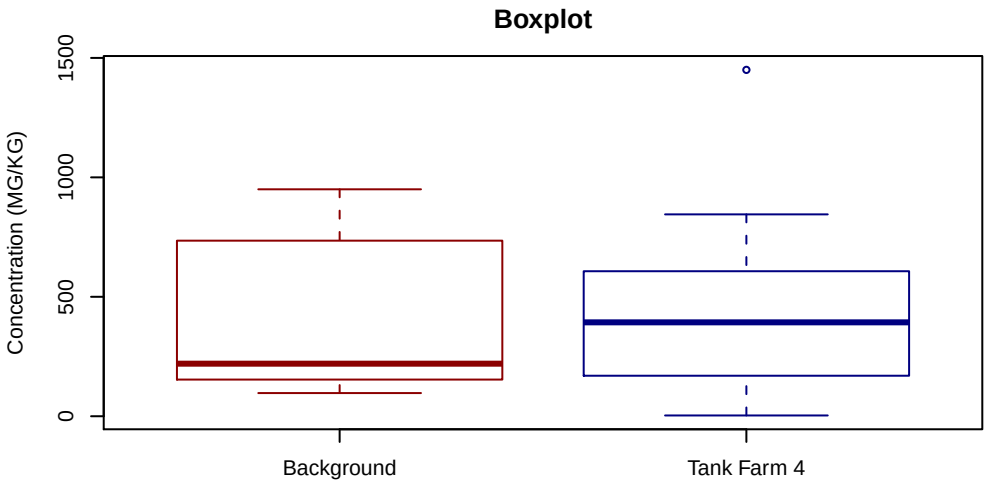

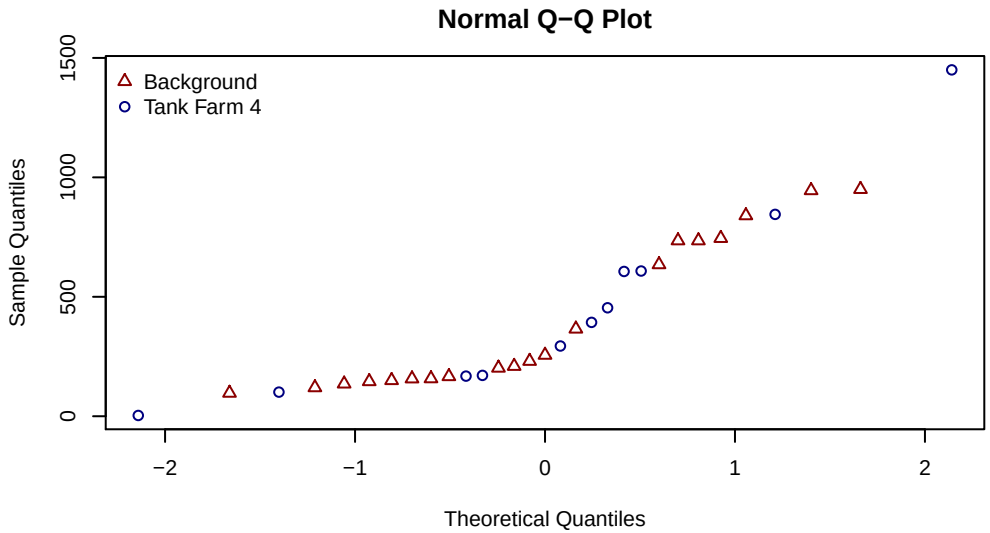

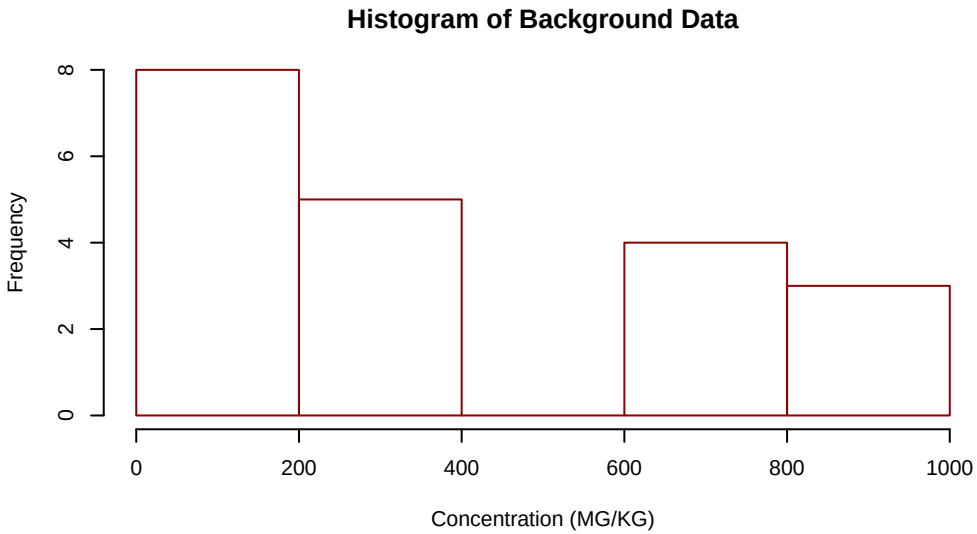

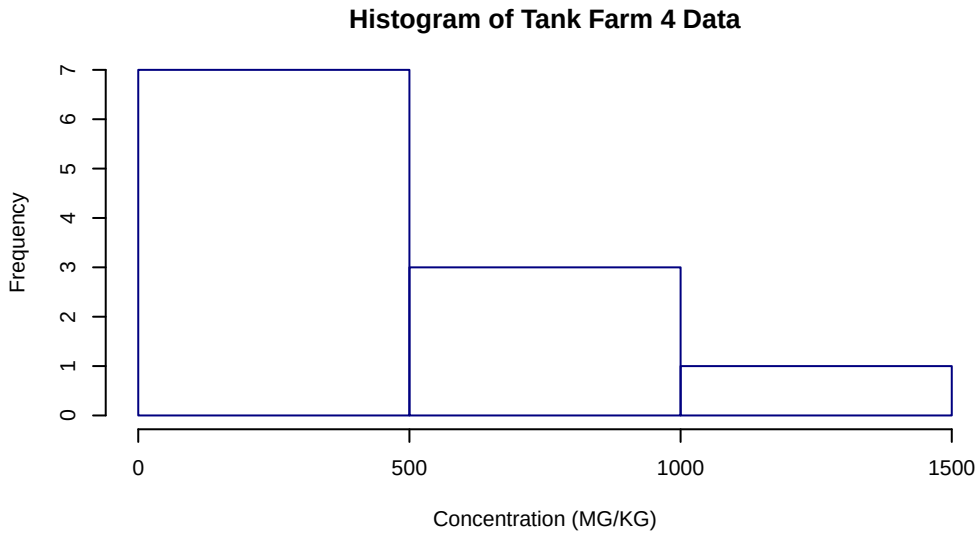

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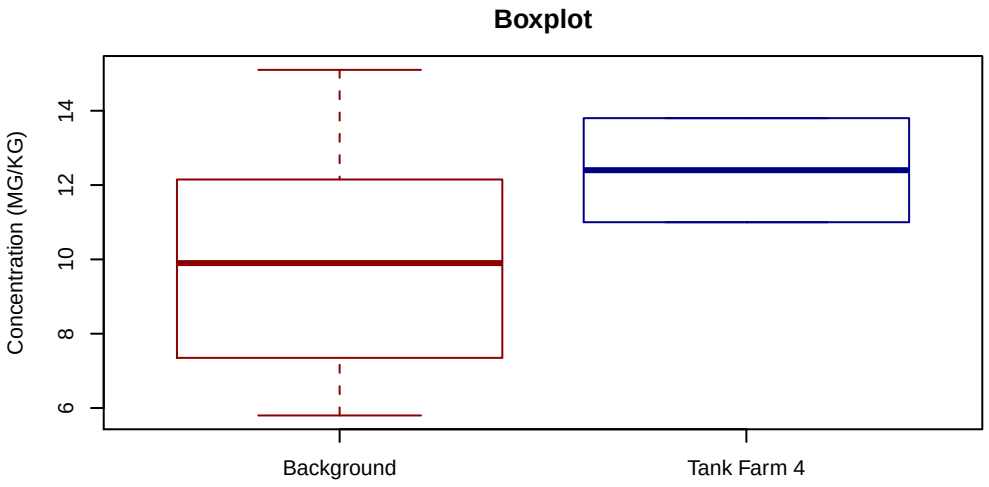

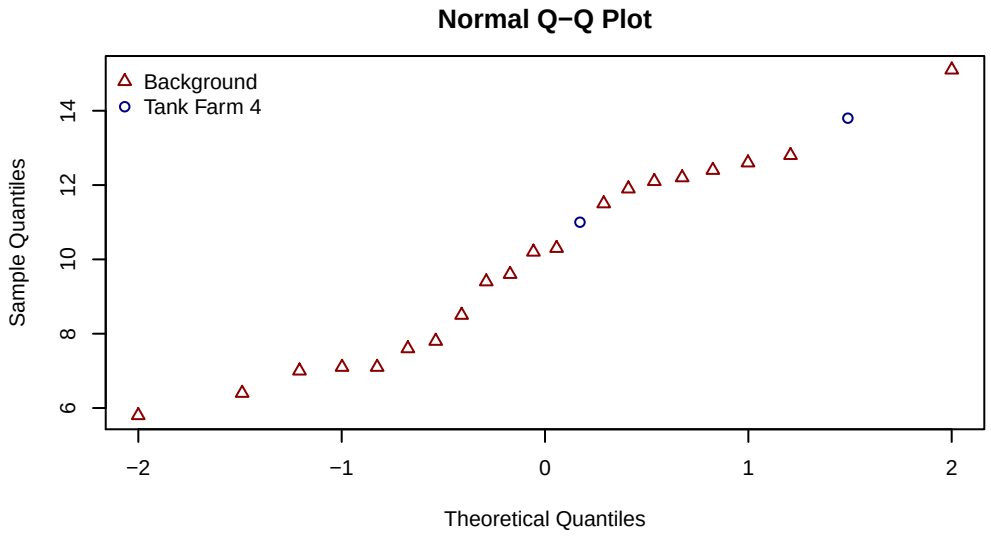

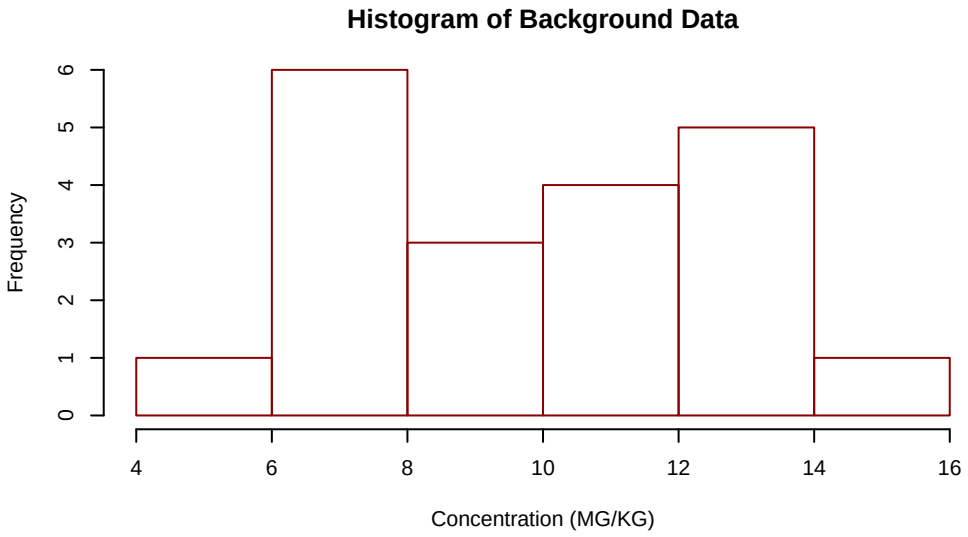

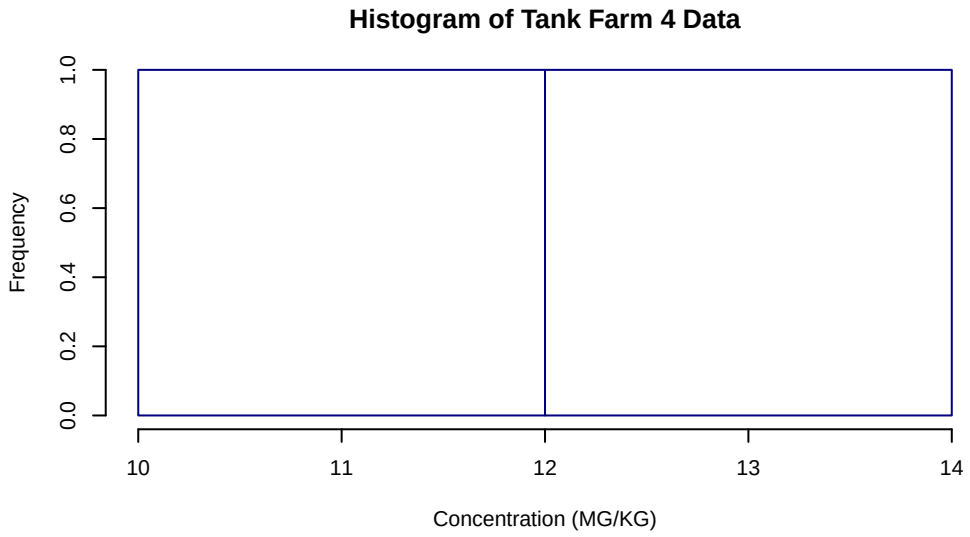

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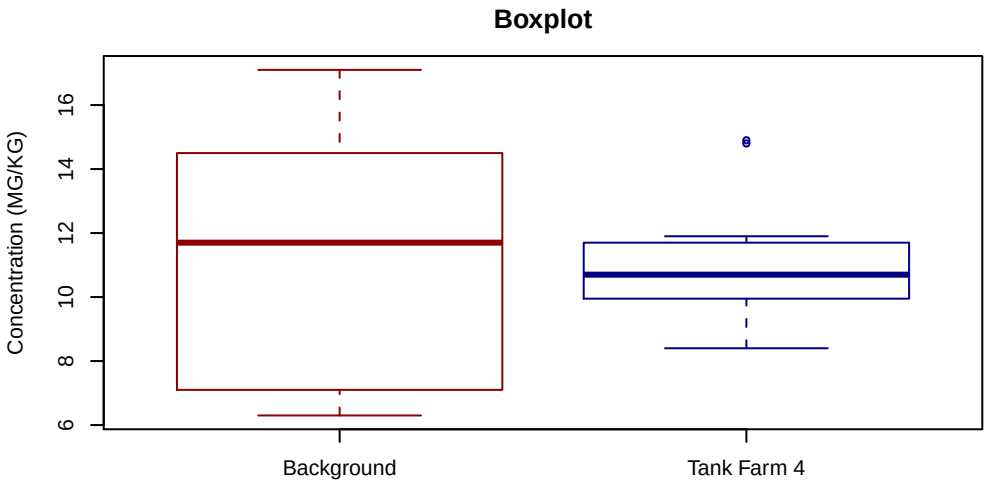

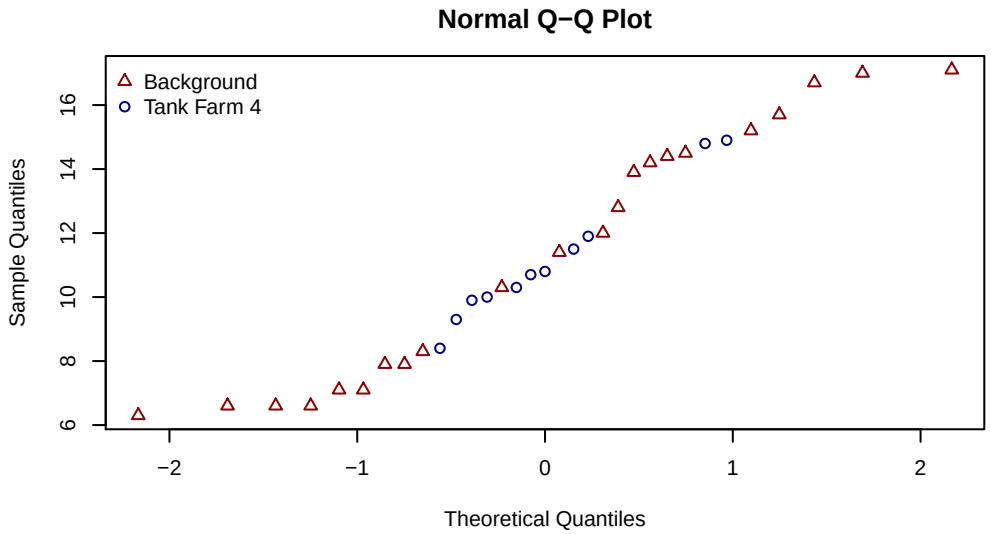

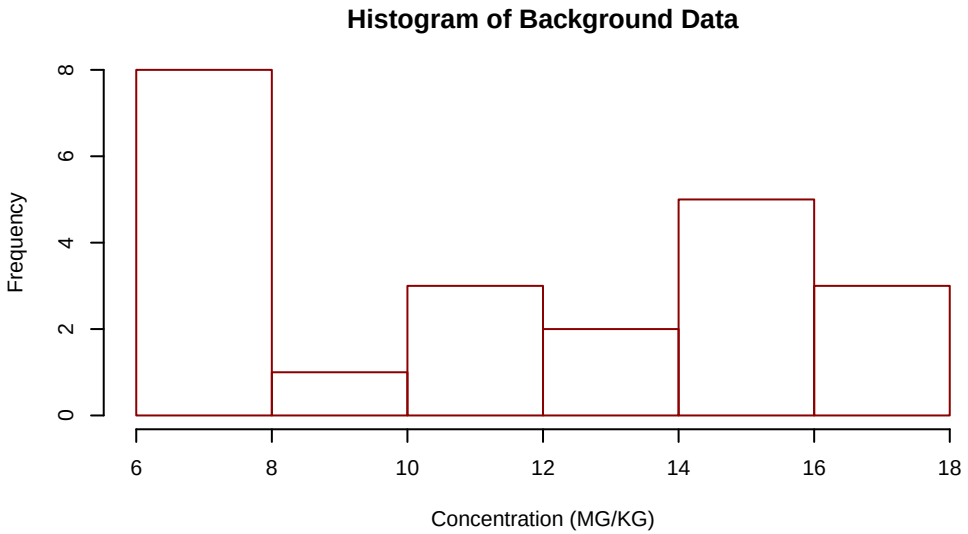

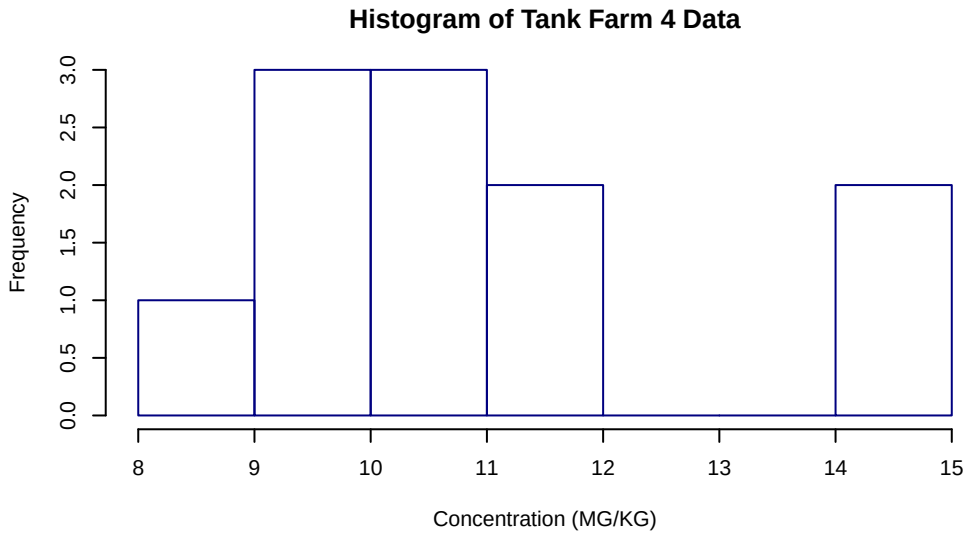

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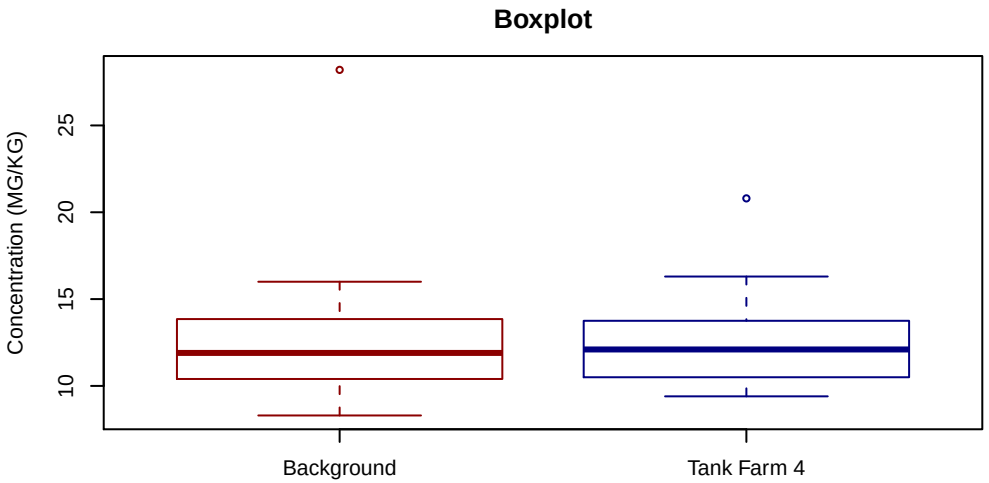

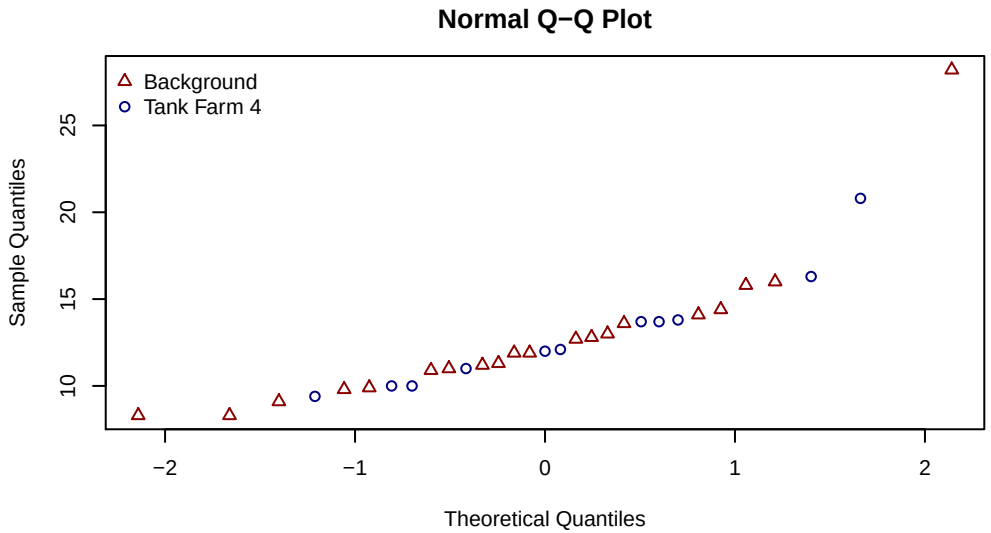

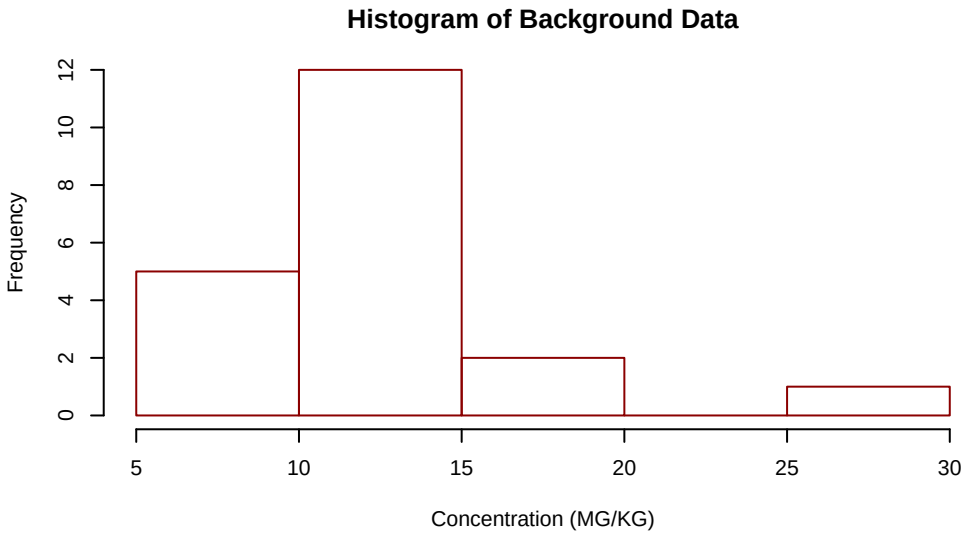

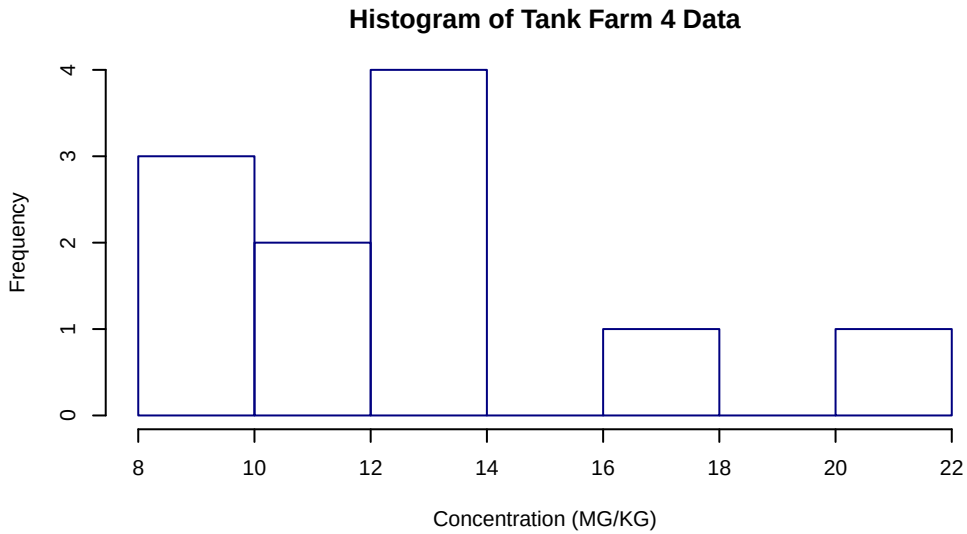

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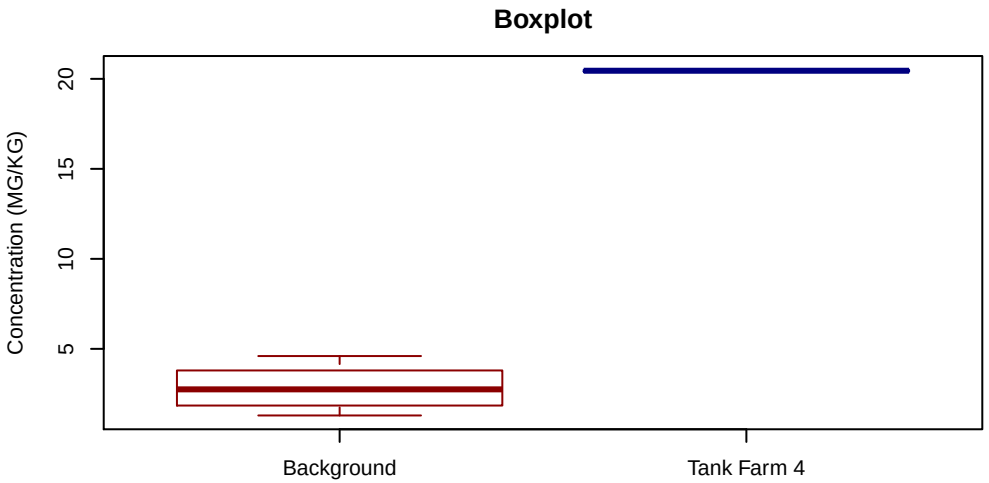
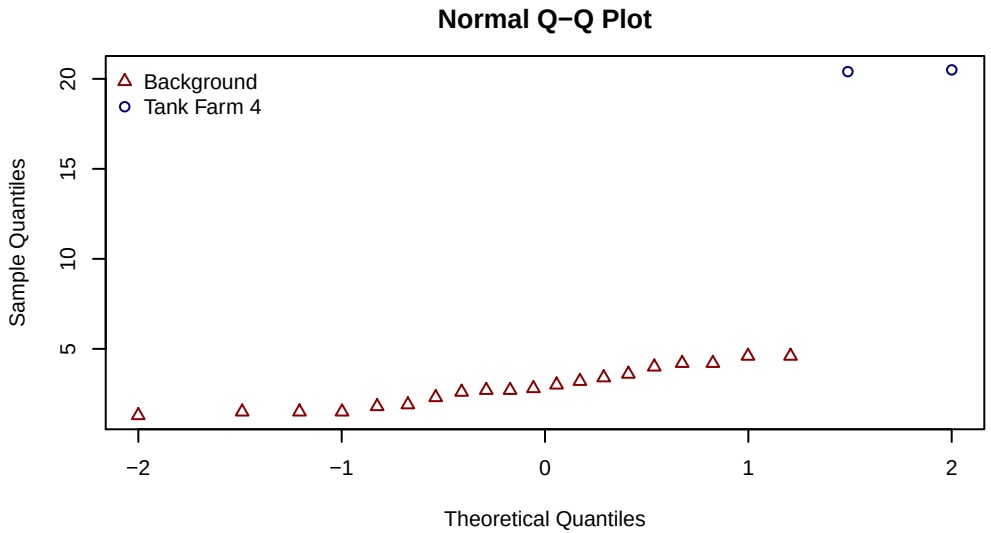
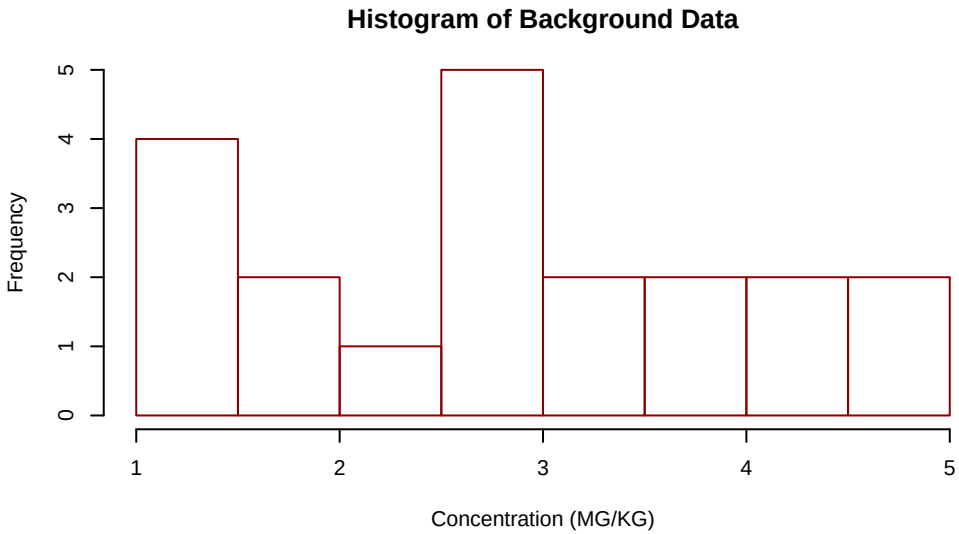
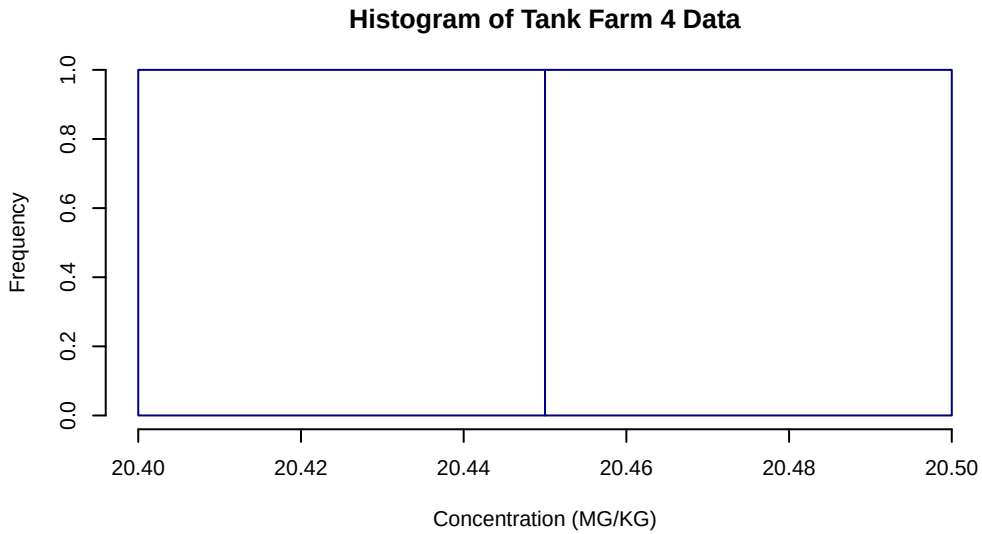
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

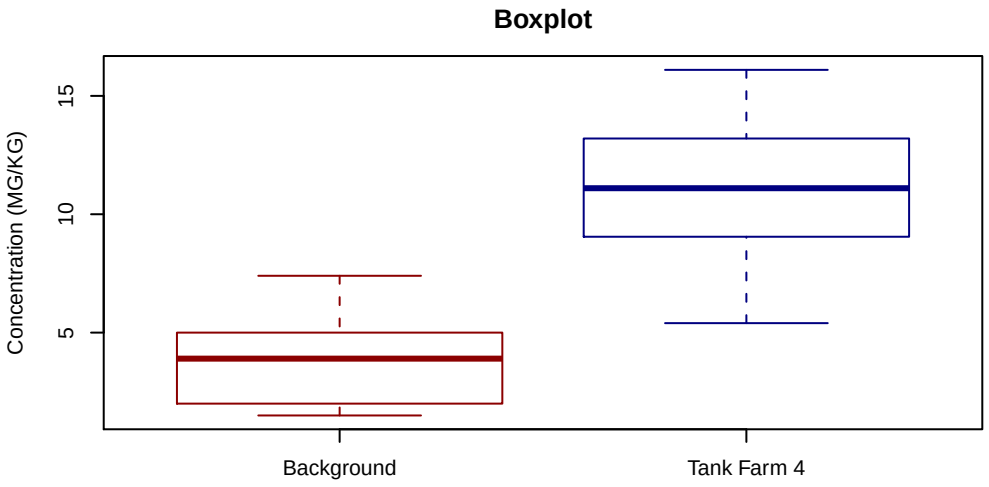


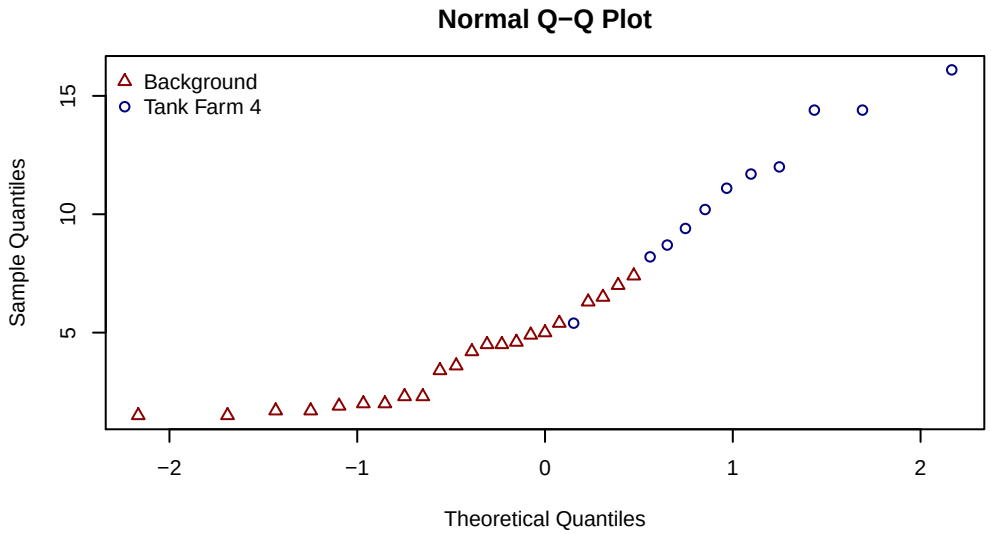


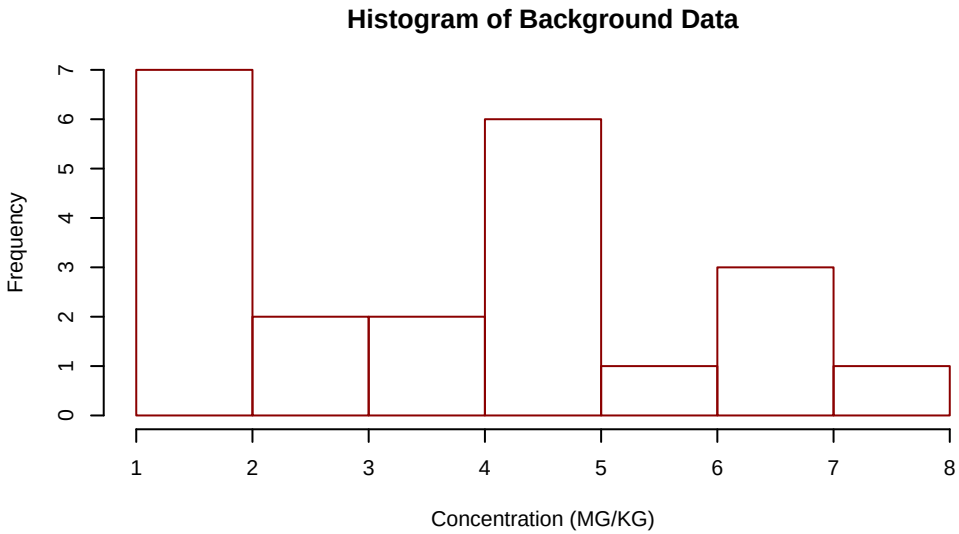


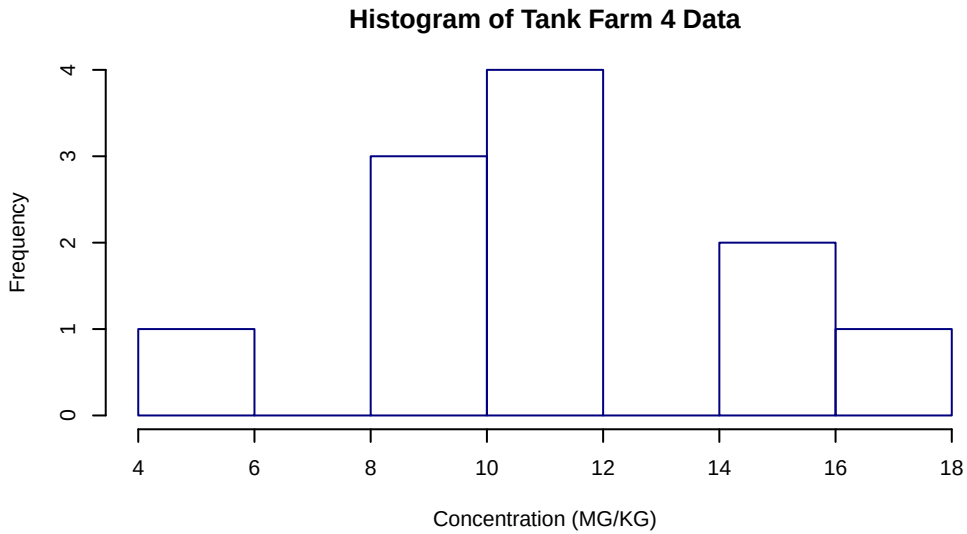


COBALT Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

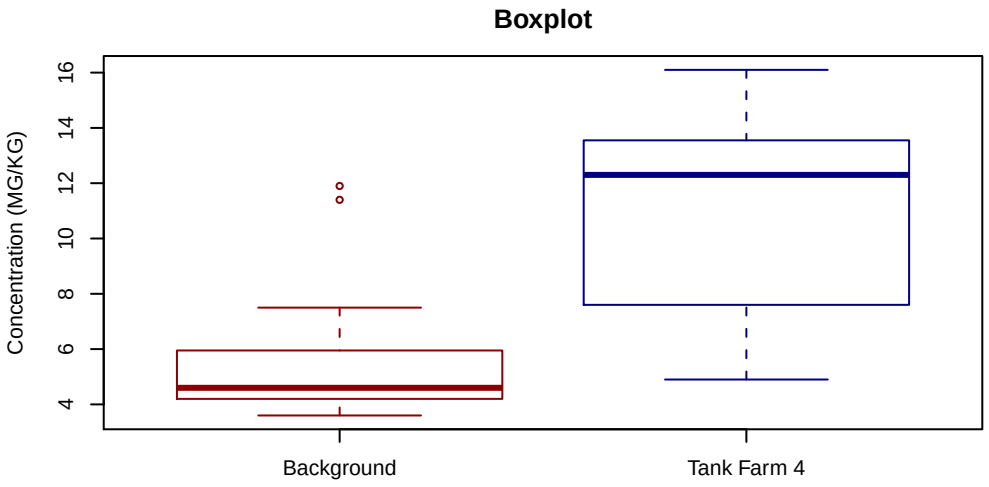


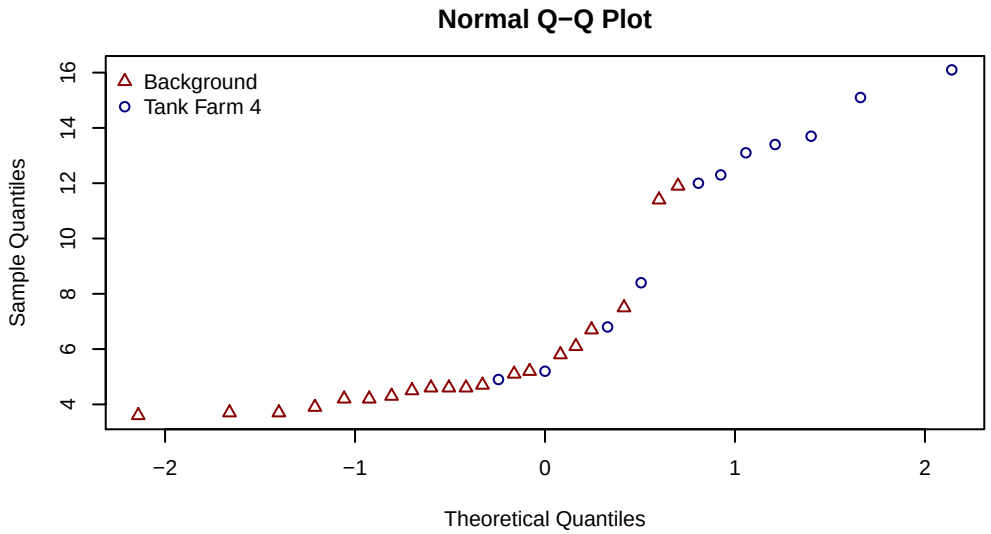


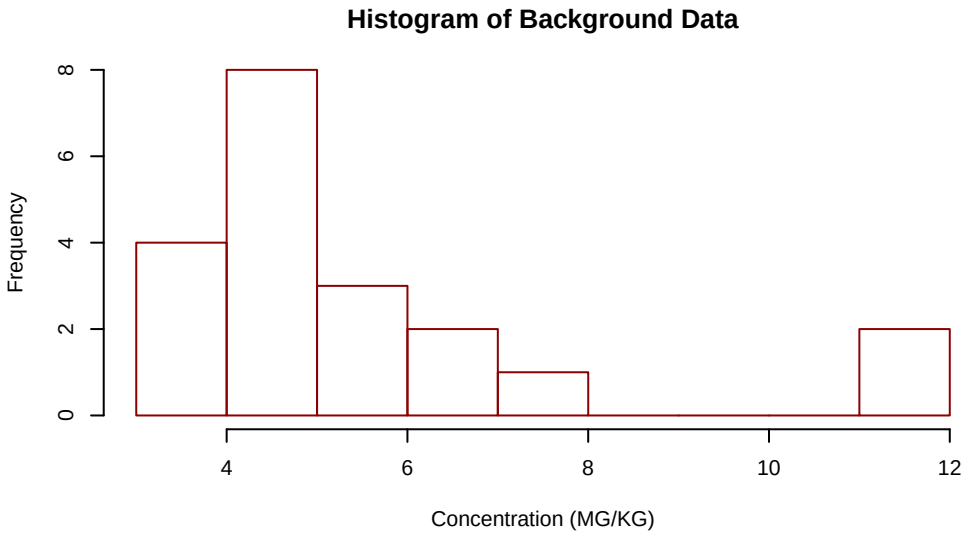


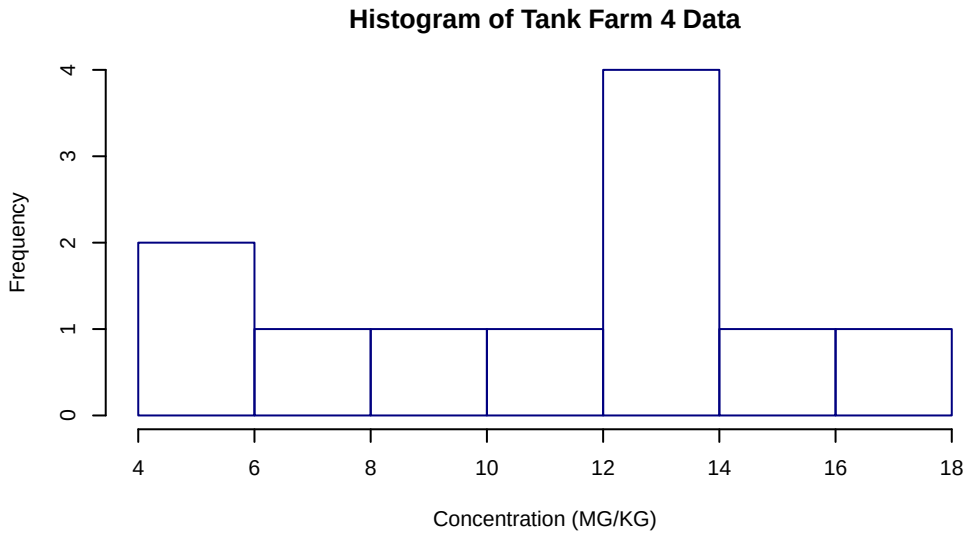


COBALT Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

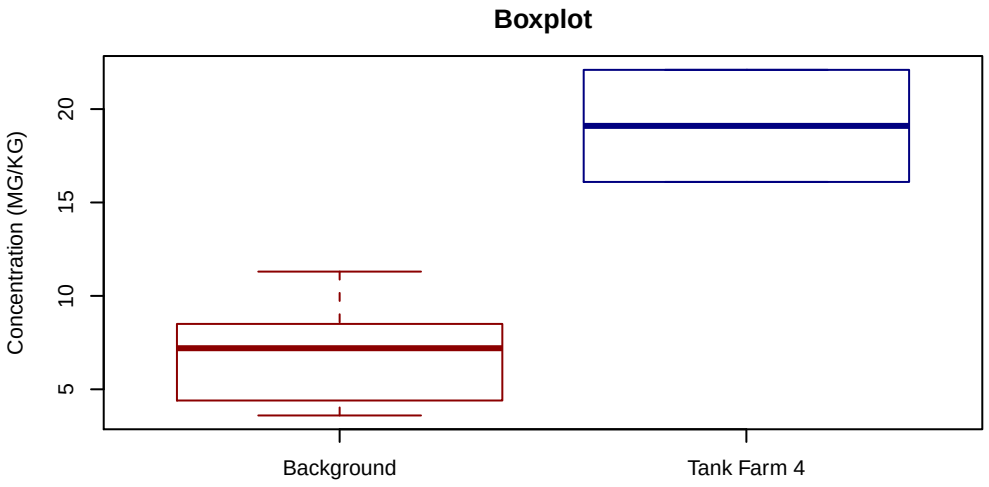


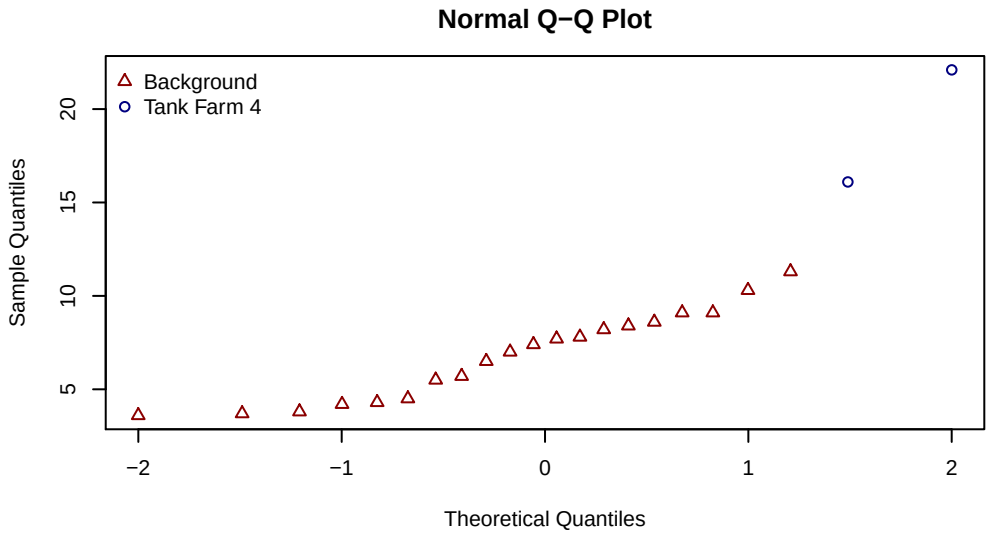


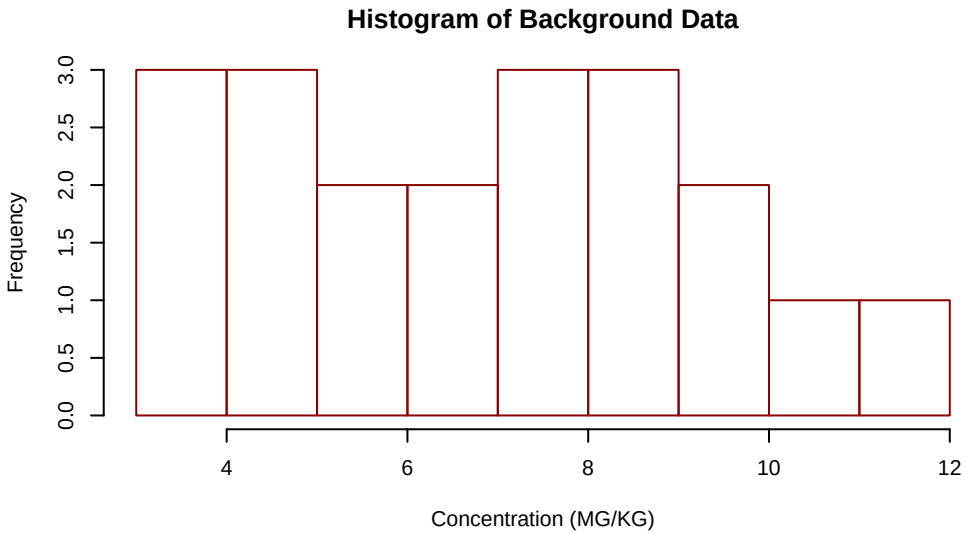


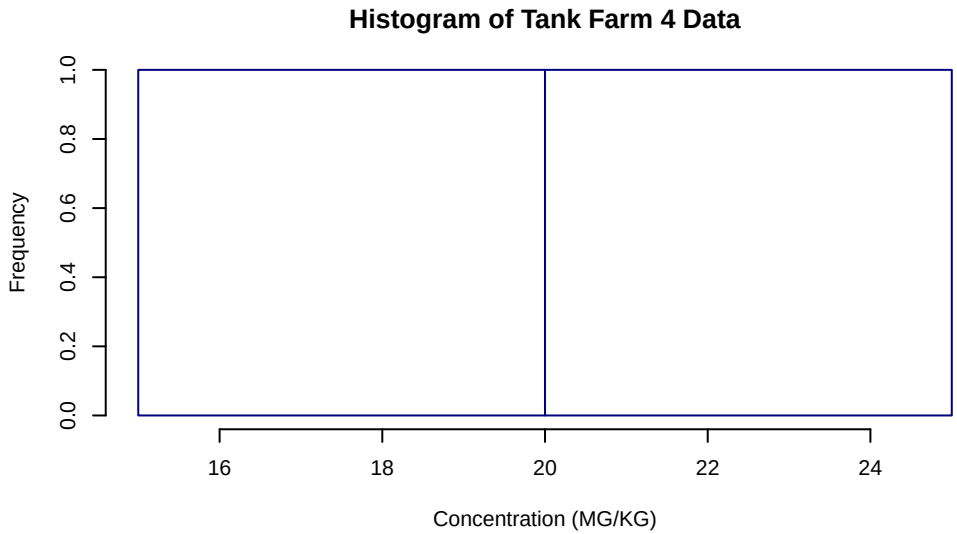


COPPER MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

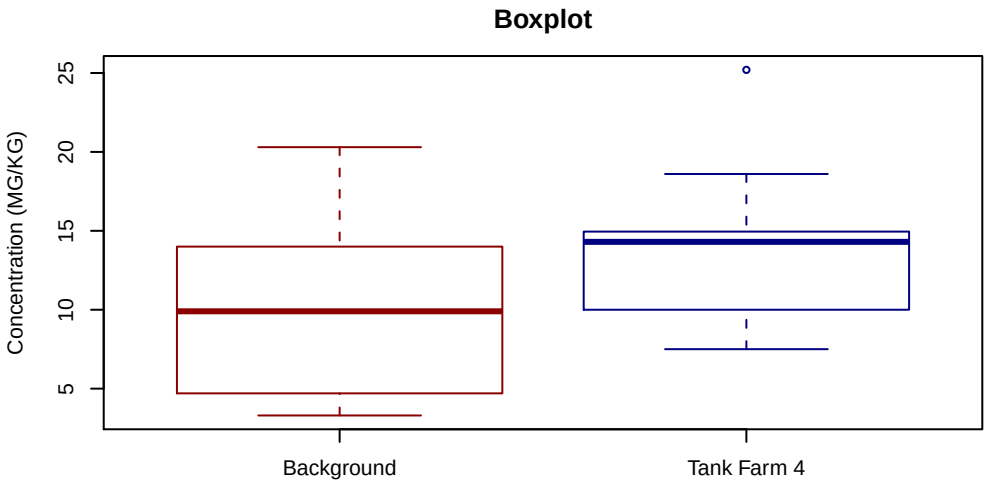


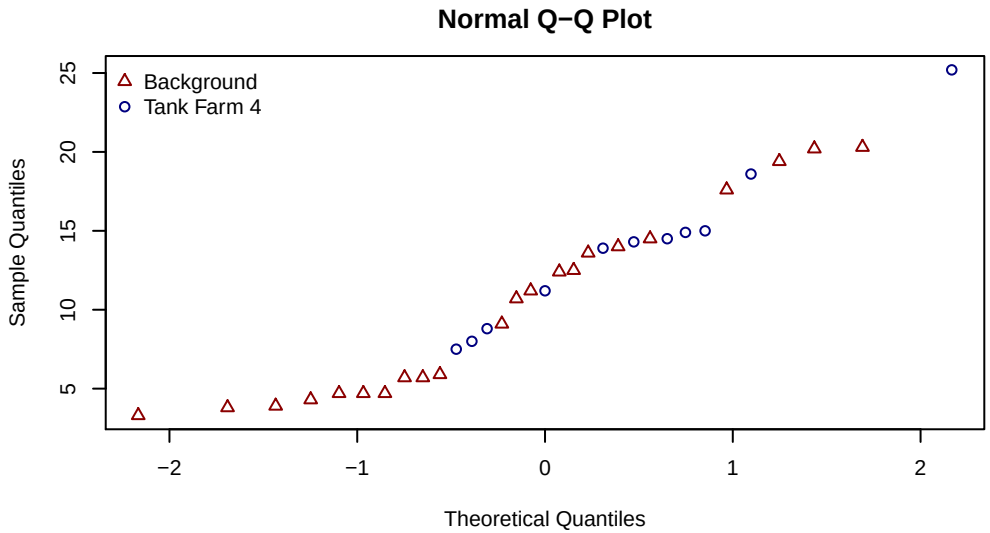


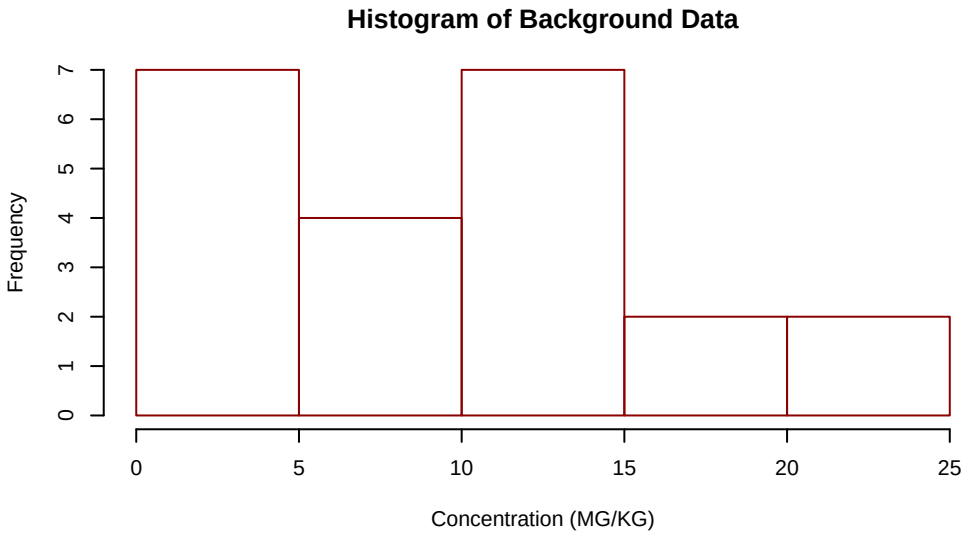


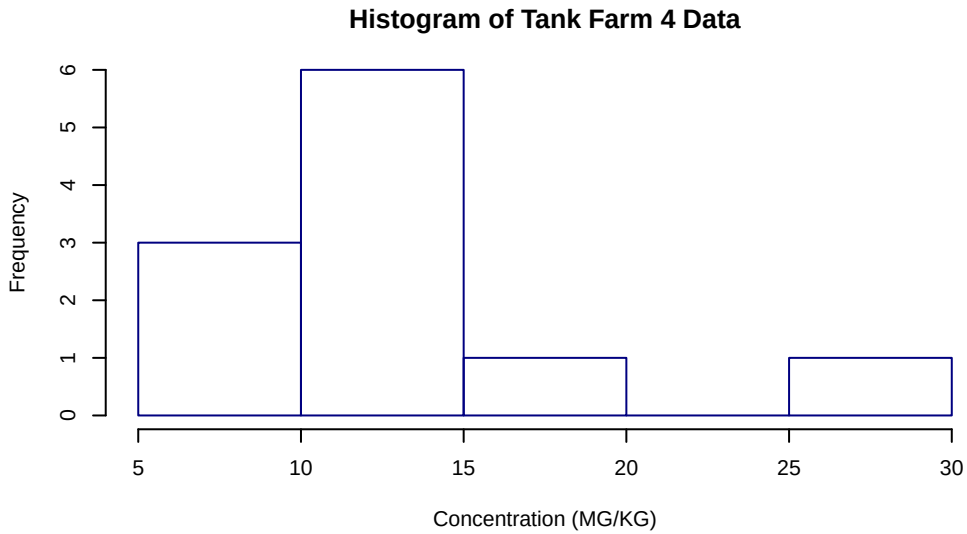


COPPER Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

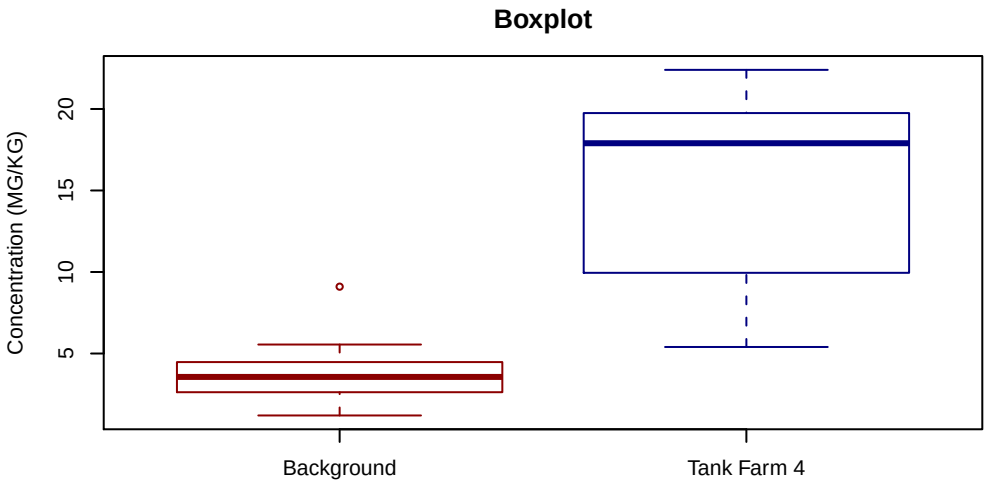


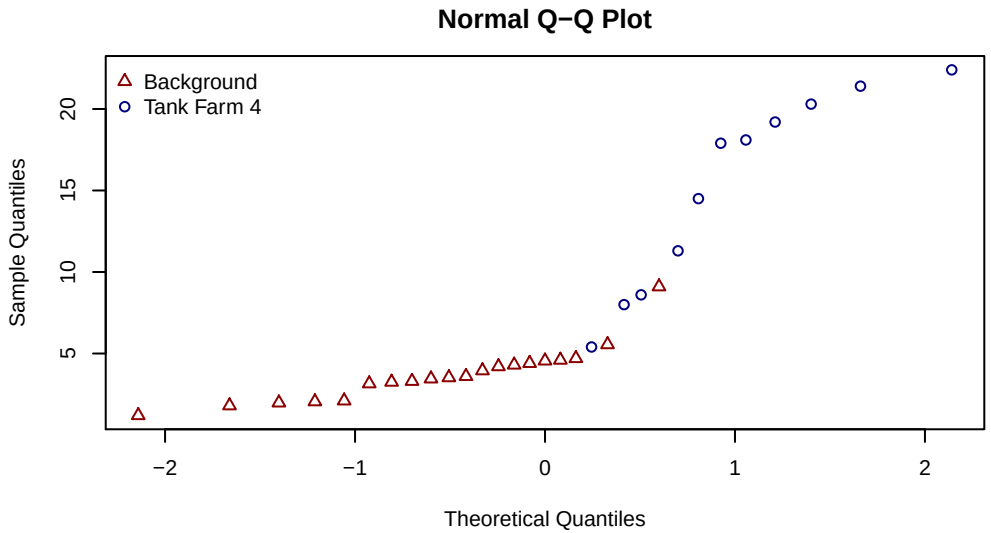


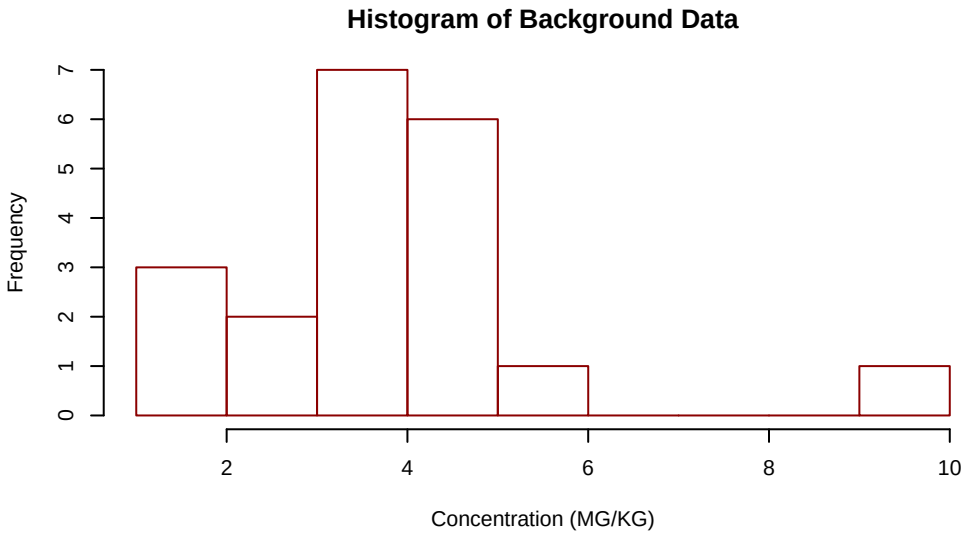


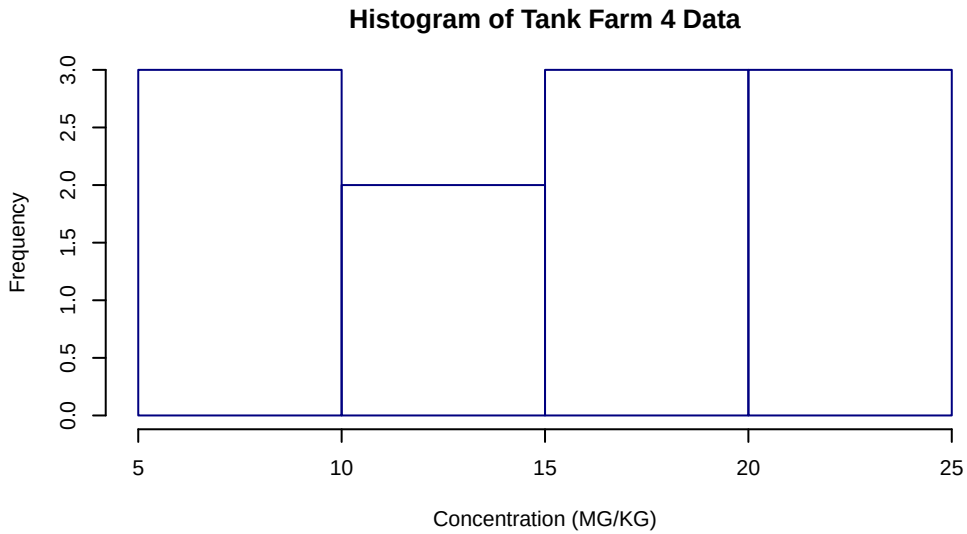


COPPER Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

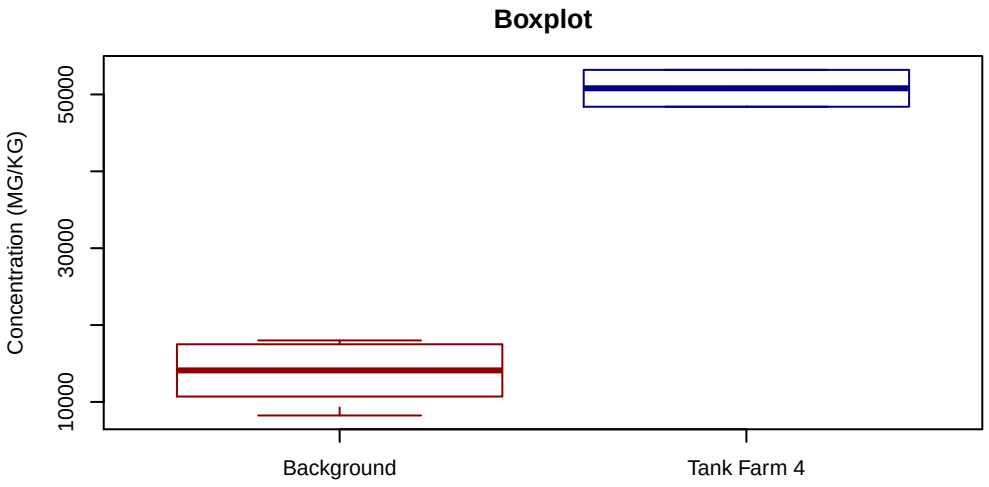


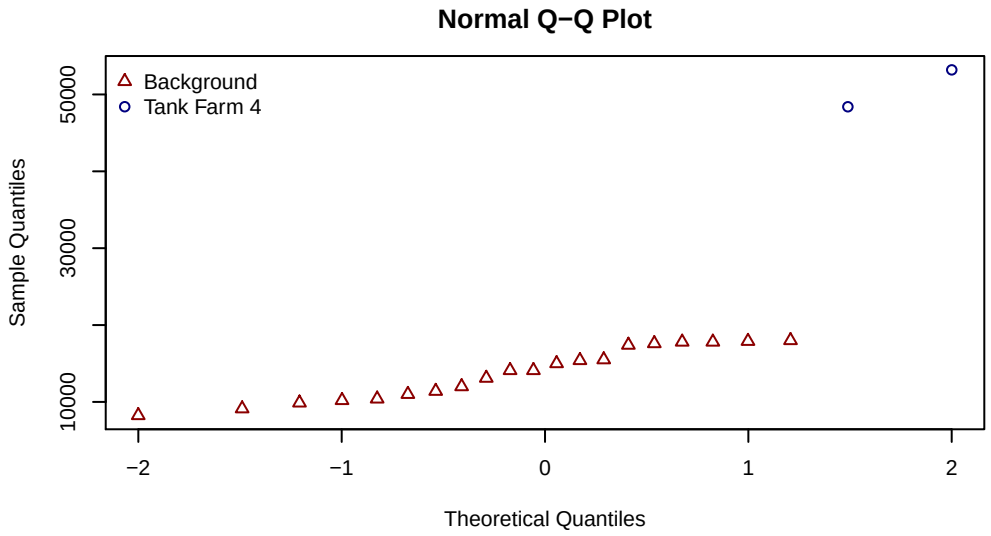


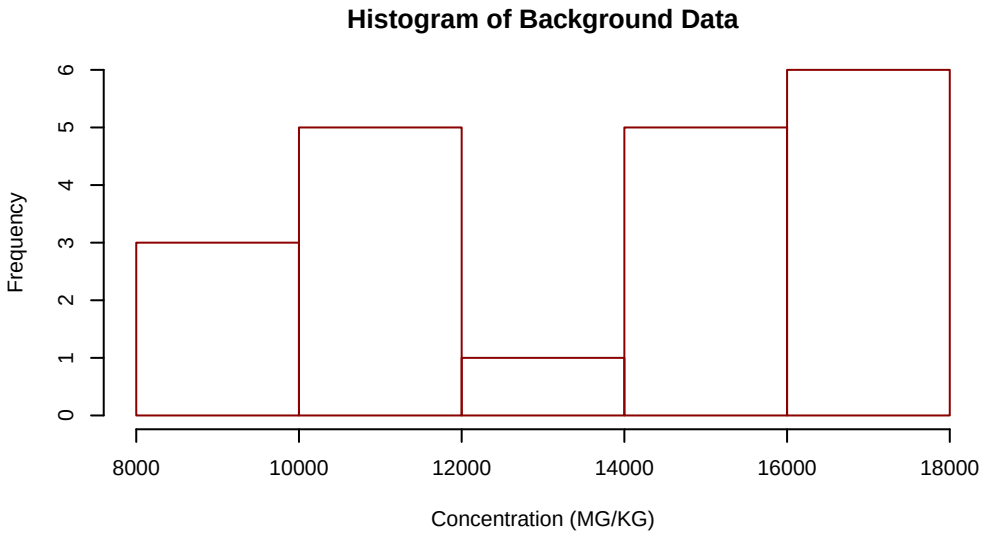


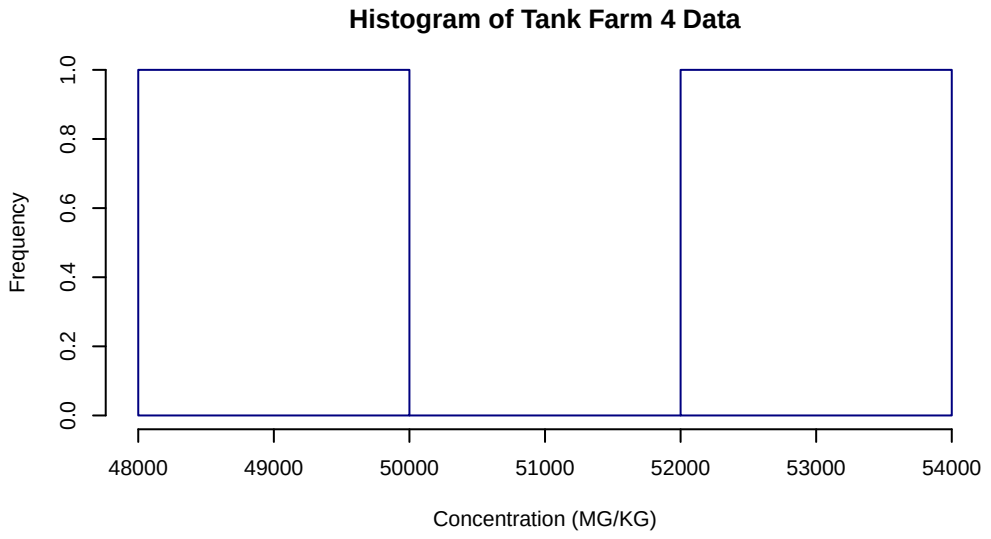


IRON MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

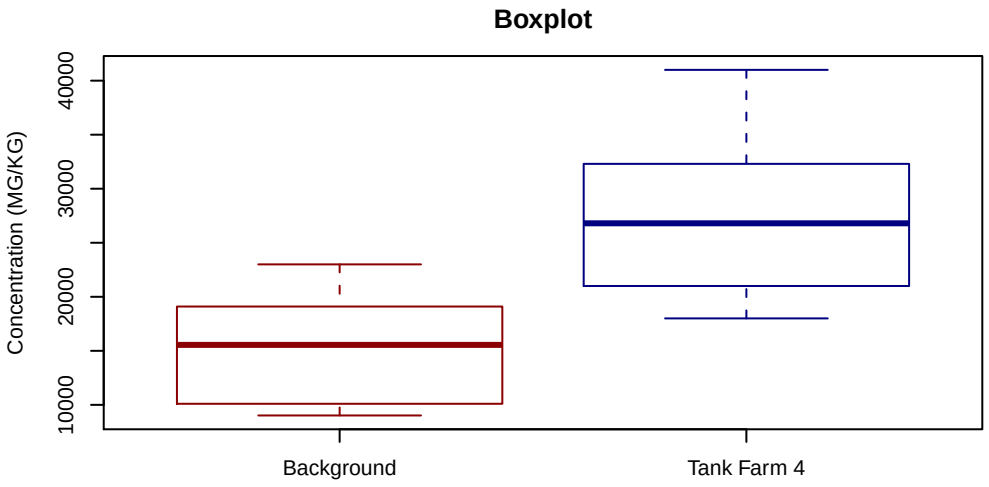


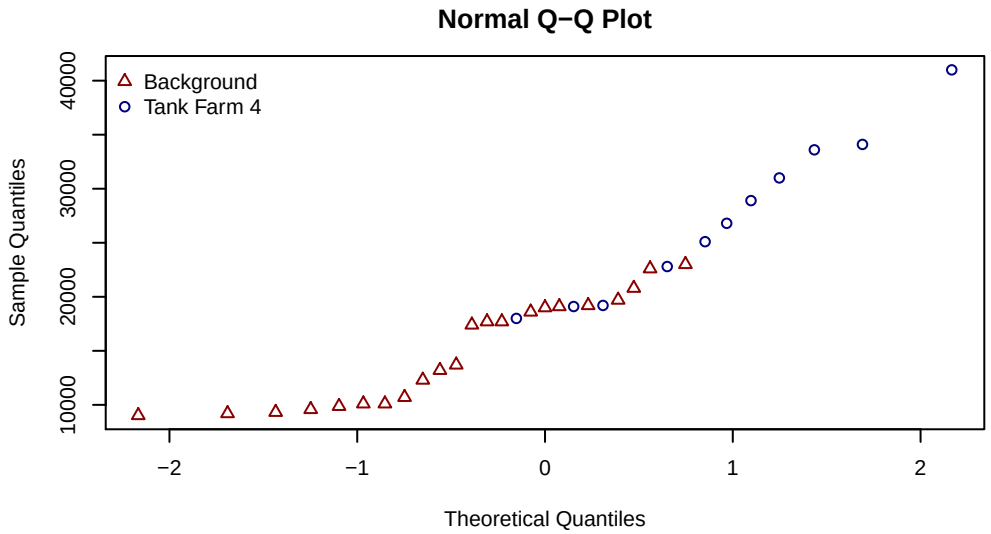


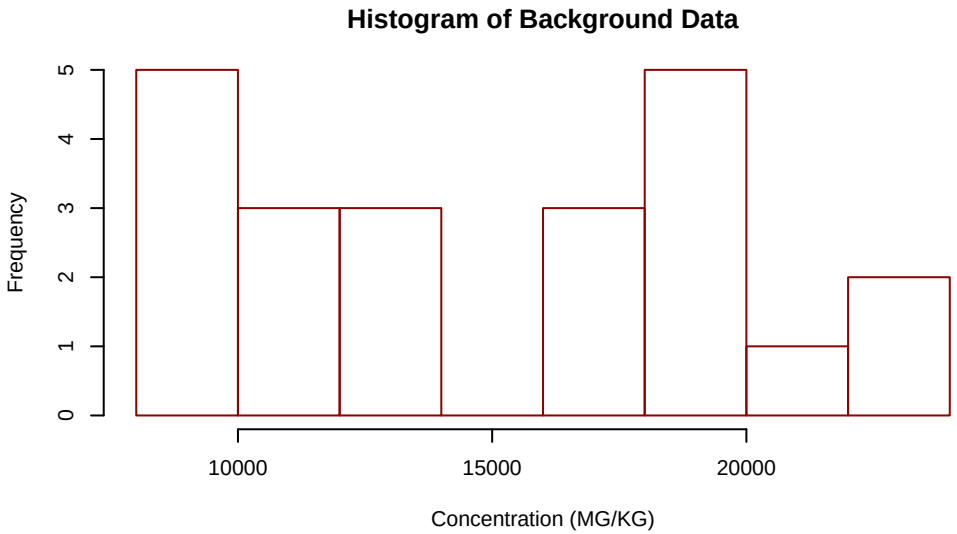


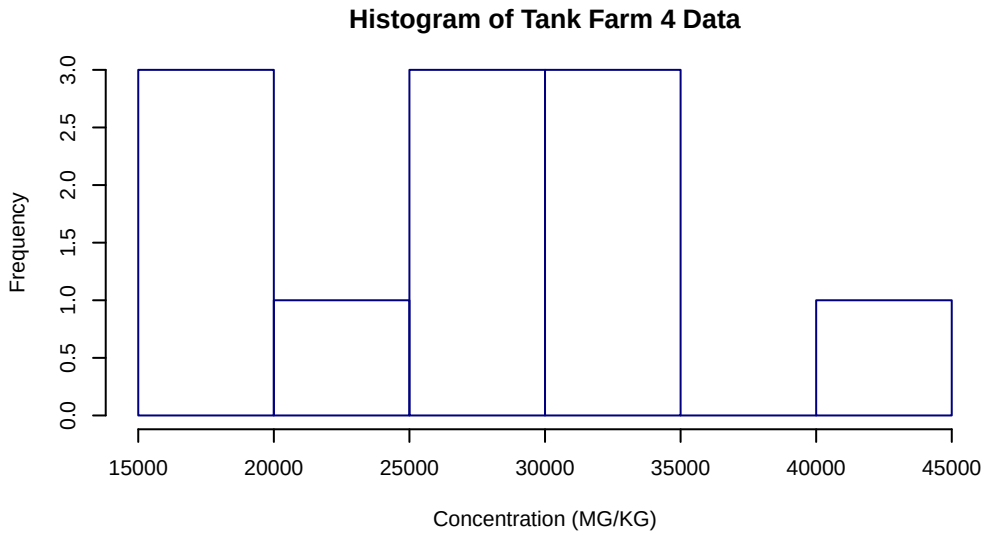


IRON Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

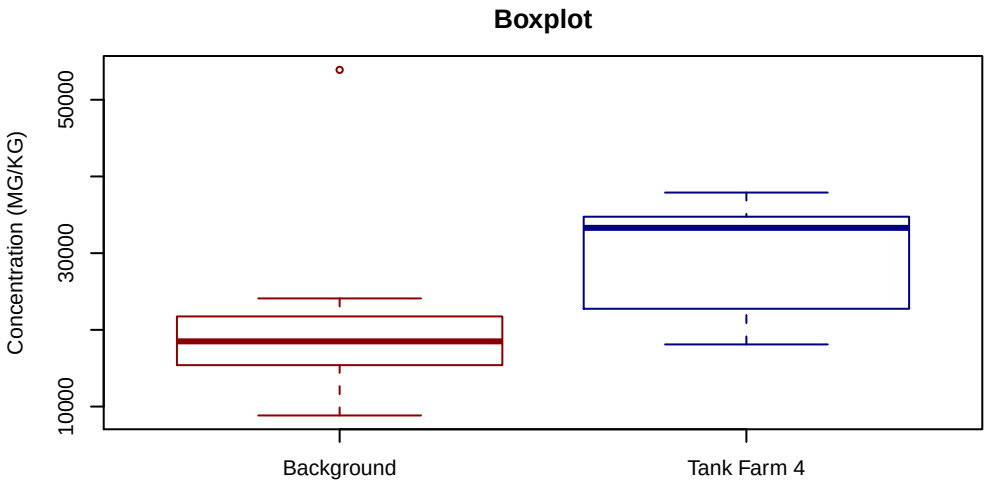


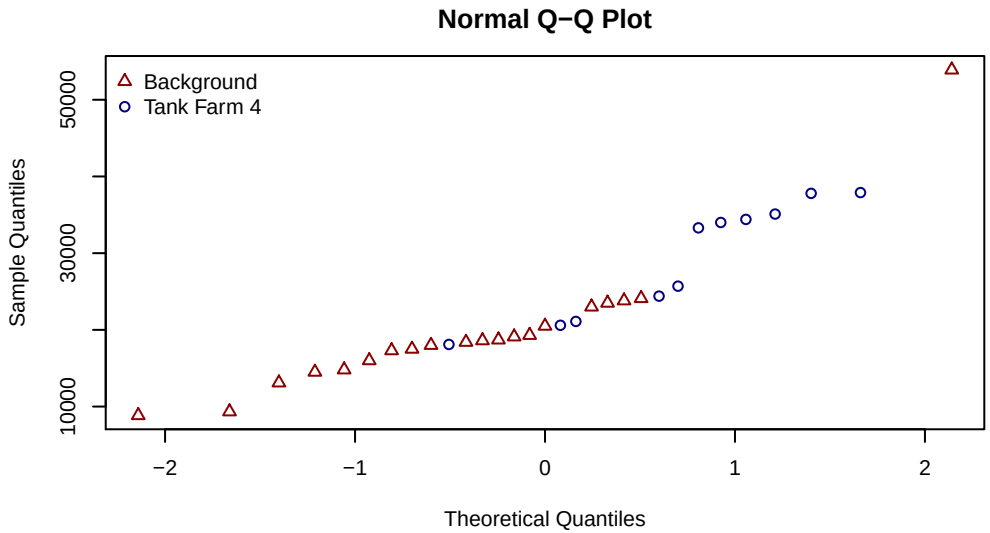


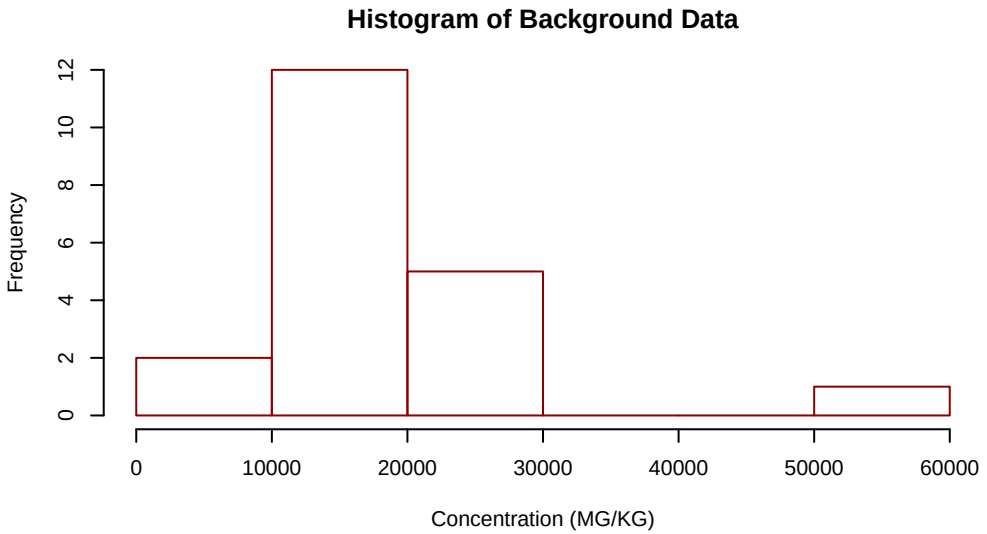


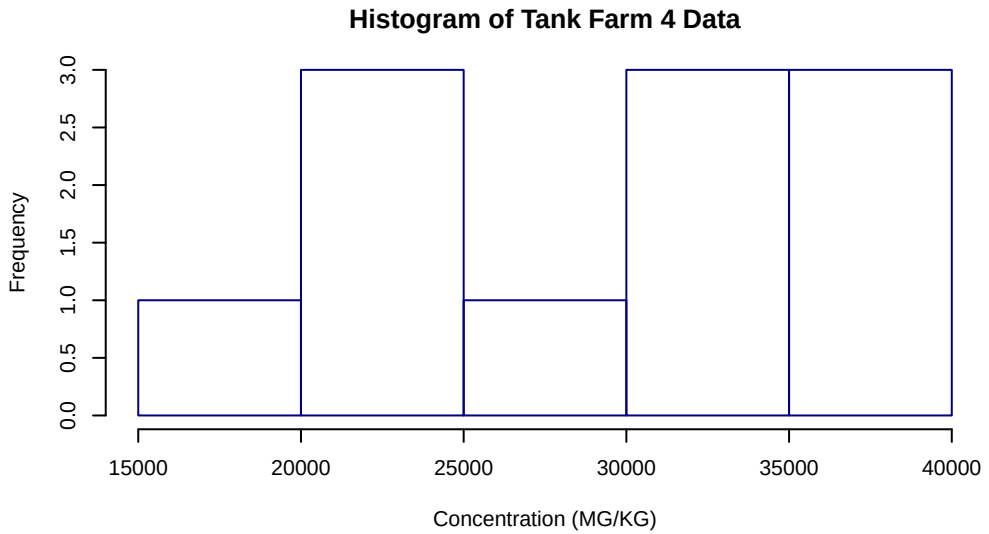


IRON Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

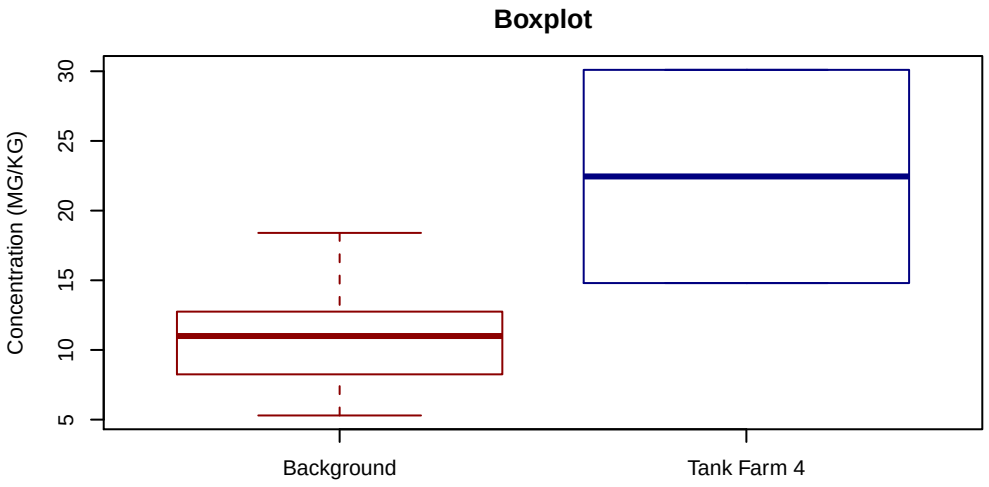


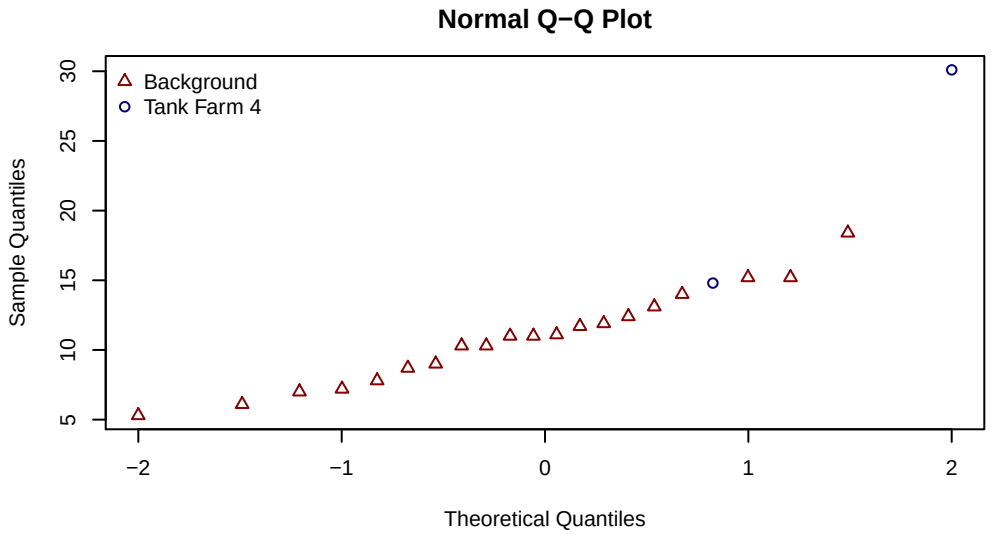


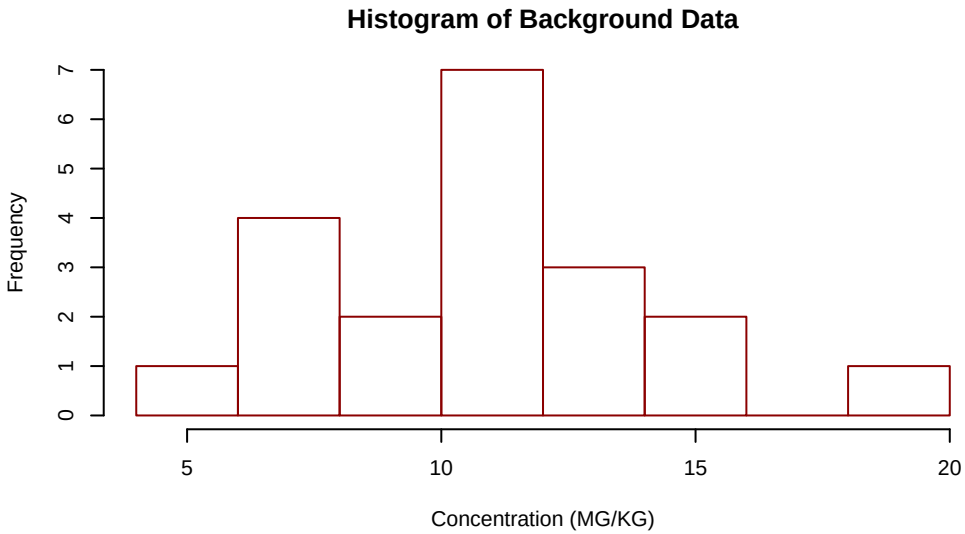


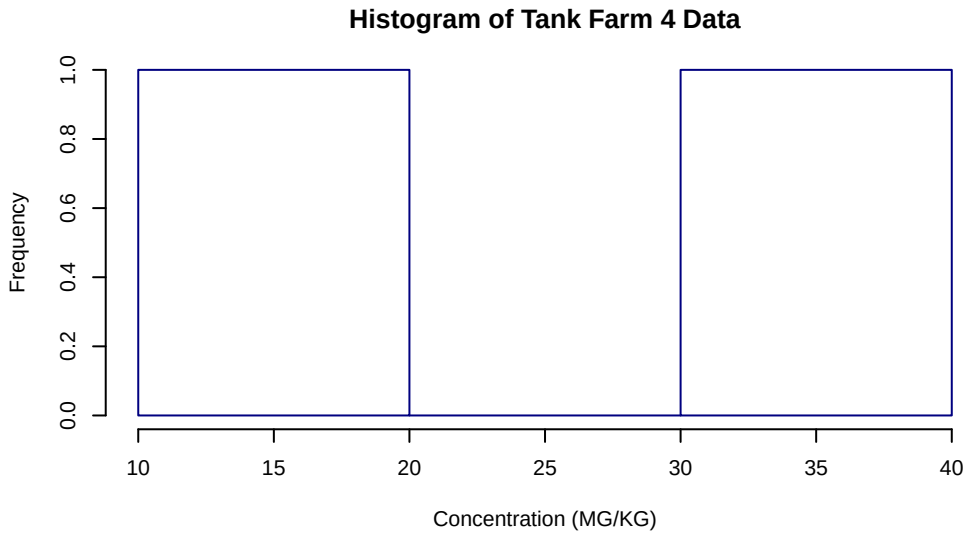


LEAD MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

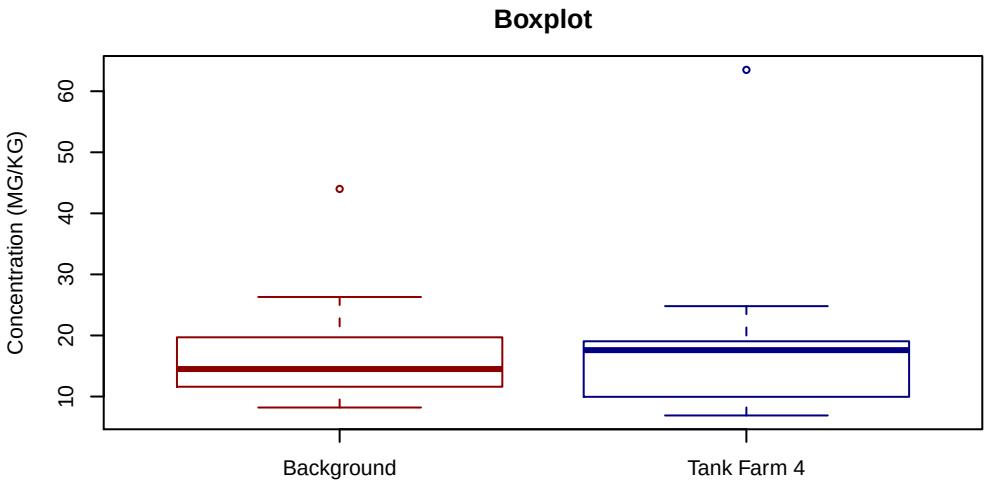


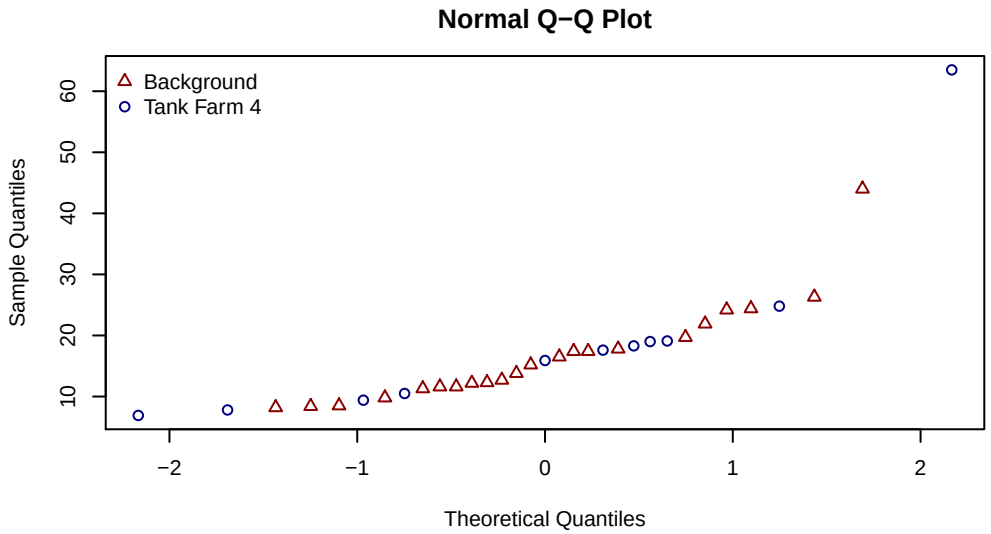


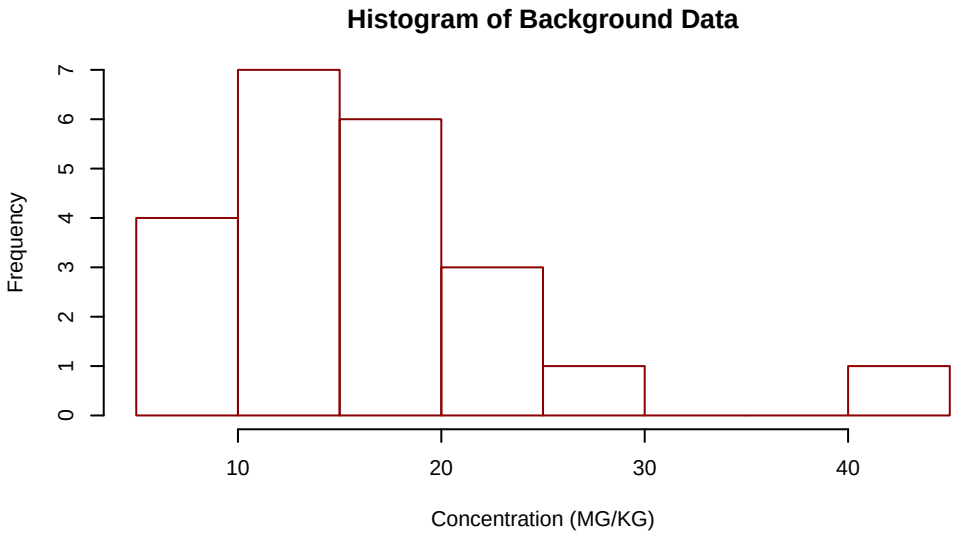


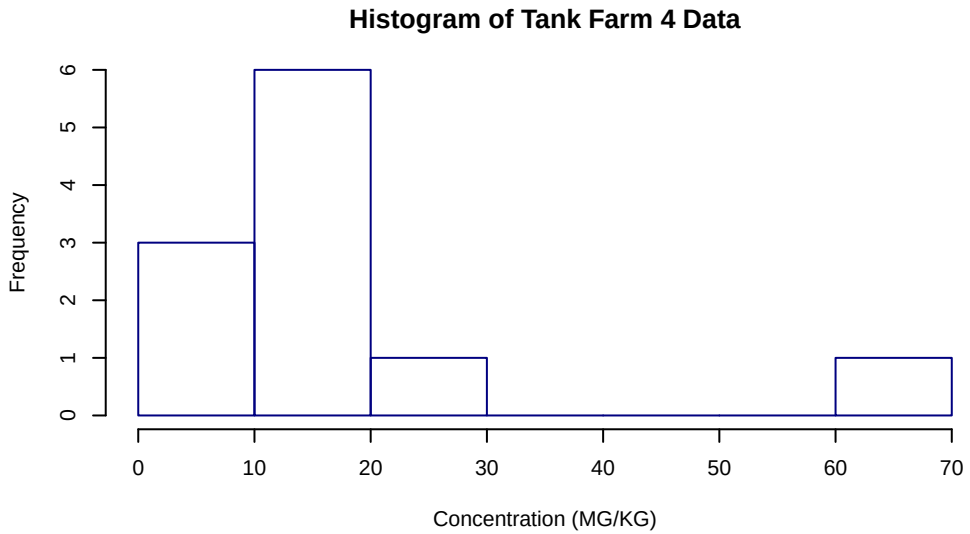


LEAD Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

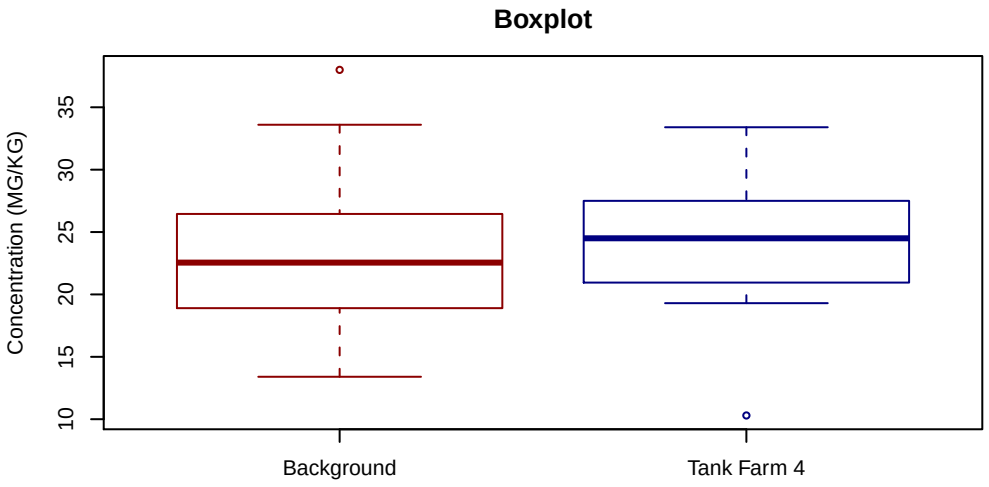


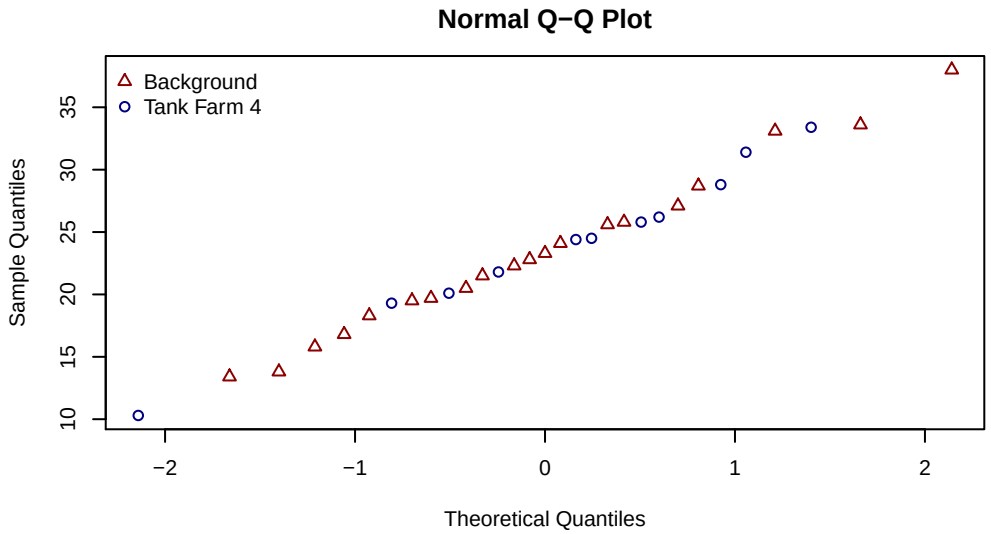


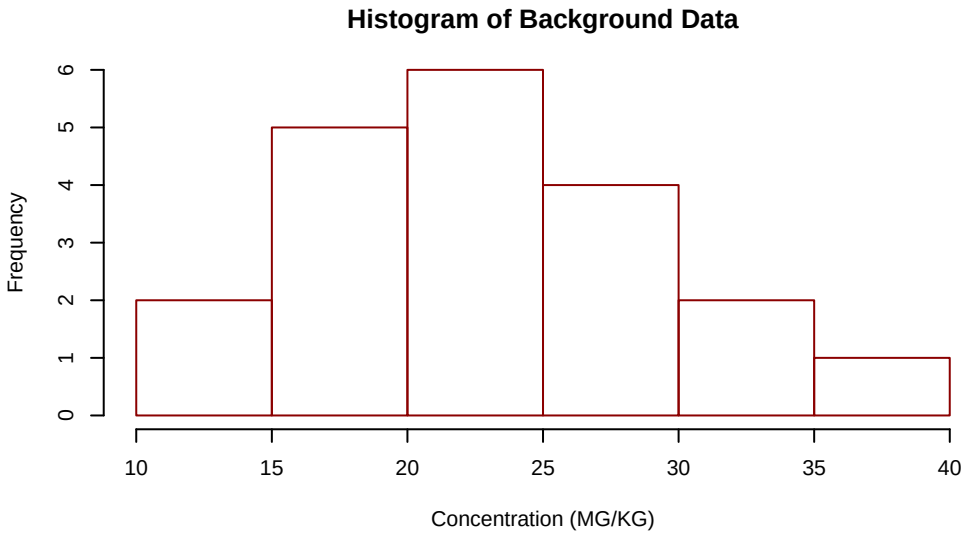


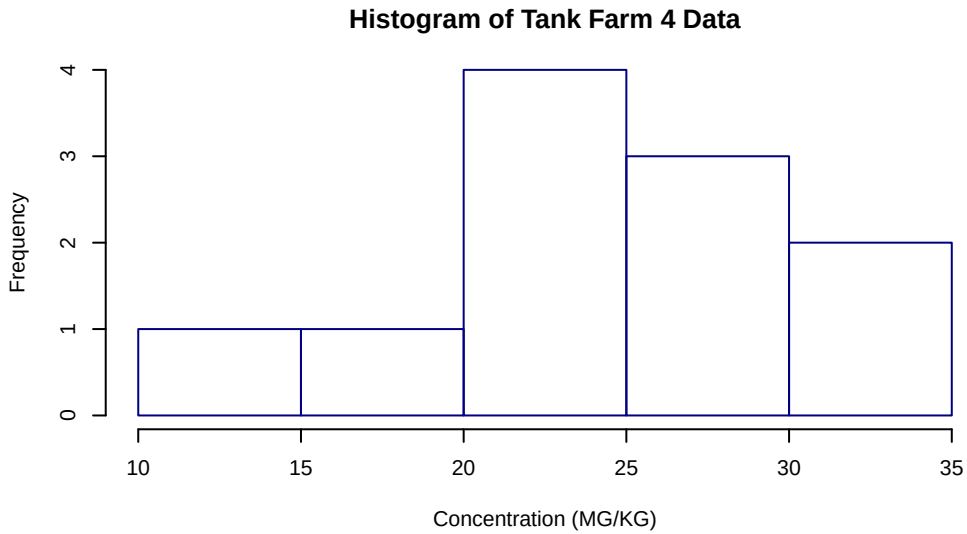


LEAD Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MAGNESIUM MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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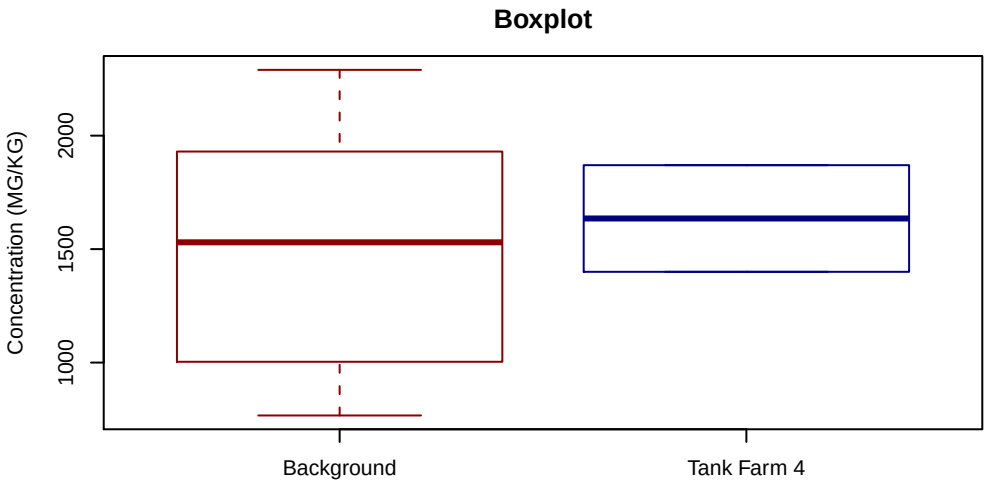
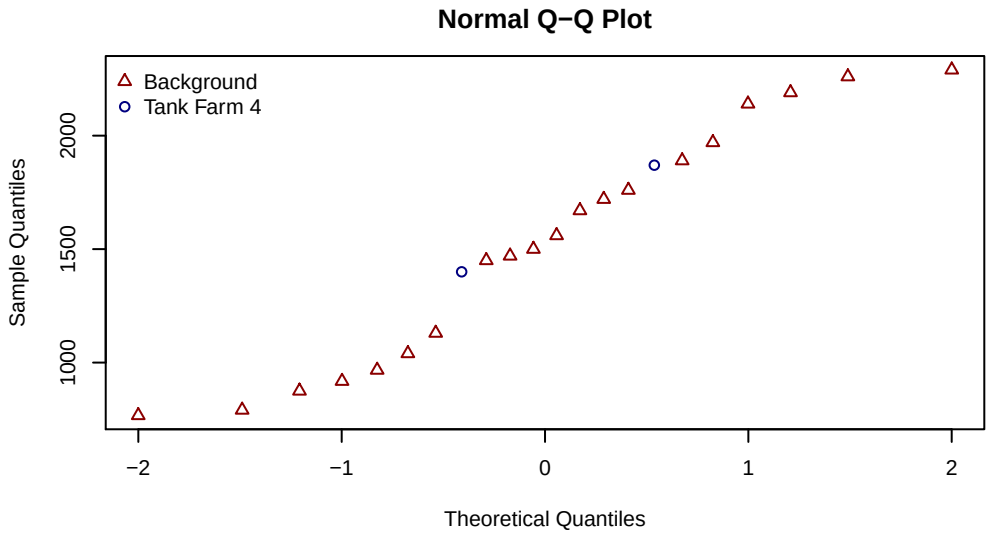
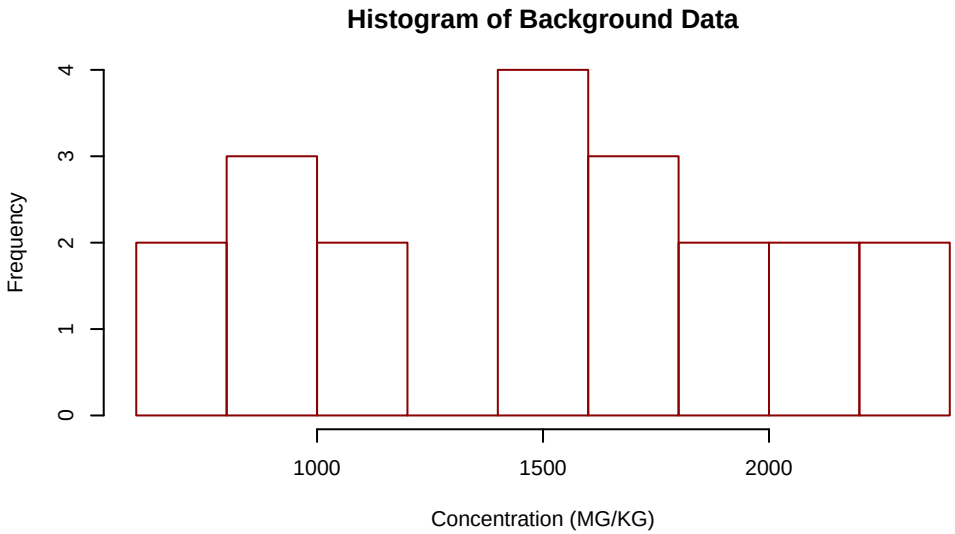
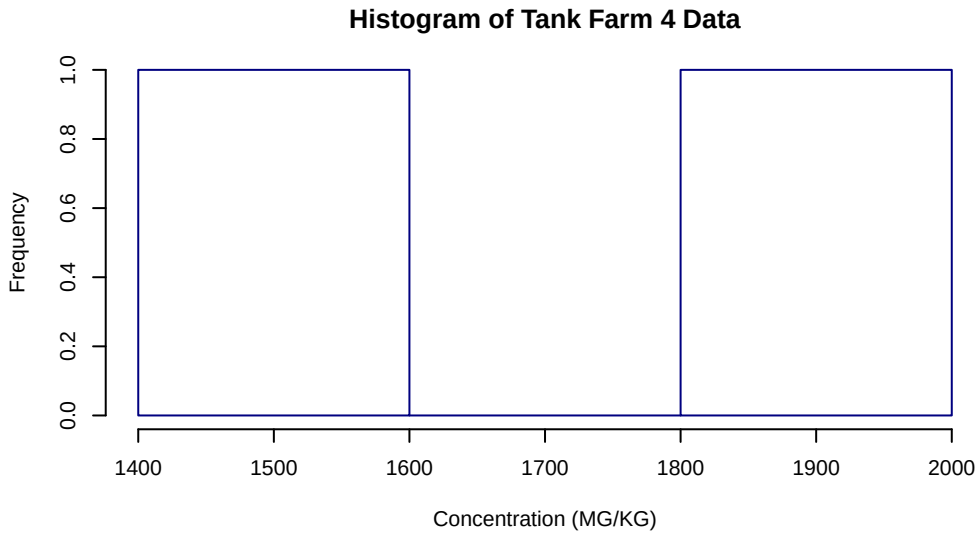
NEWPORT, RHODE ISLAND









MAGNESIUM Ne SURFACESOIL
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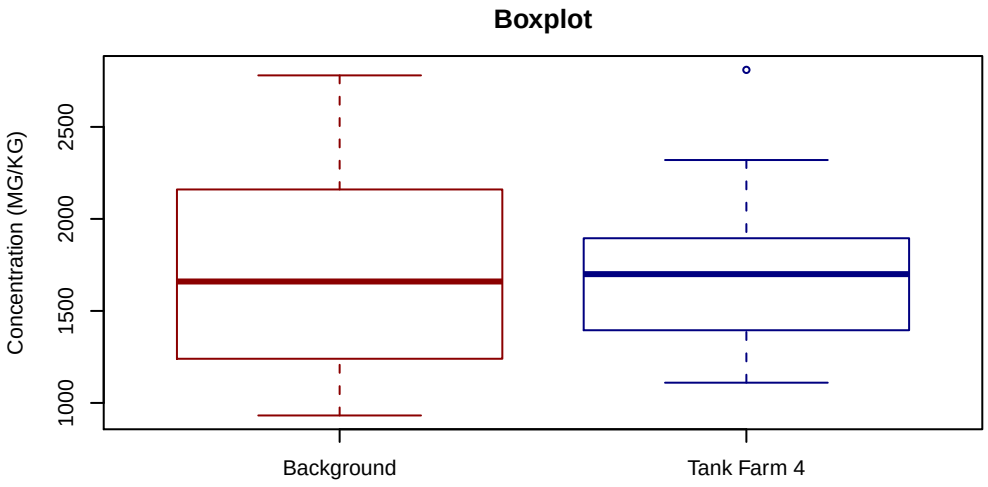
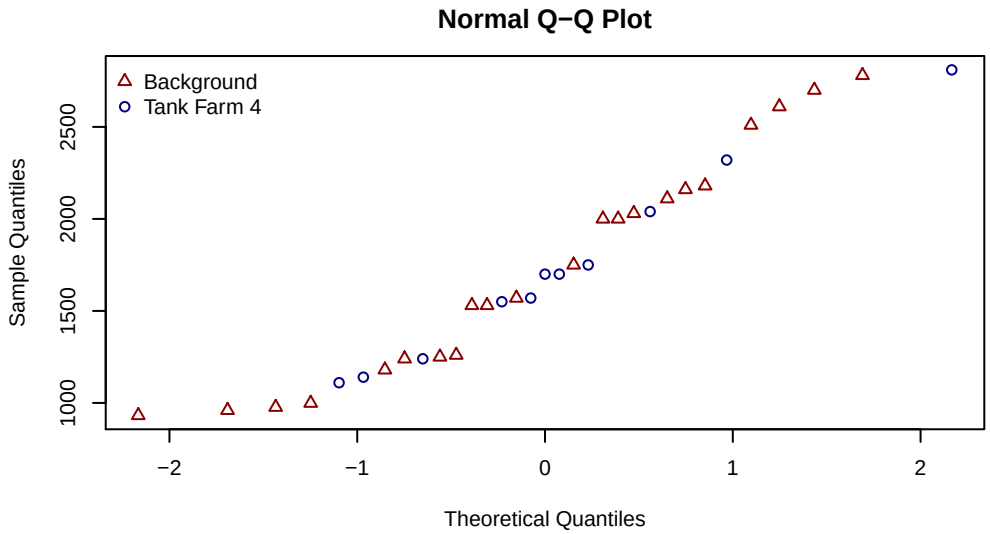
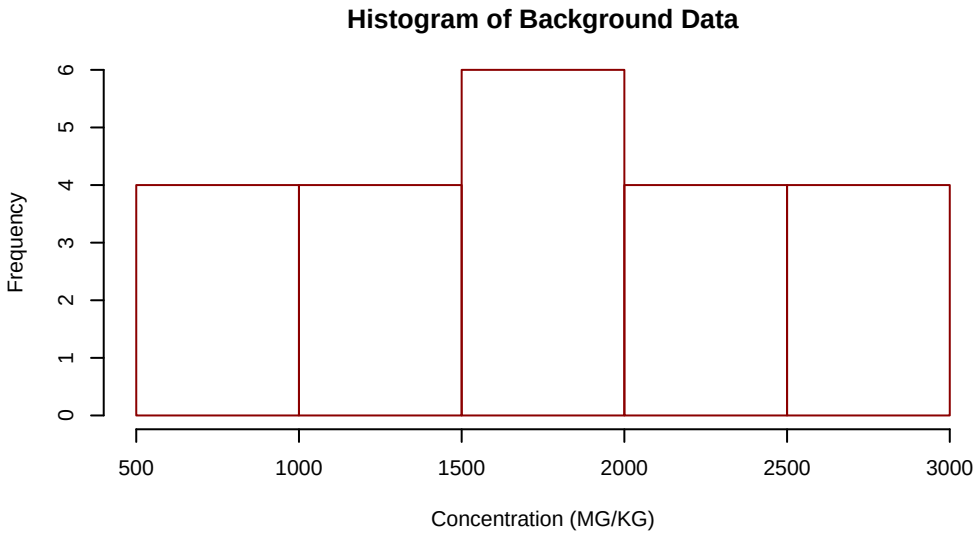
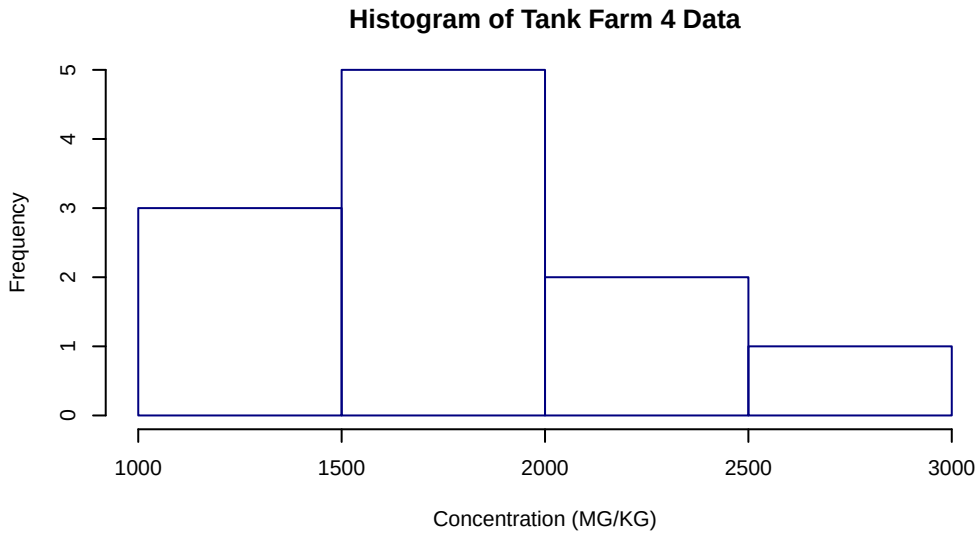
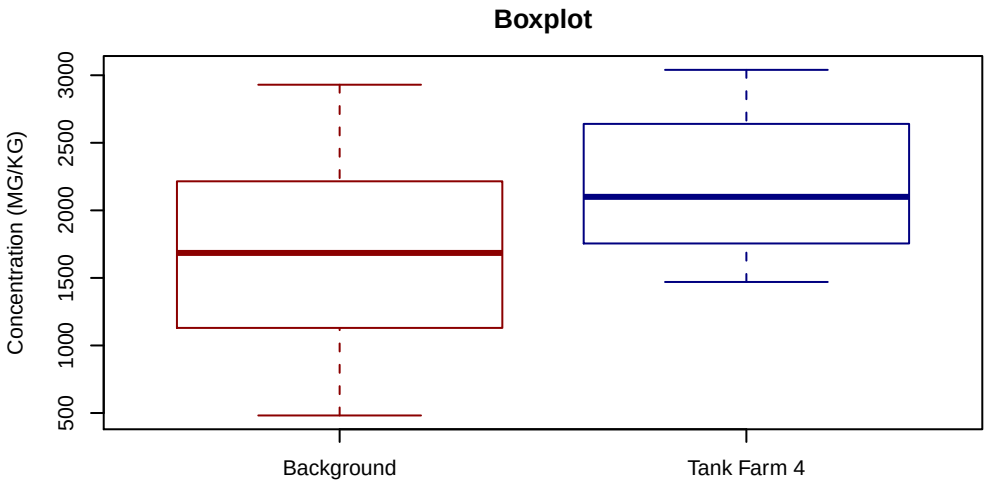


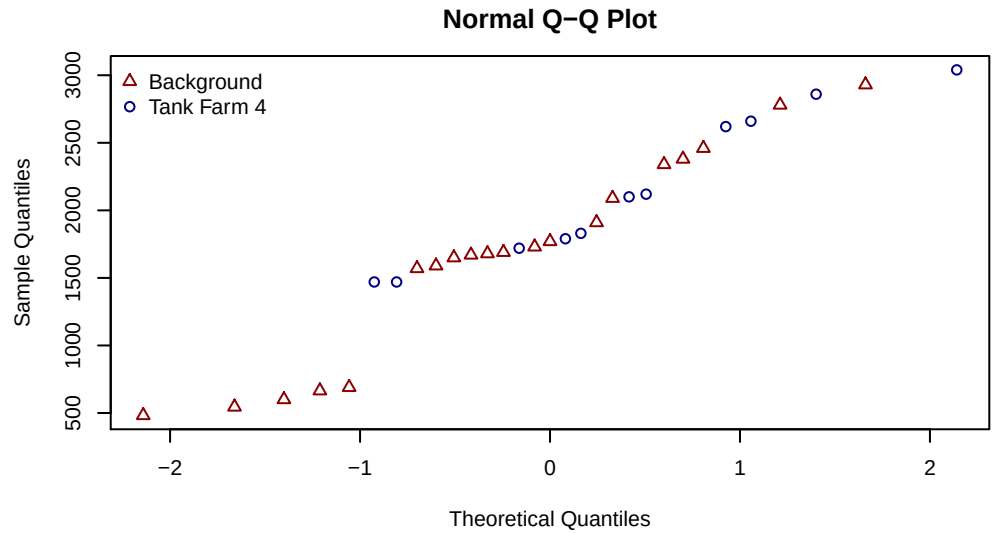


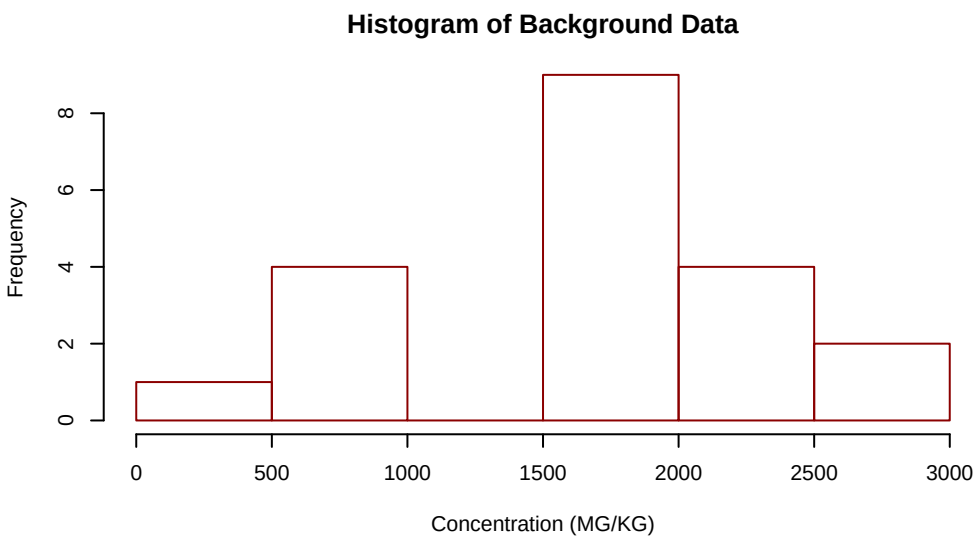


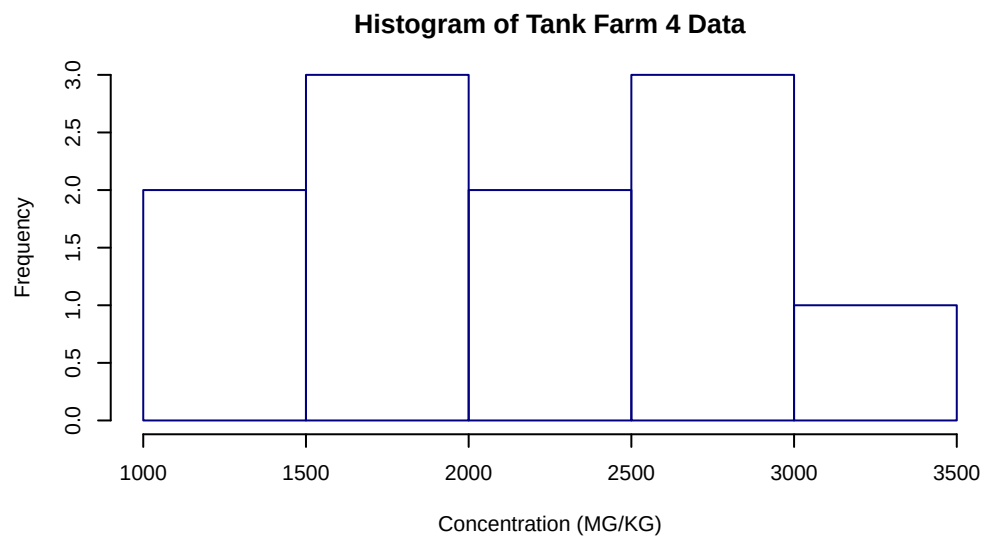


MAGNESIUM Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MANGANESE MmA SURFACESOIL
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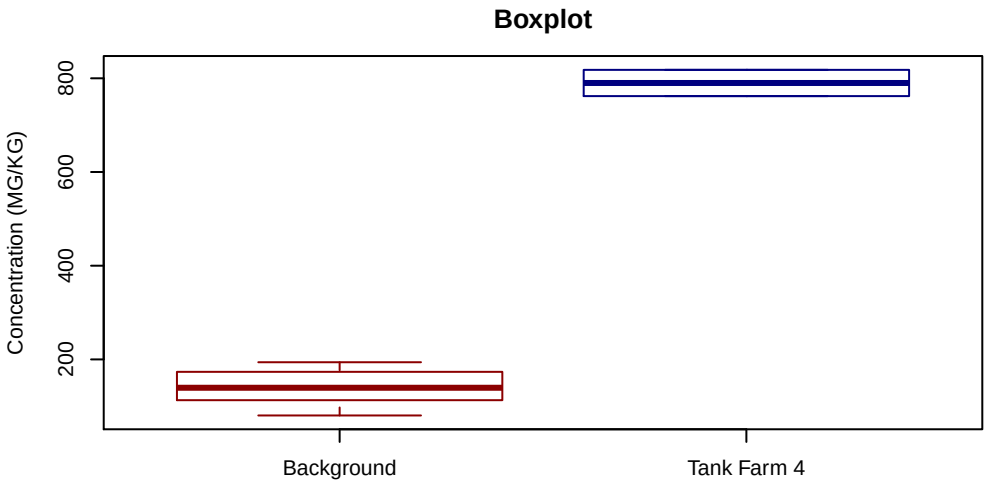
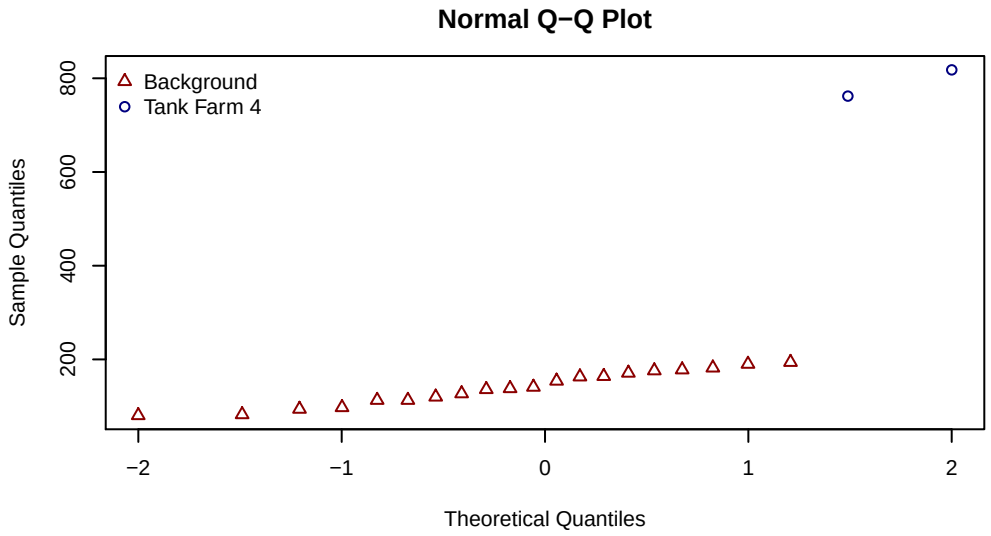
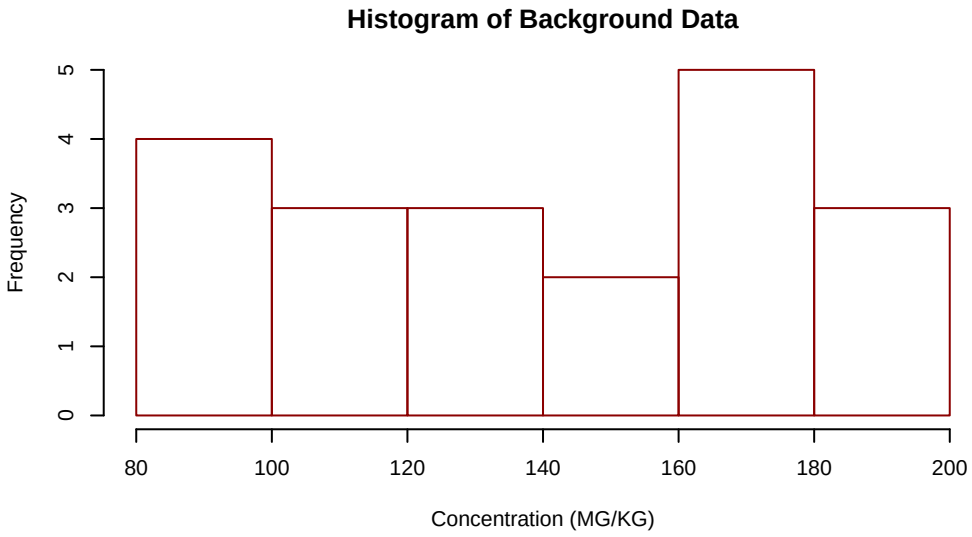
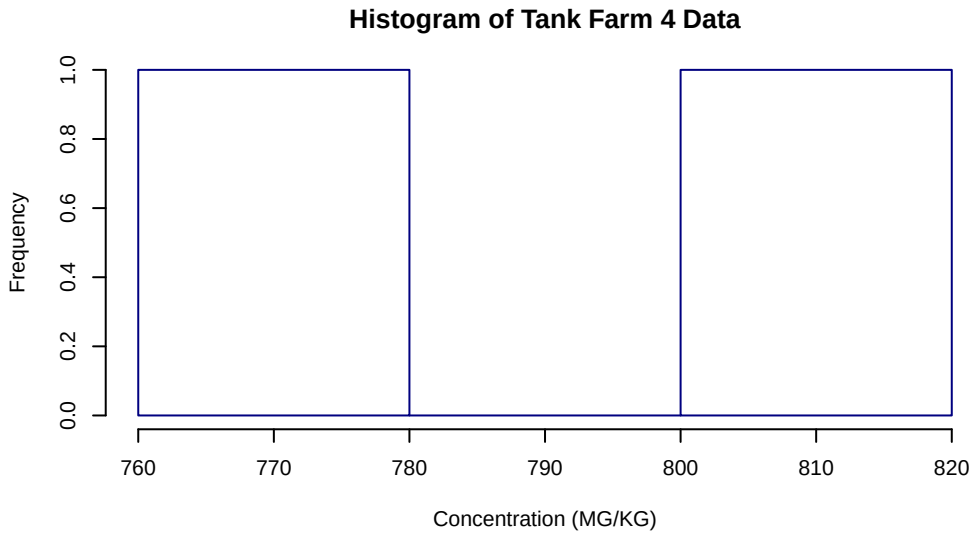
NEWPORT, RHODE ISLAND









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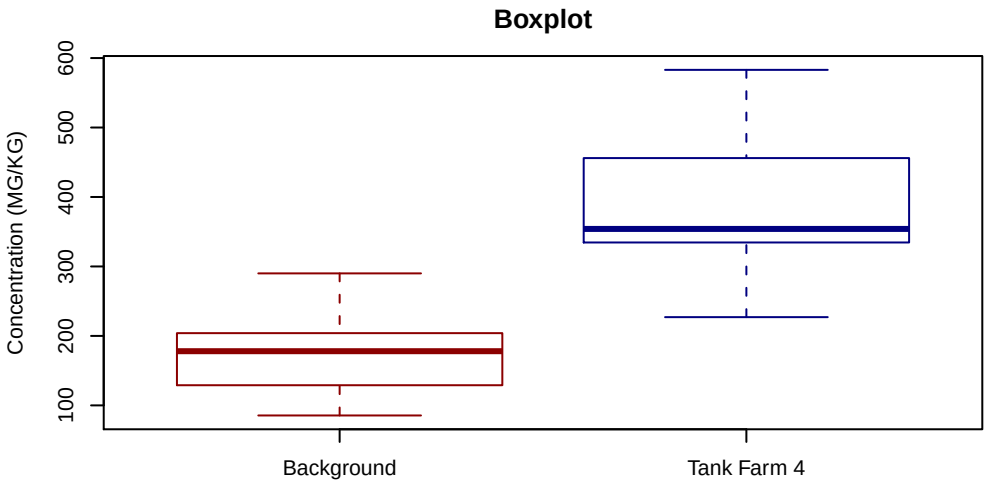
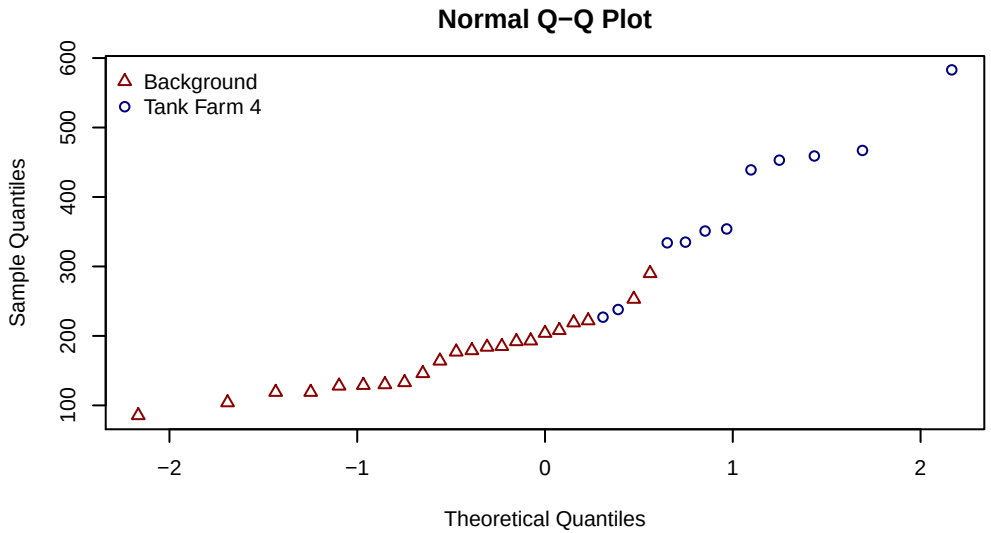
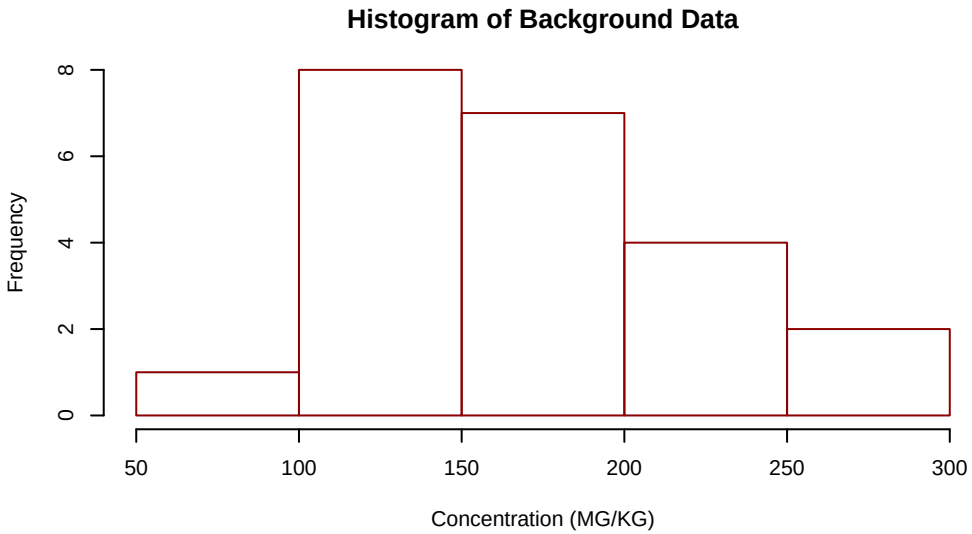
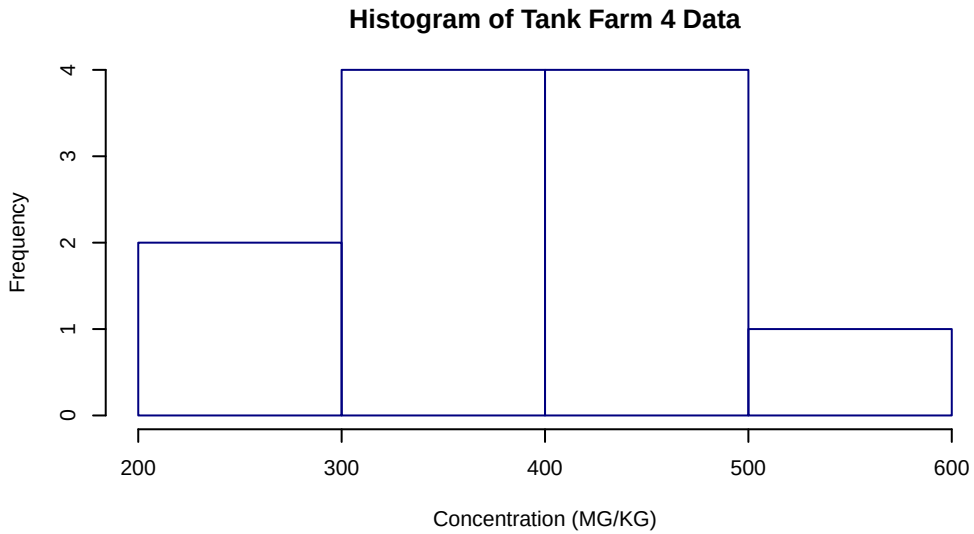
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MANGANESE Se SURFACESOIL
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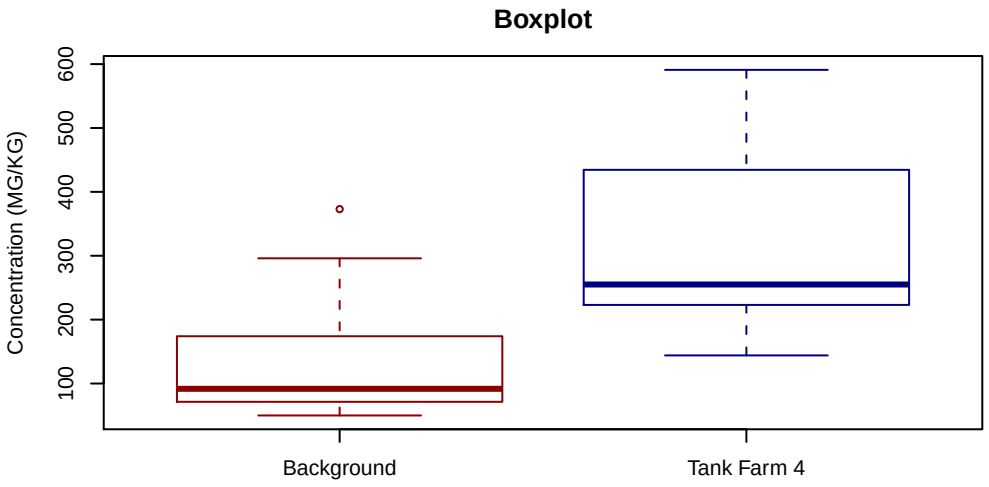
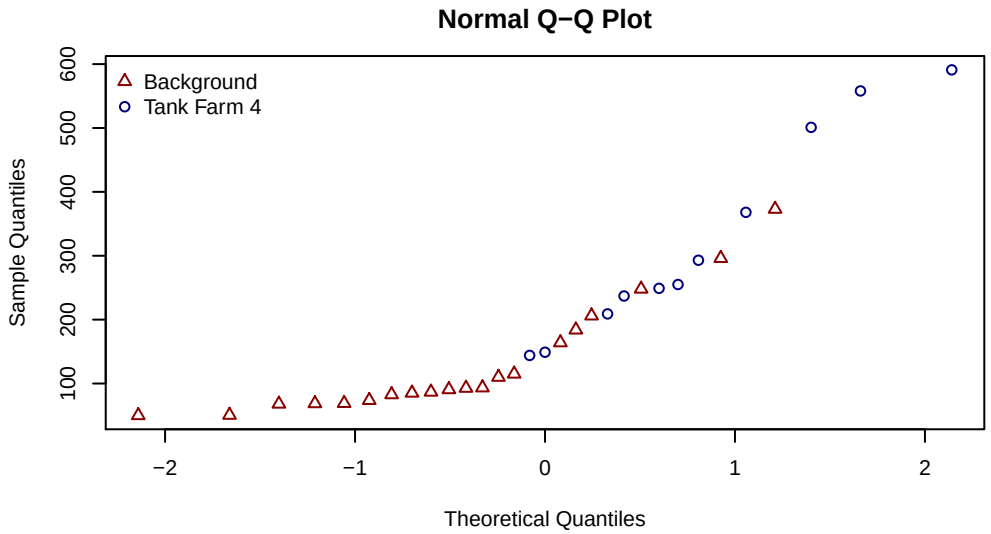
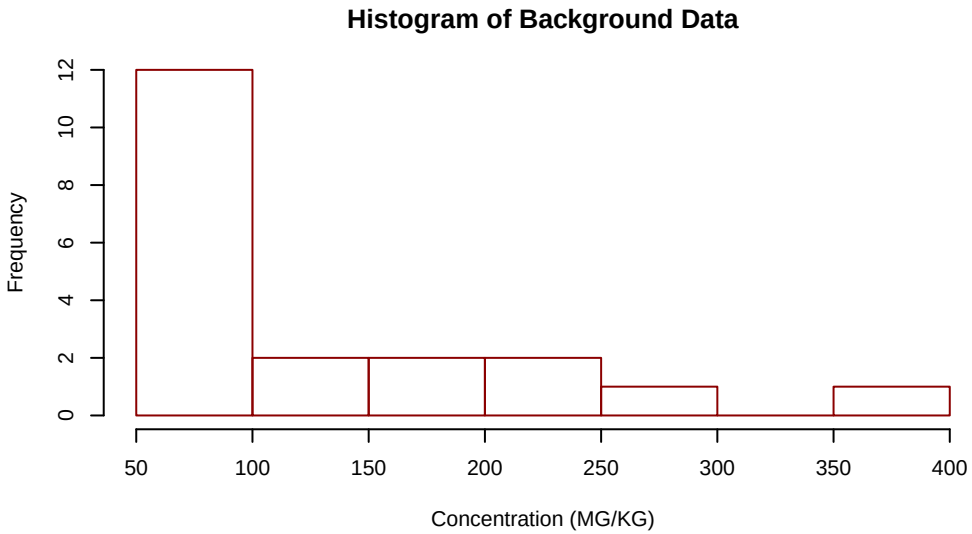
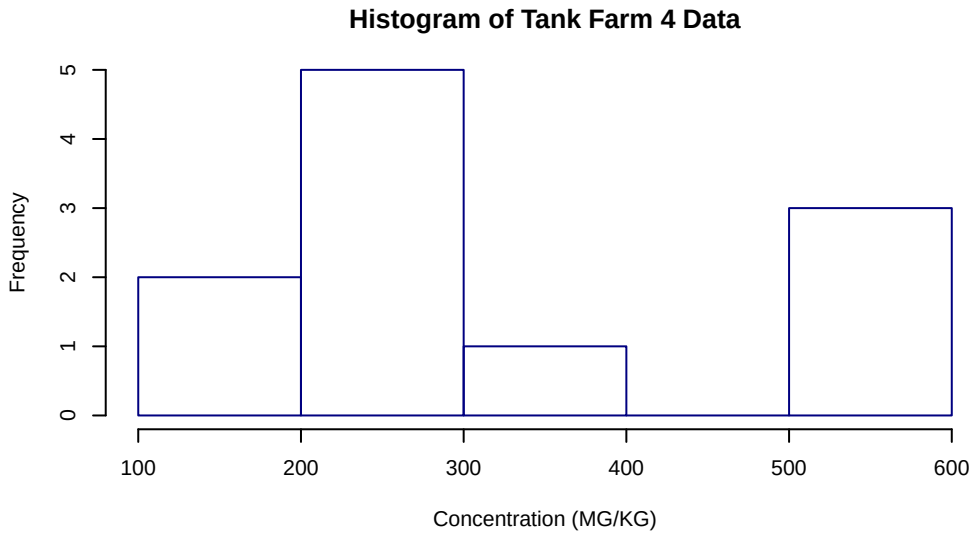
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MERCURY MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
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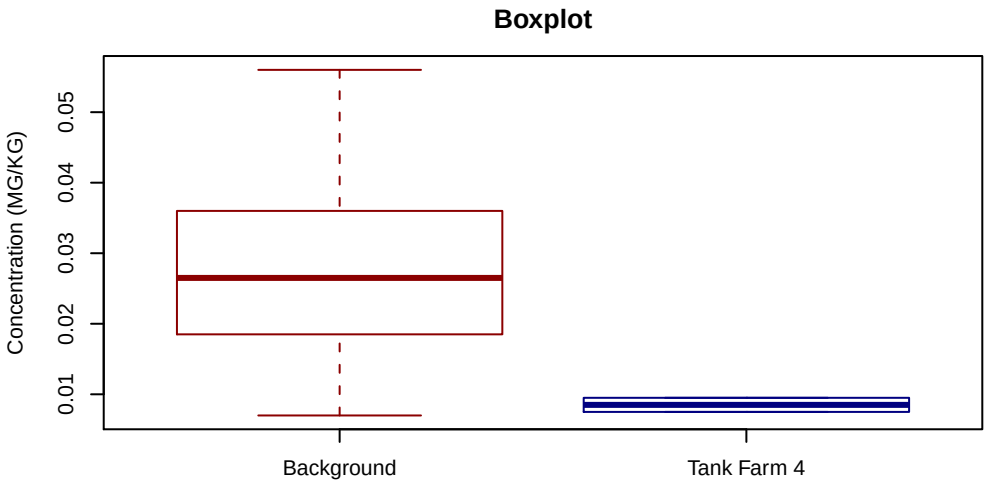

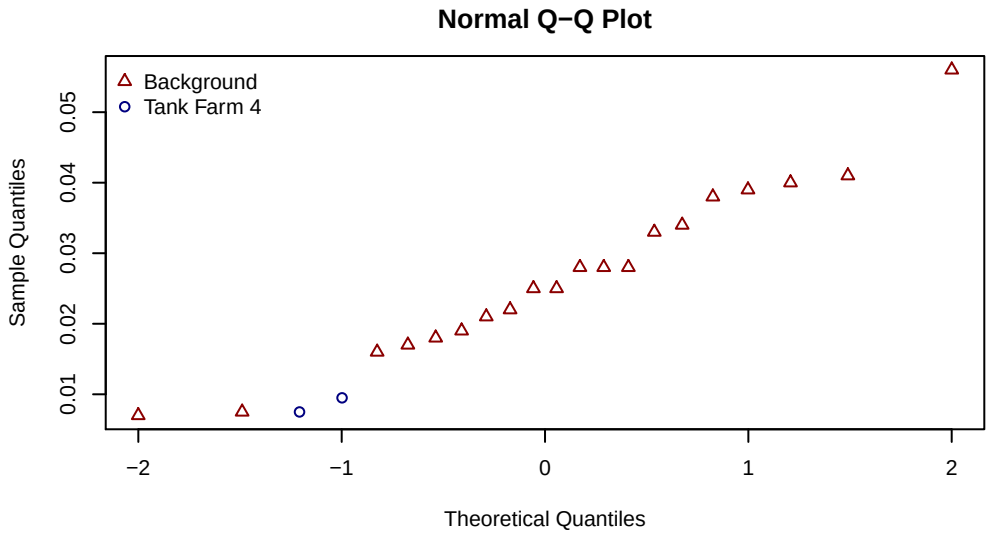

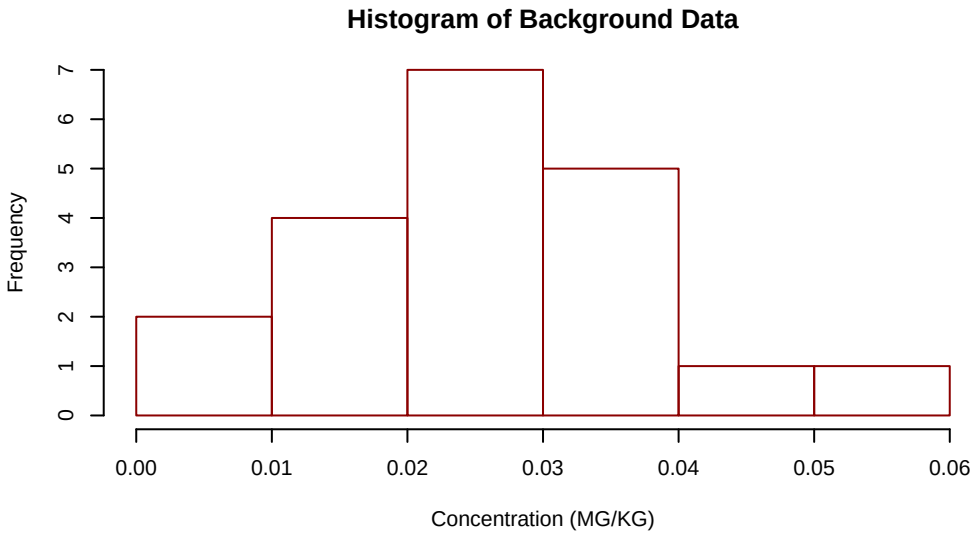

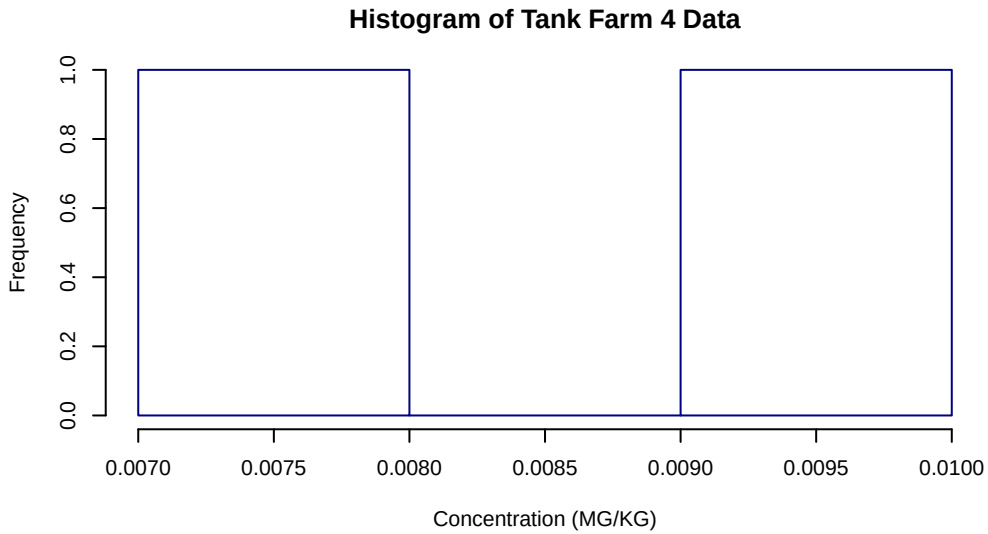

MERCURY Ne SURFACESOIL
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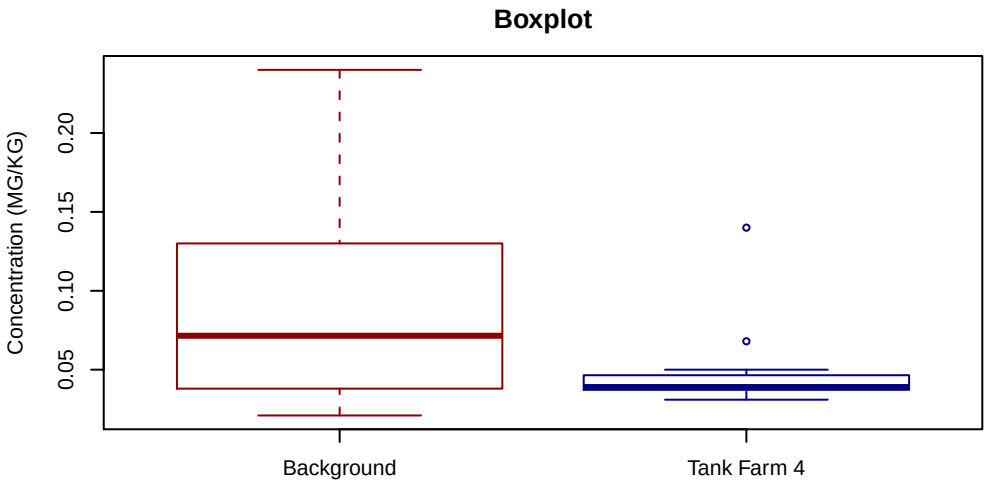
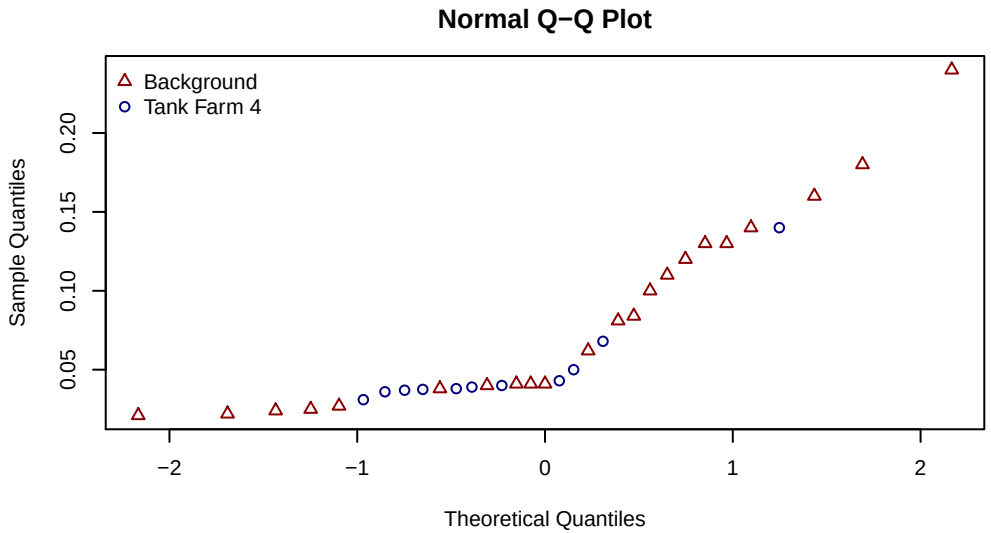
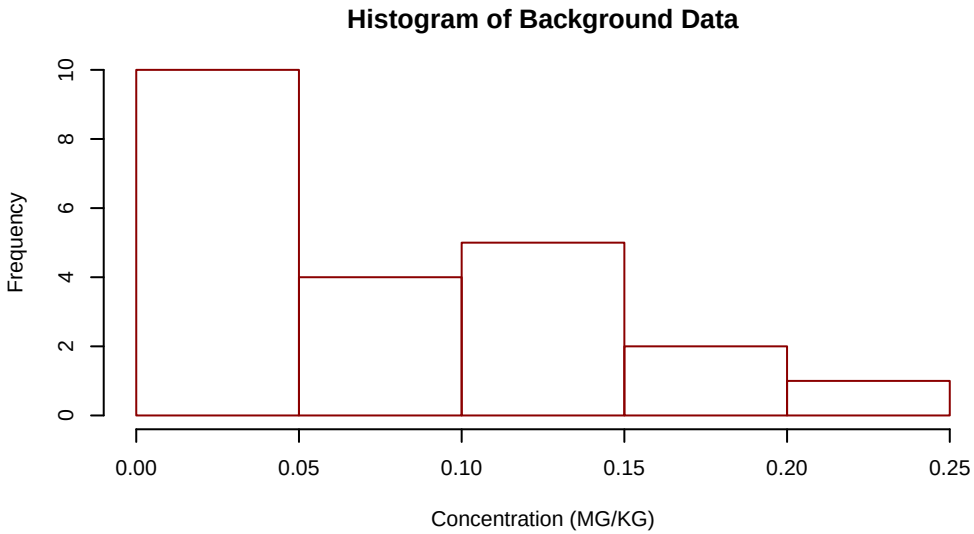
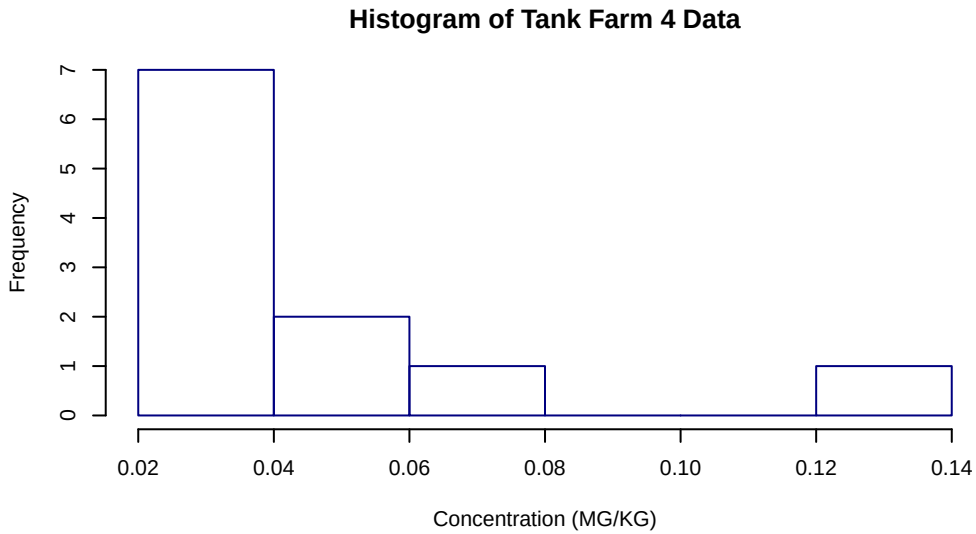
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MERCURY Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
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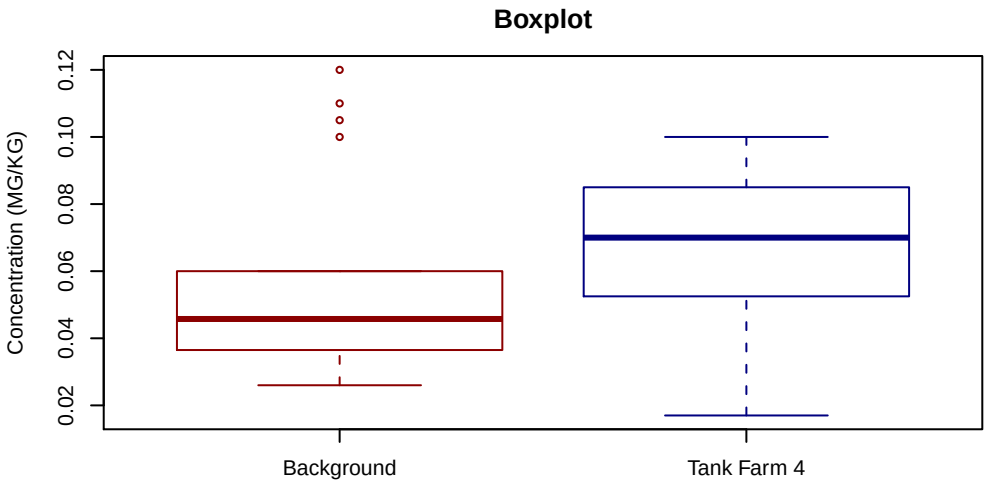
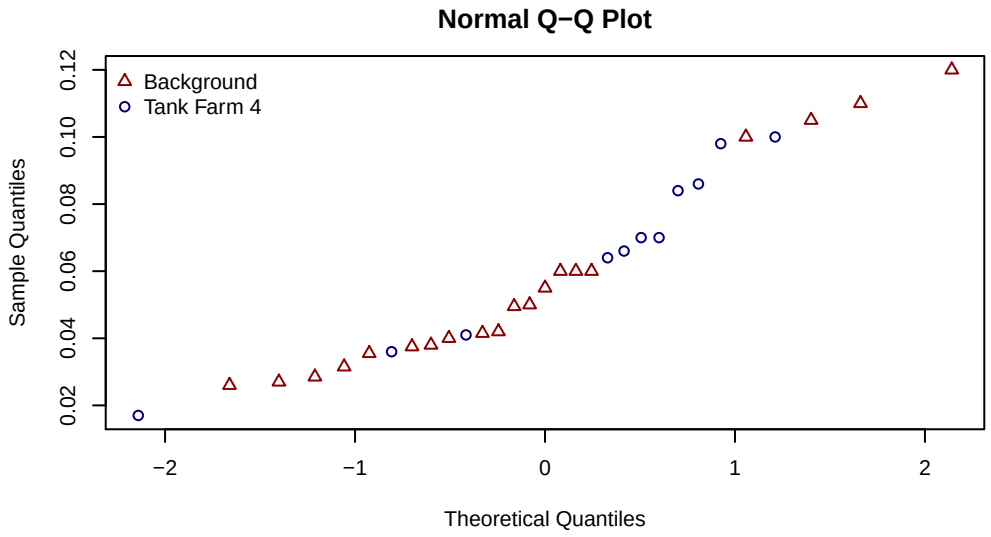
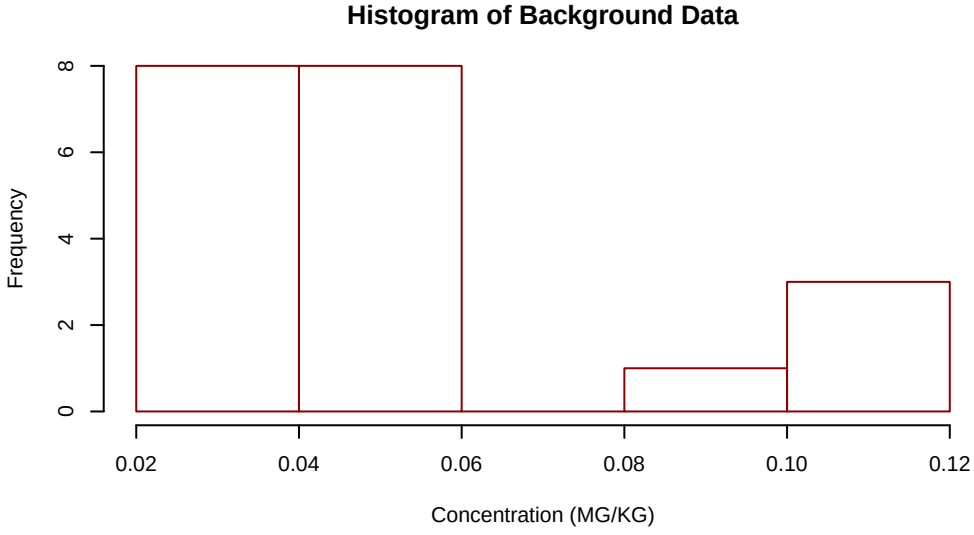
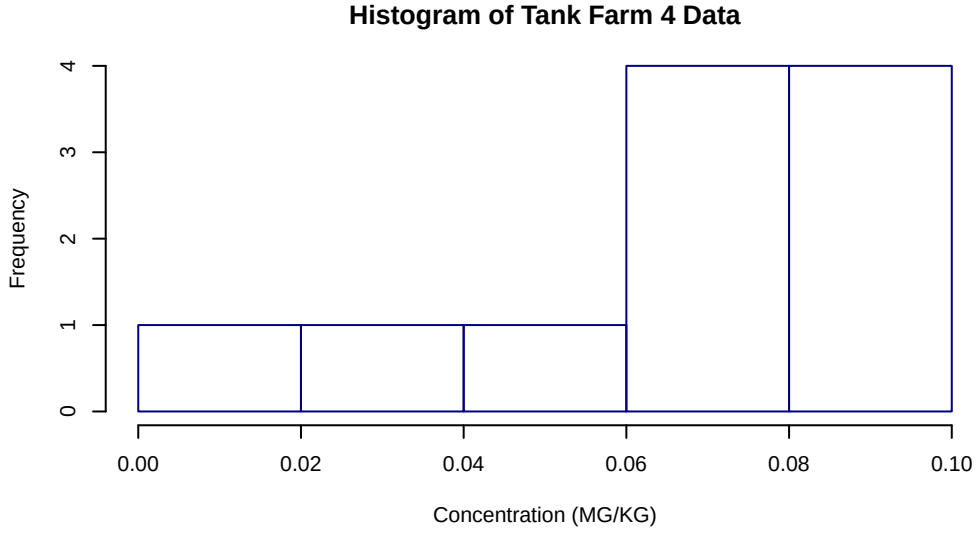
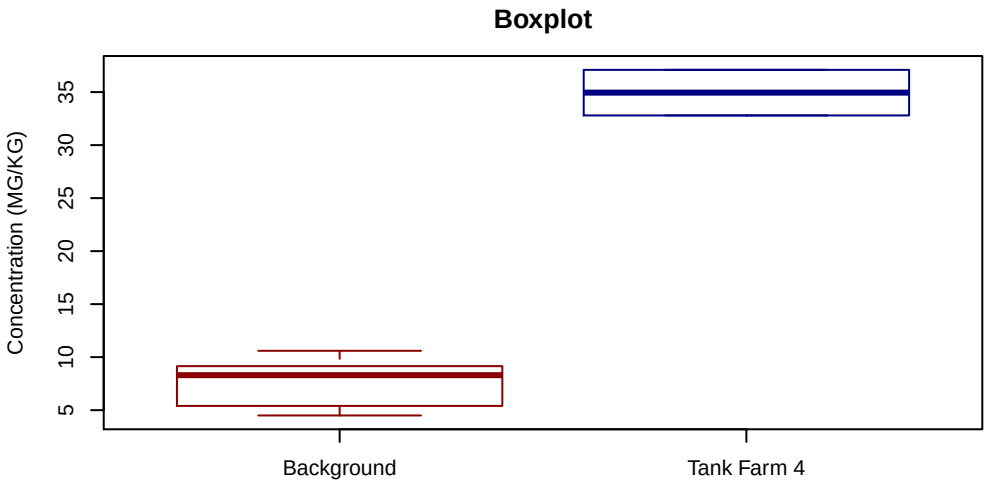


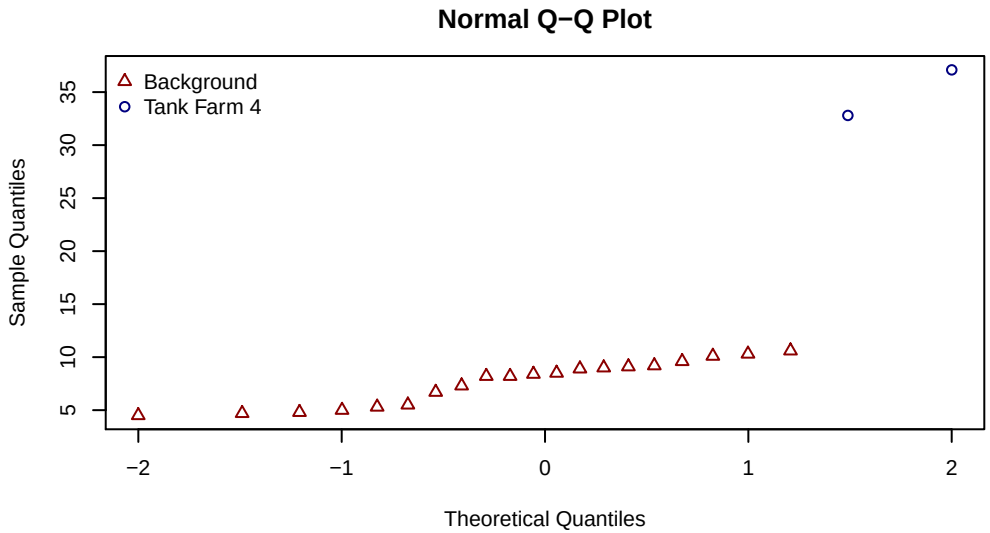


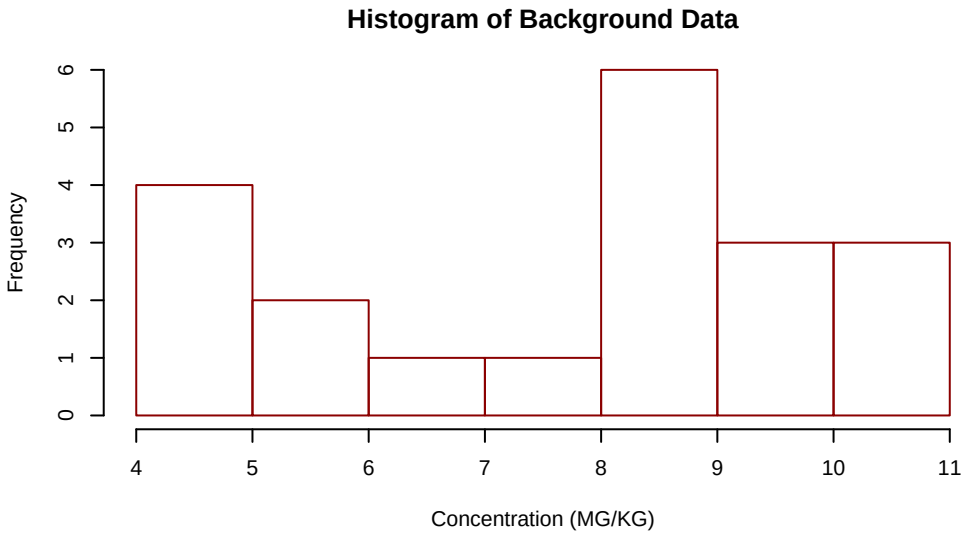


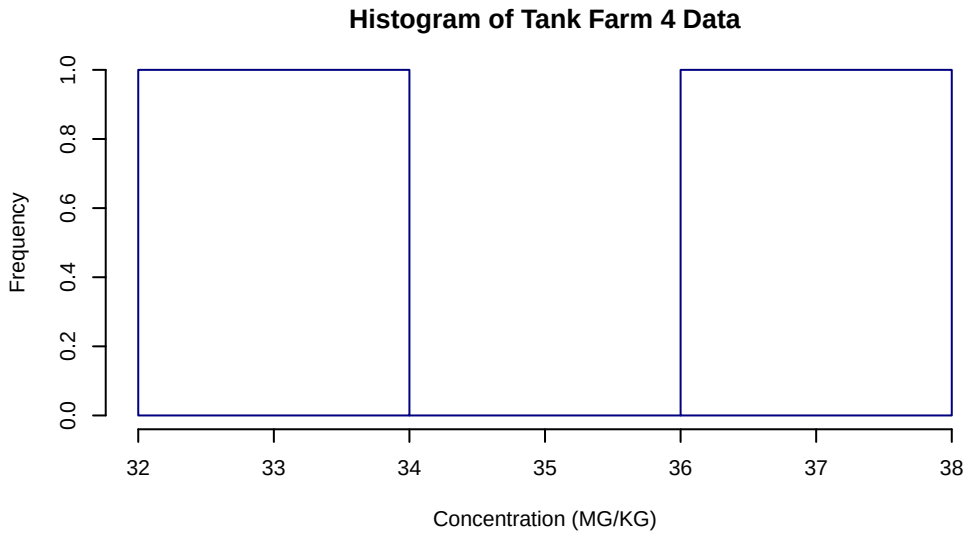


NICKEL MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









NICKEL Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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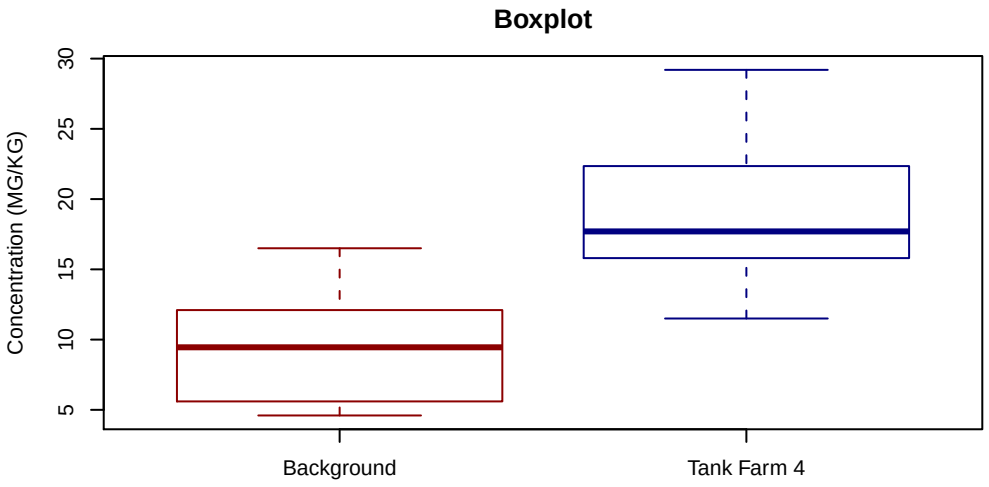
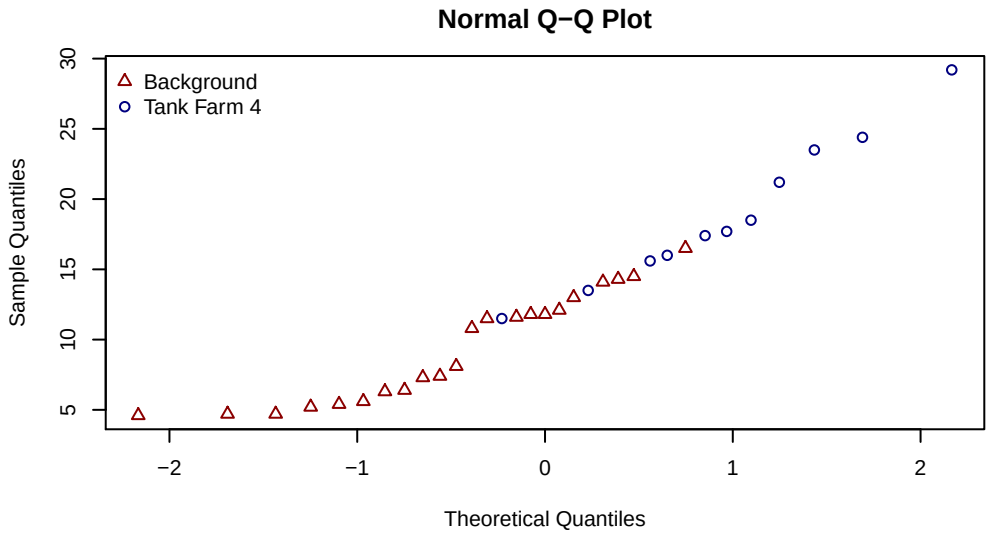
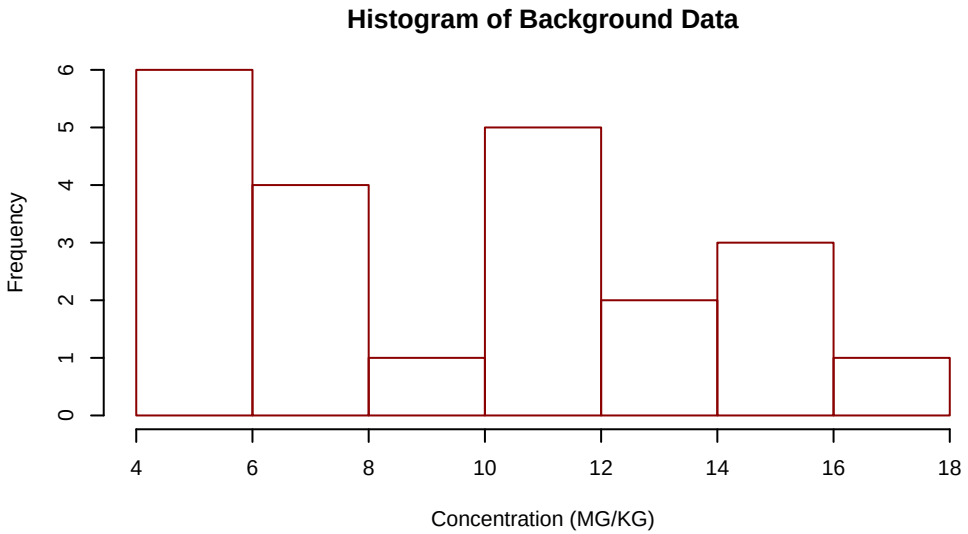
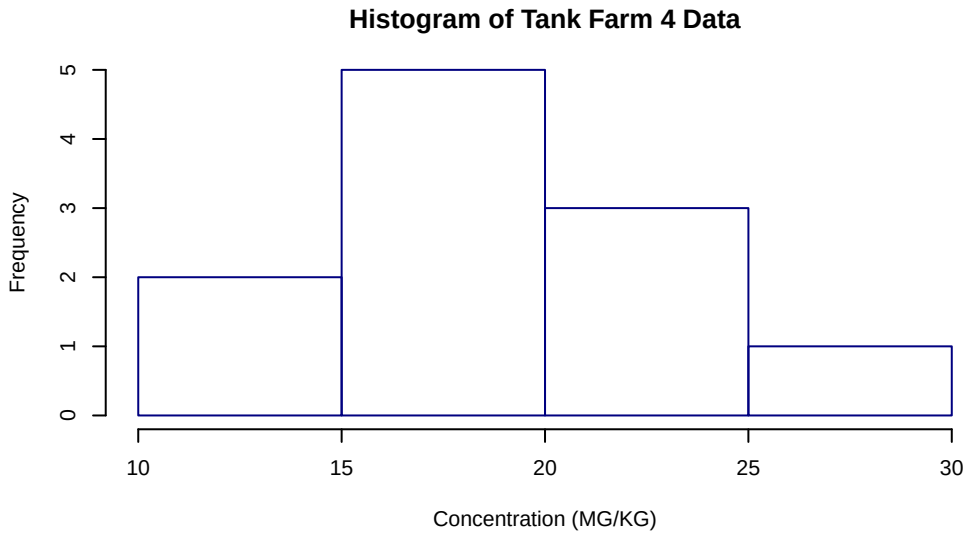
NEWPORT, RHODE ISLAND









NICKEL Se SURFACESOIL
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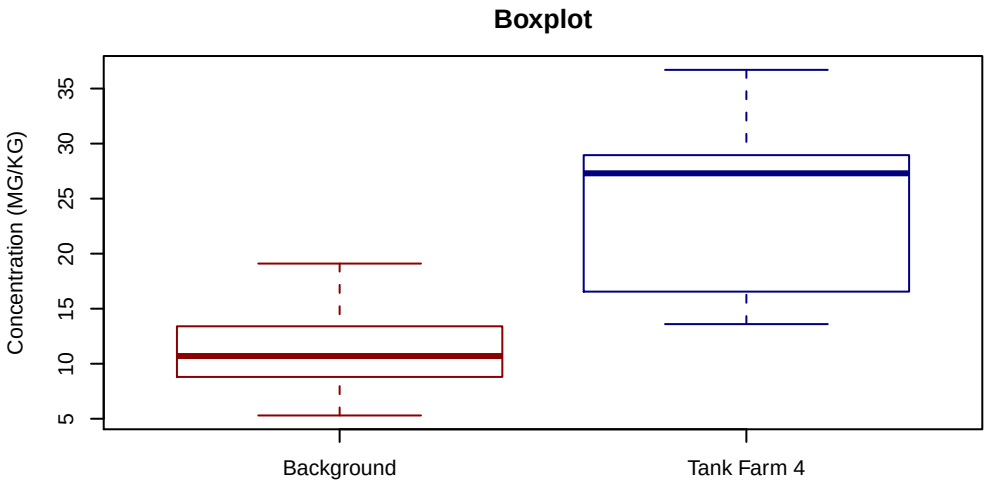

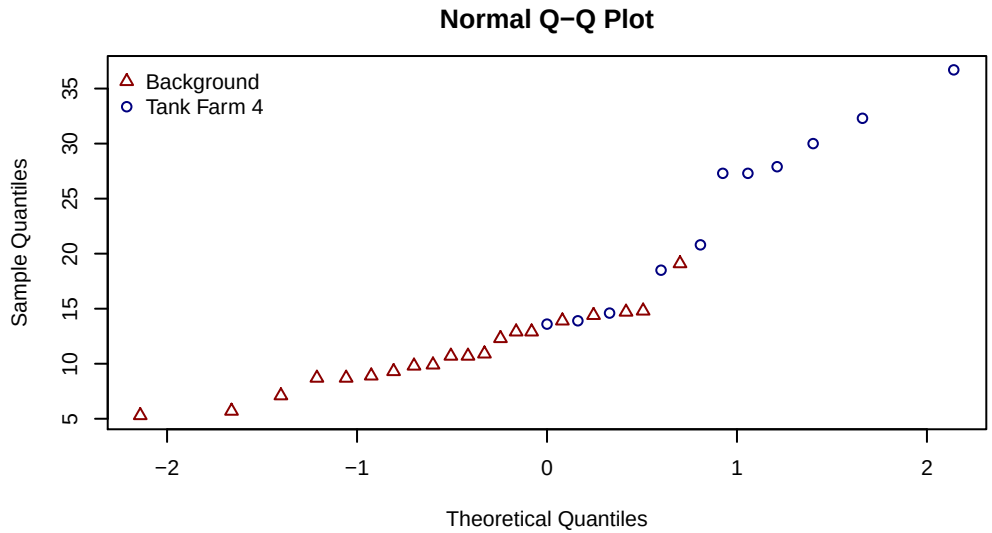

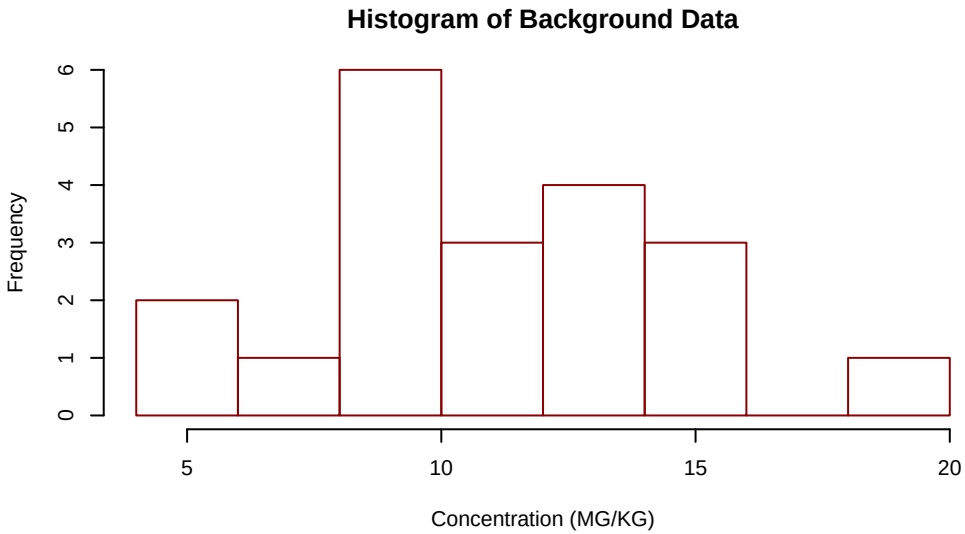

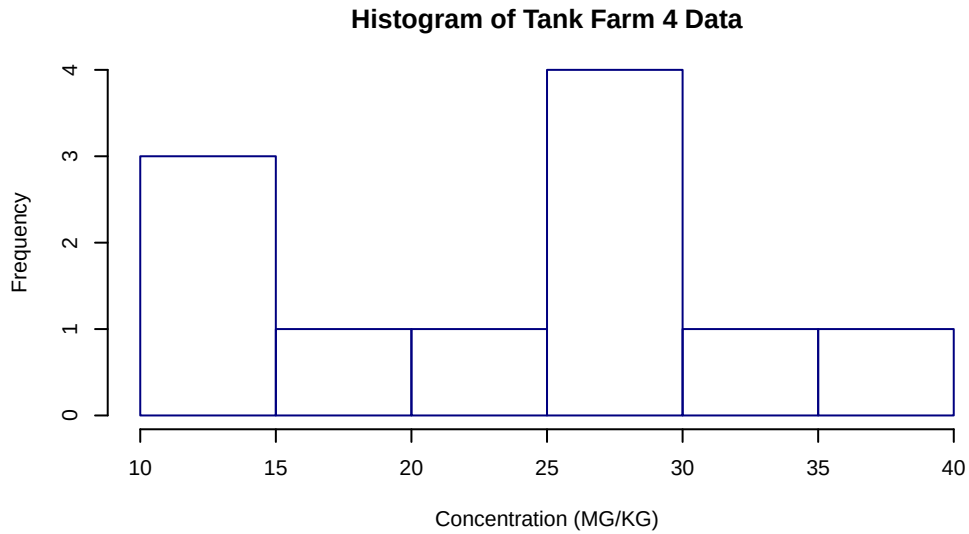

POTASSIUM MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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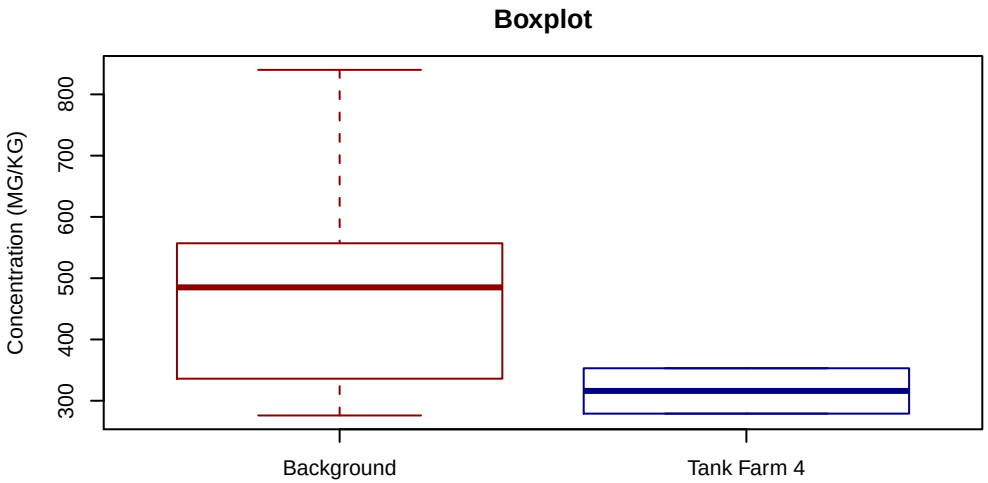

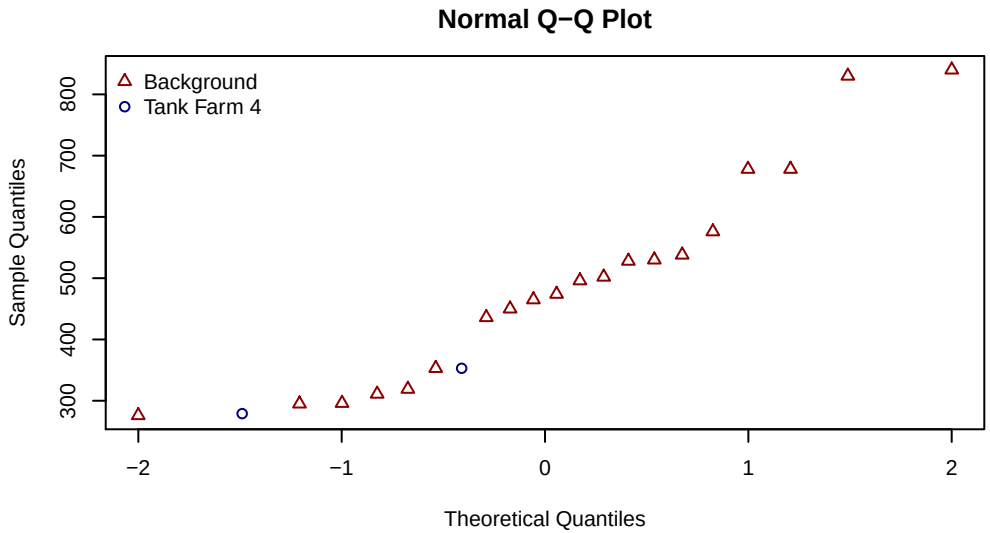

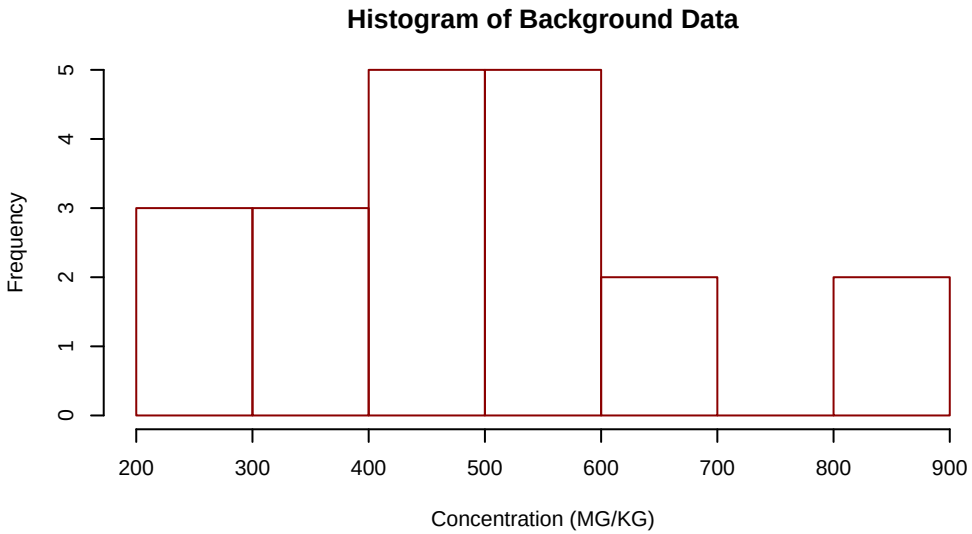

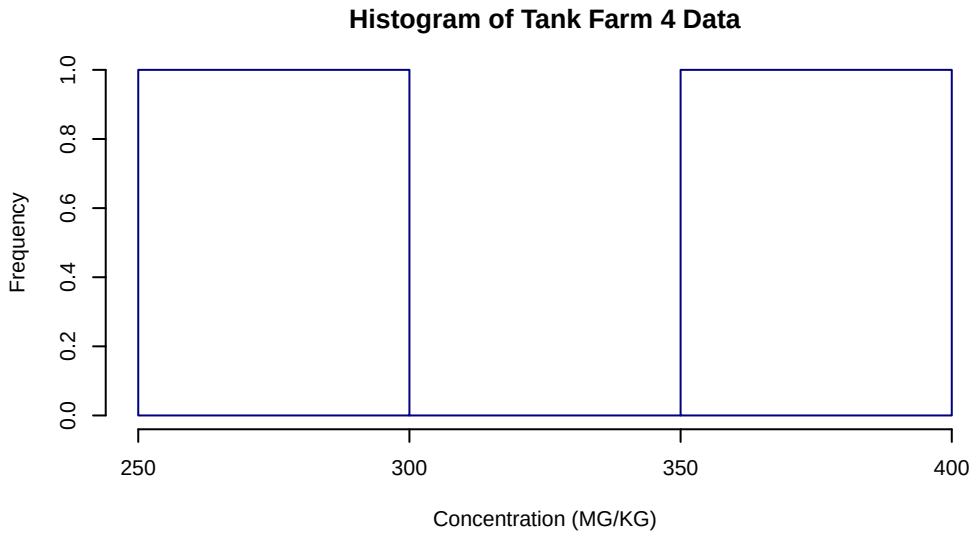

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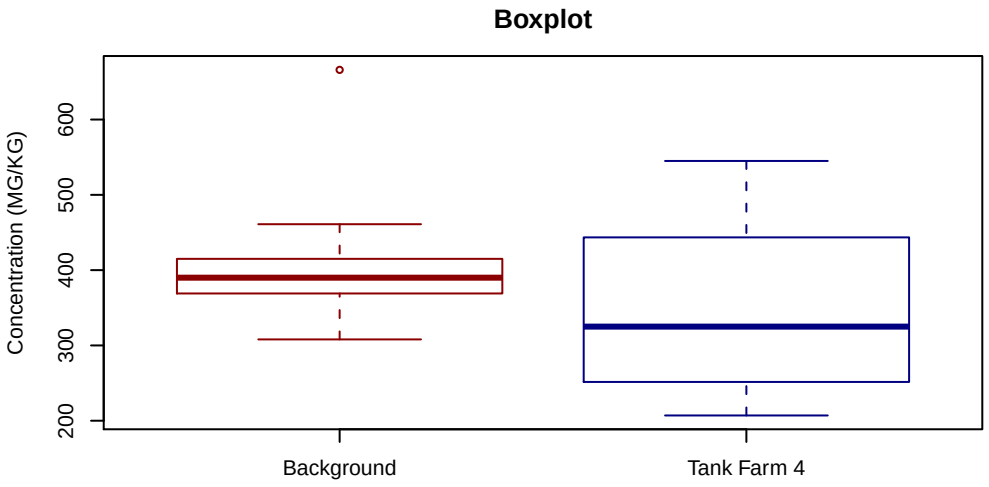

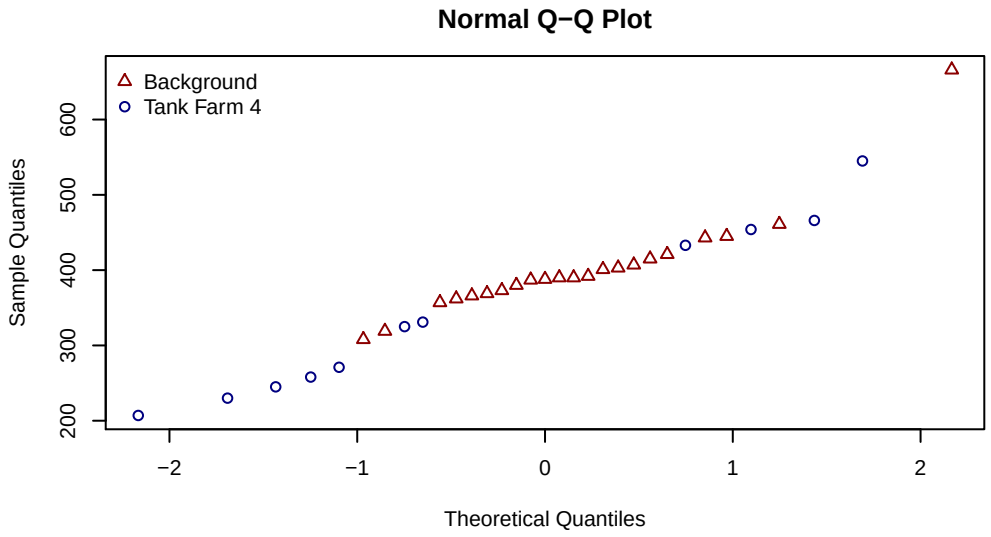

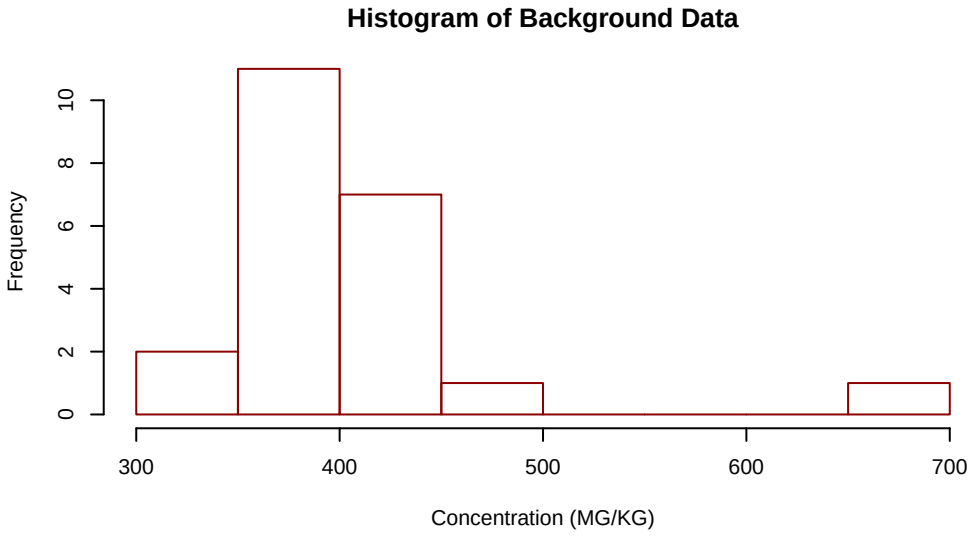

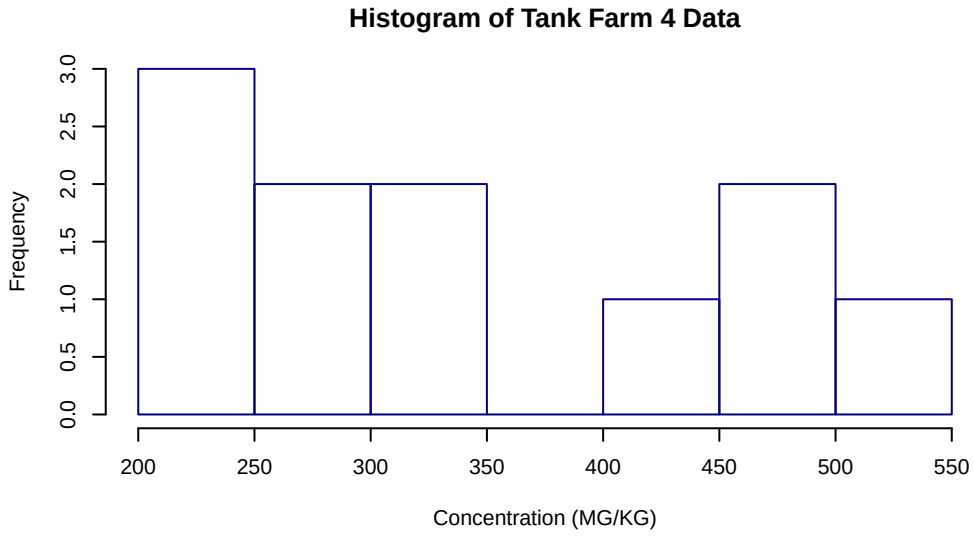

POTASSIUM Se SURFACESOIL
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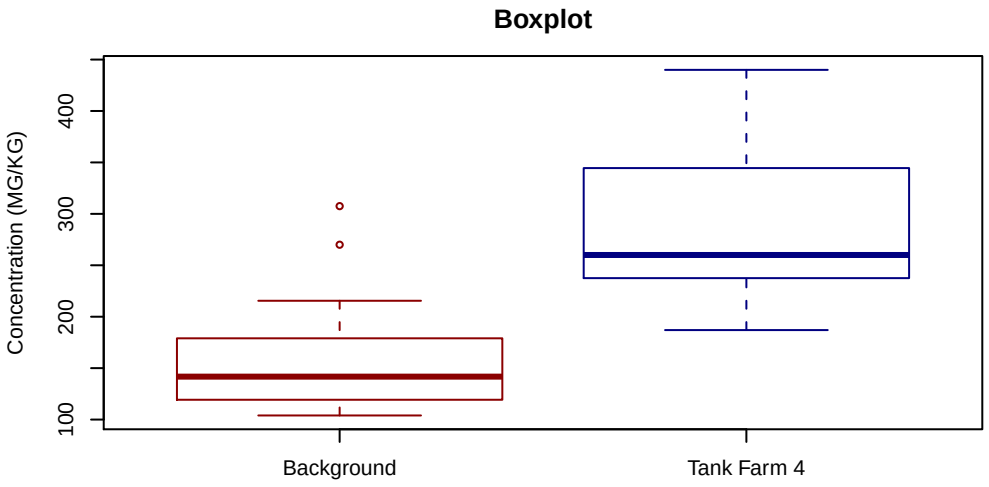

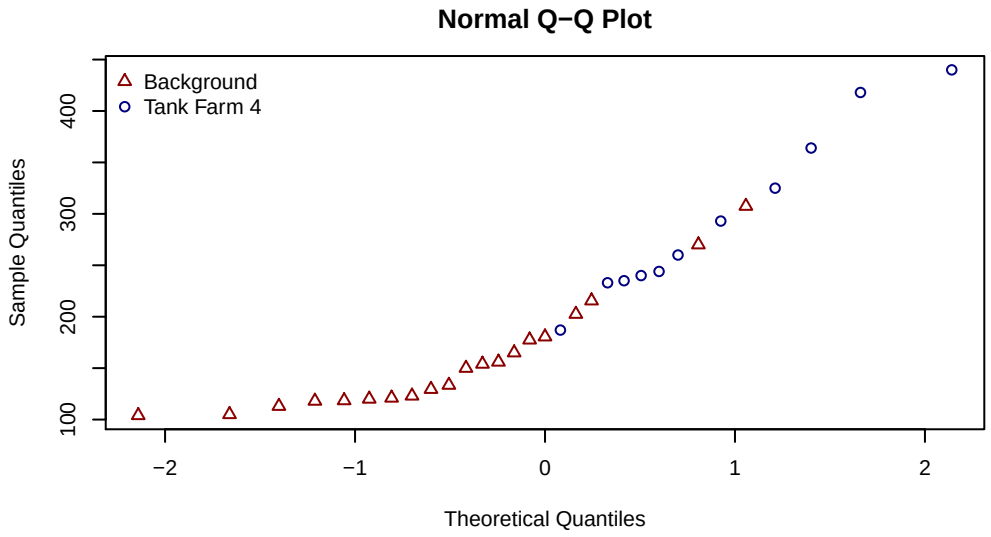

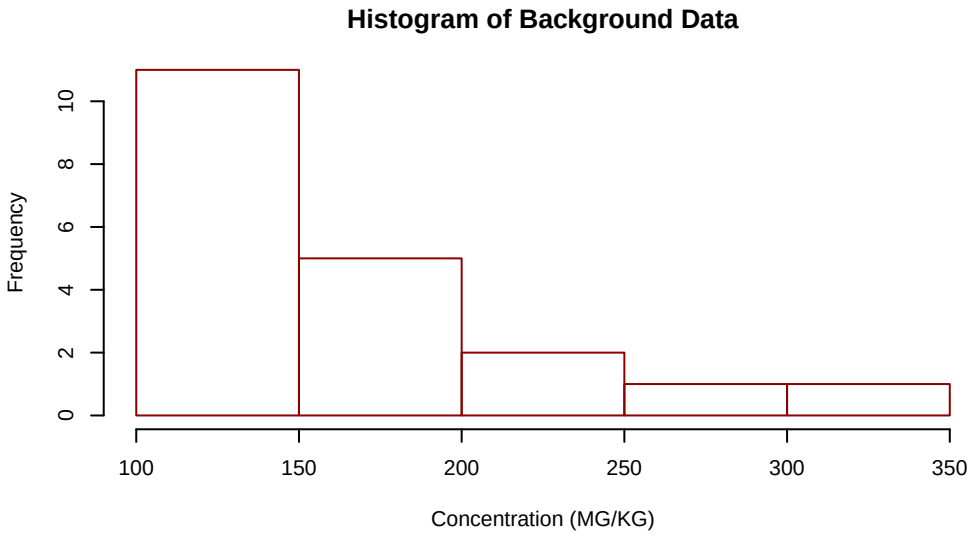

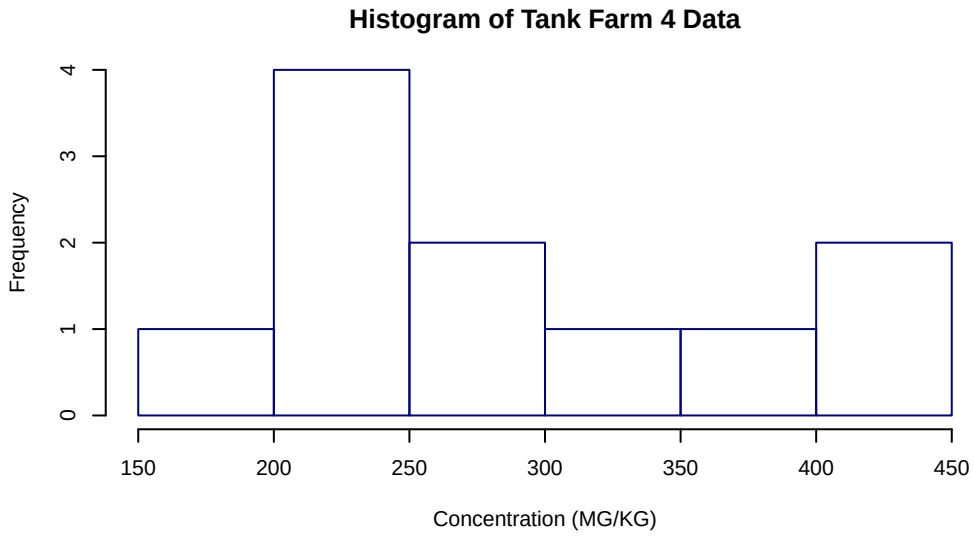

SELENIUM MmA SURFACESOIL
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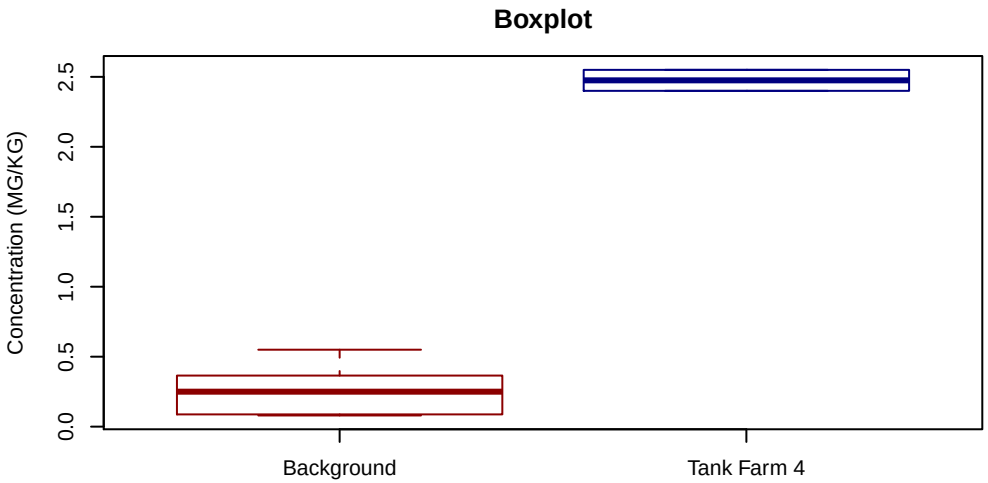

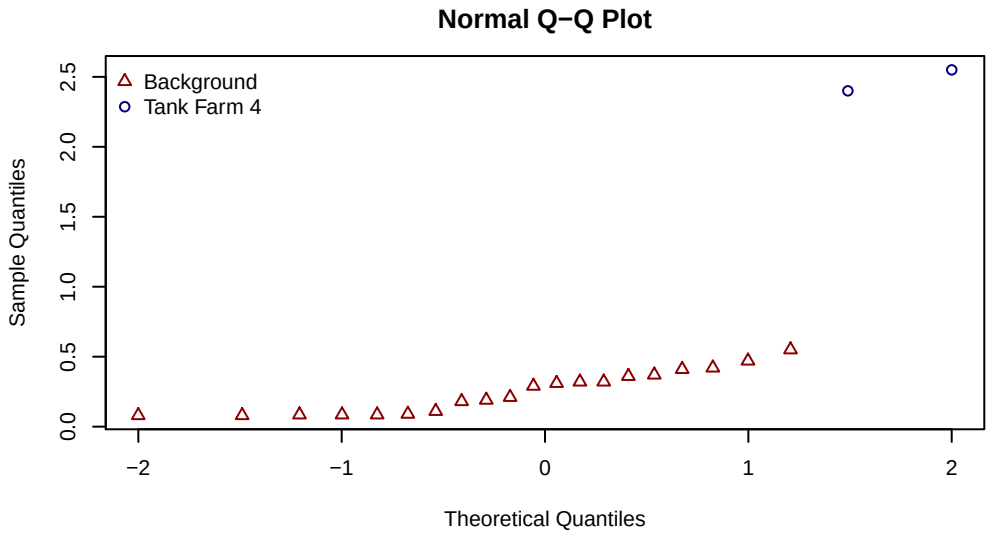

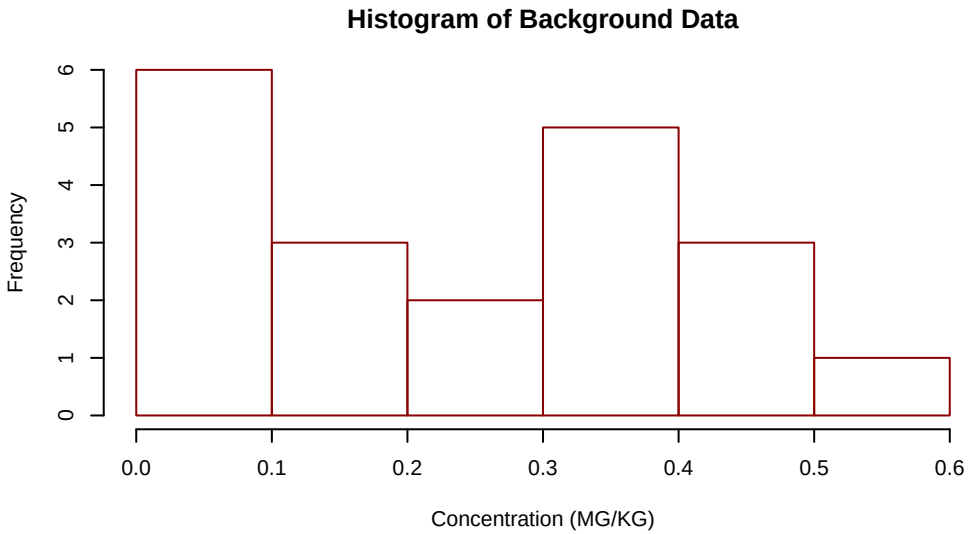

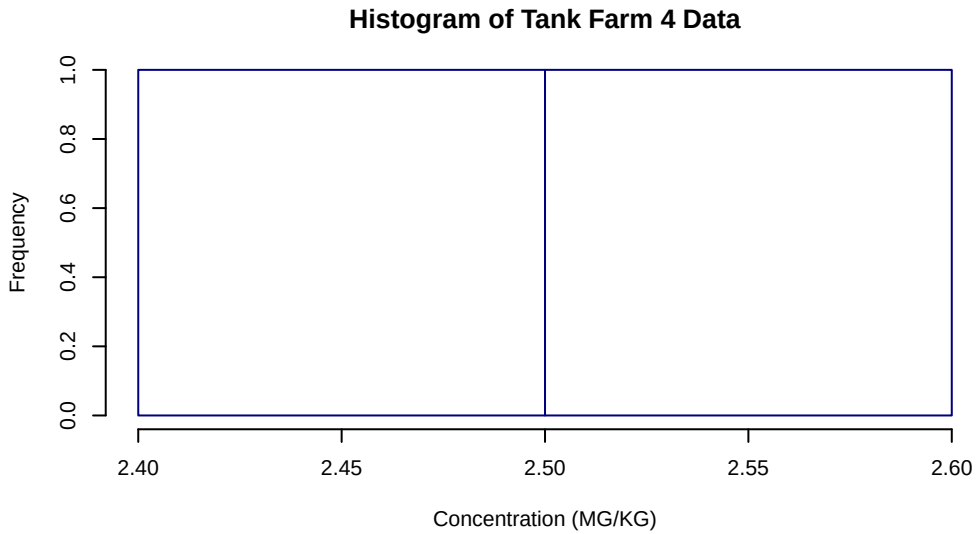

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NAVAL STATION NEWPORT
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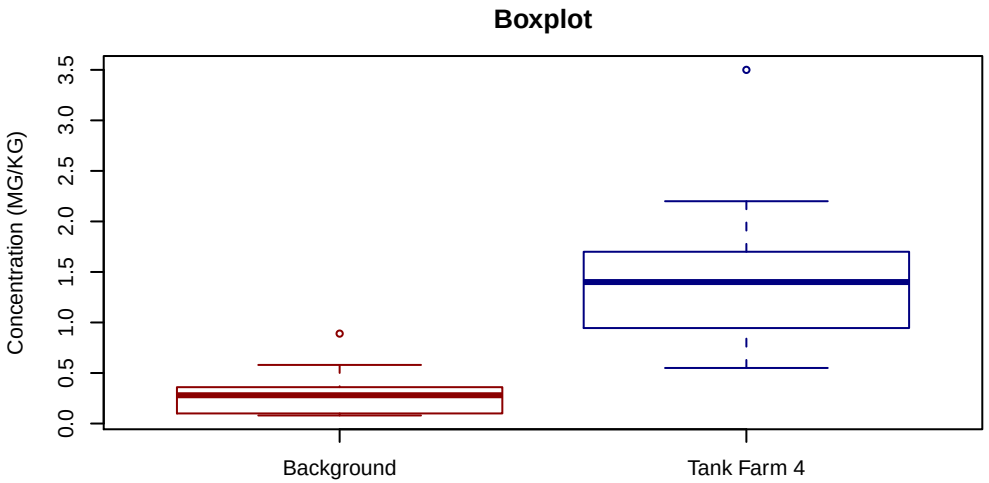

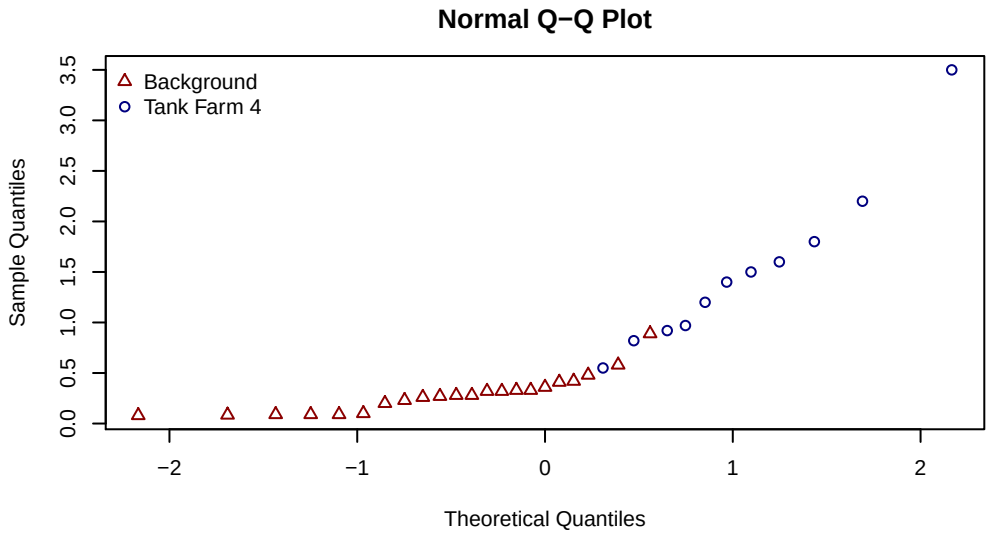

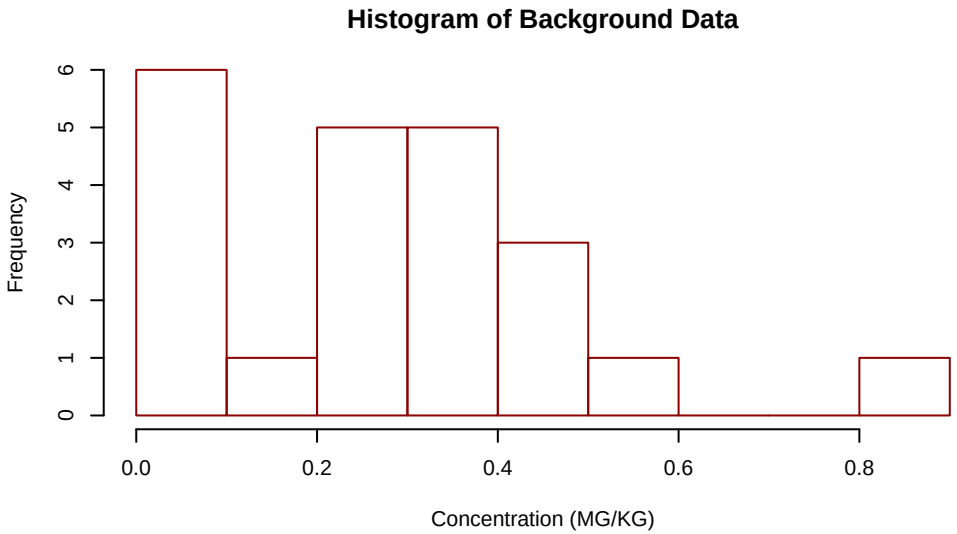

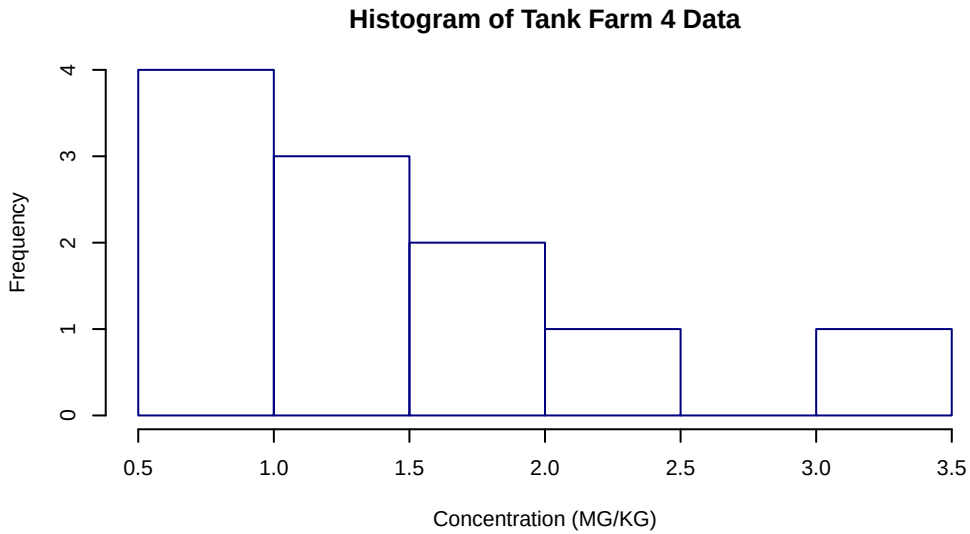

SELENIUM Se SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
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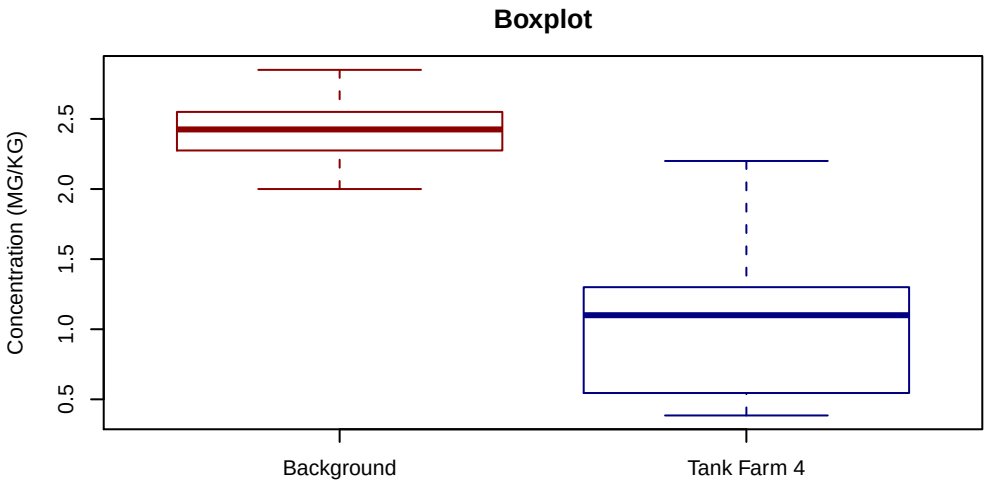
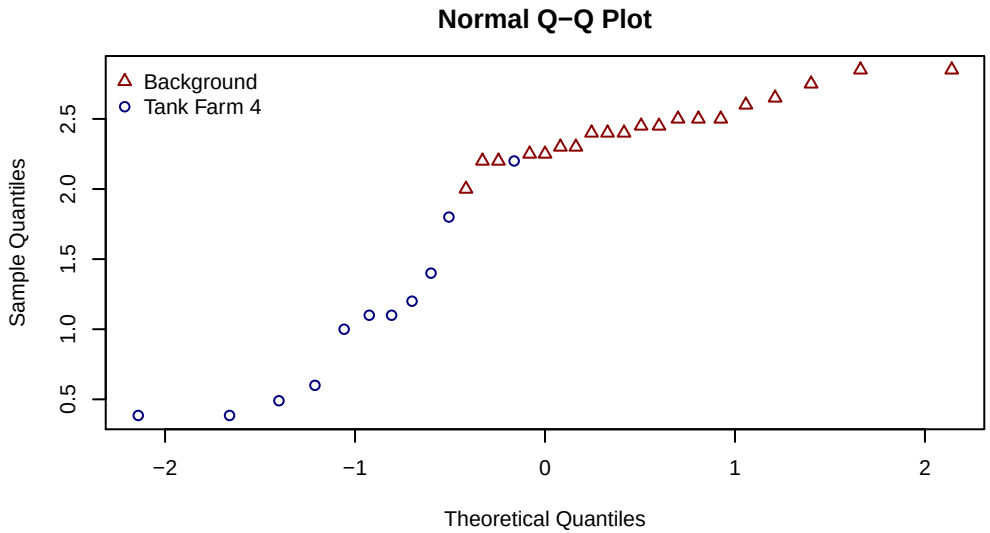
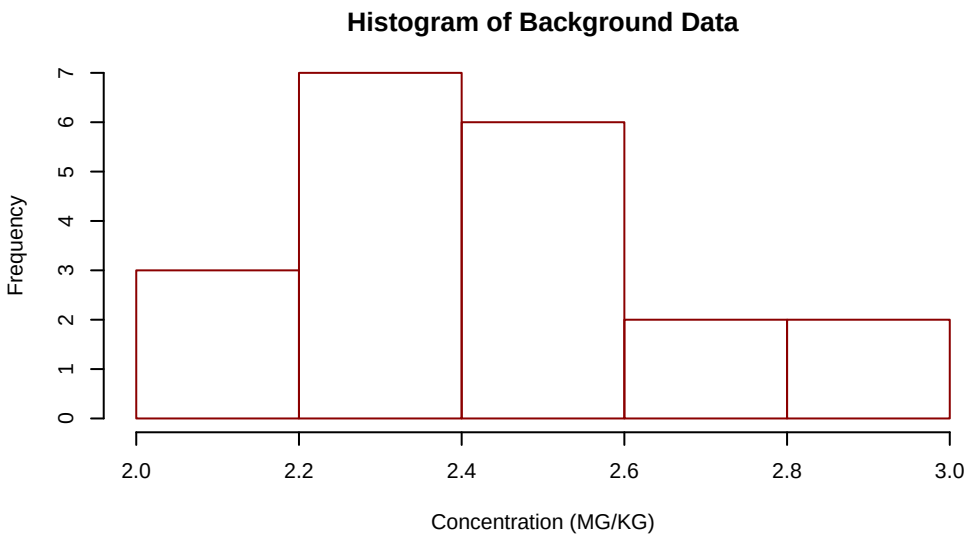
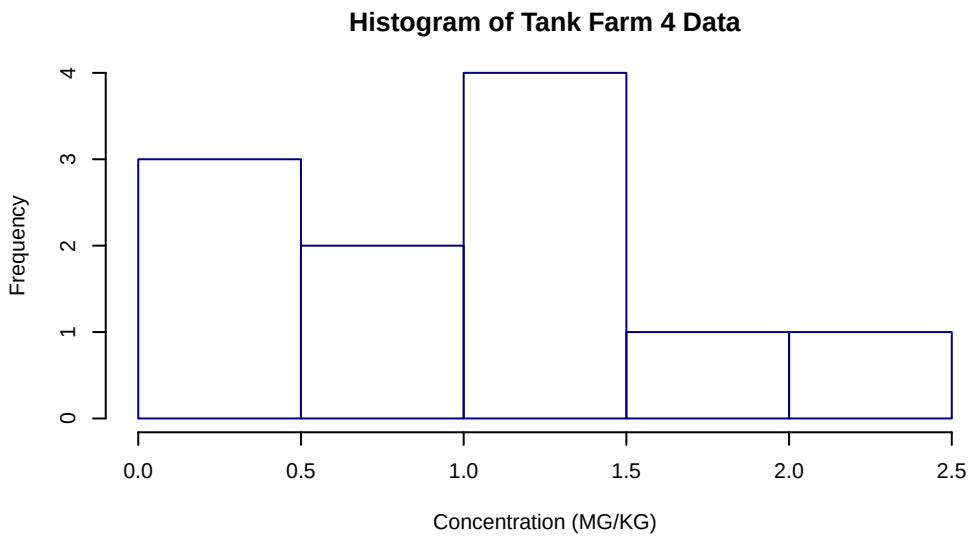
NEWPORT, RHODE ISLAND









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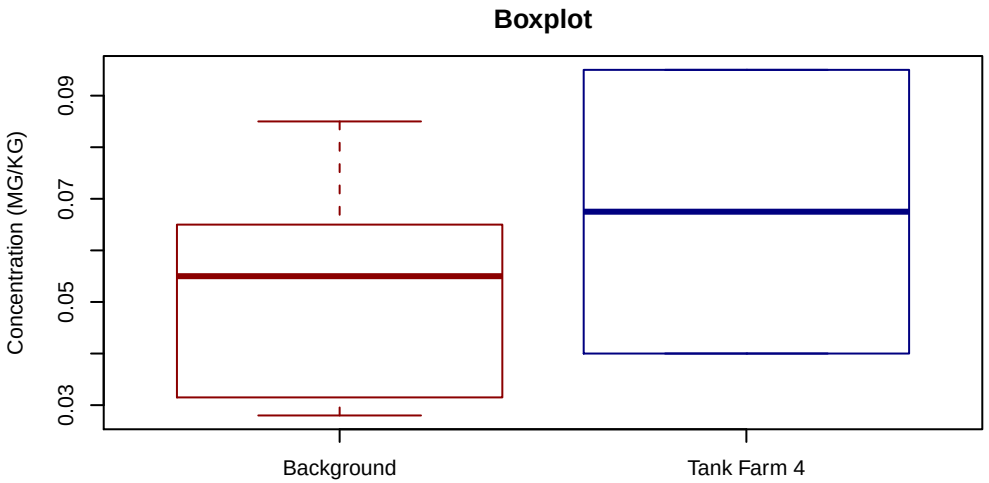

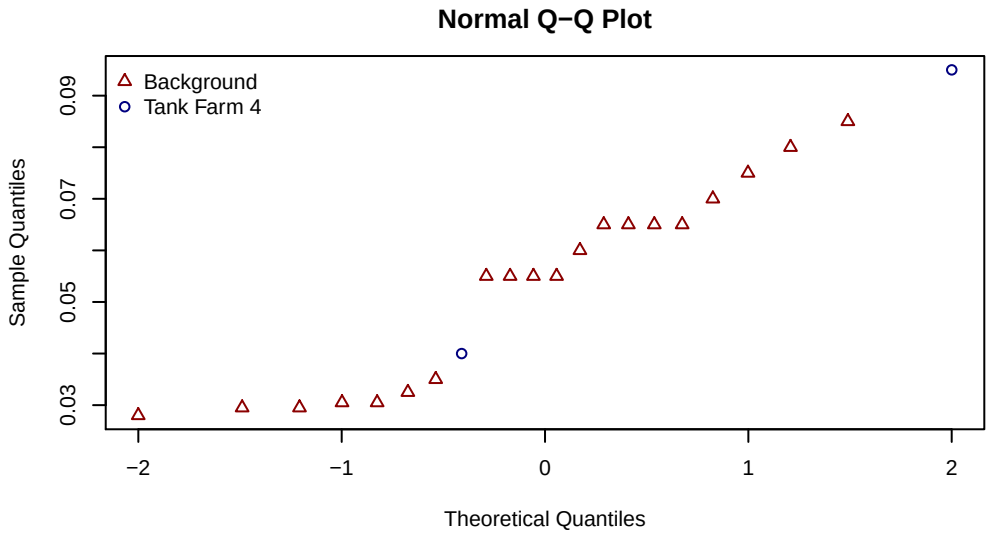

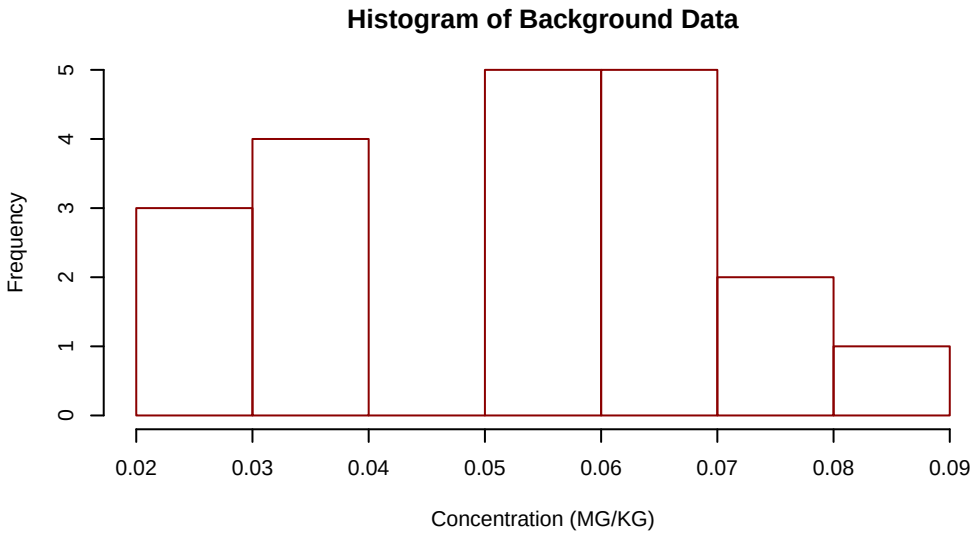

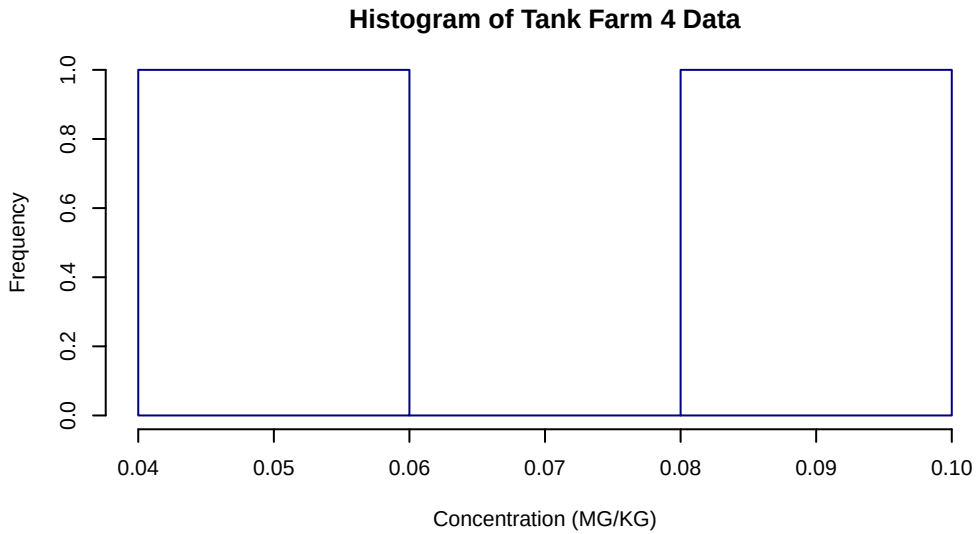

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TANK FARM 4 BACKGROUND COMPARISON
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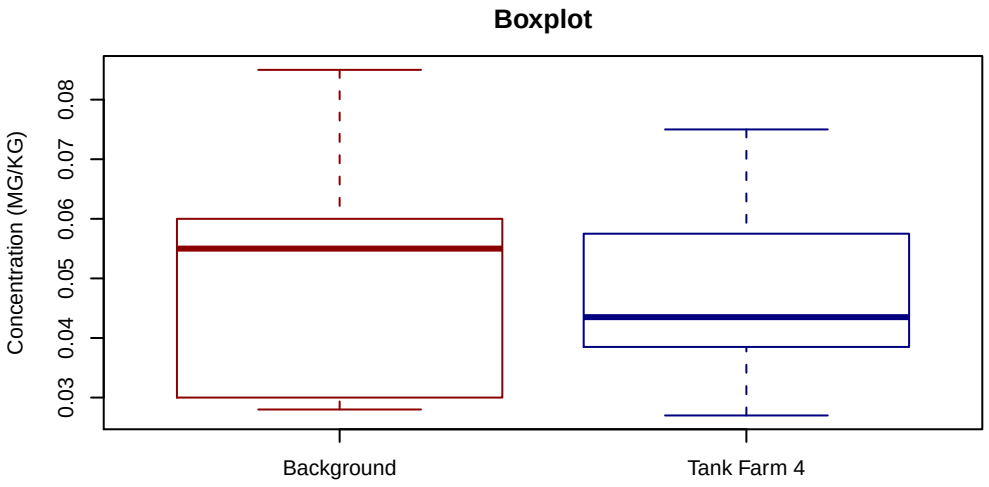
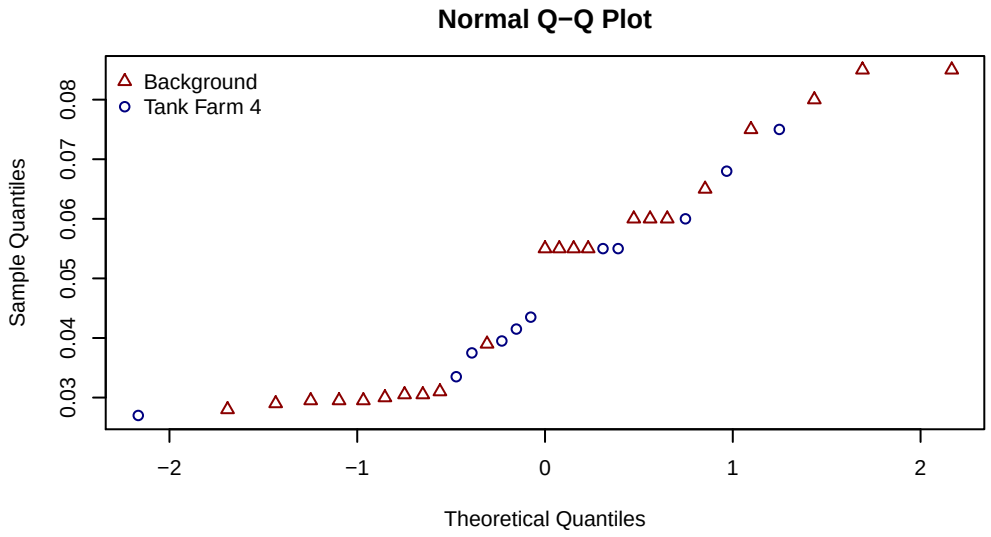
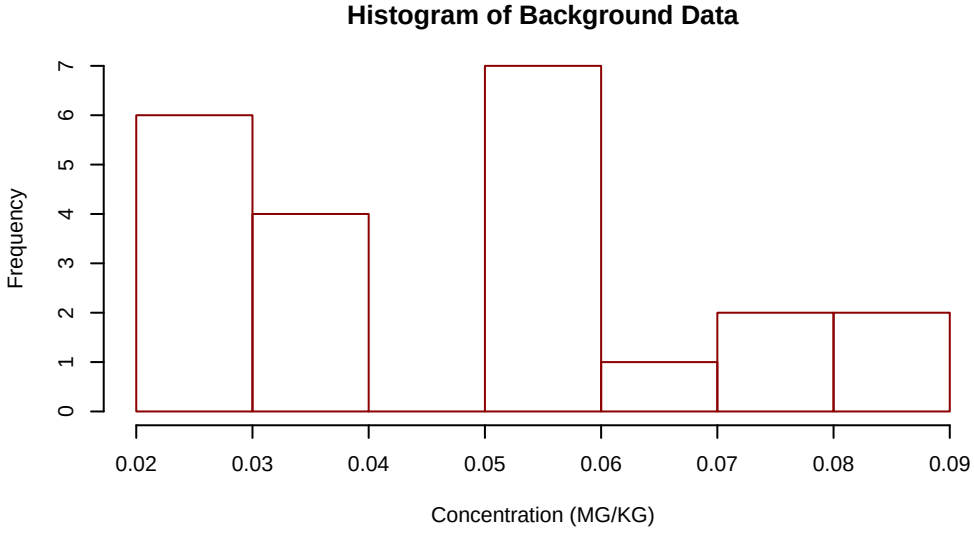
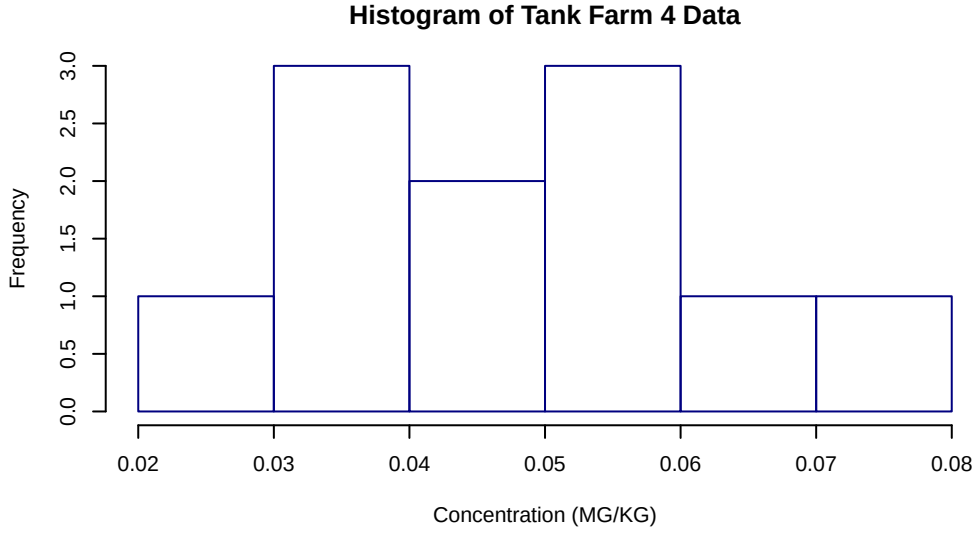
NEWPORT, RHODE ISLAND









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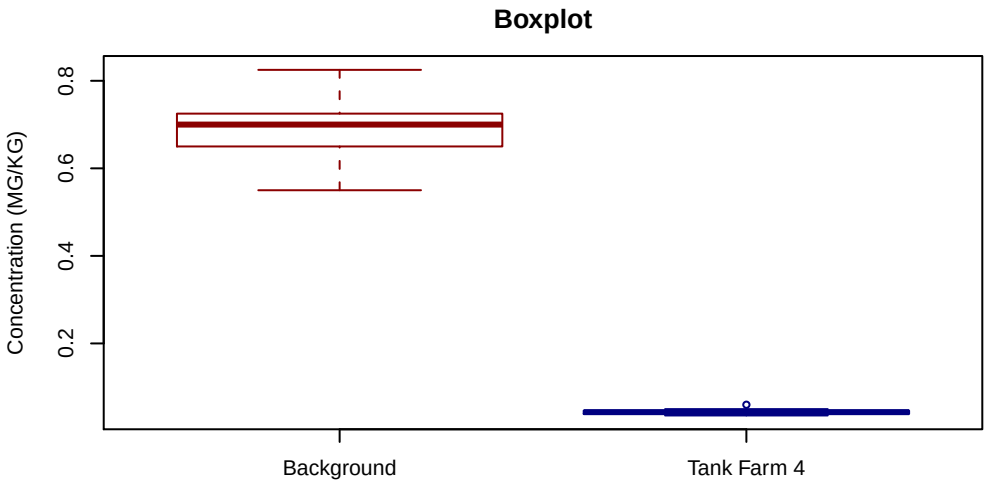
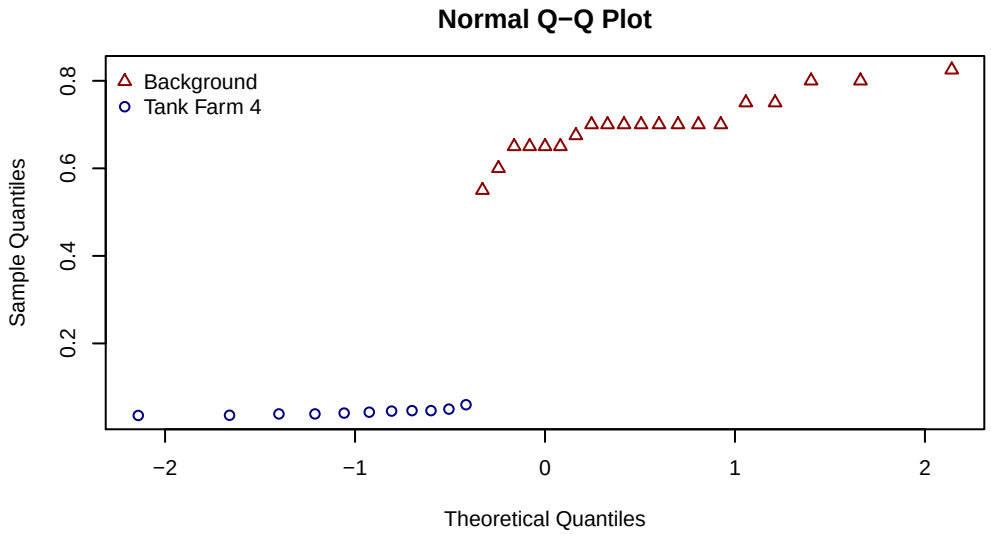
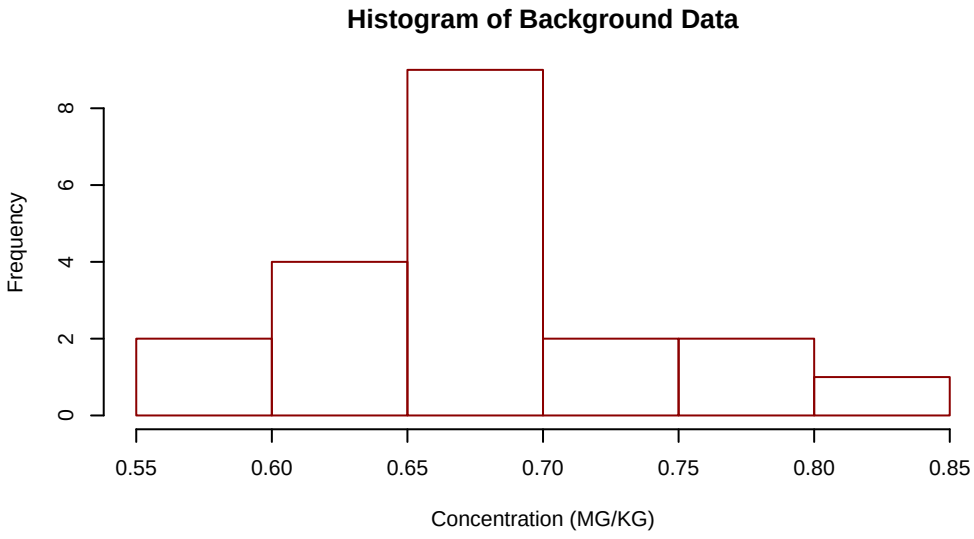
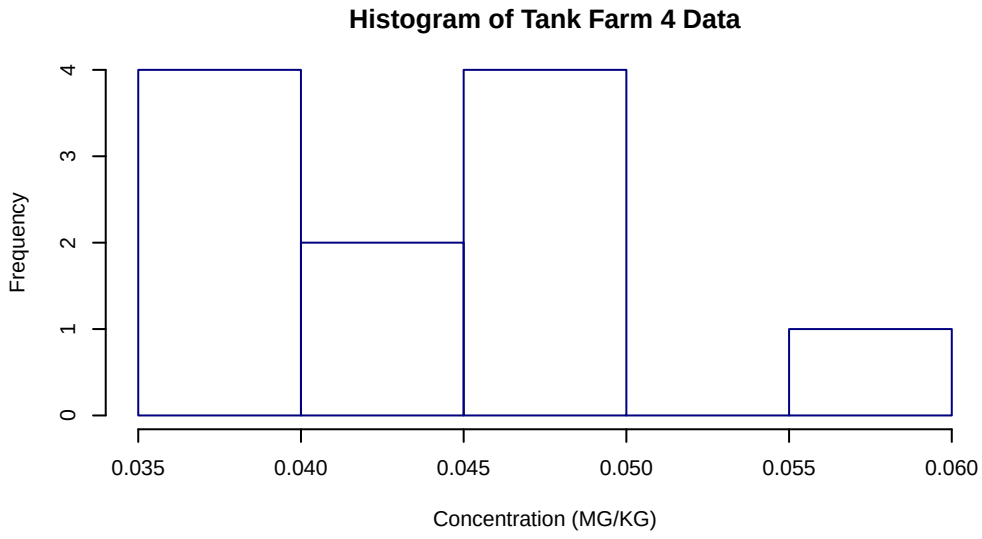
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









SODIUM MmA SURFACESOIL
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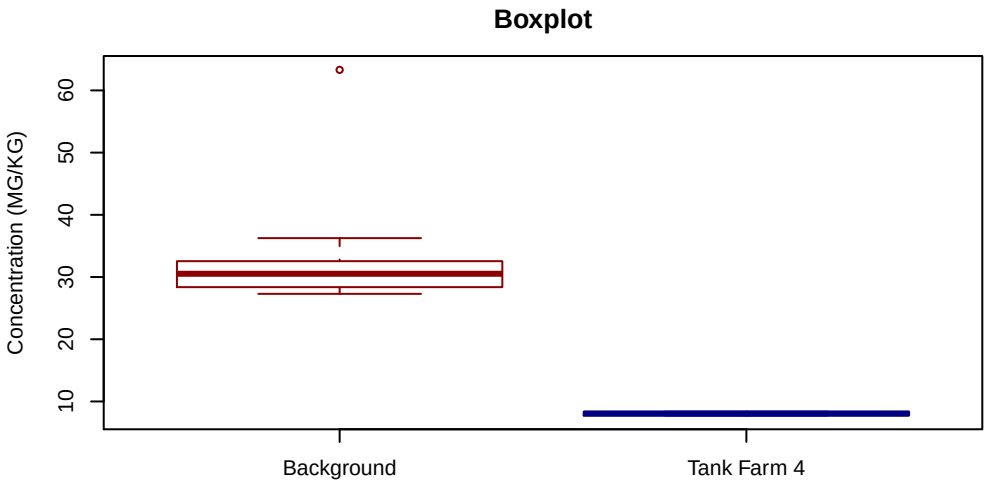
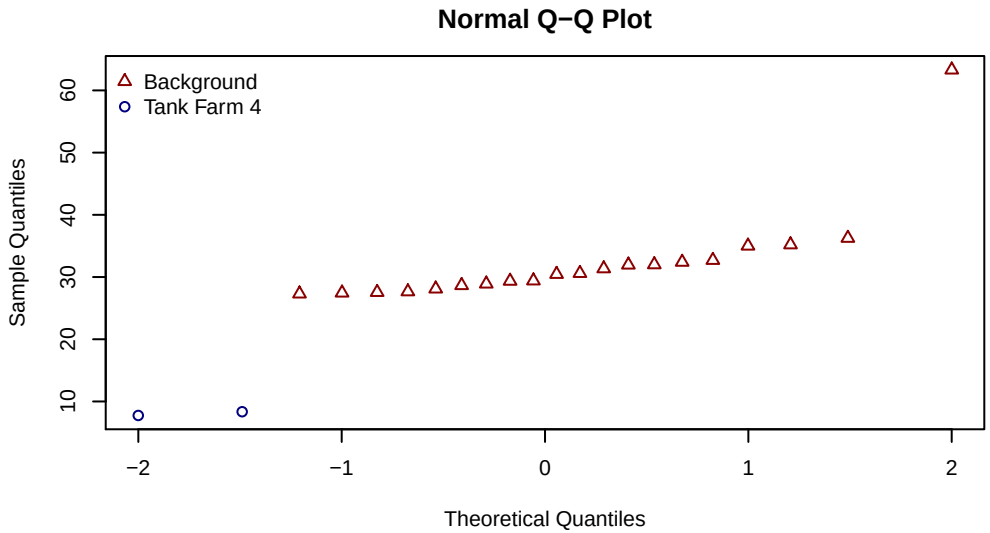
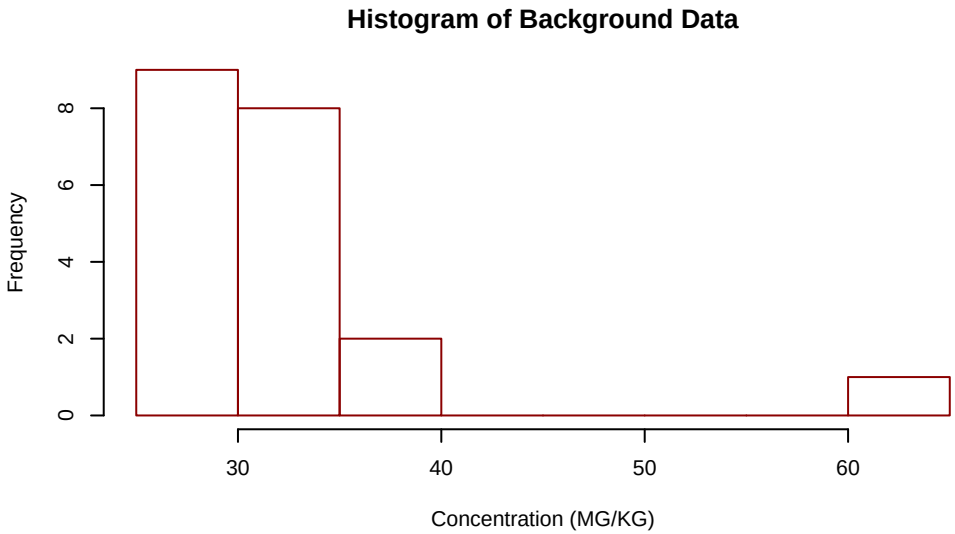
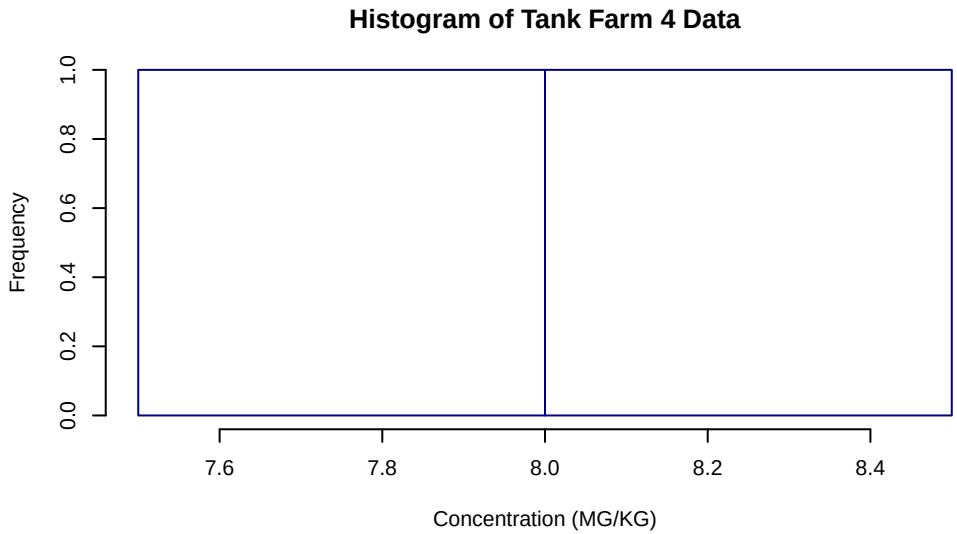
NEWPORT, RHODE ISLAND









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TANK FARM 4 BACKGROUND COMPARISON
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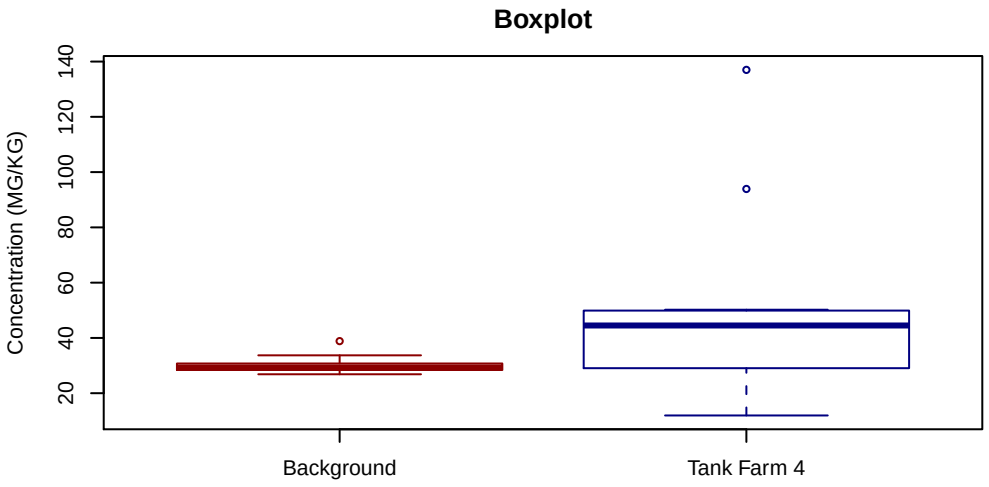
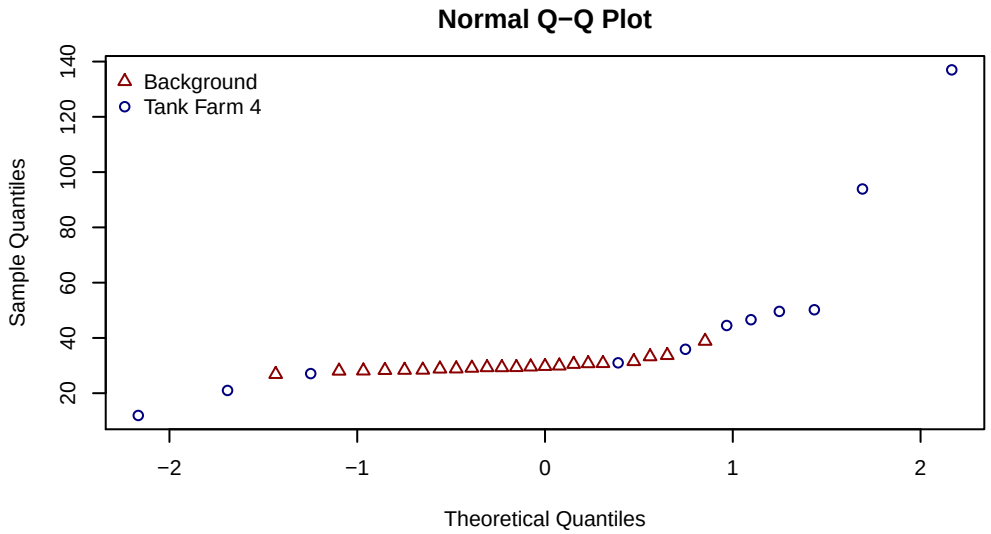
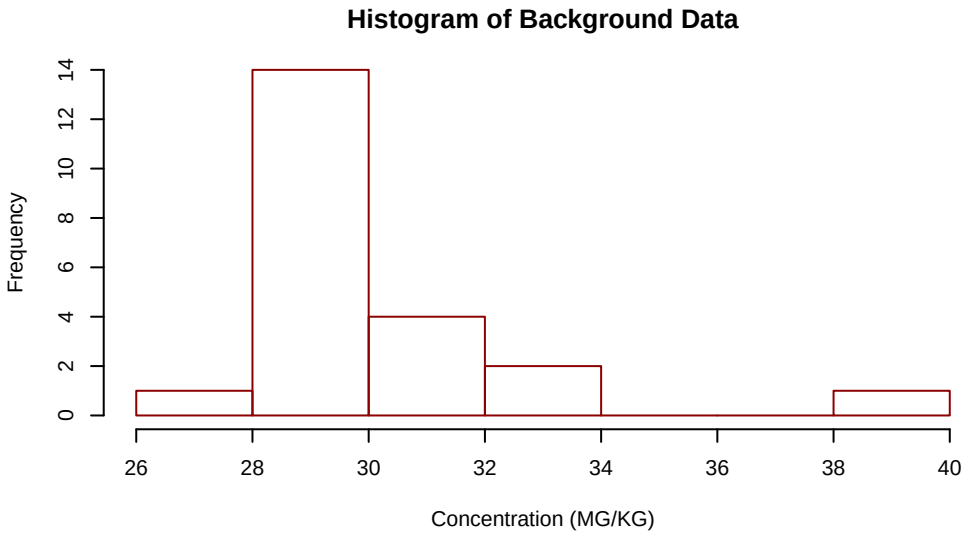
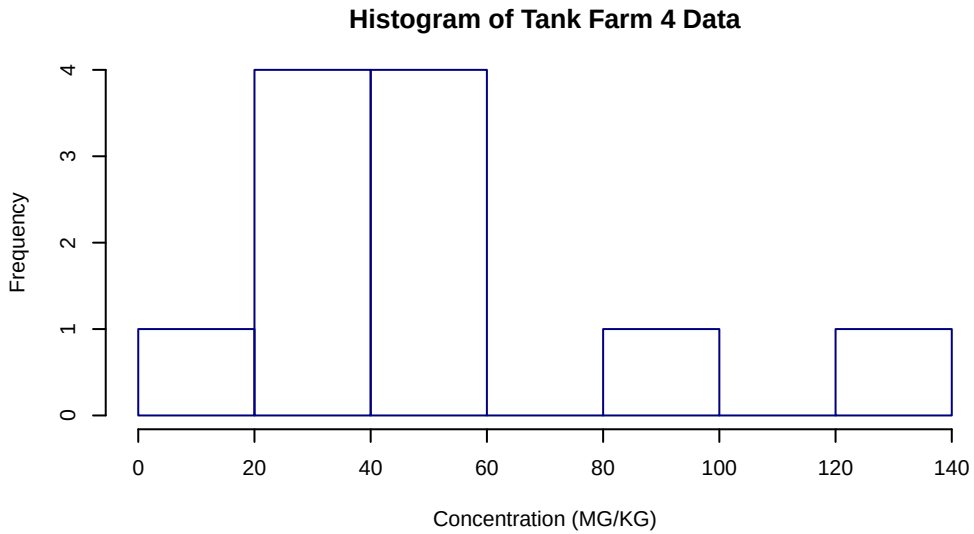
NEWPORT, RHODE ISLAND









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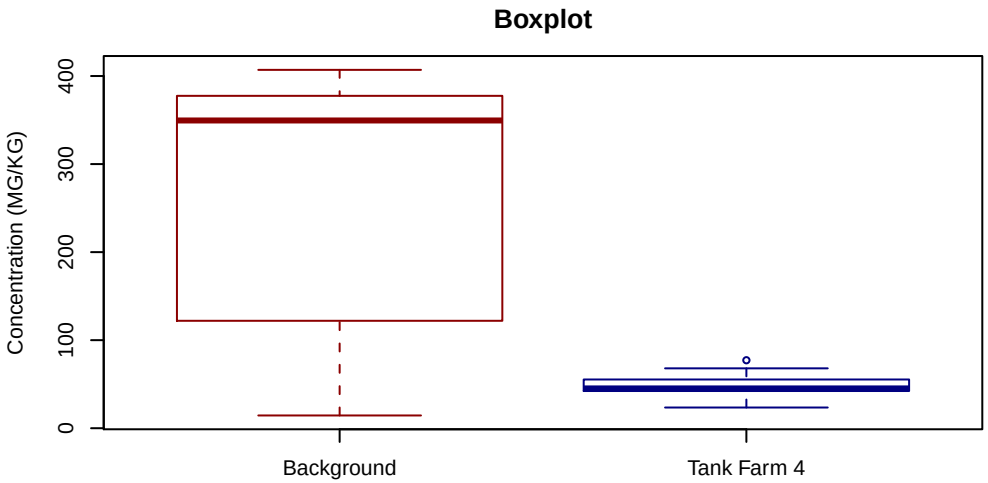
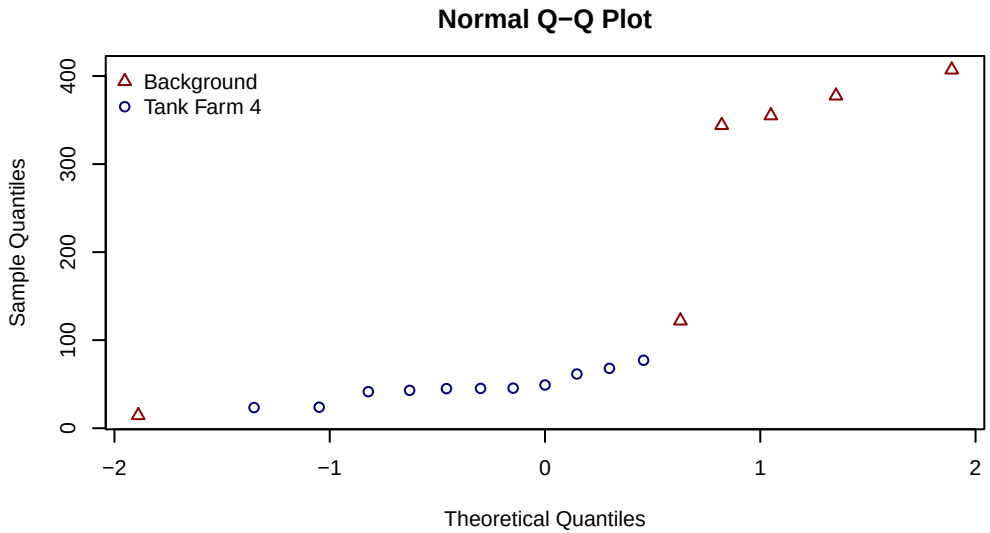
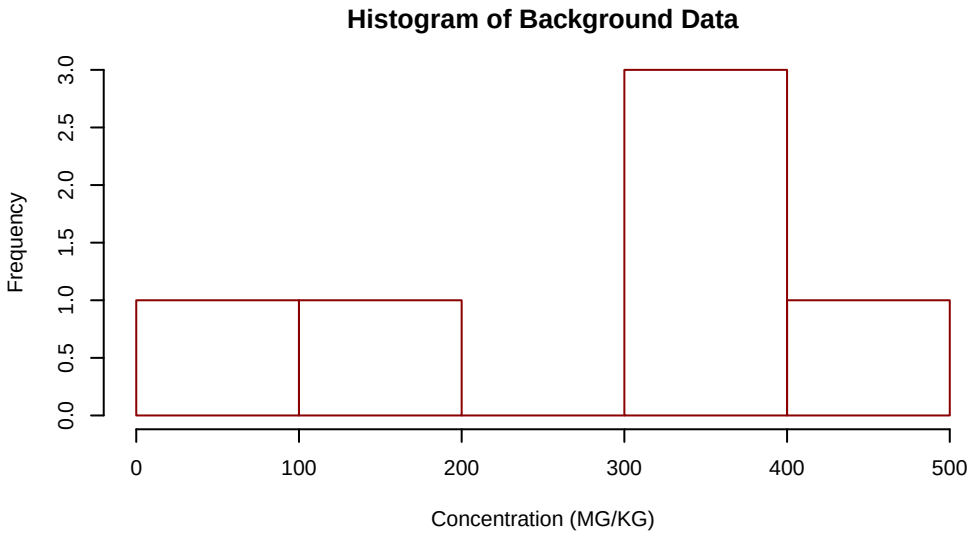
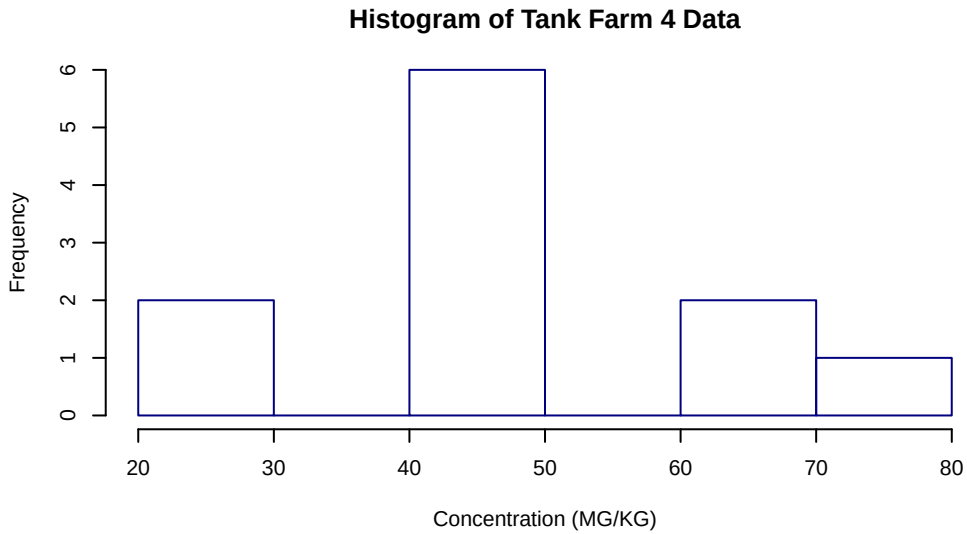
NEWPORT, RHODE ISLAND









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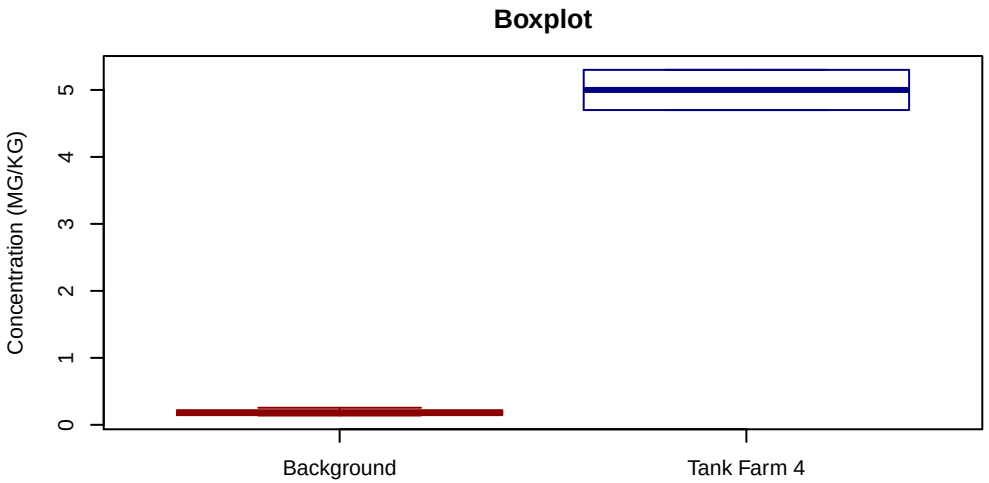

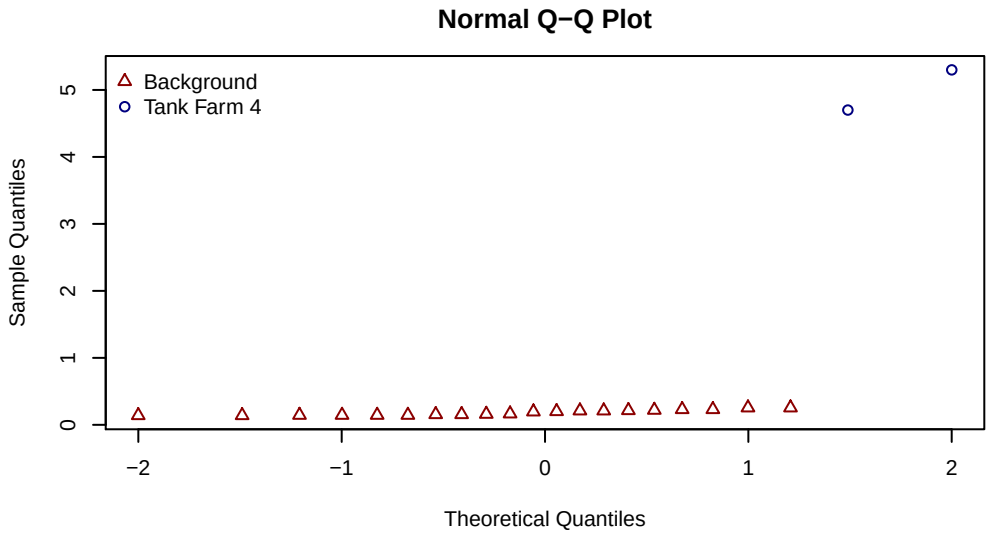

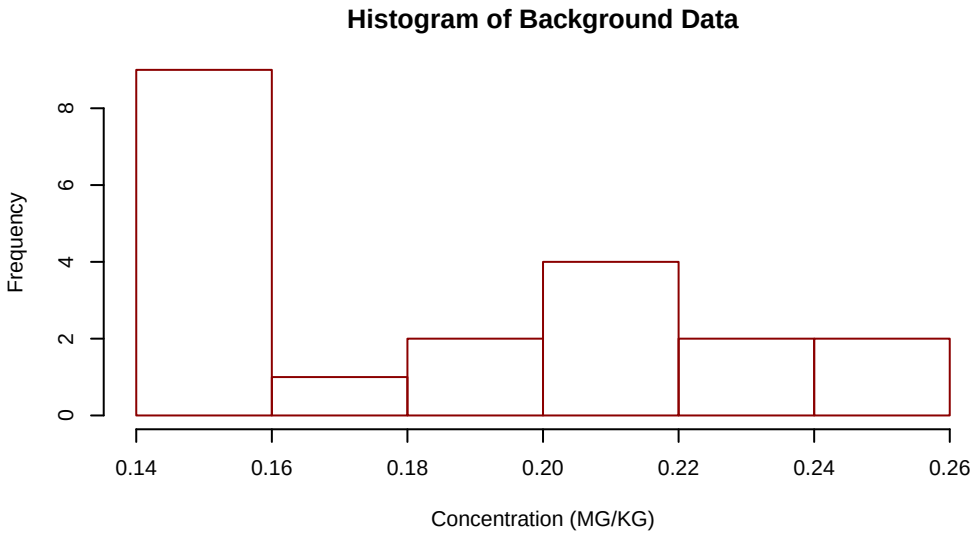

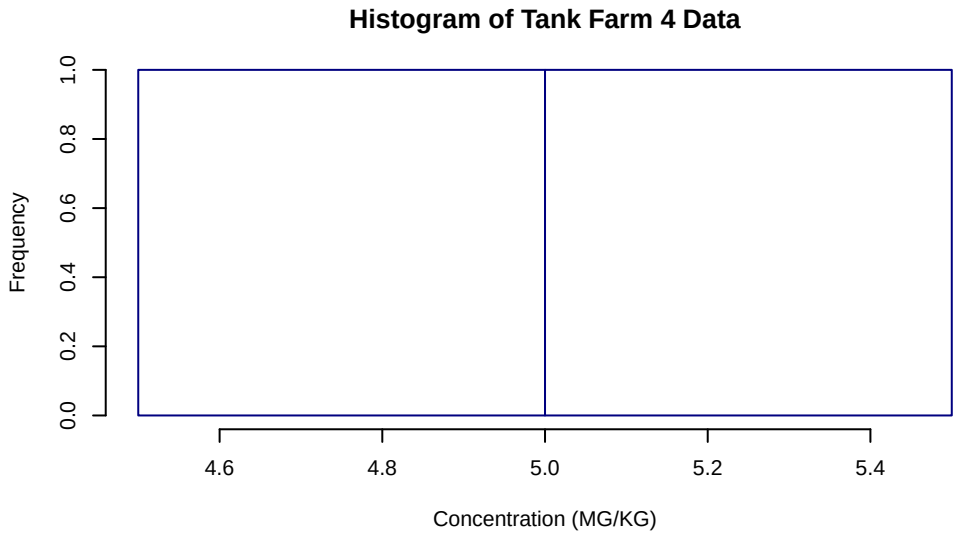

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TANK FARM 4 BACKGROUND COMPARISON
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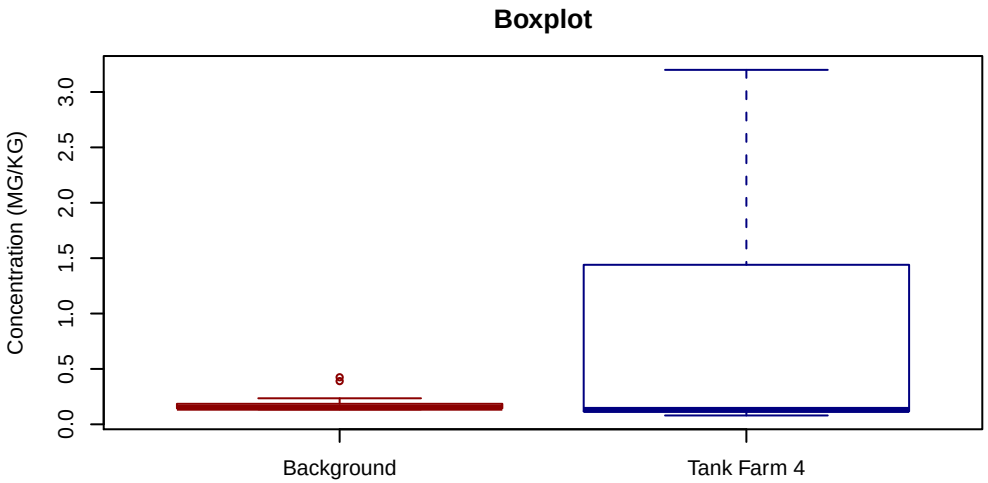
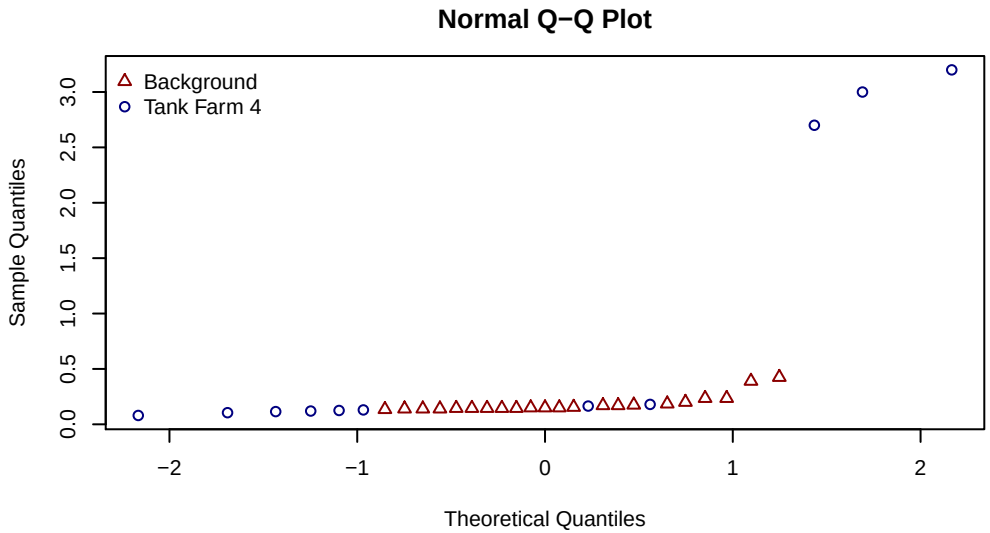
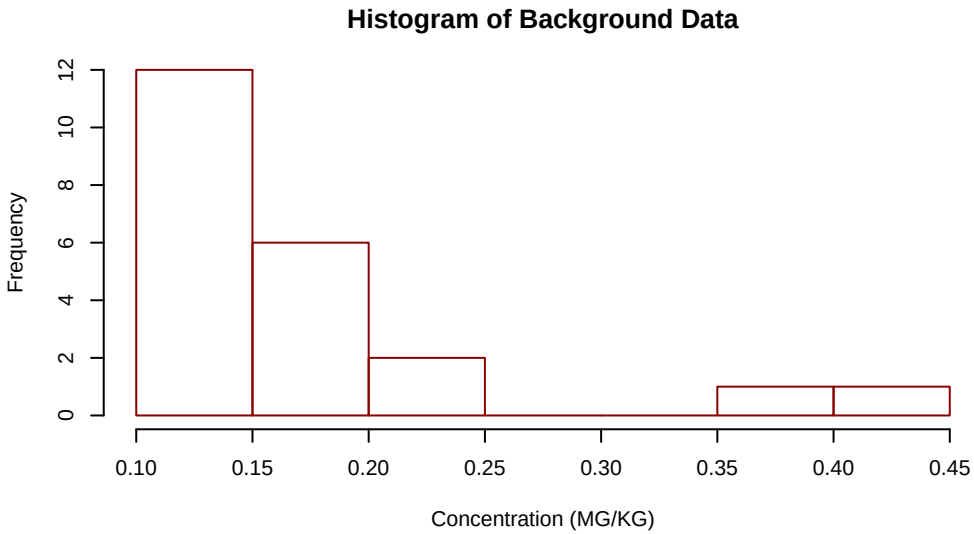
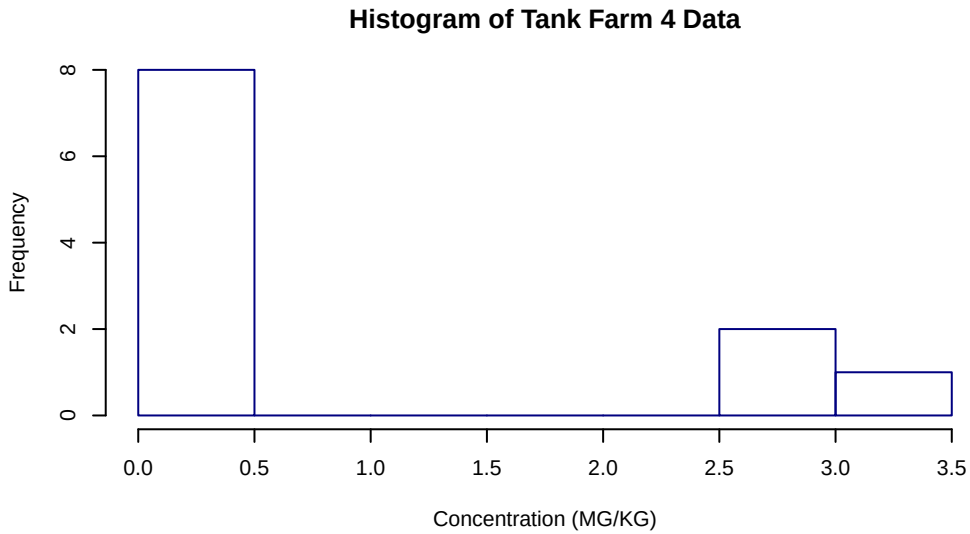
NEWPORT, RHODE ISLAND









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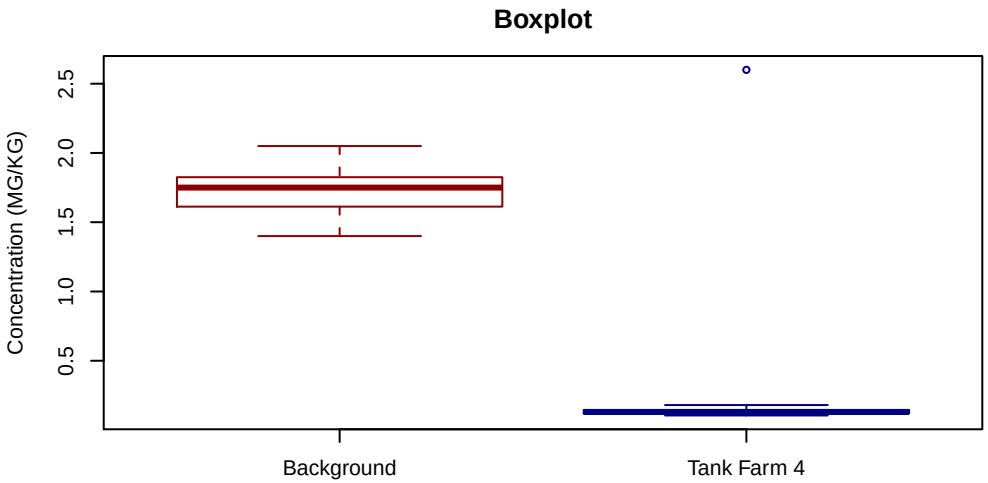
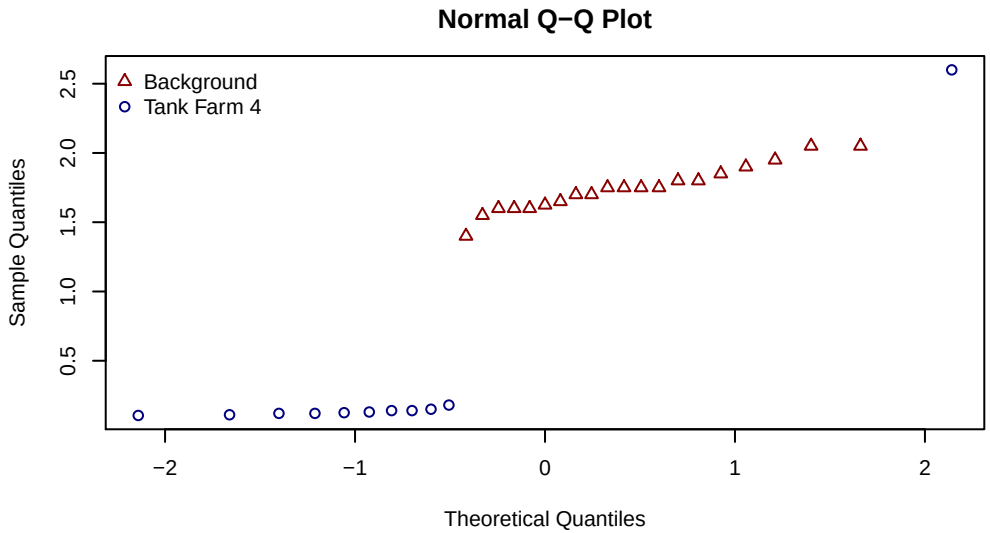
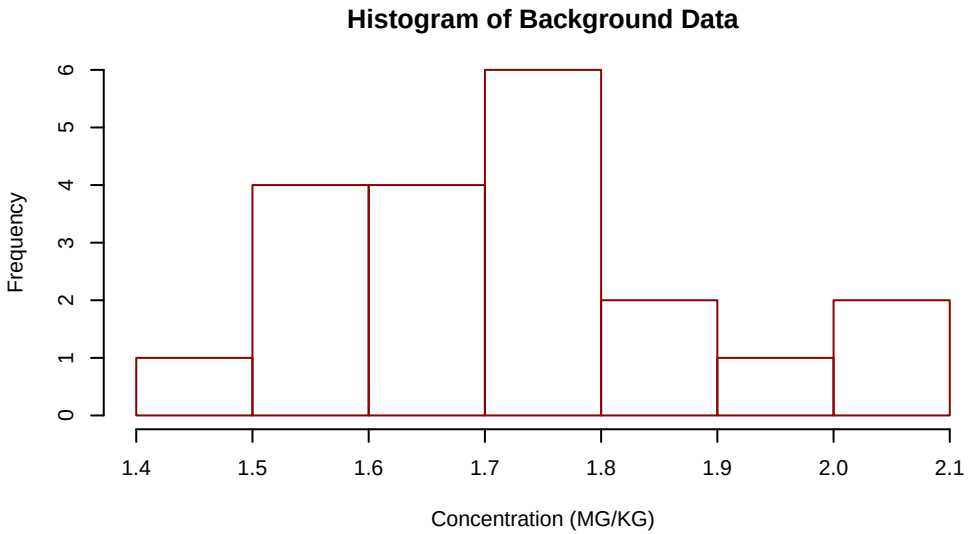
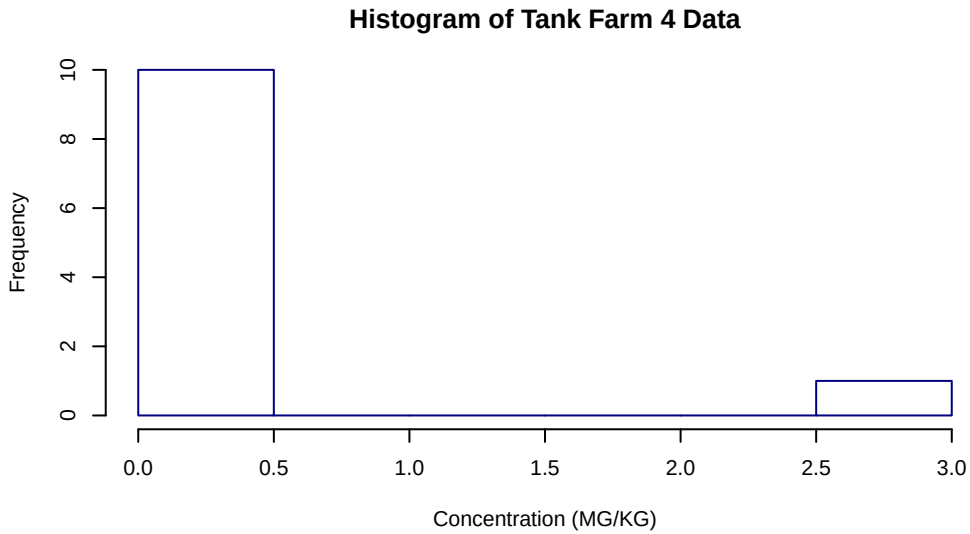
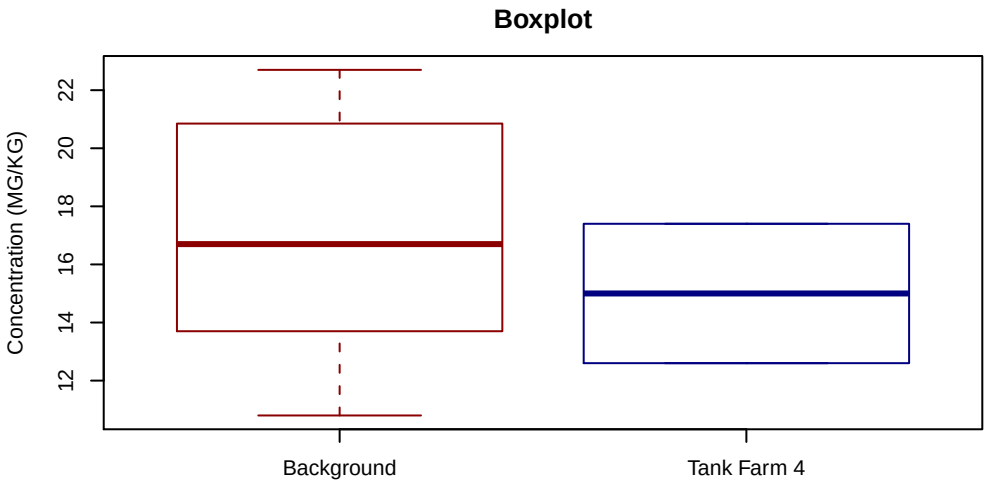


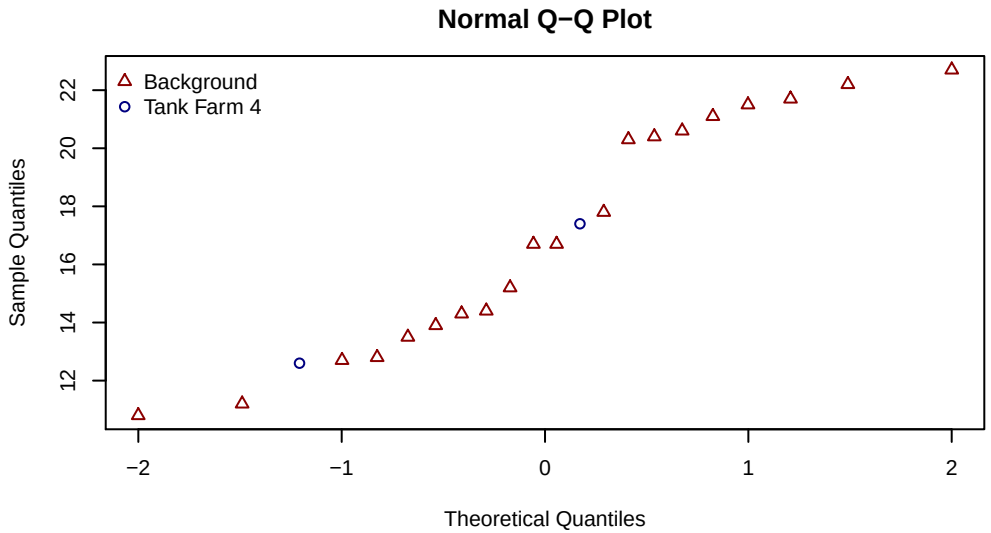


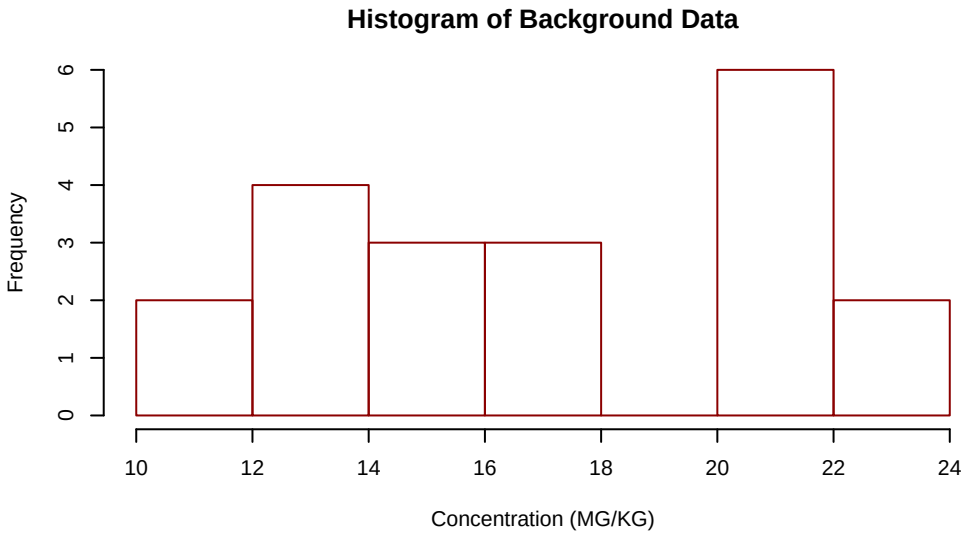


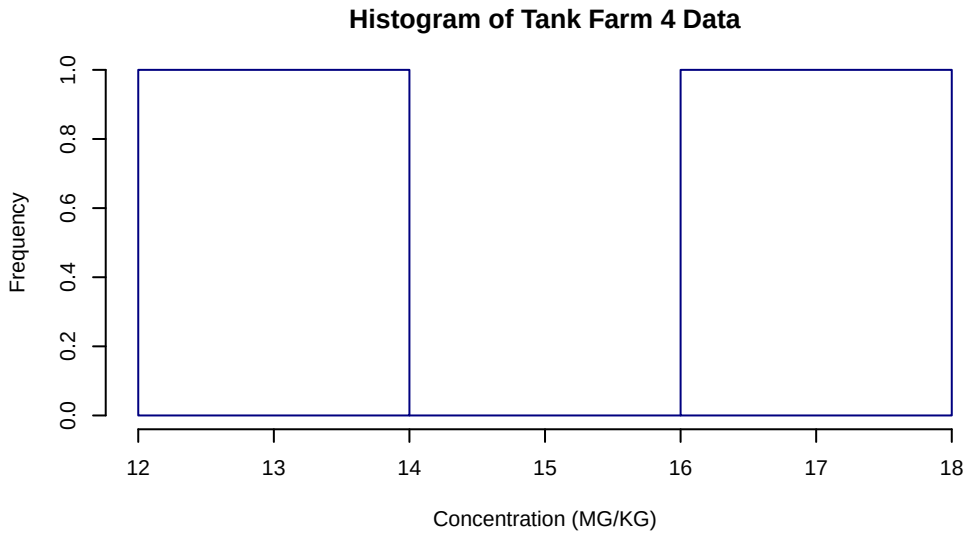


VANADIUM MmA SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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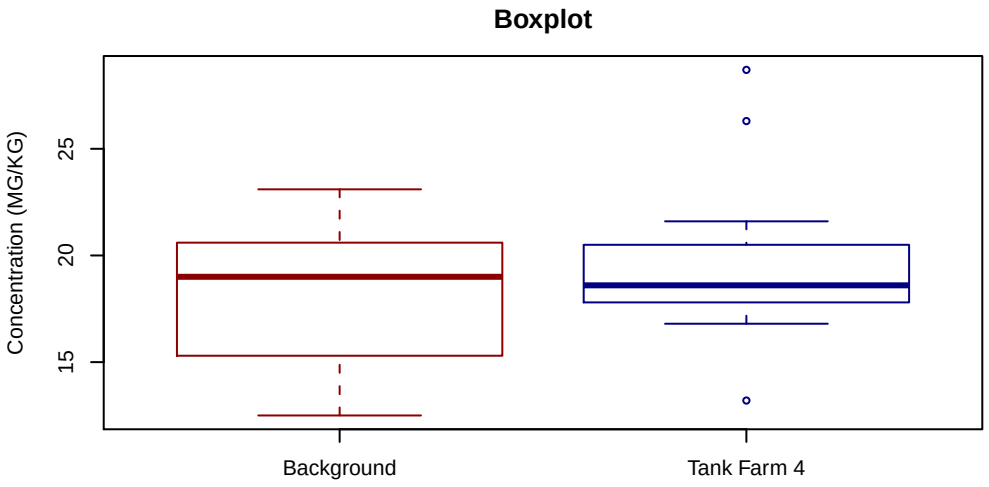

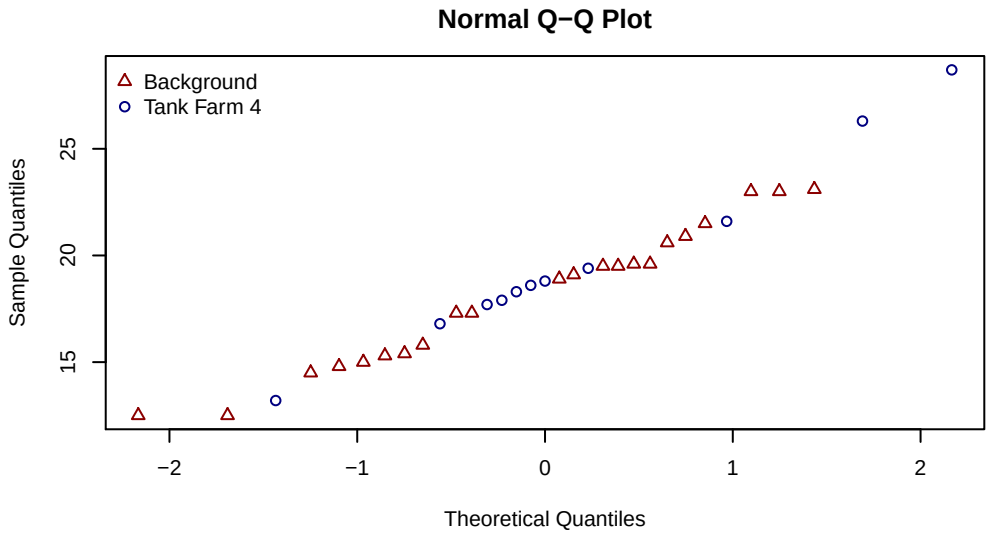

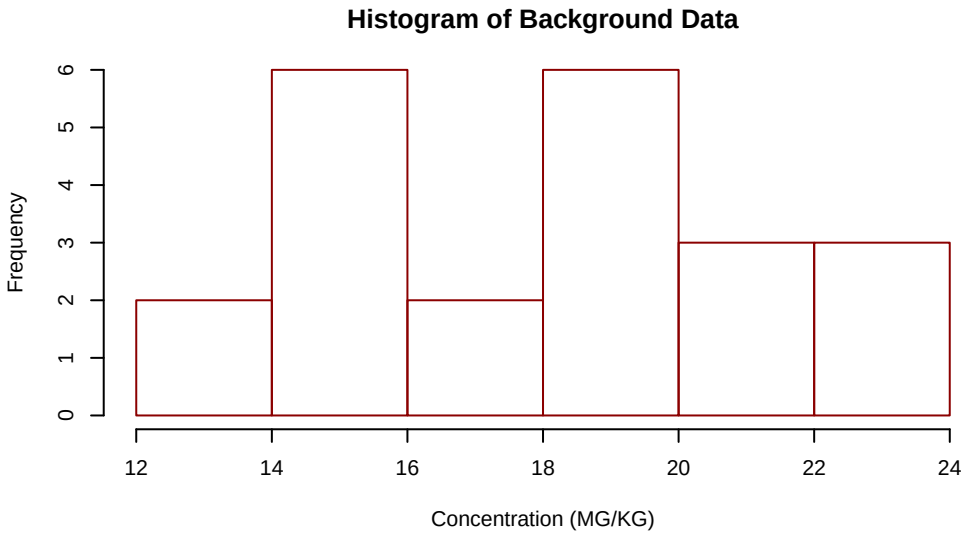

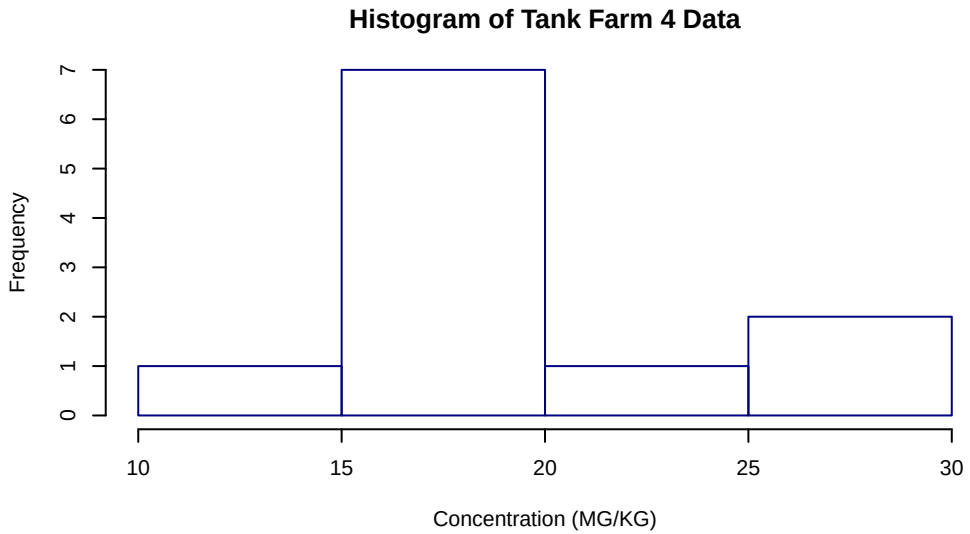

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TANK FARM 4 BACKGROUND COMPARISON
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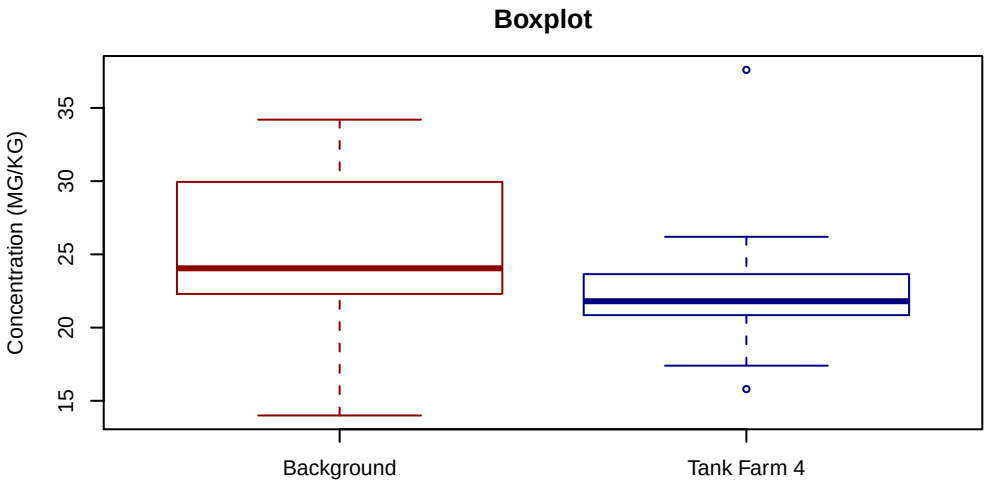

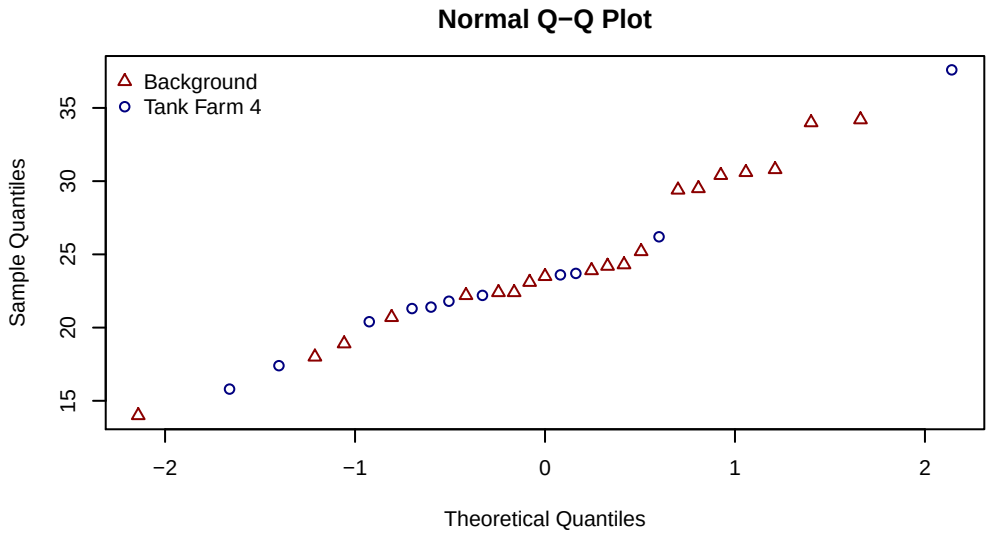

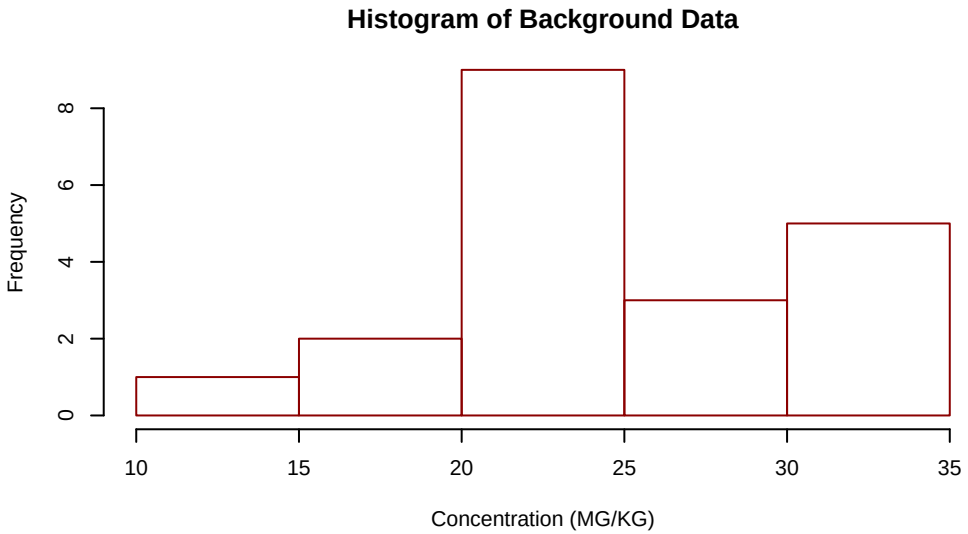

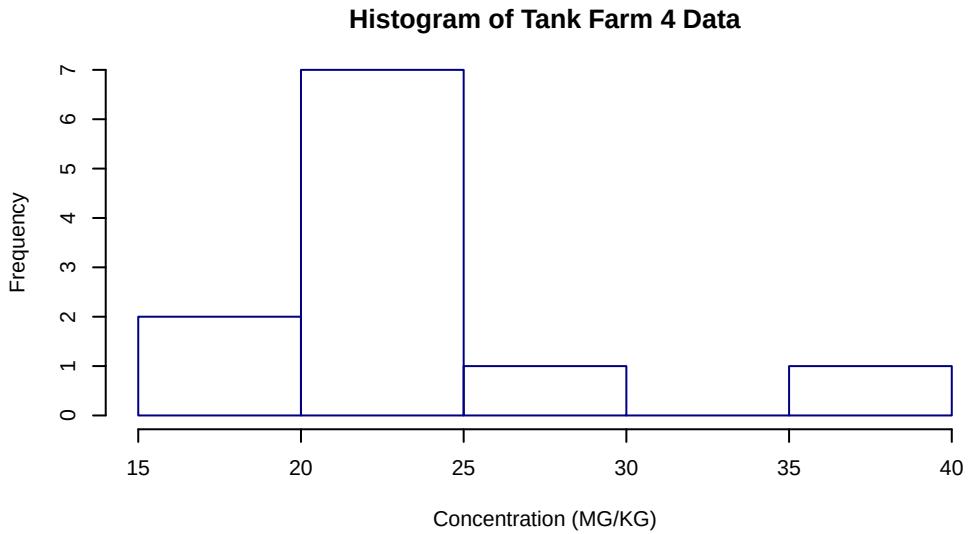

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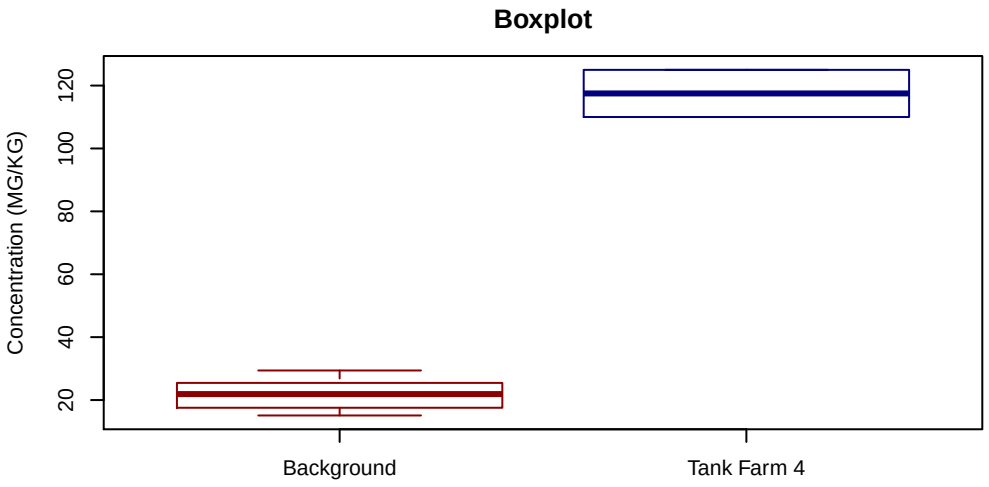
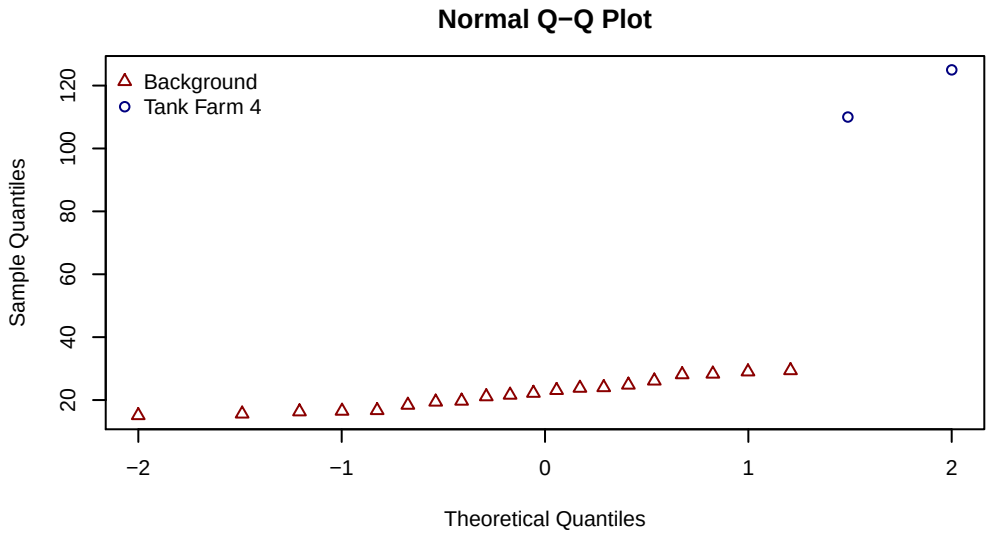
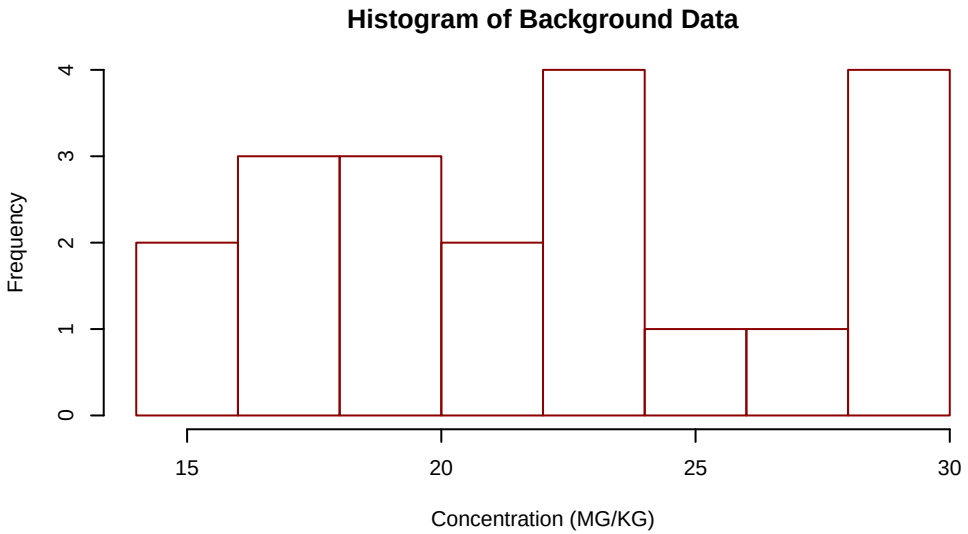
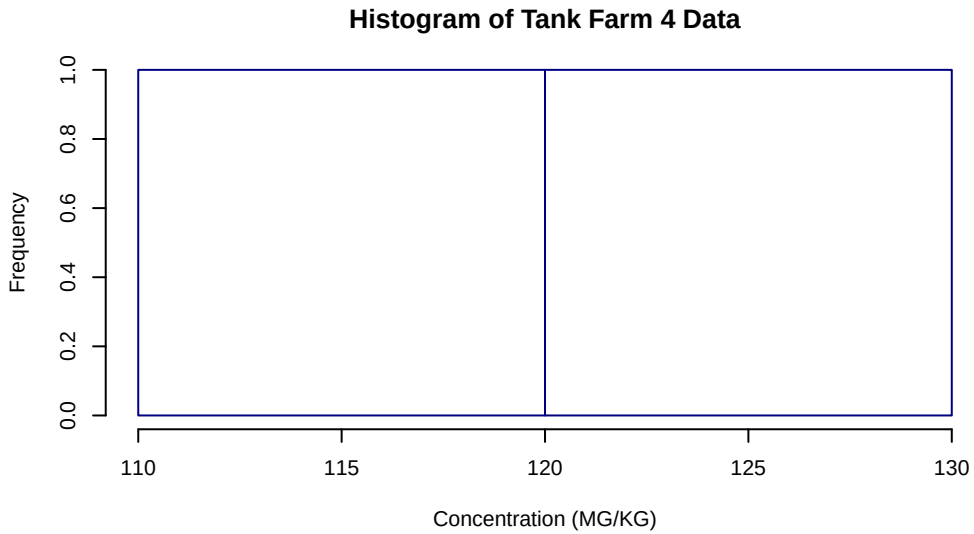
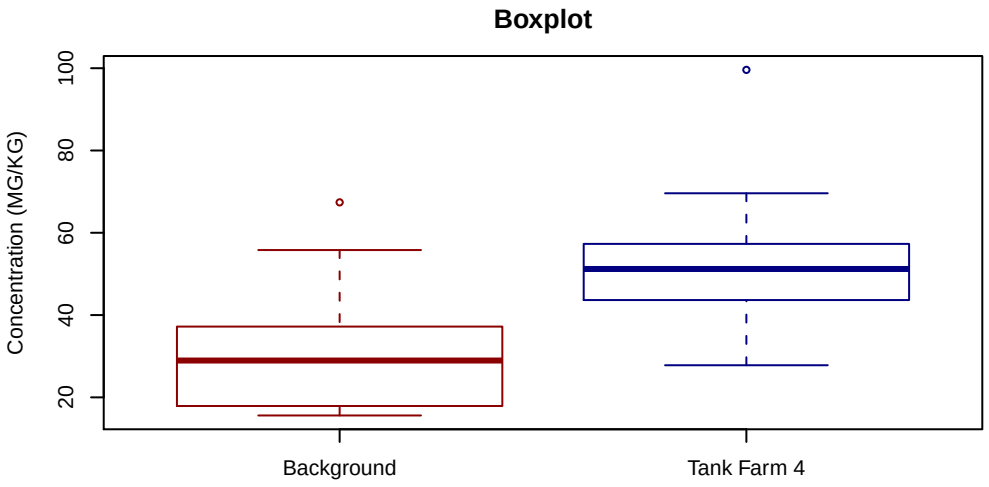


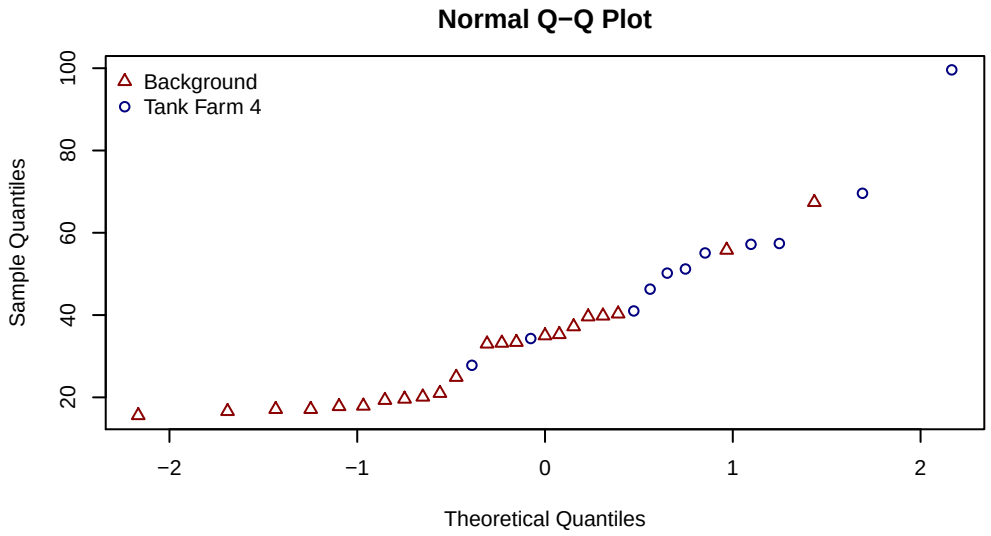


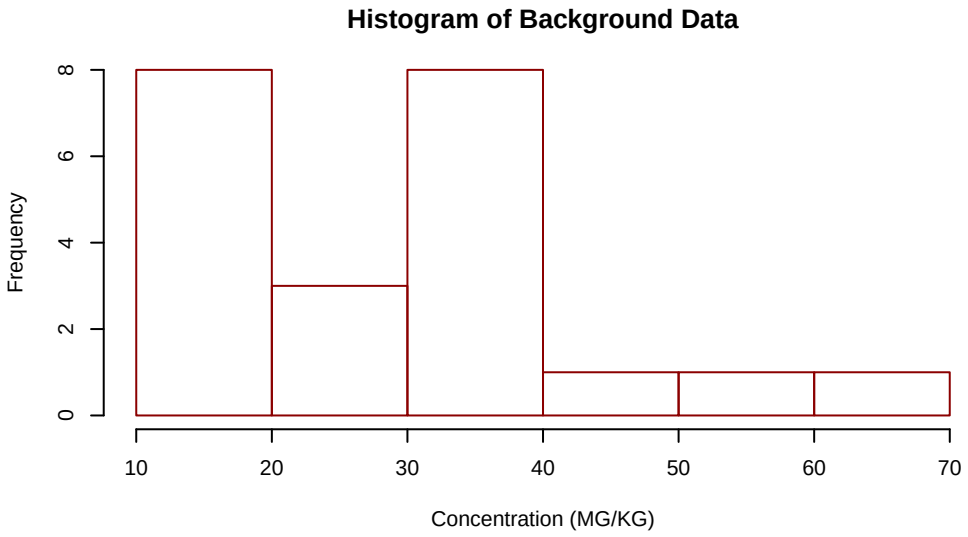


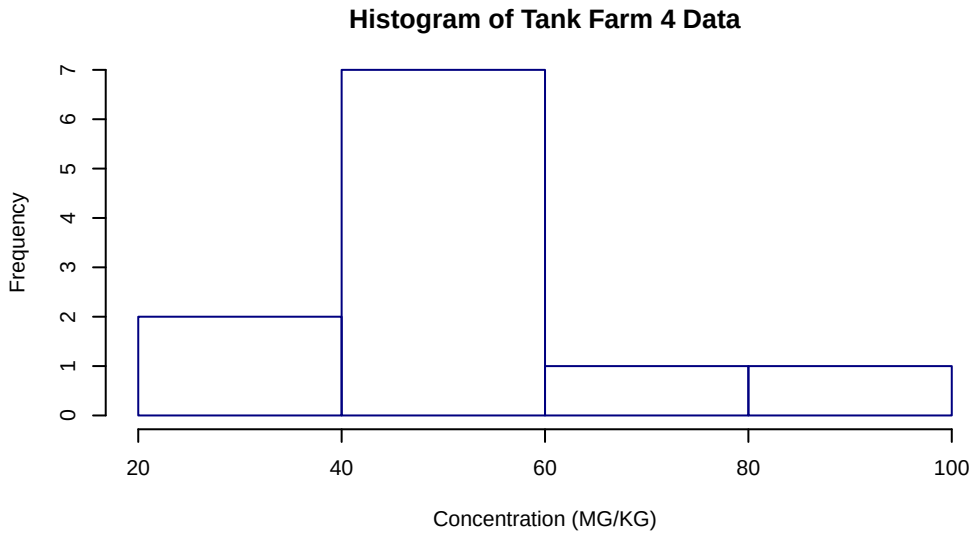


ZINC Ne SURFACESOIL
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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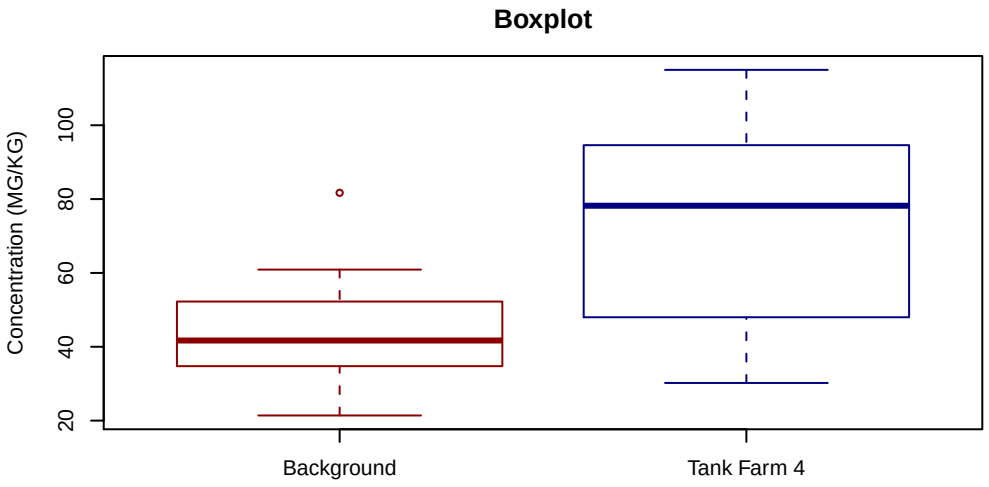
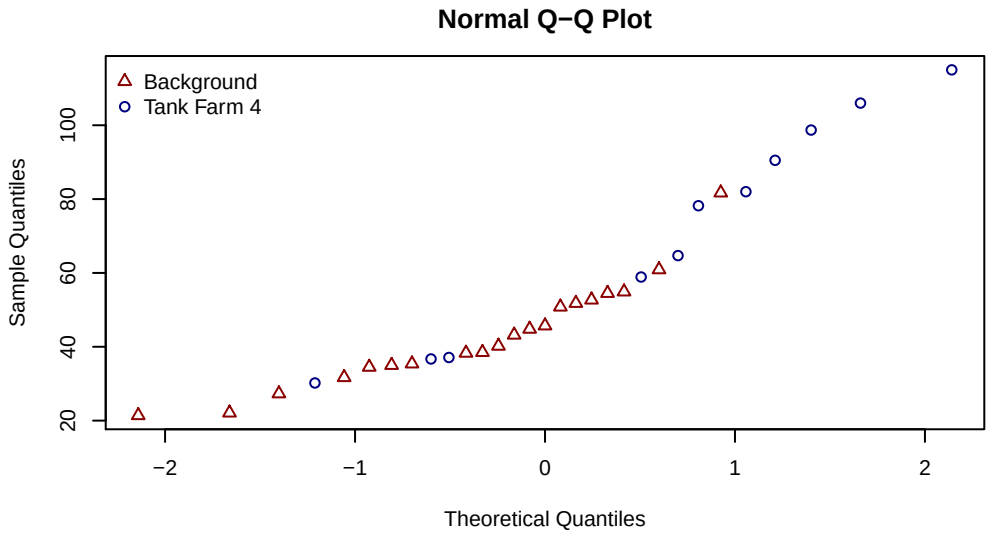
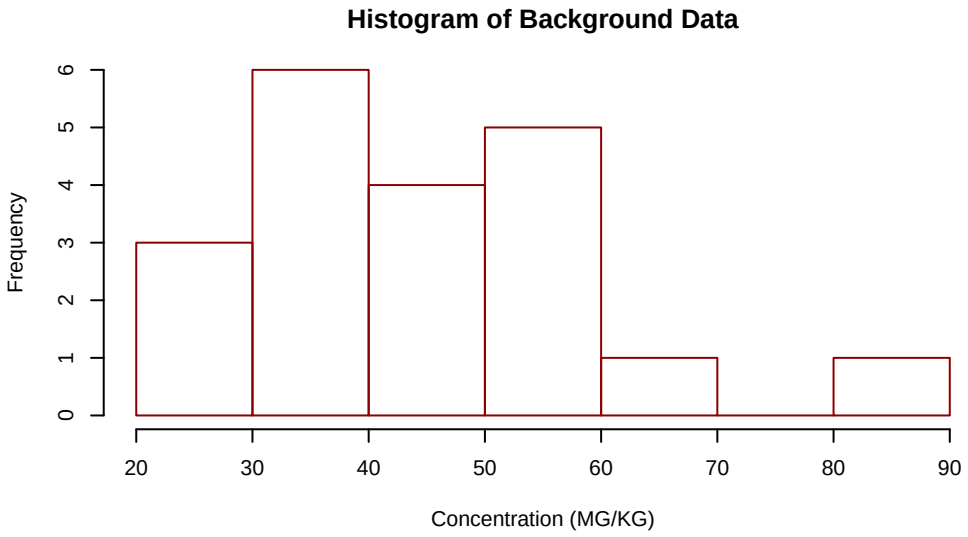
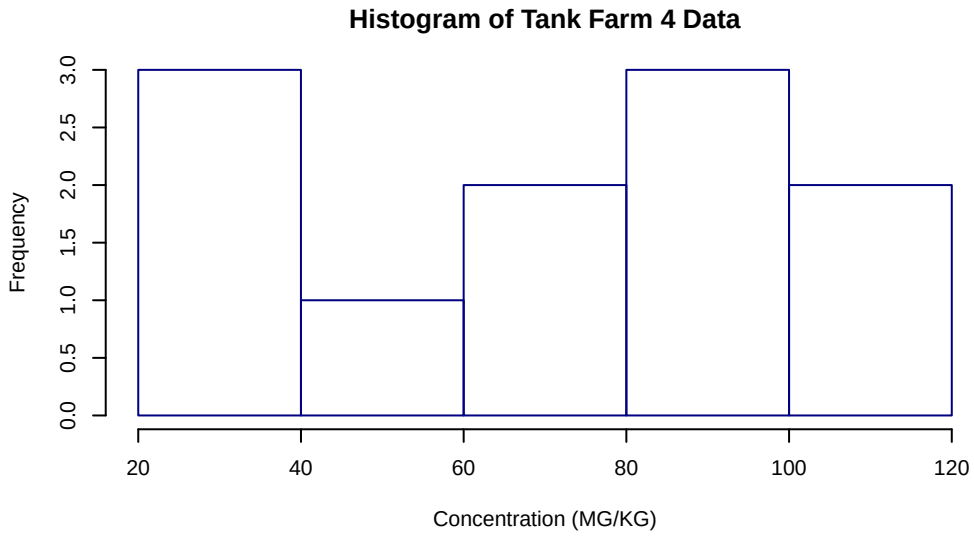
TANK FARM 4 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

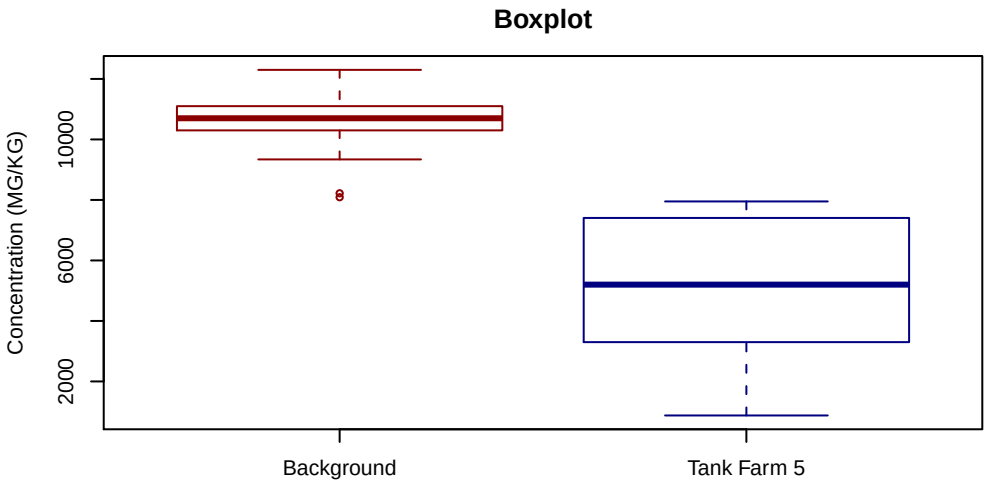


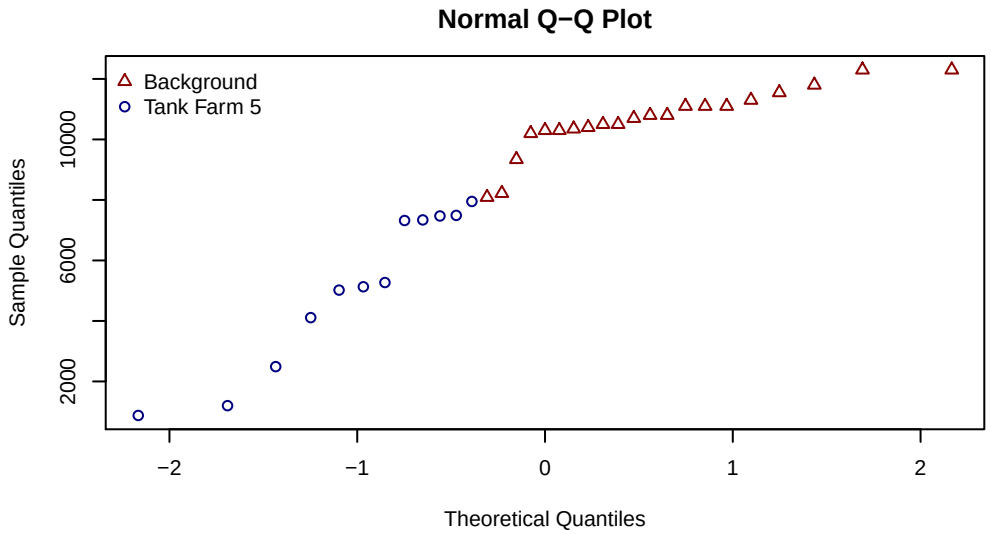


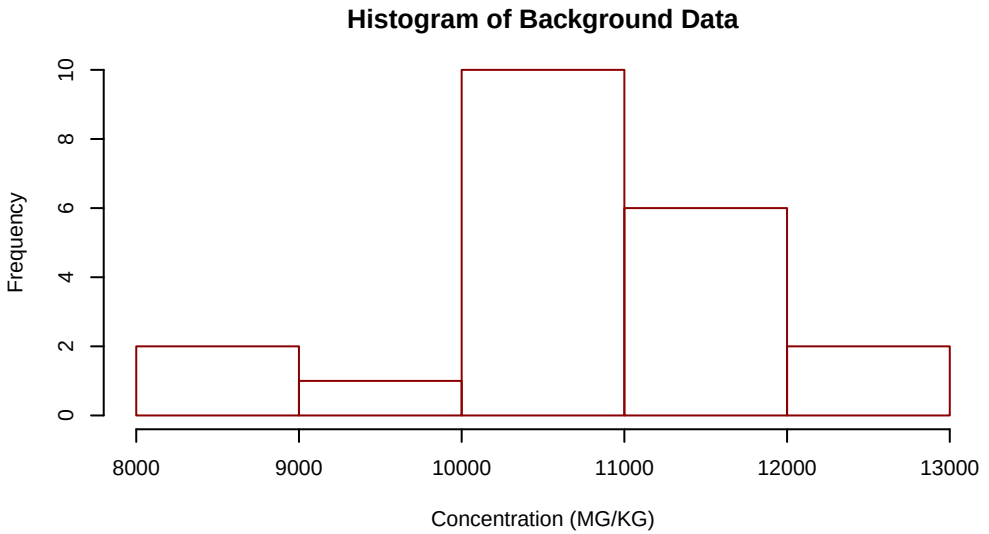


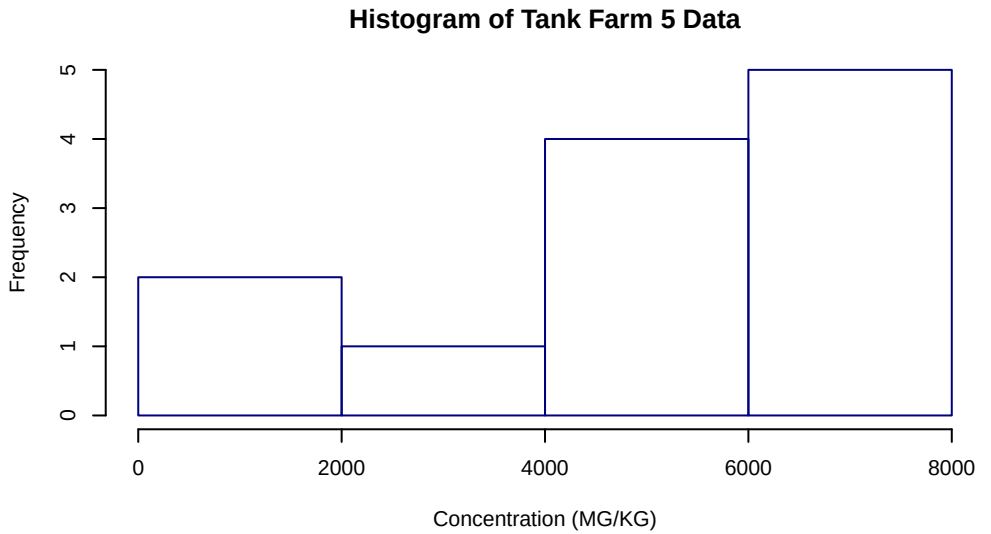


ALUMINUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

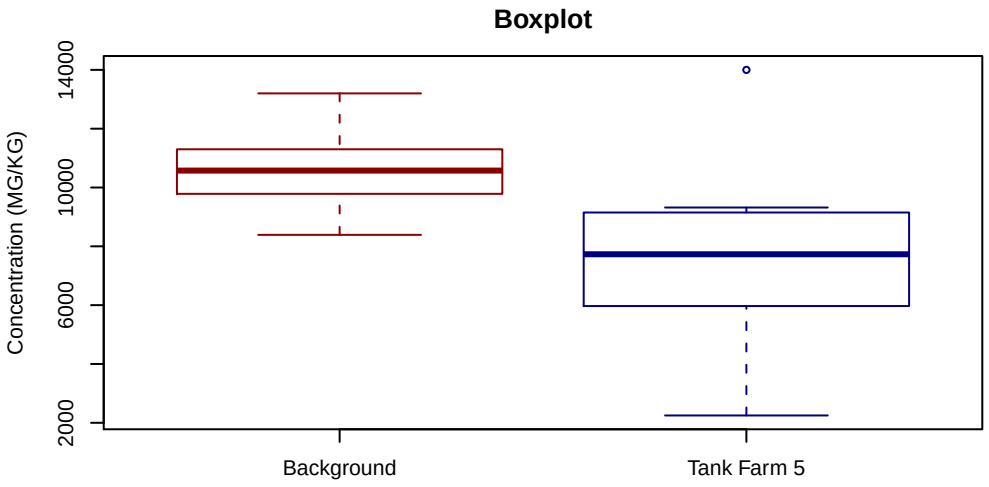


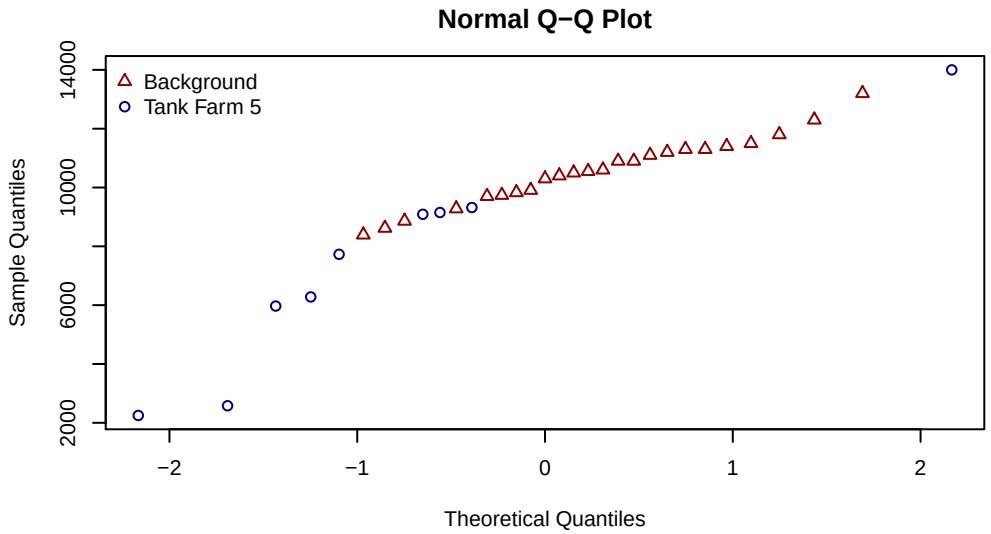


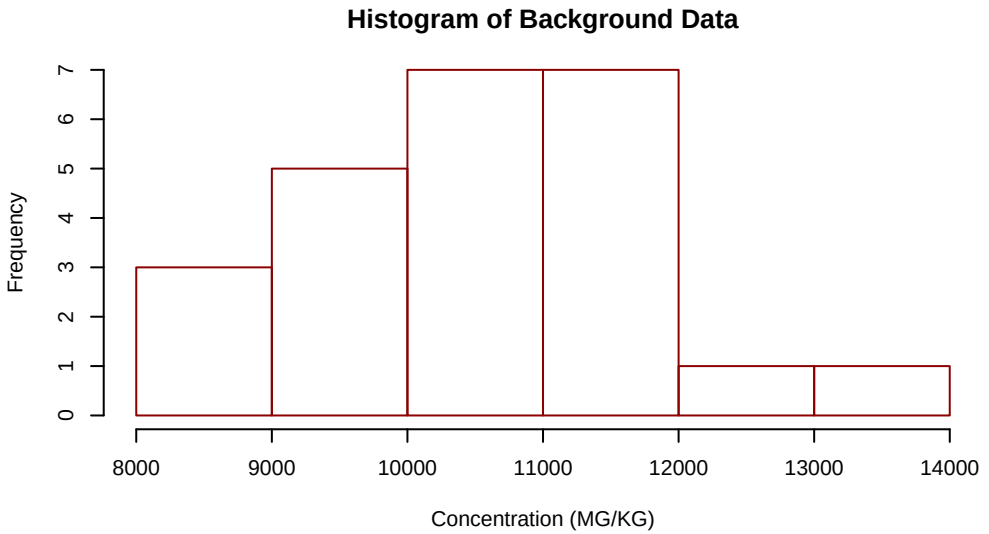


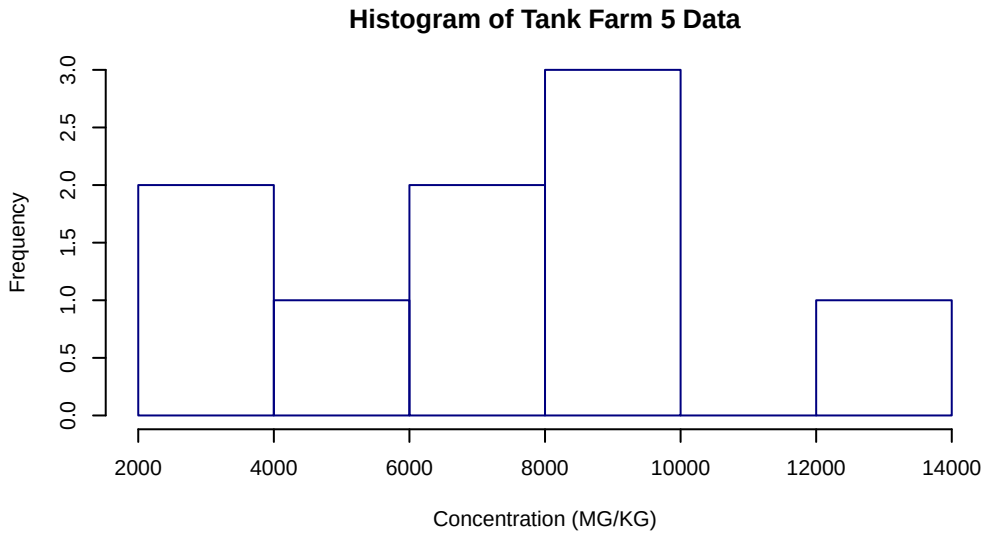


ALUMINUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

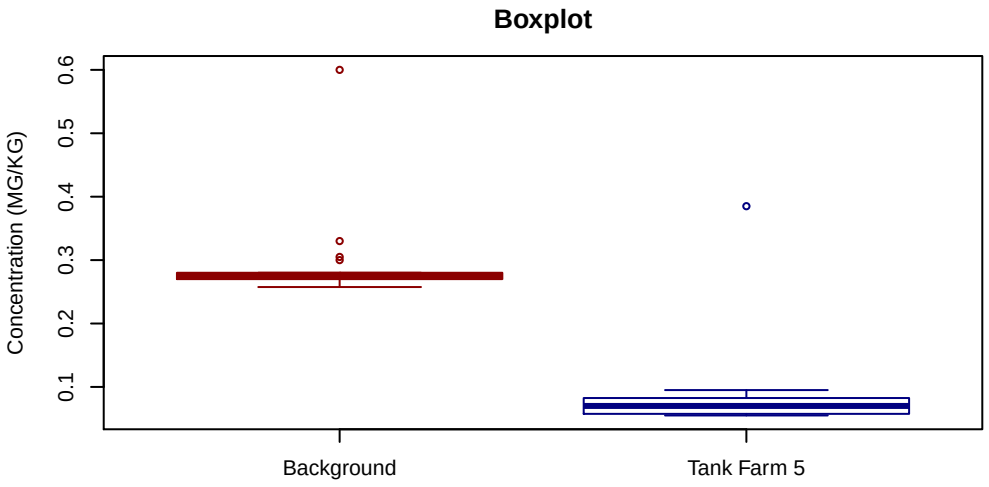


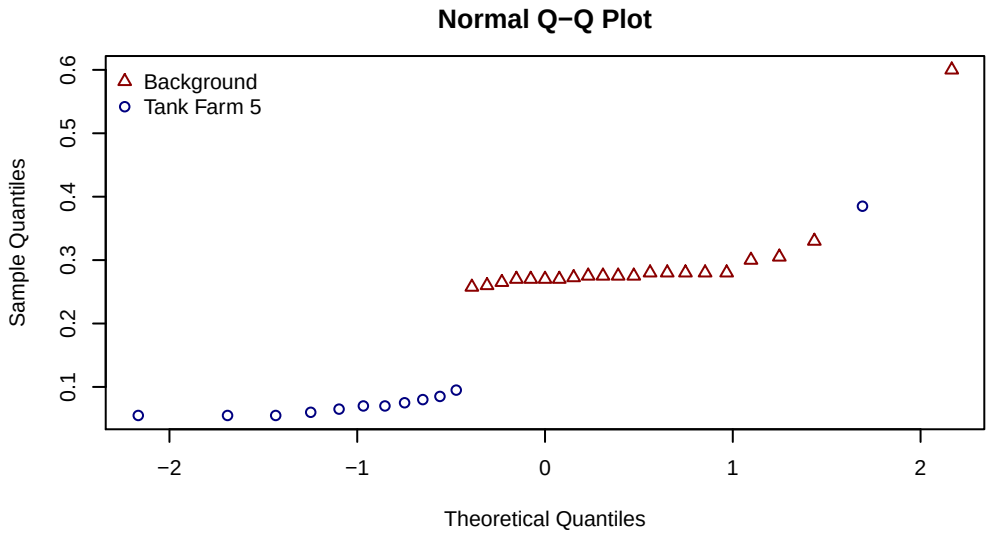


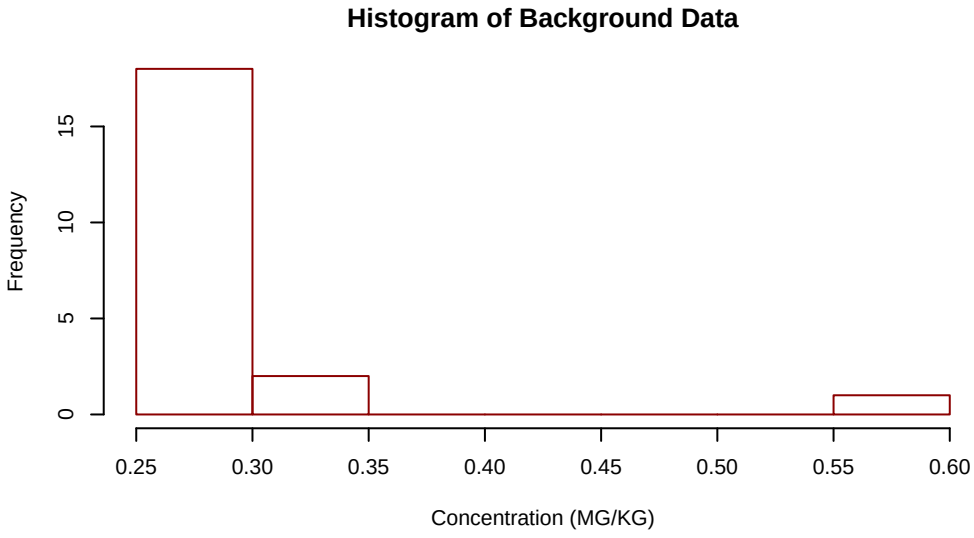


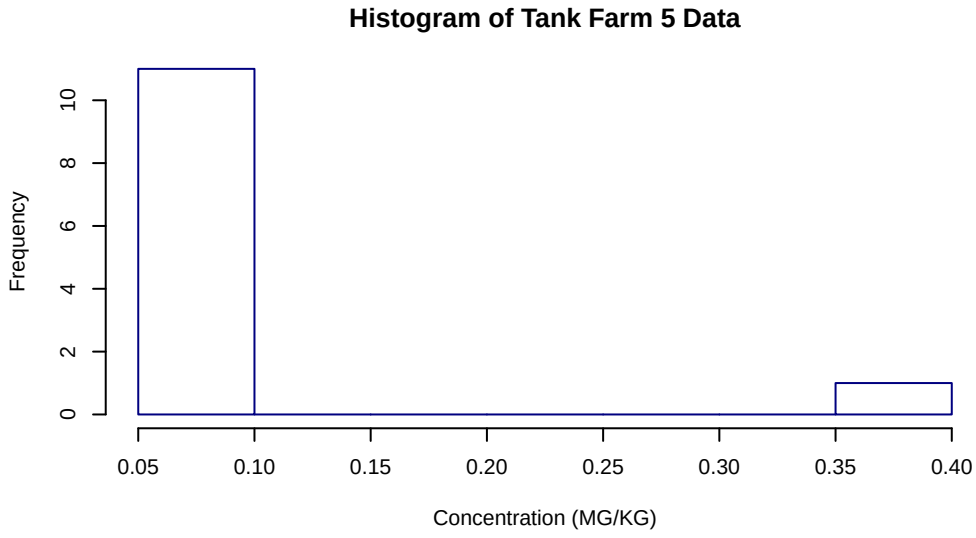


ANTIMONY Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

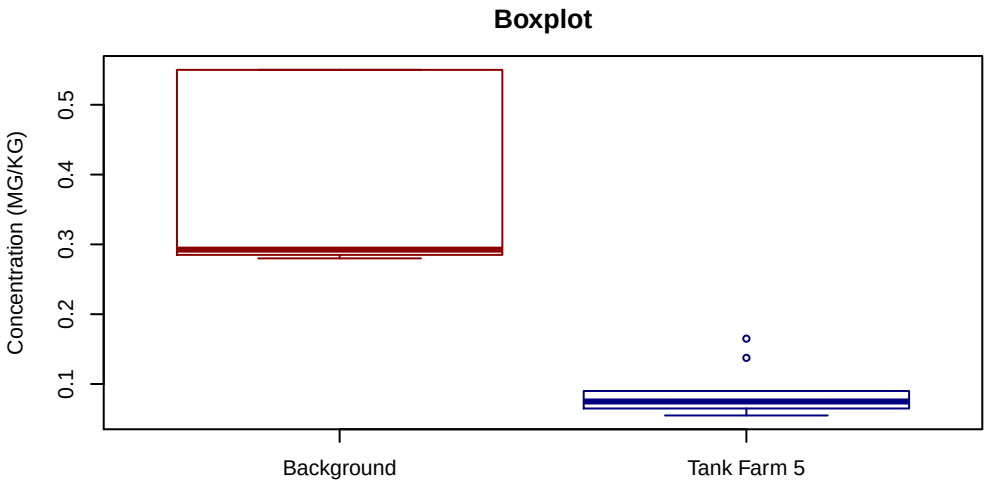


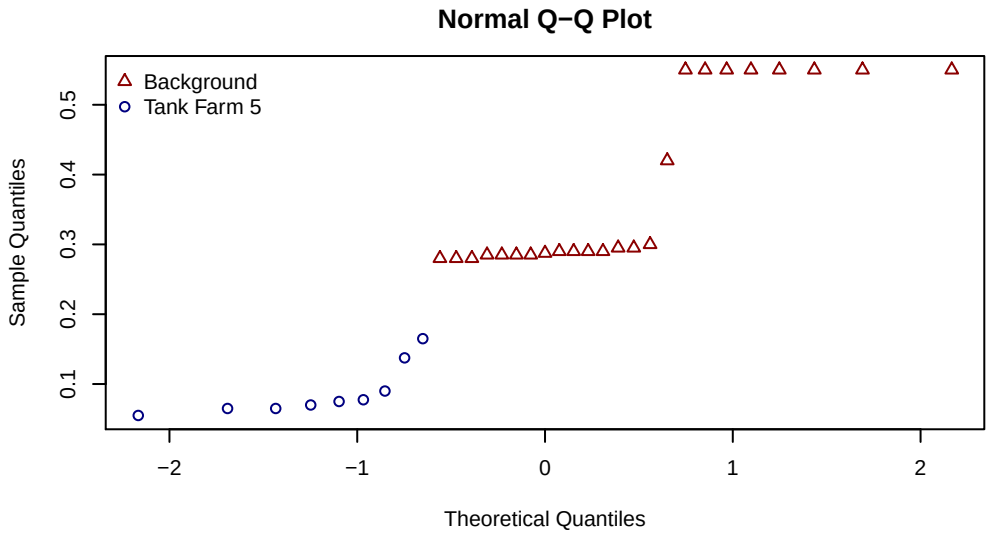


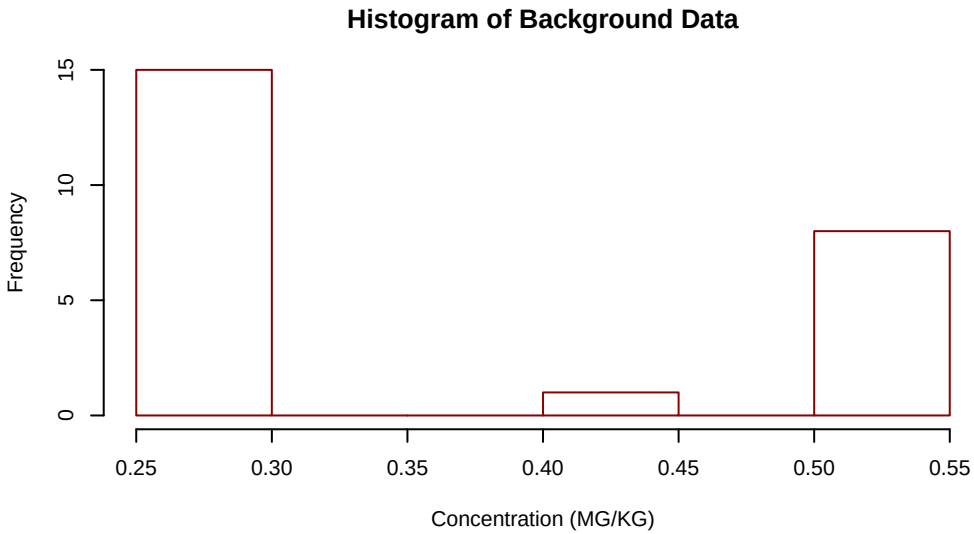


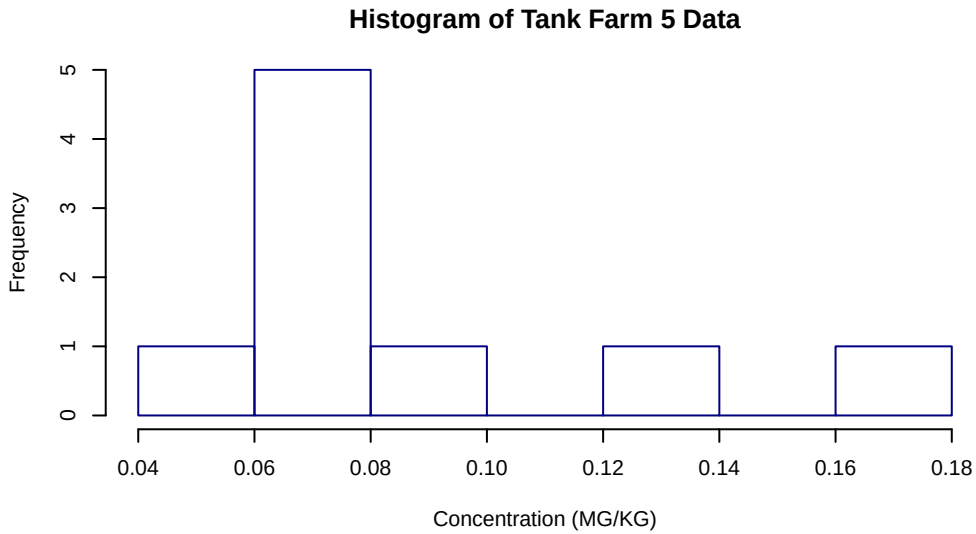


ANTIMONY Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

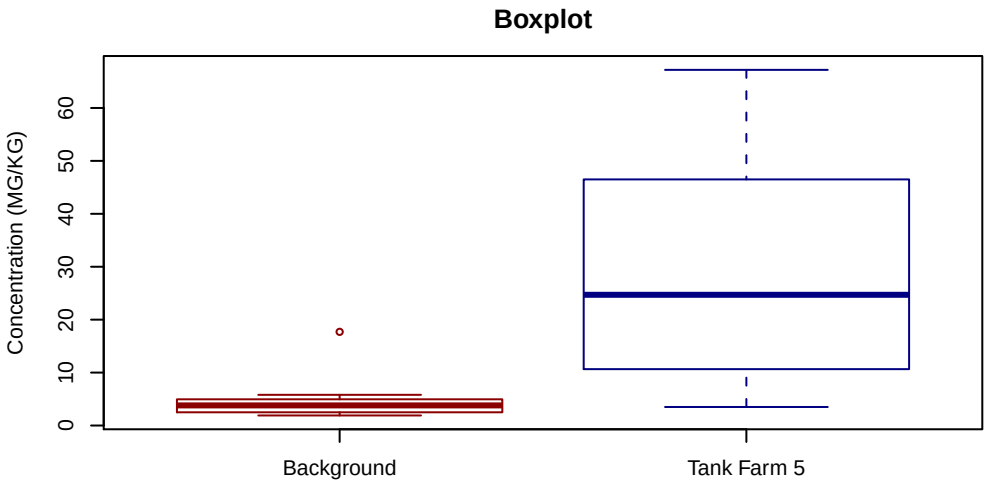


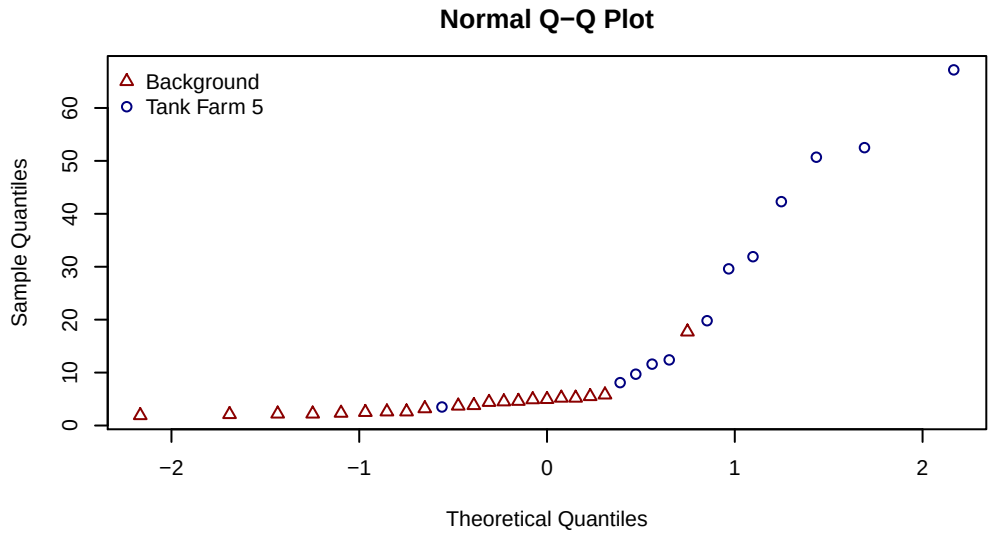


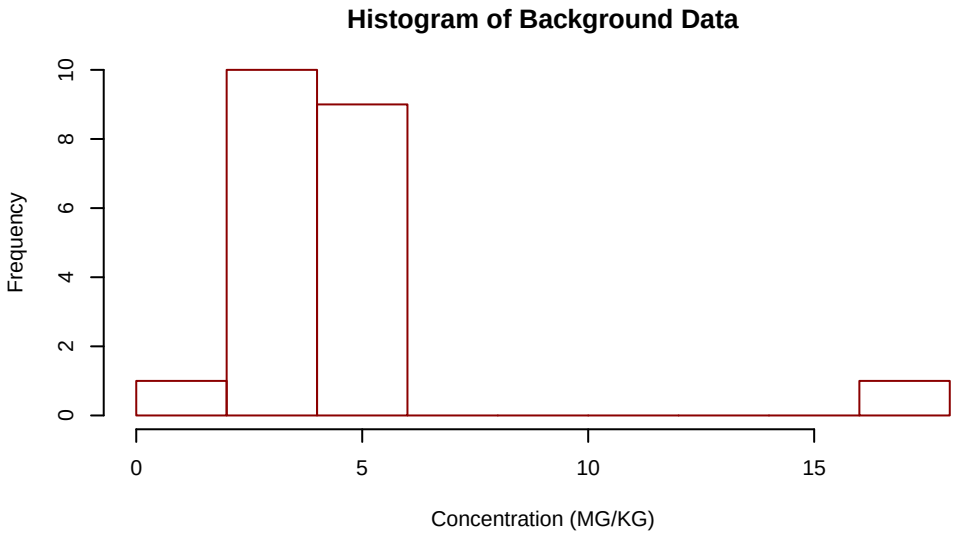


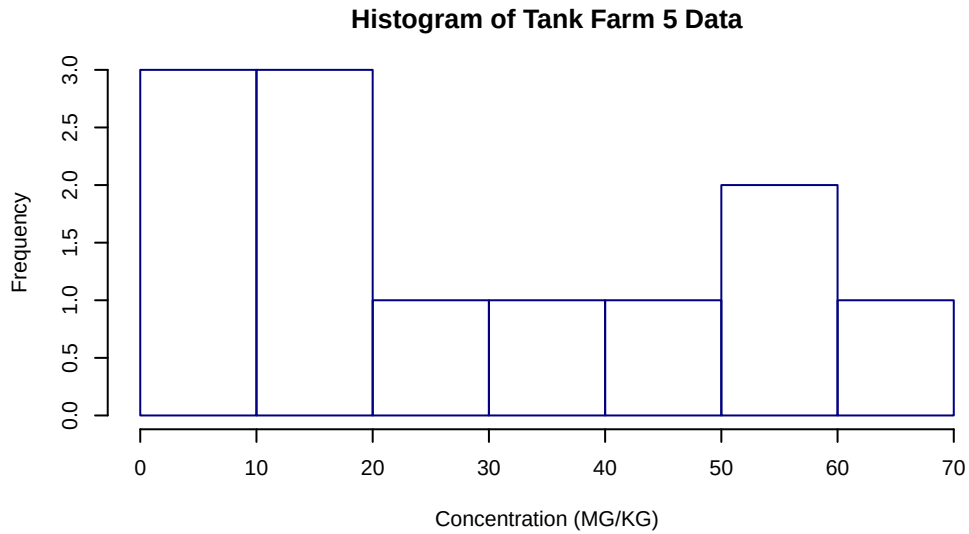


ARSENIC Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









ARSENIC Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
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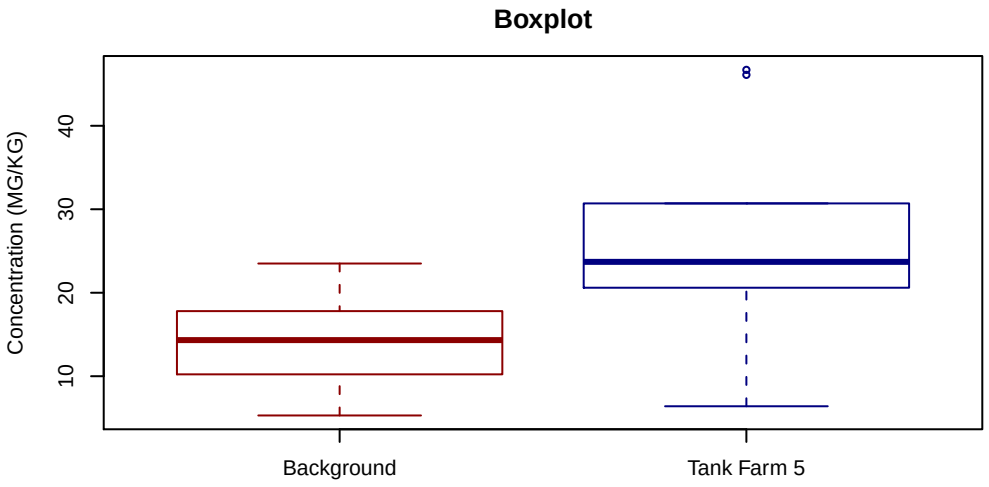
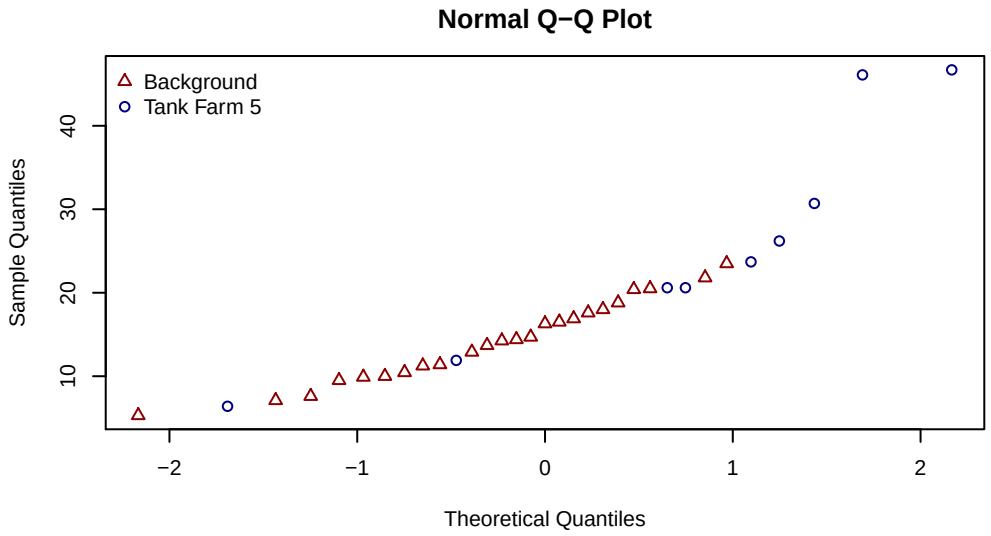
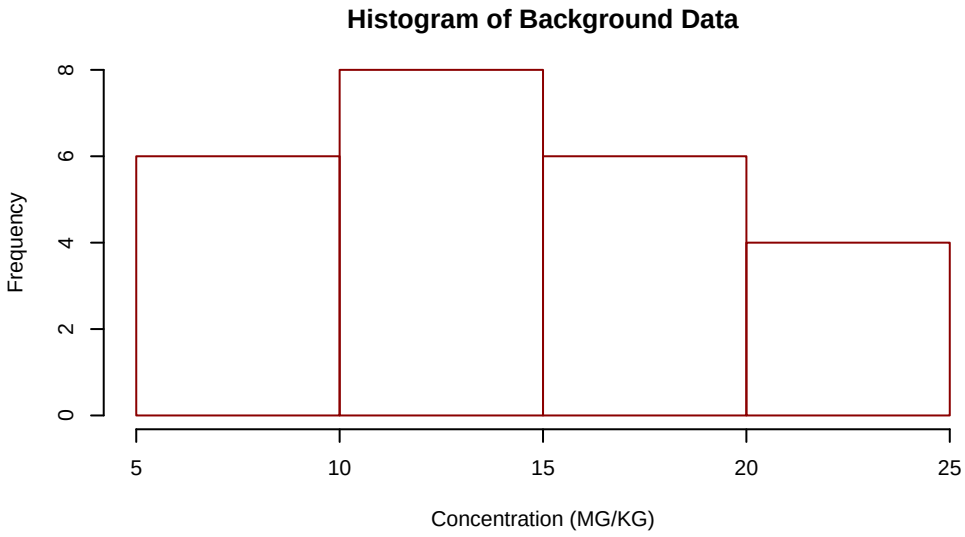
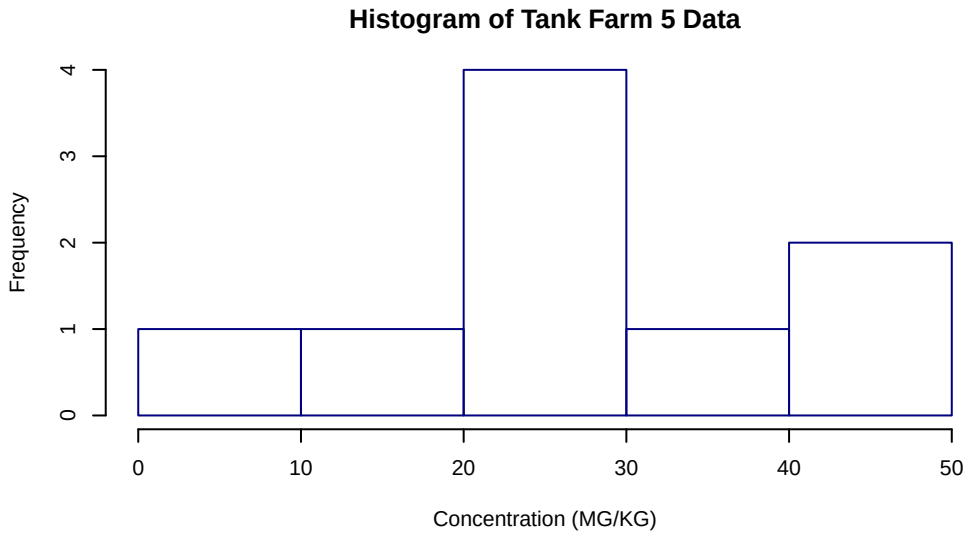
NEWPORT, RHODE ISLAND

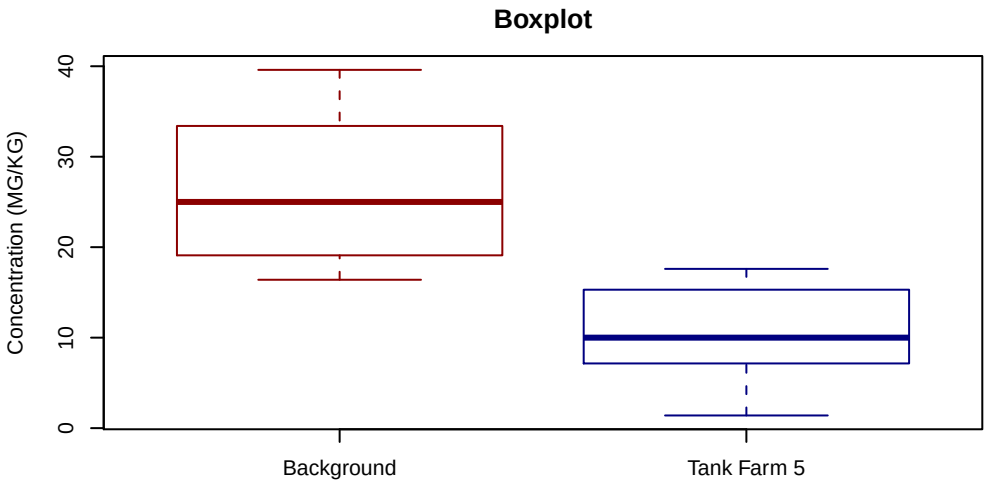


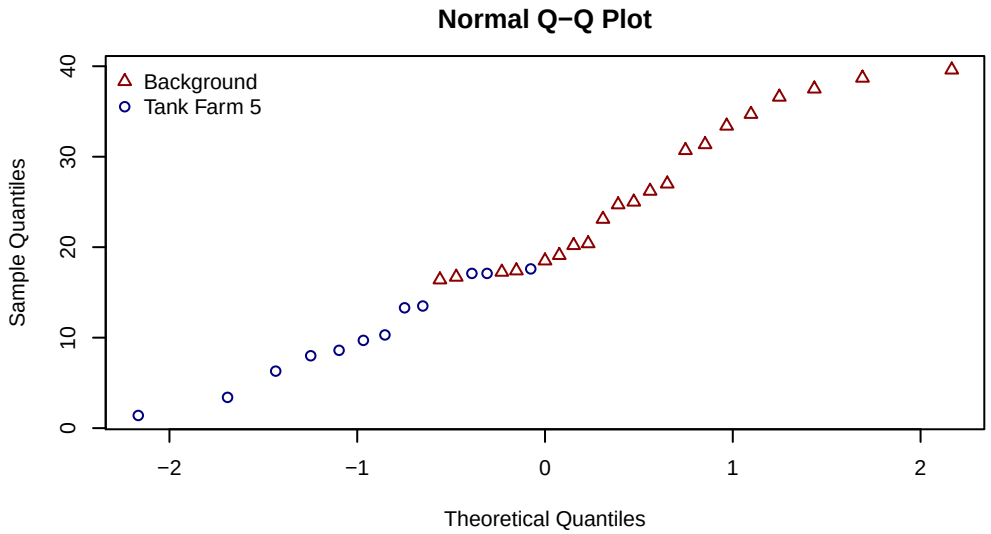


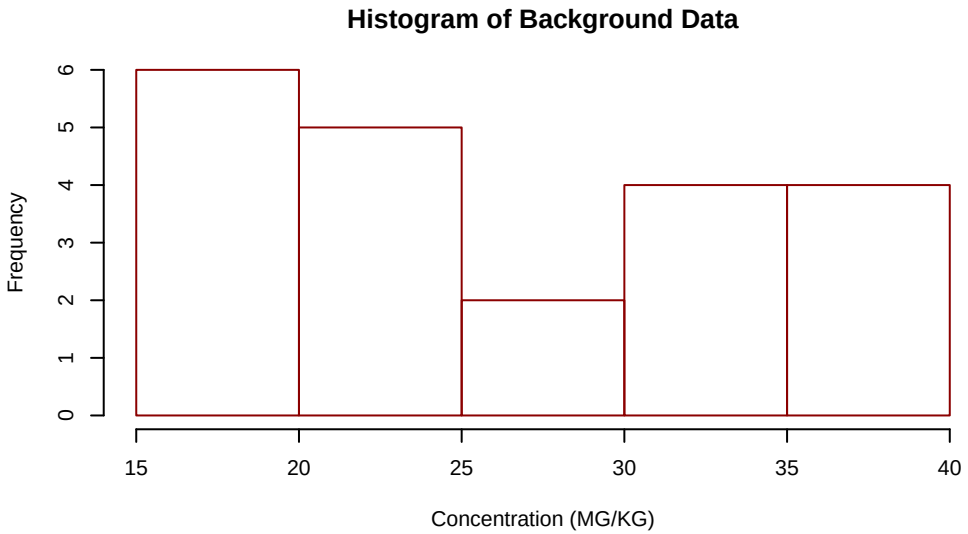


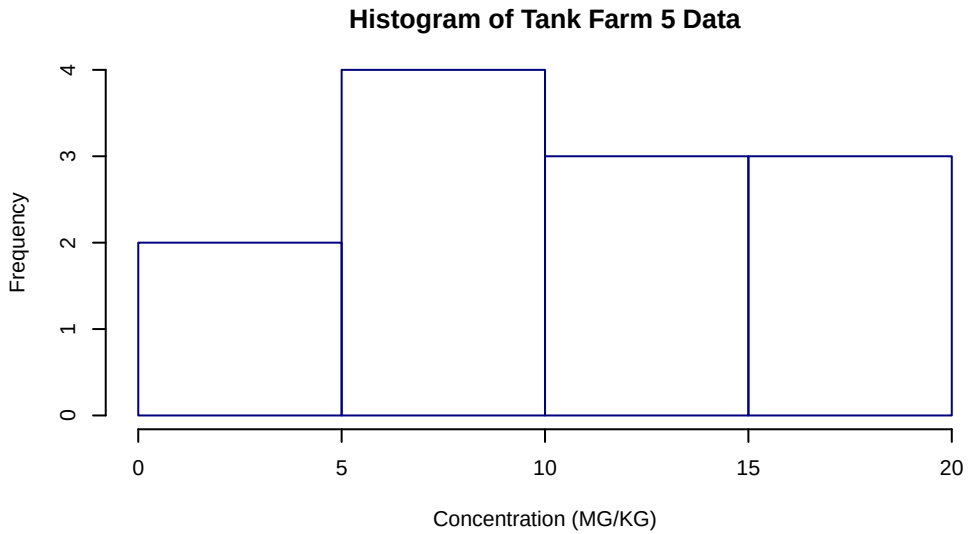


BARIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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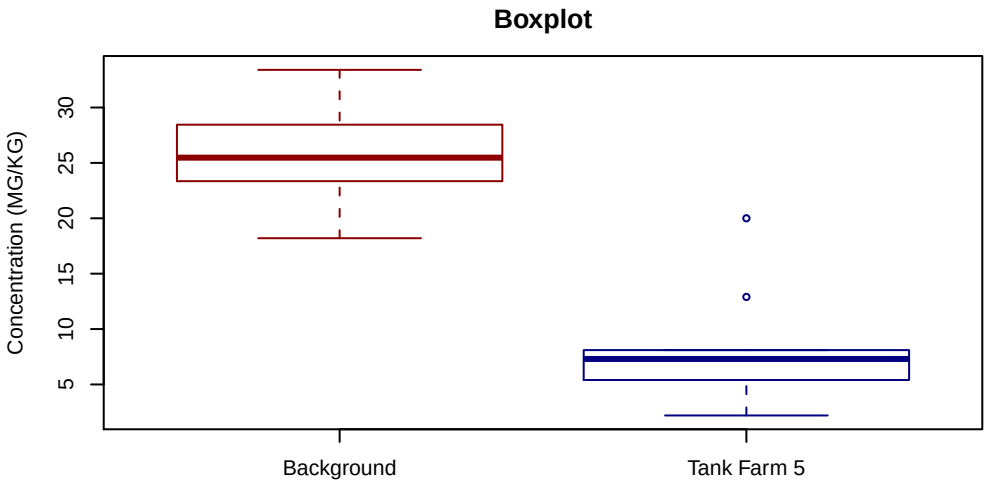
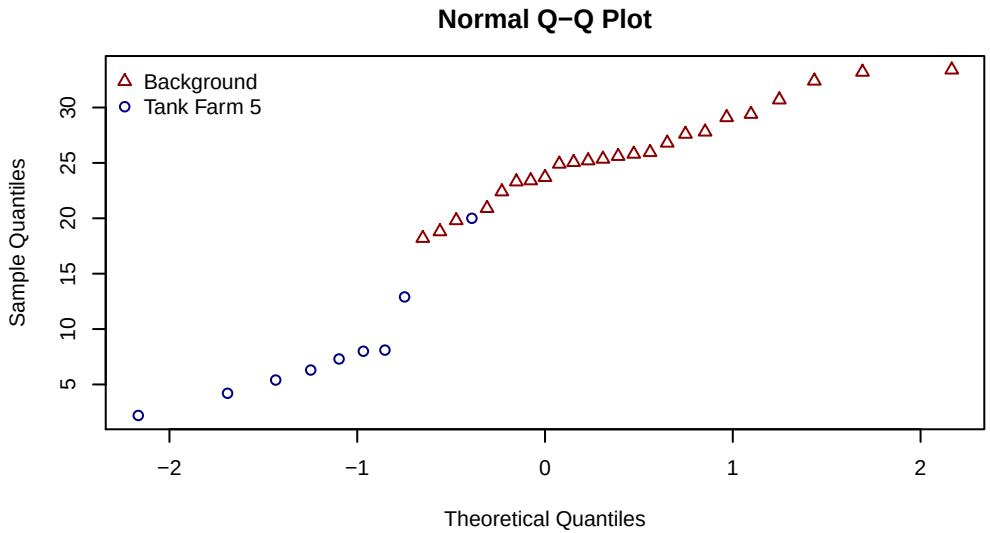
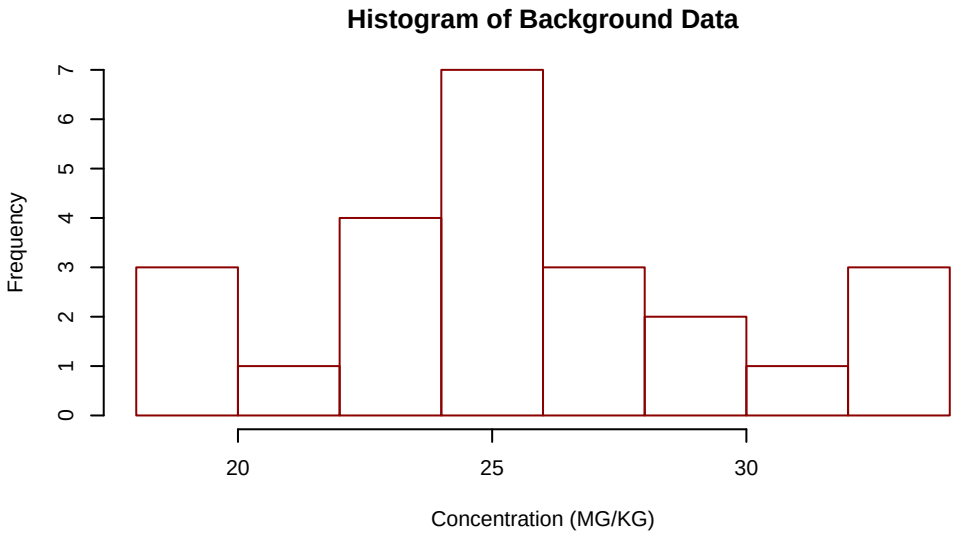
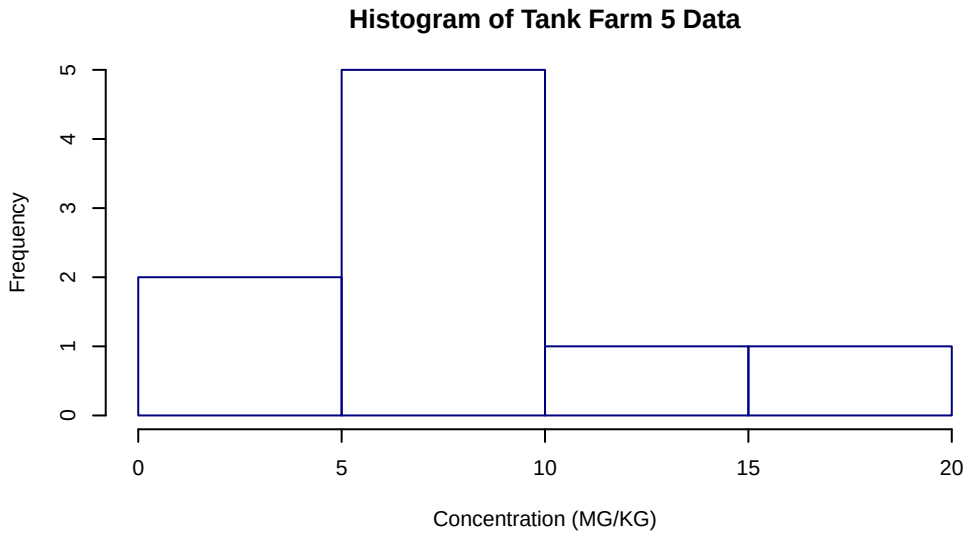
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

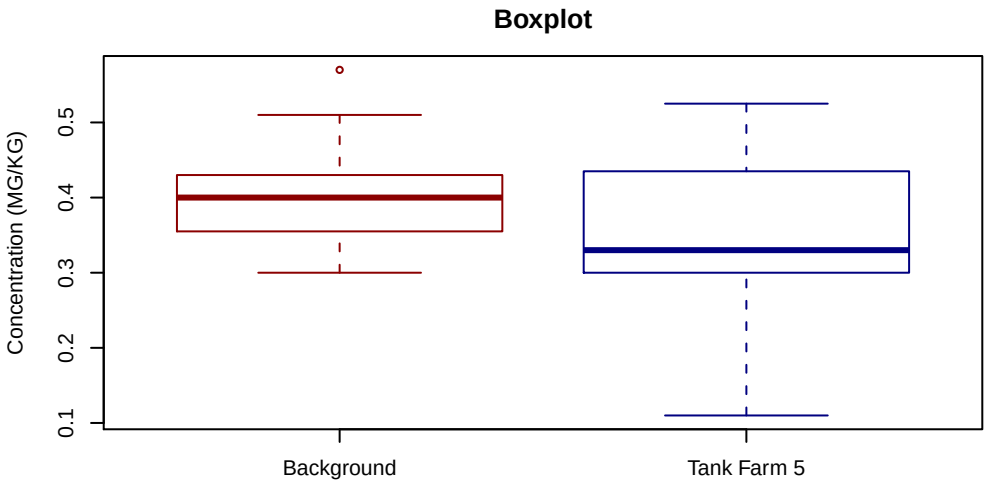


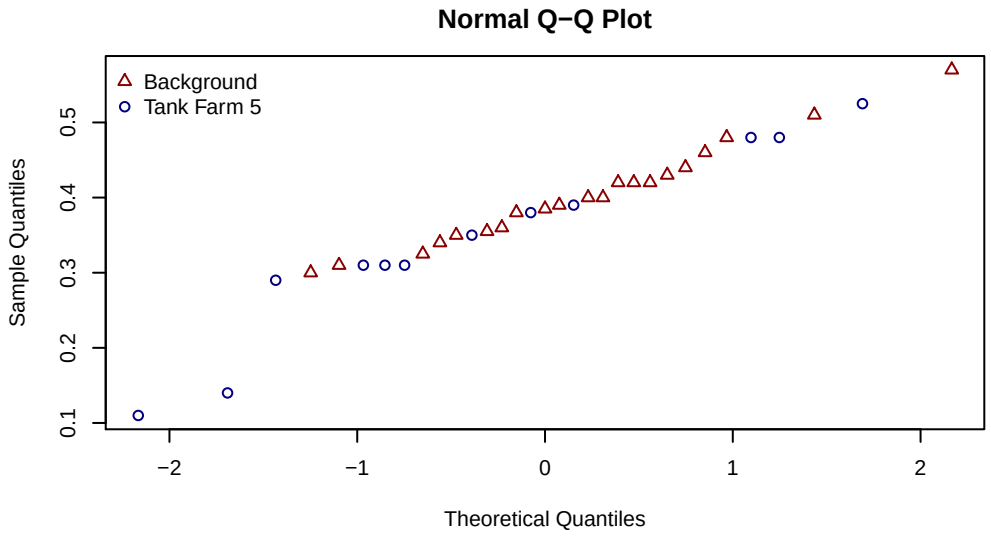


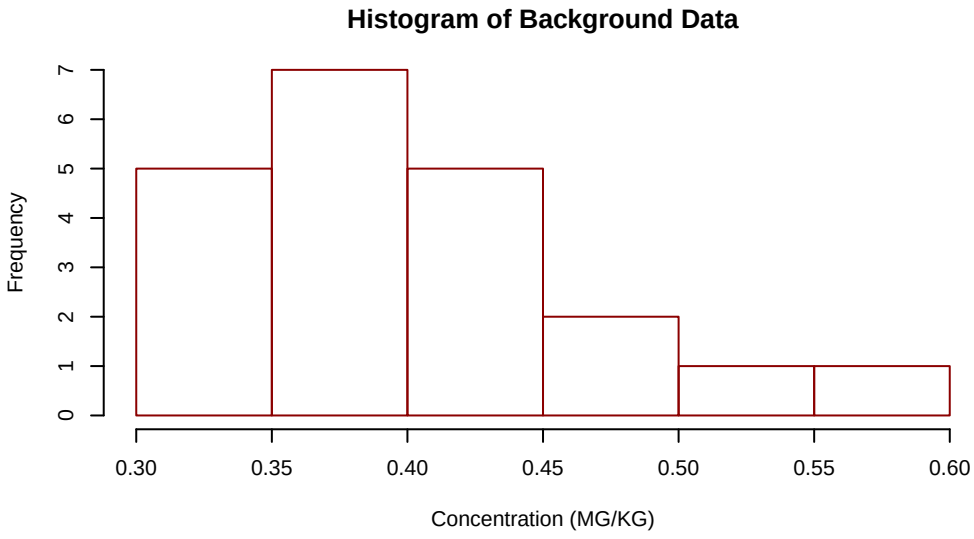


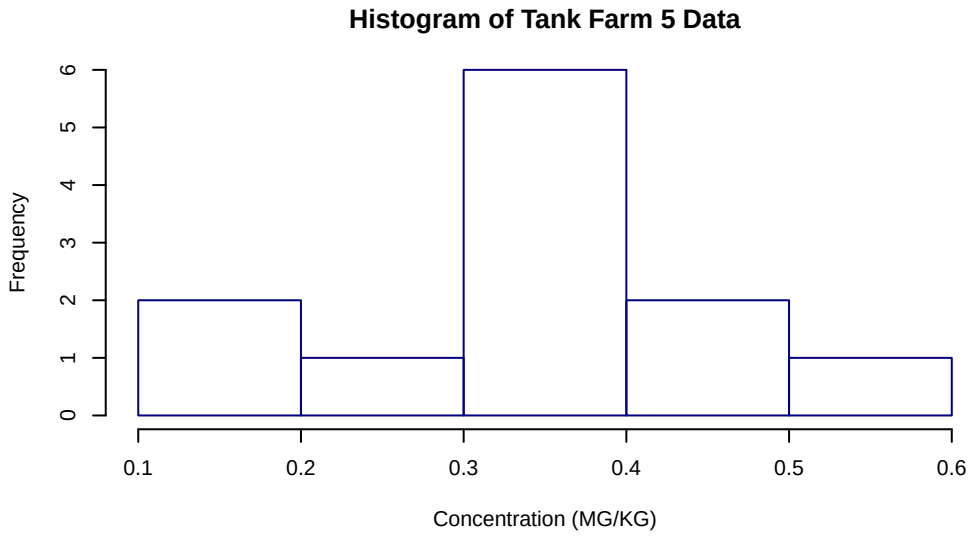


BERYLLIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









BERYLLIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
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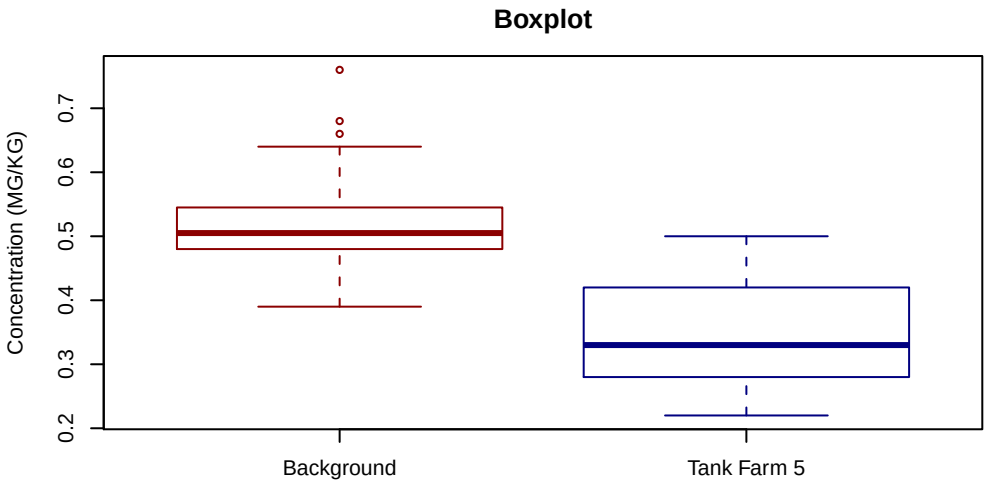
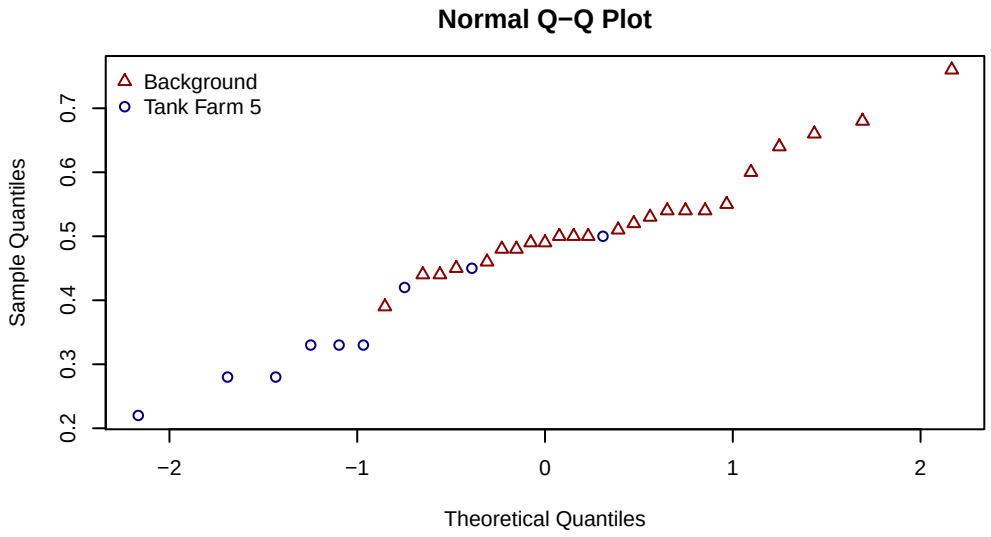
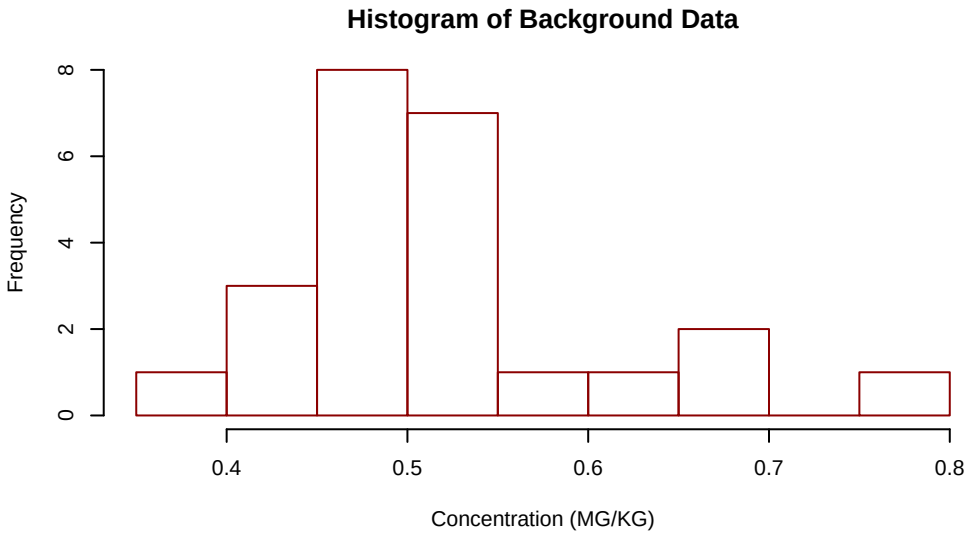
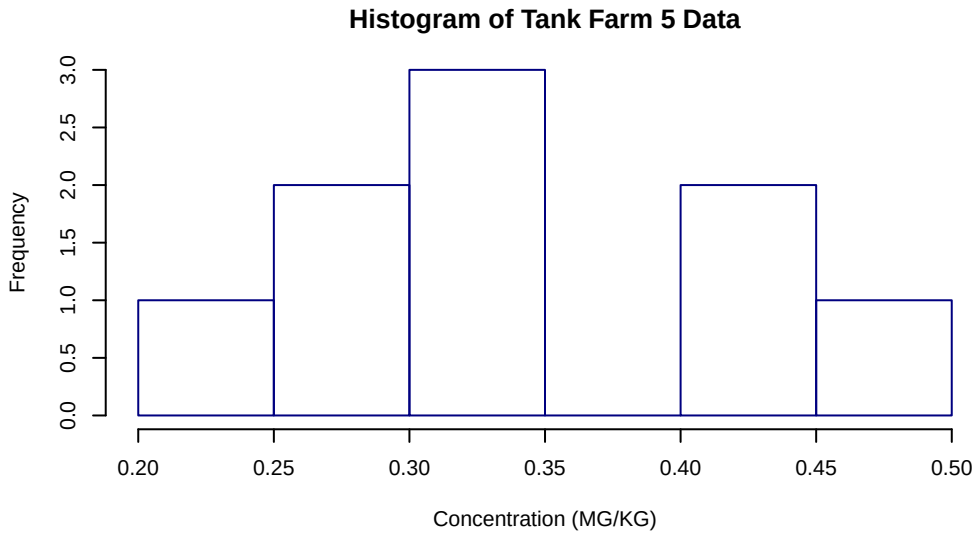
NEWPORT, RHODE ISLAND

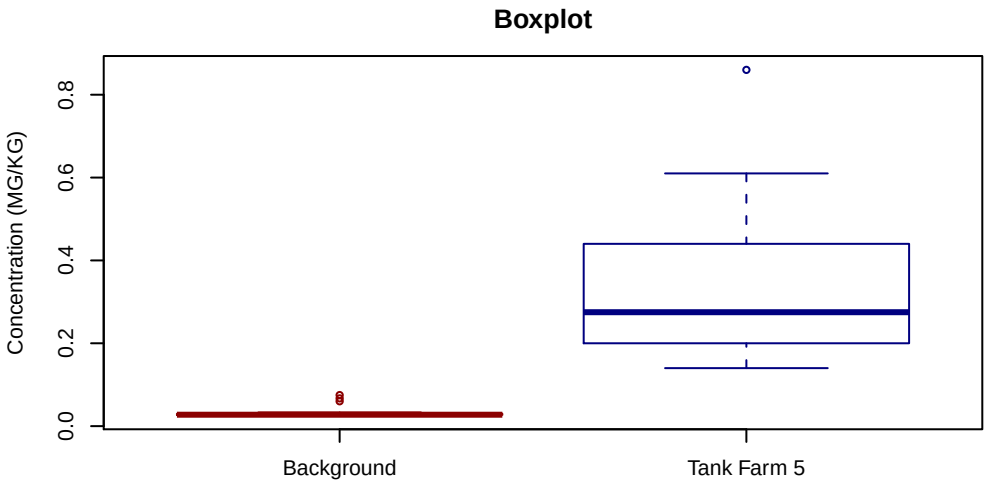


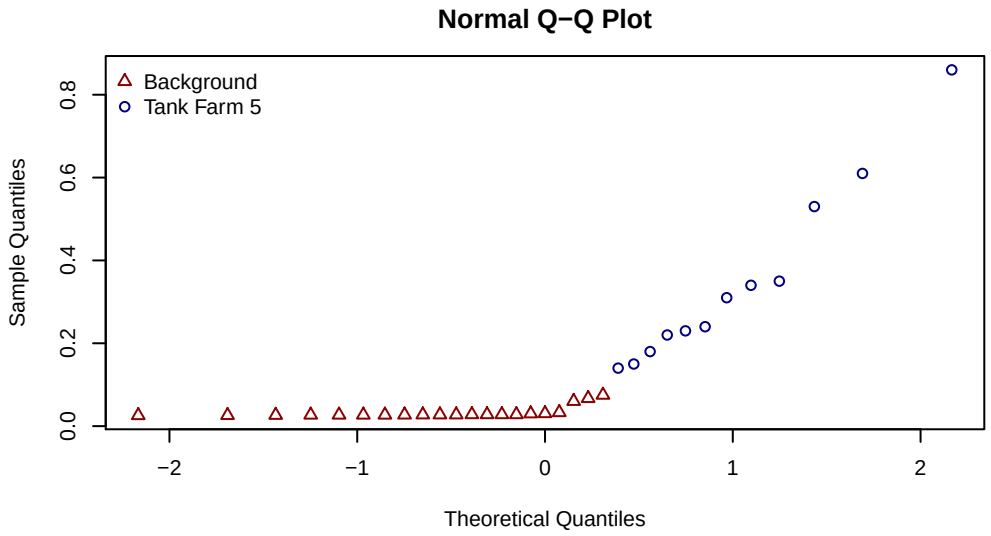


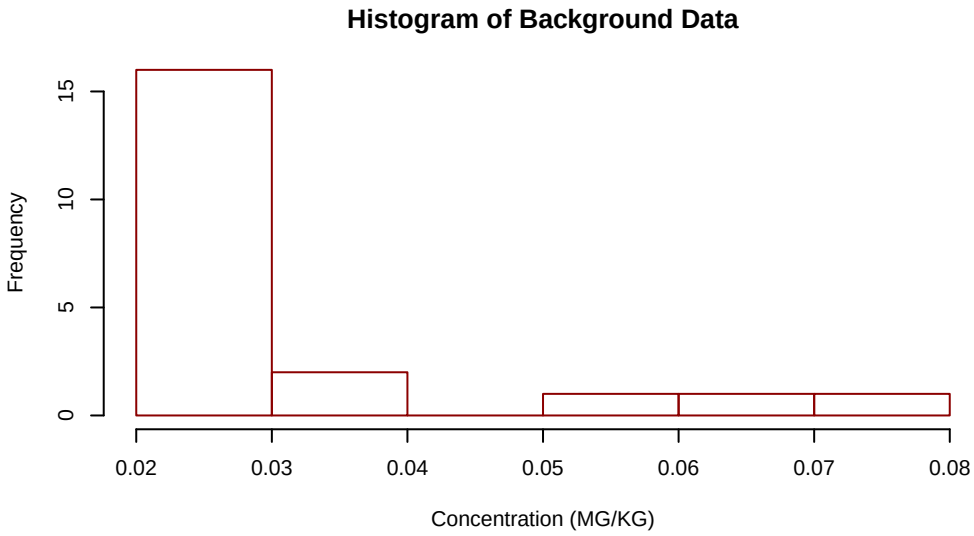


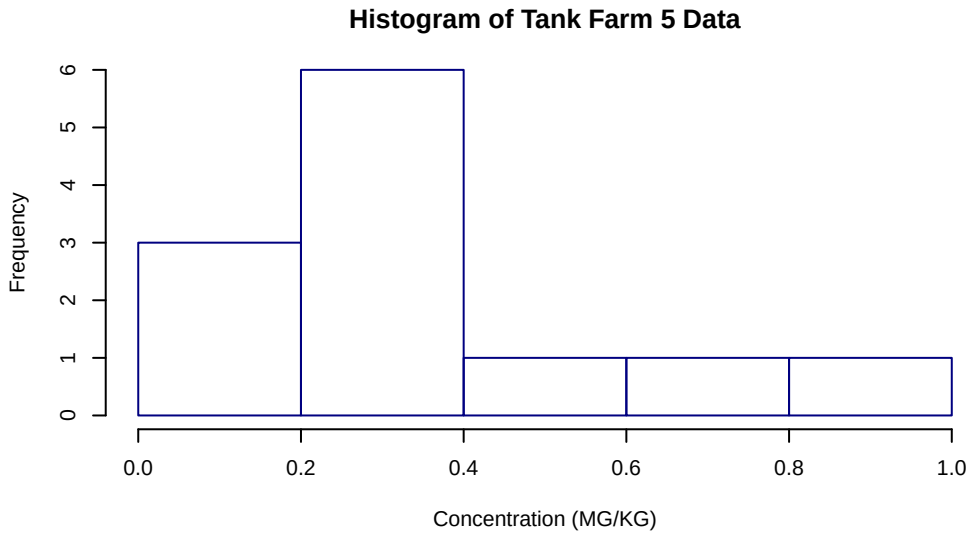


CADMIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









CADMIUM Pm SUBSURFACESOIL
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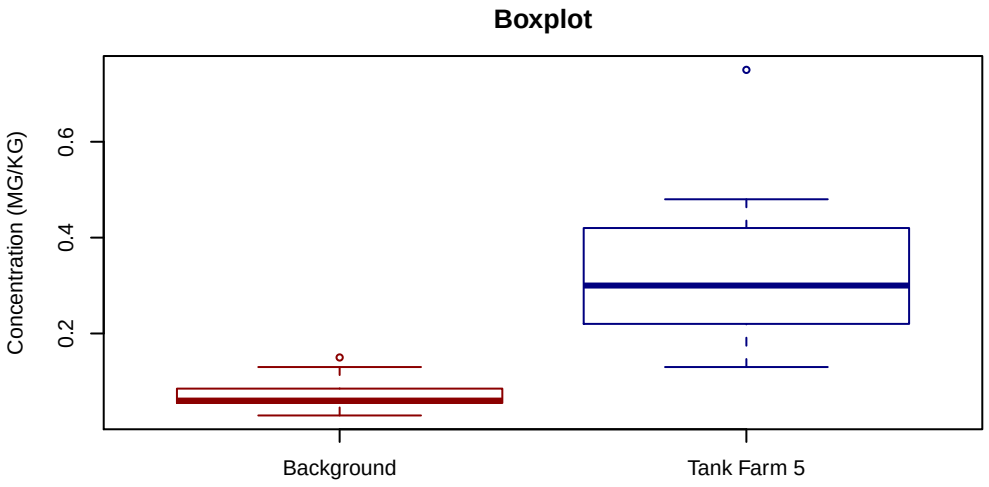
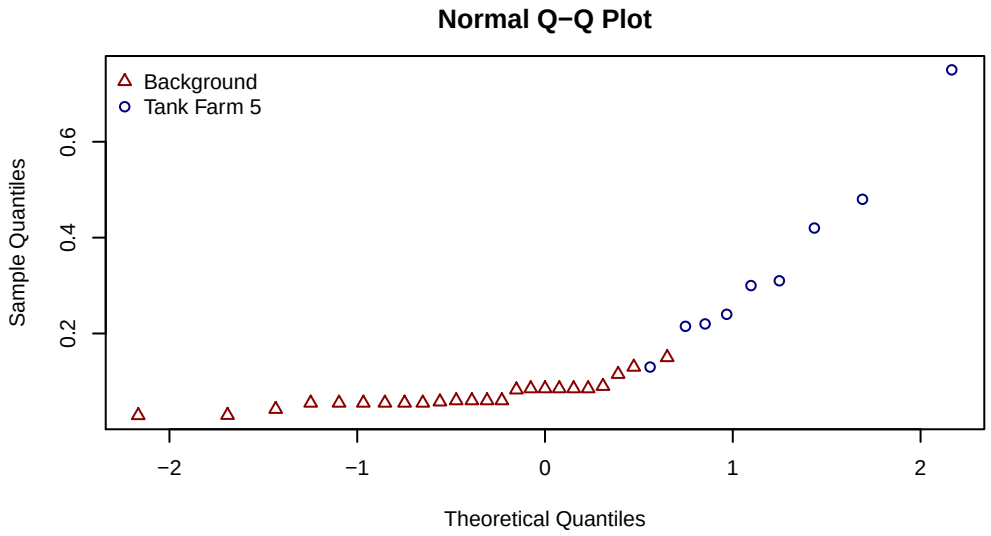
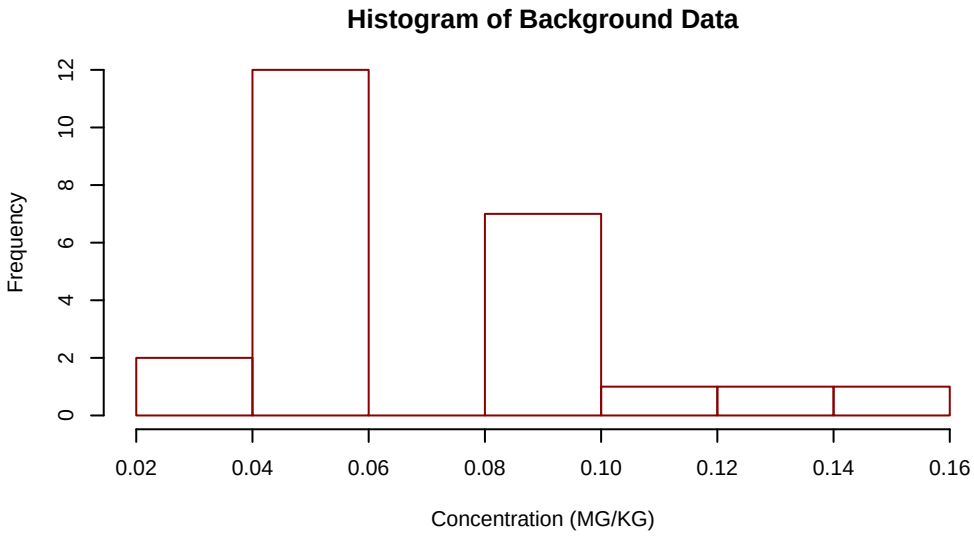
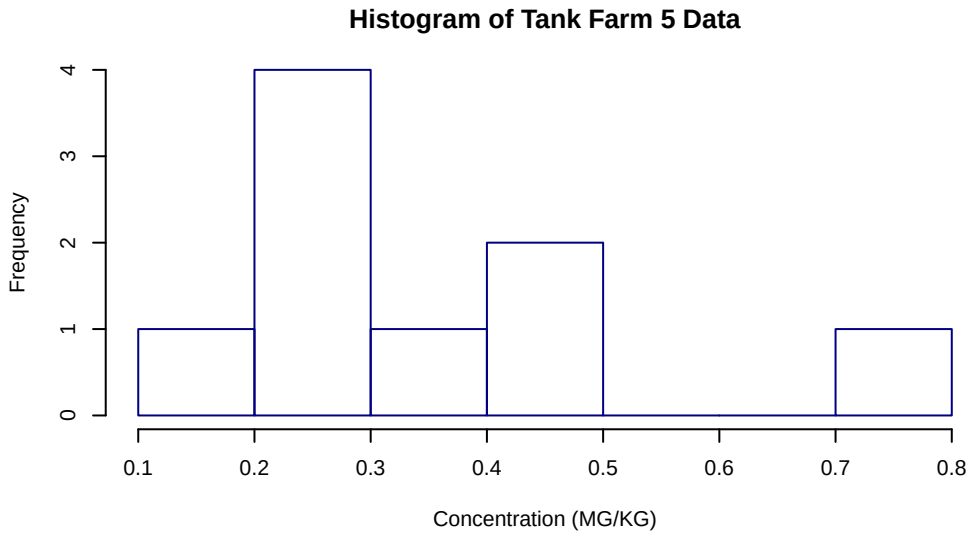
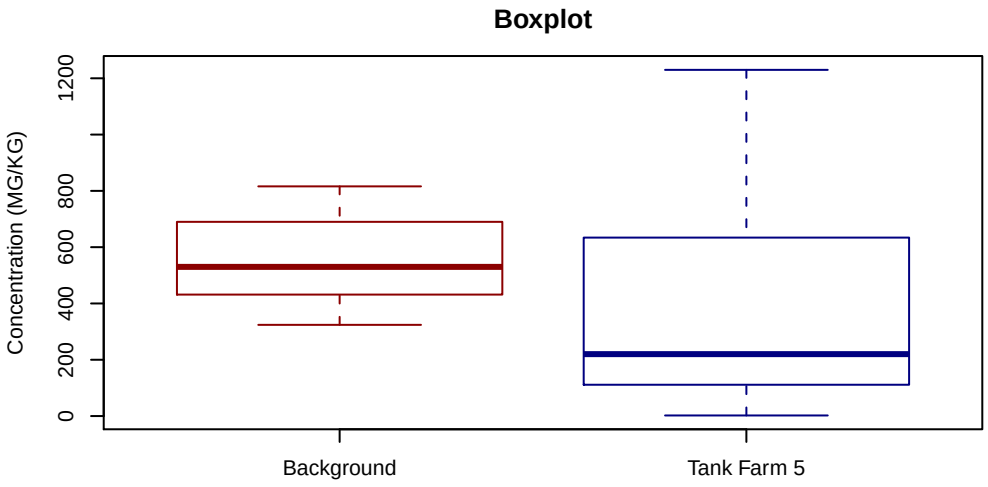


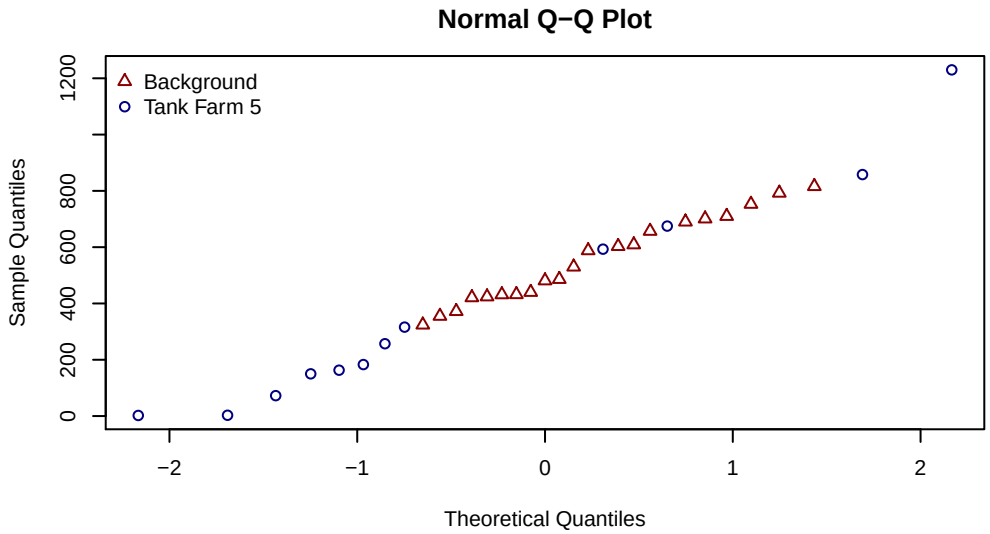


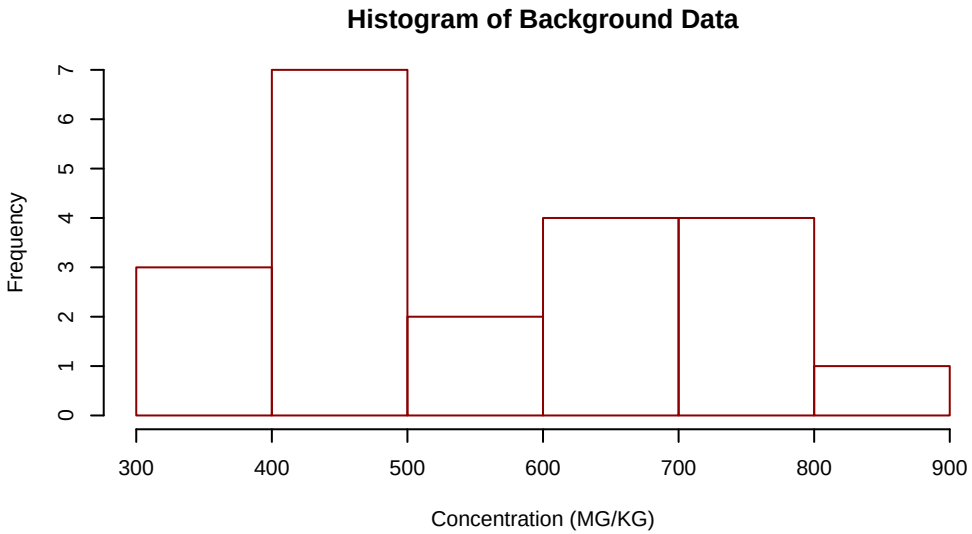


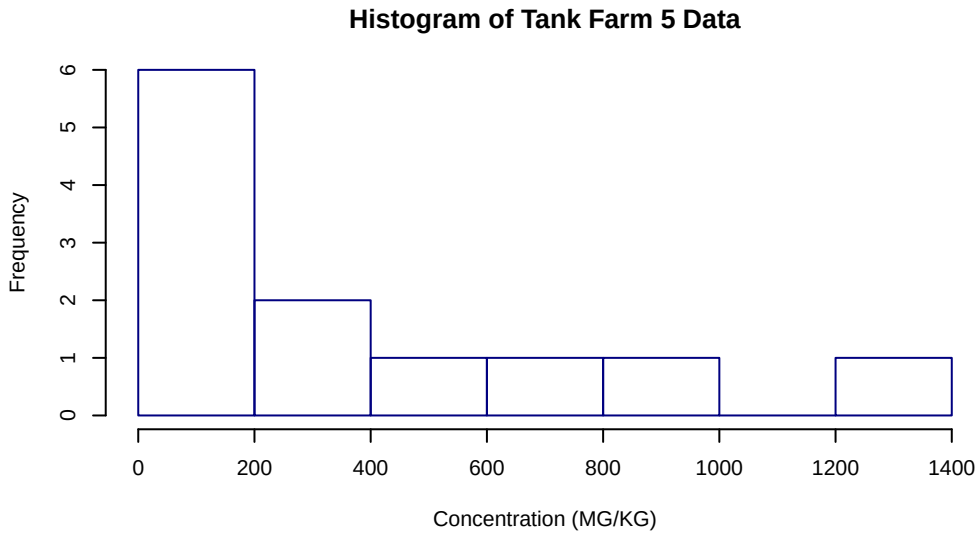


CALCIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

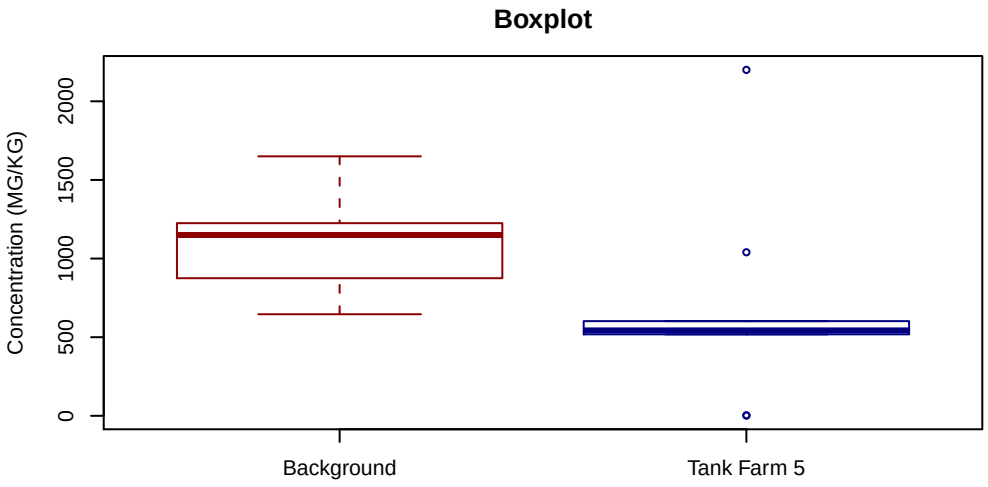


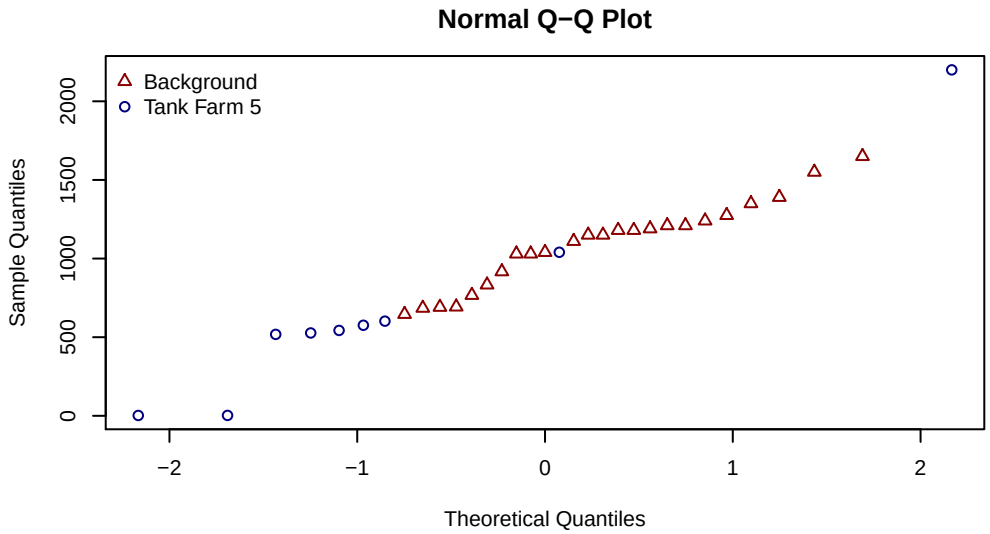


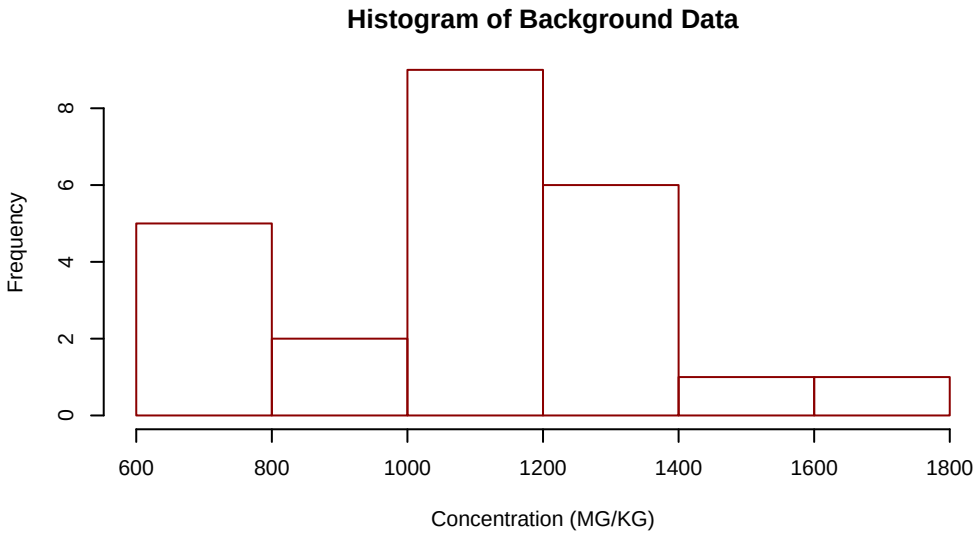


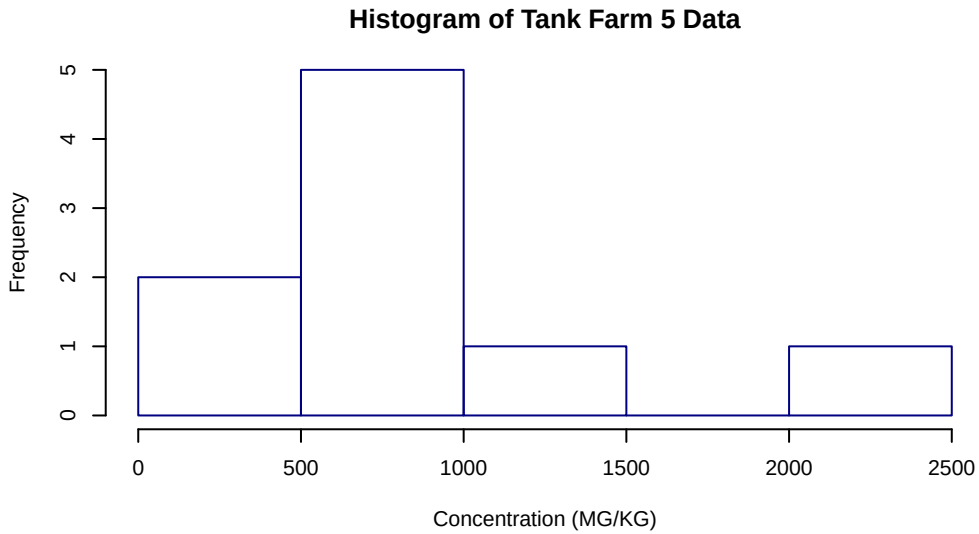


CALCIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

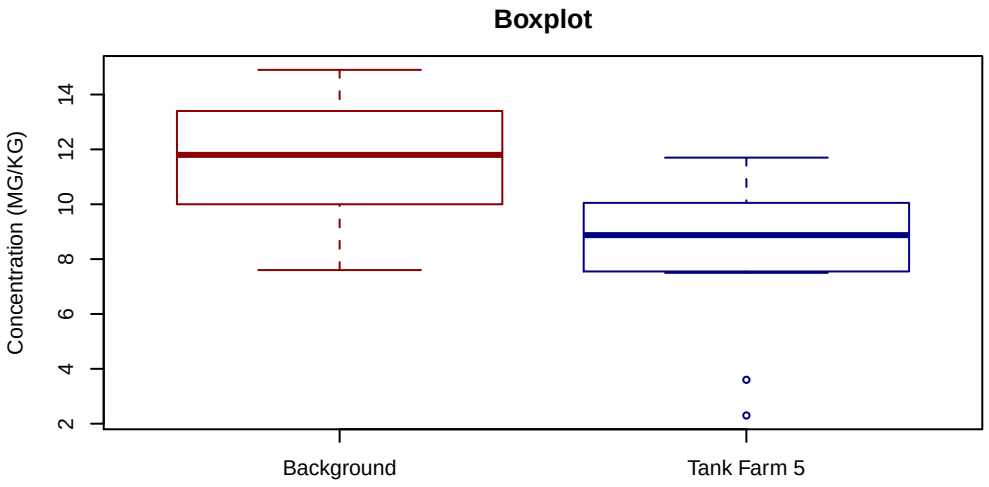


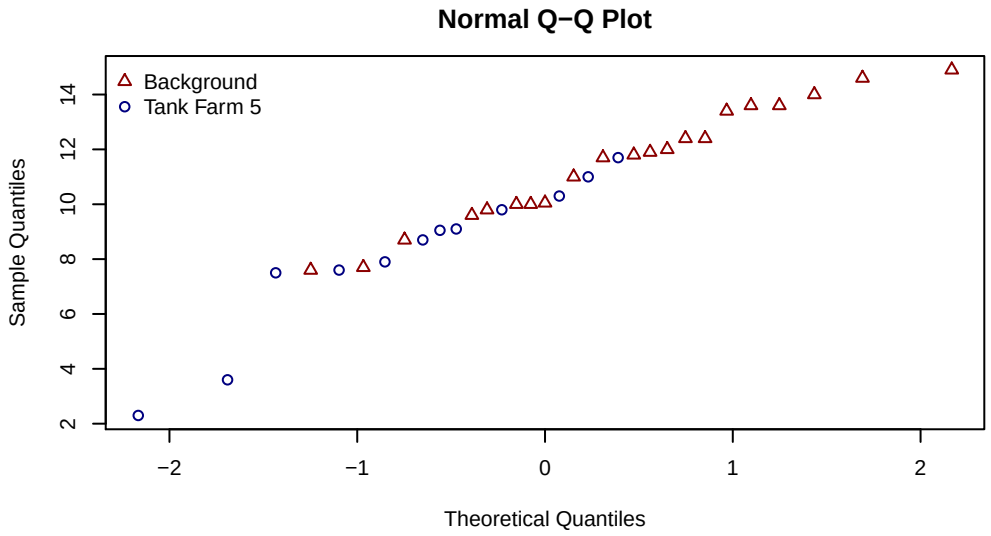


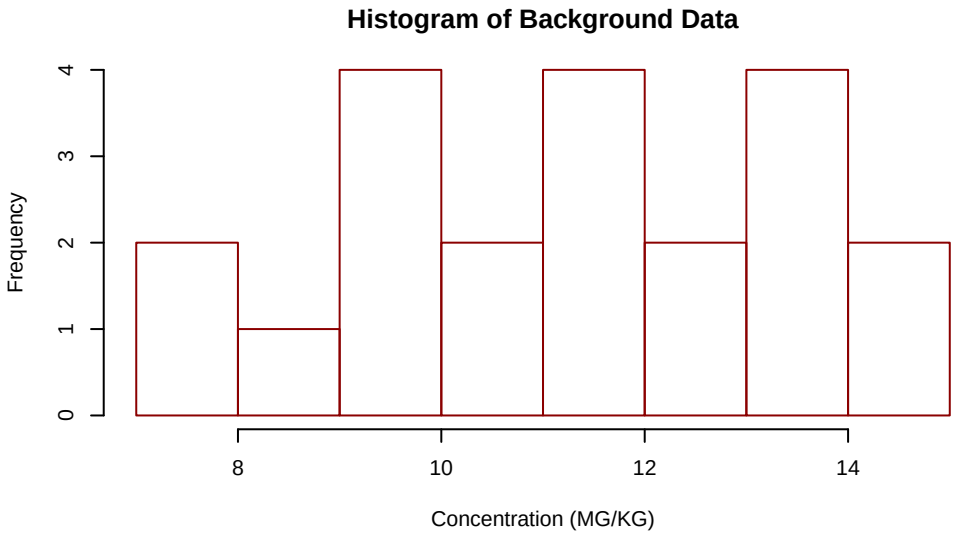


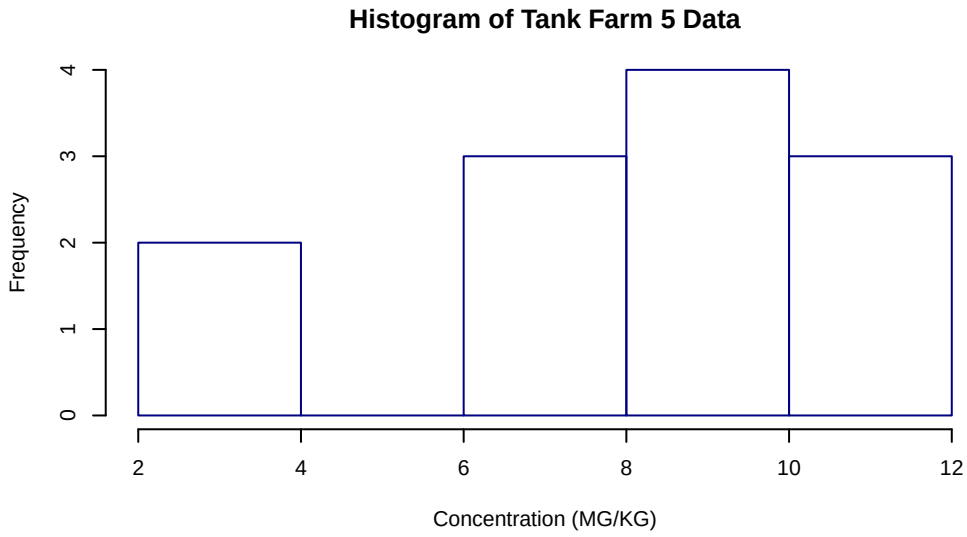


CHROMIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

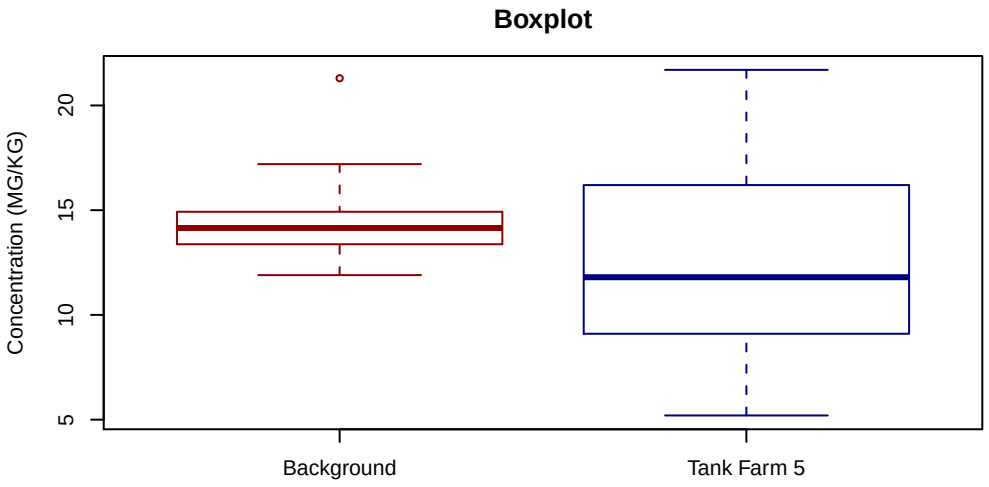


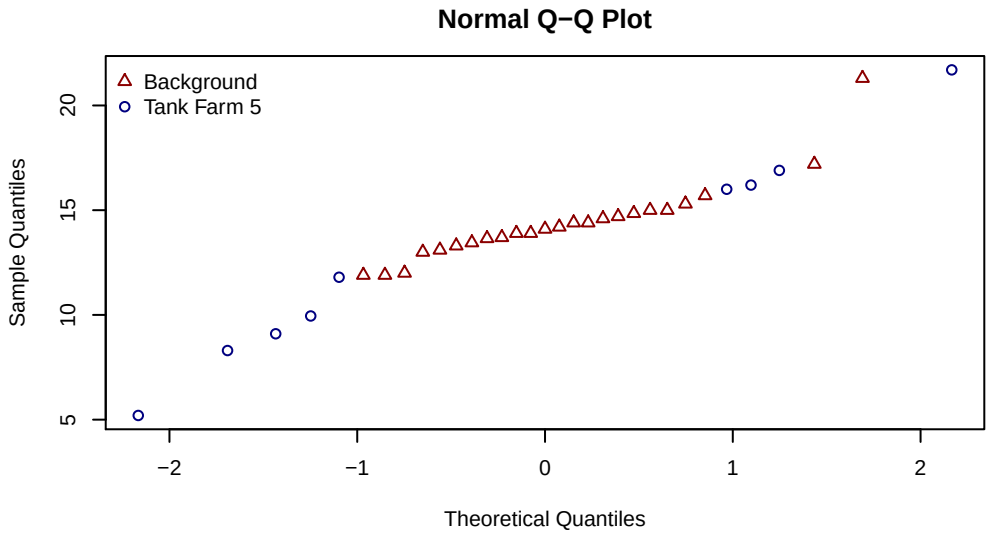


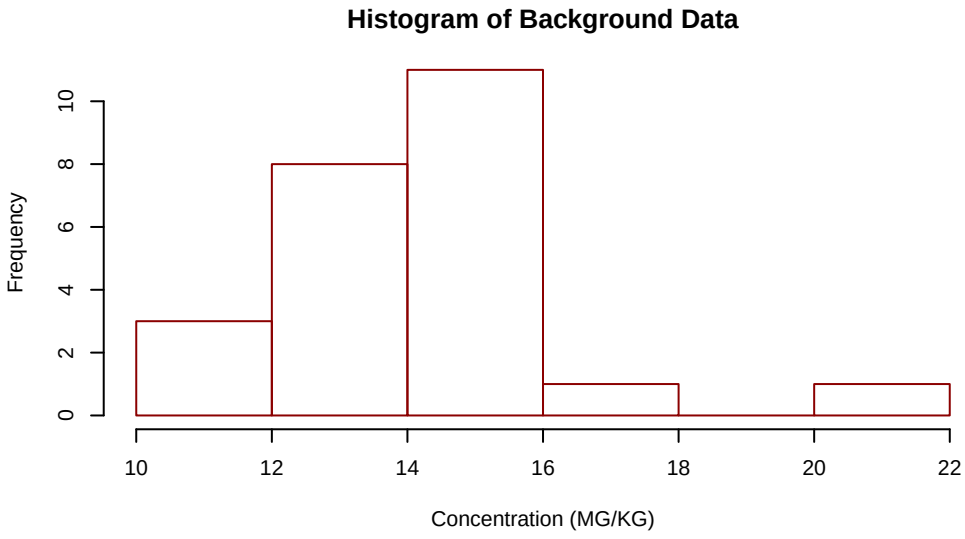


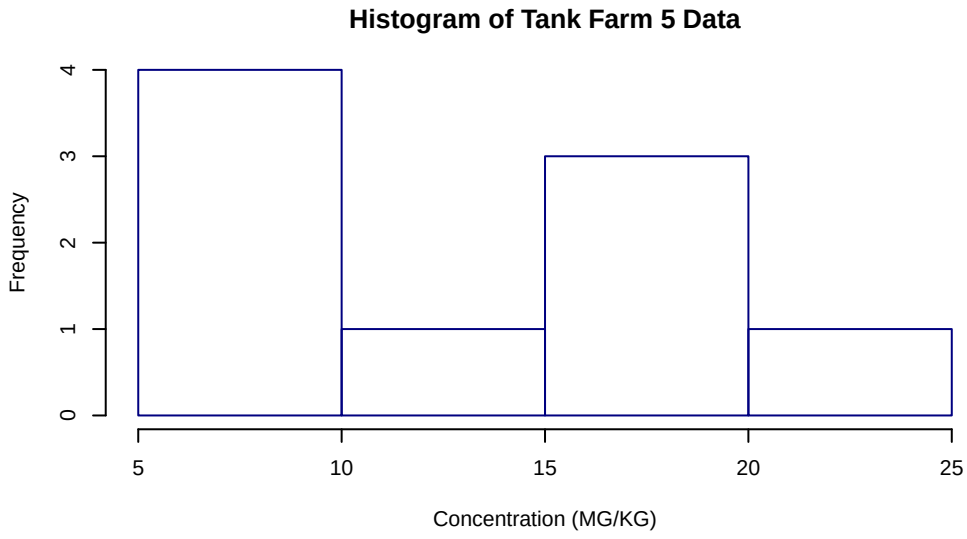


CHROMIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

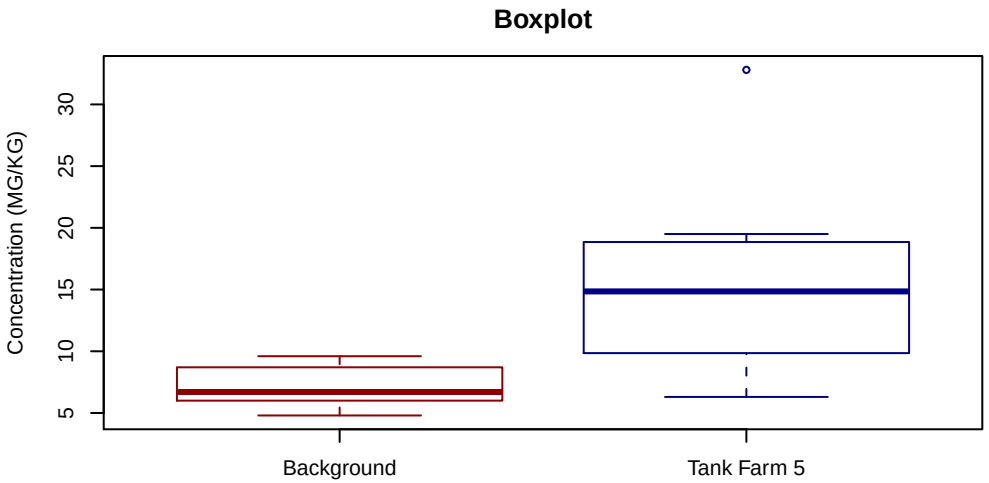


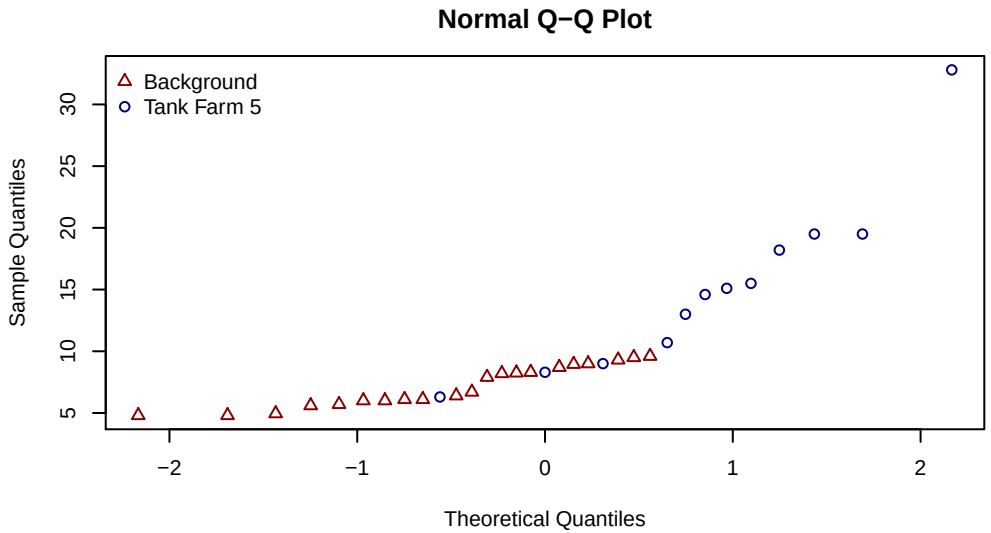


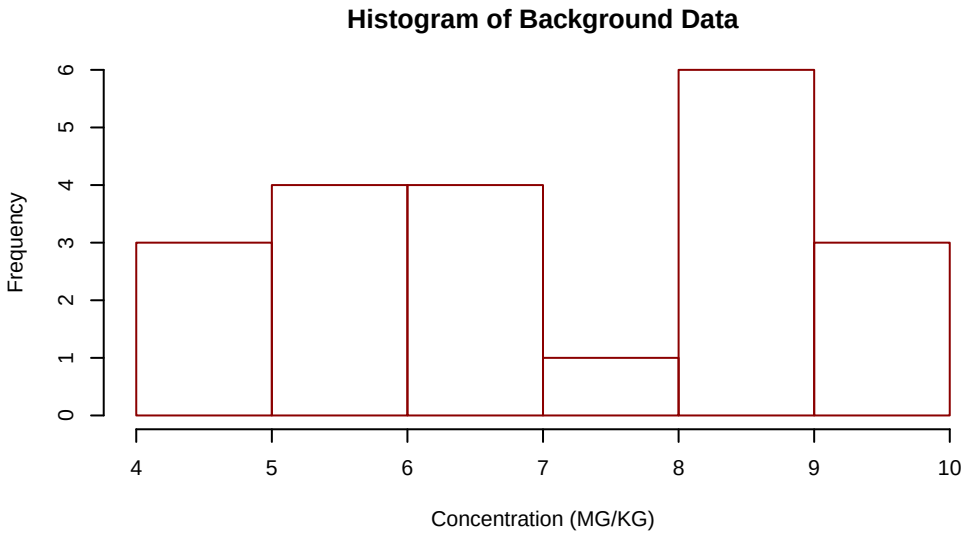


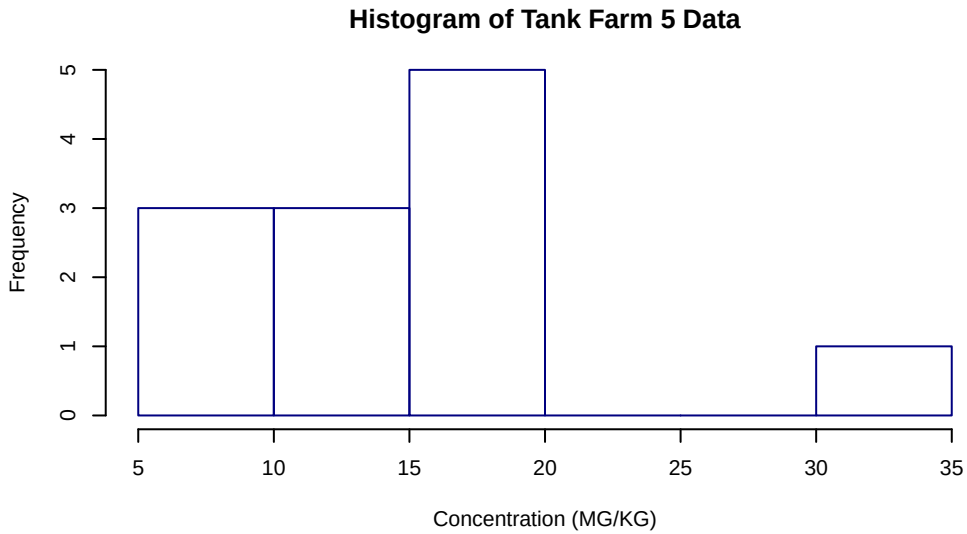


COBALT Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

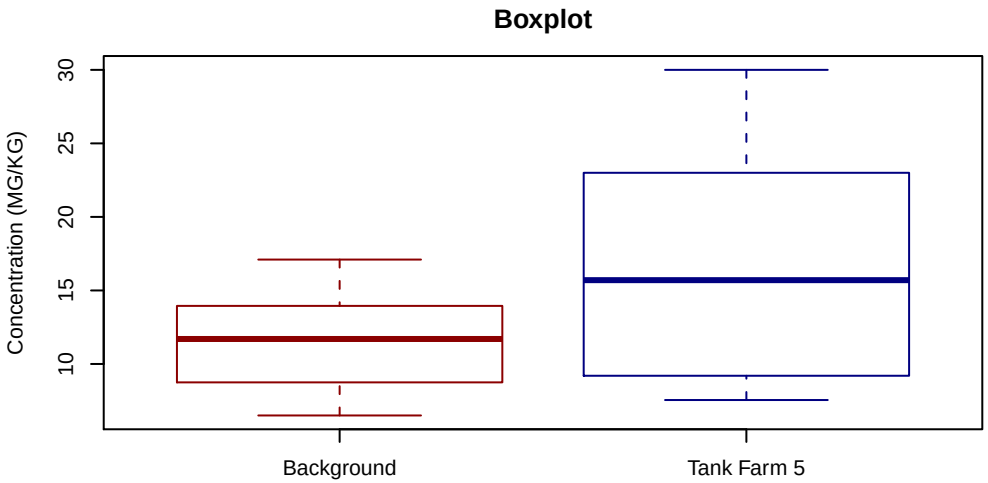


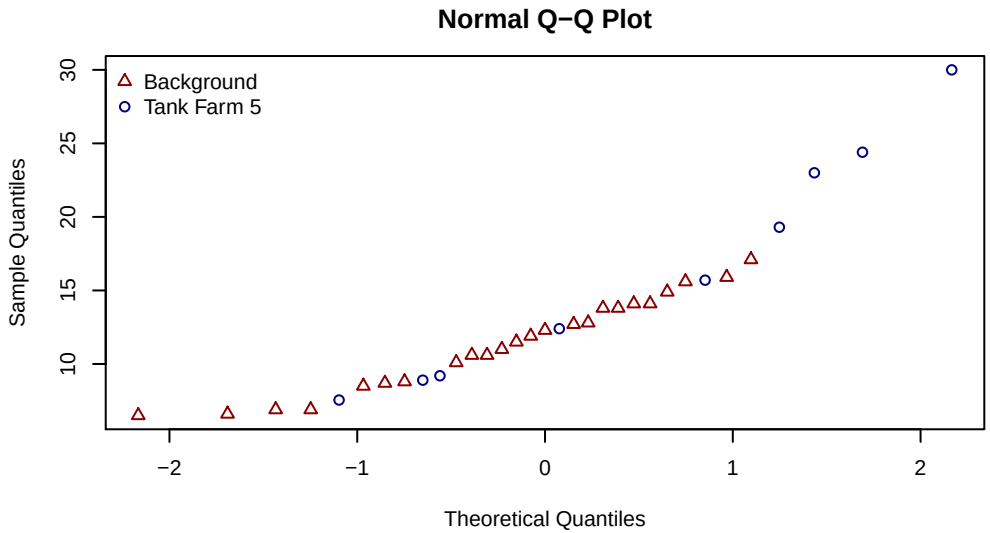


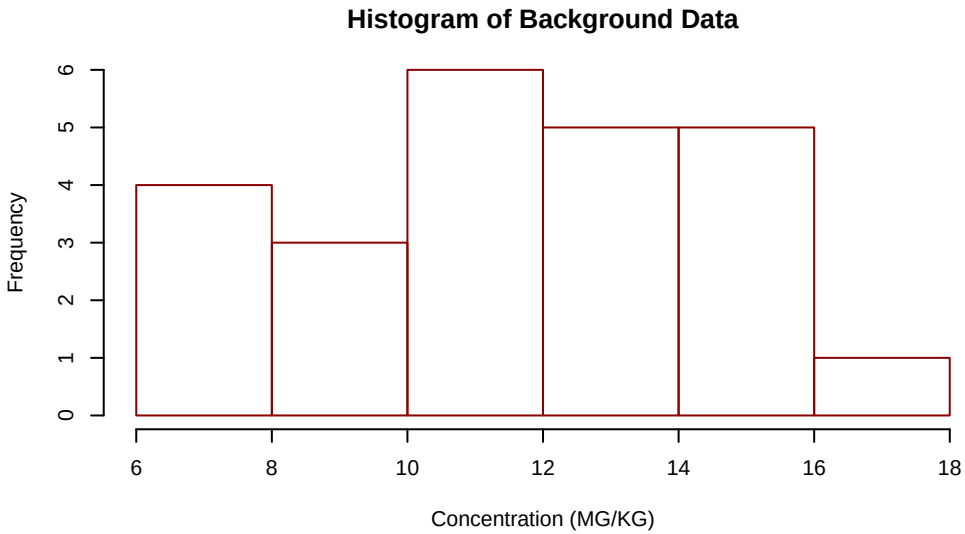


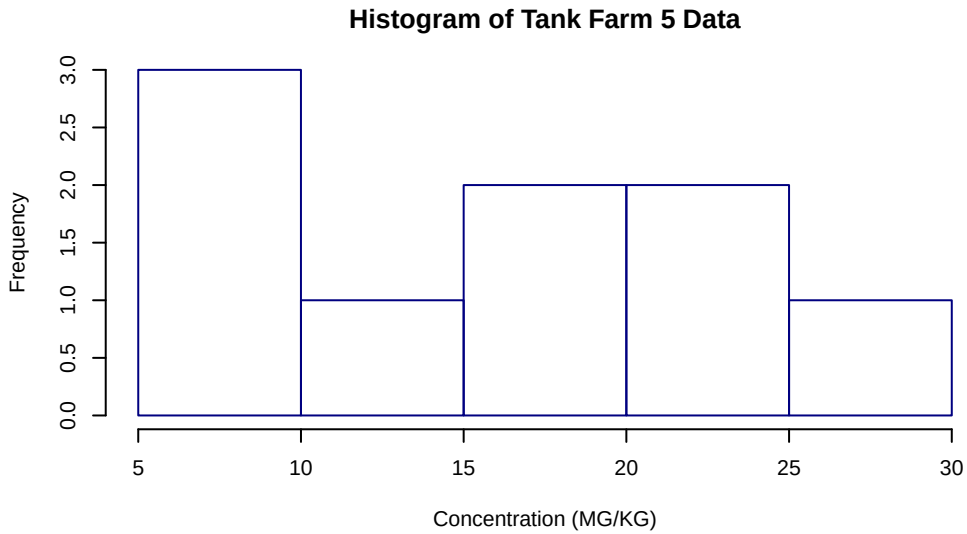


COBALT Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

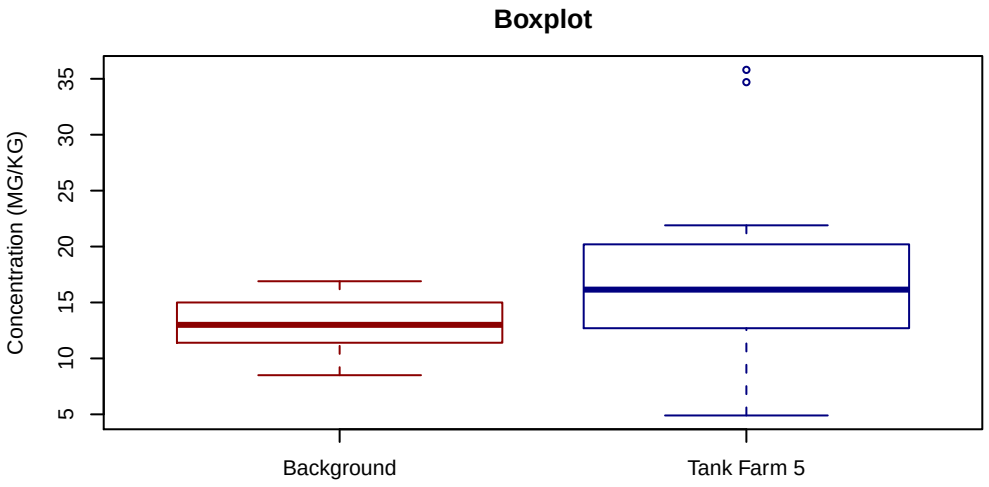


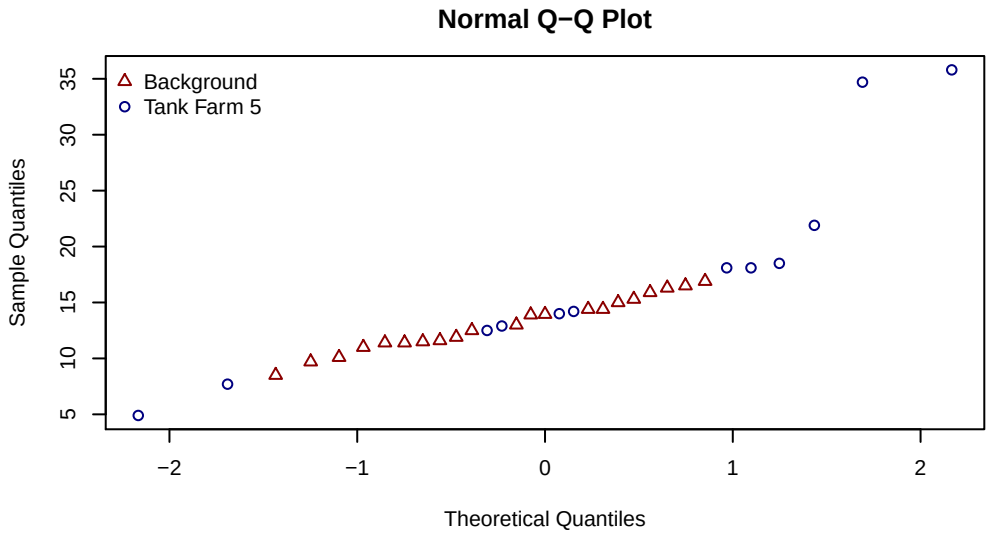


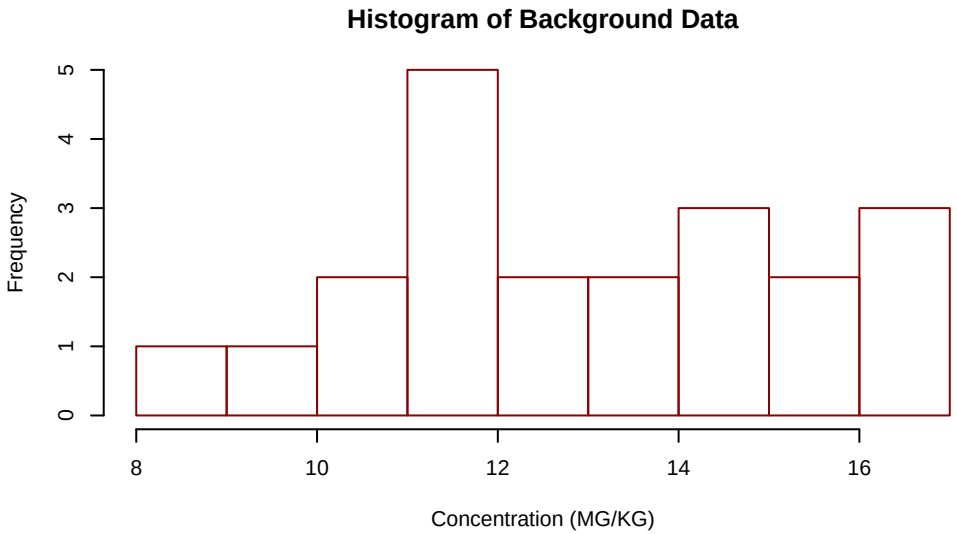


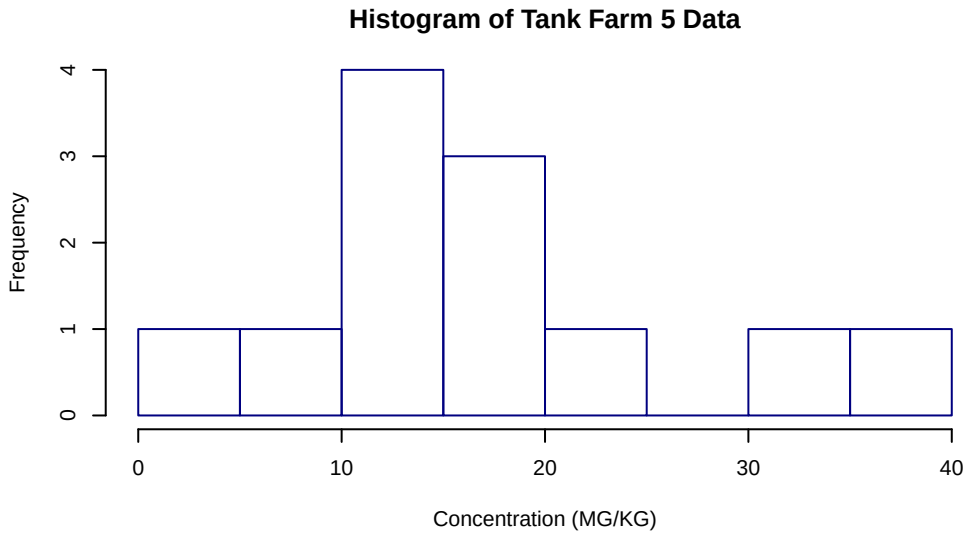


COPPER Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

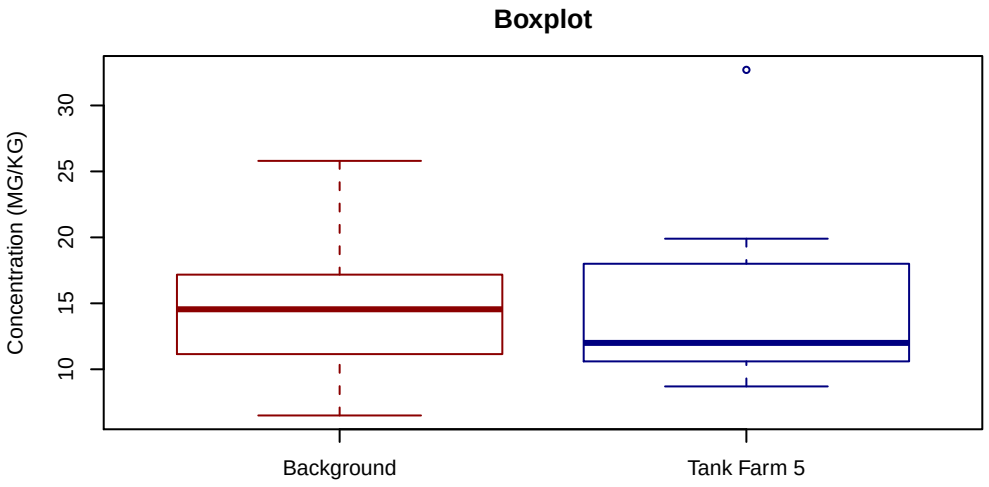


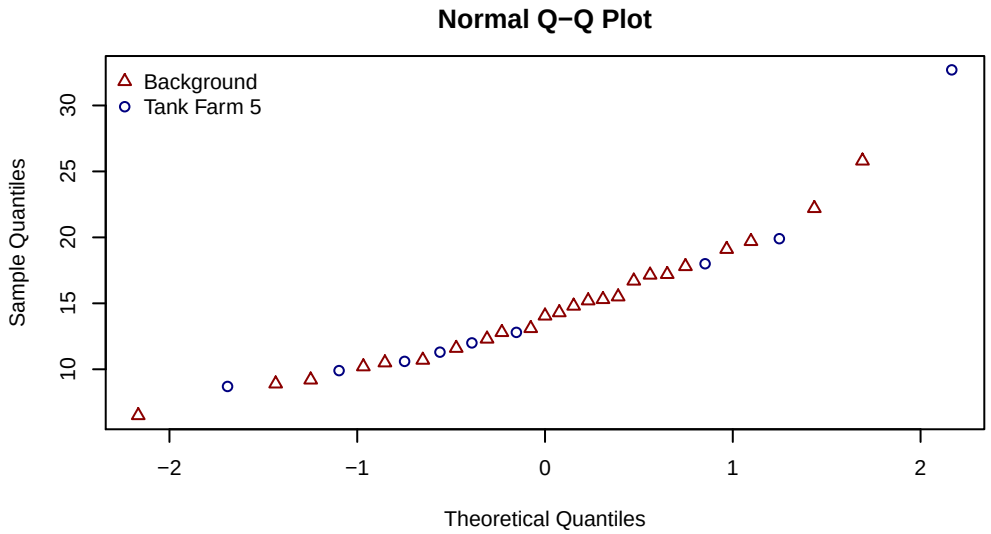


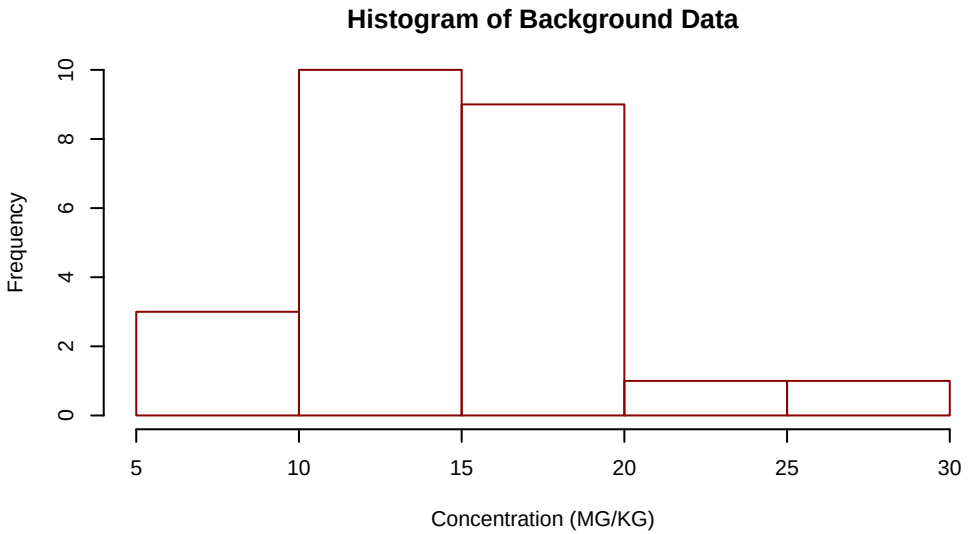


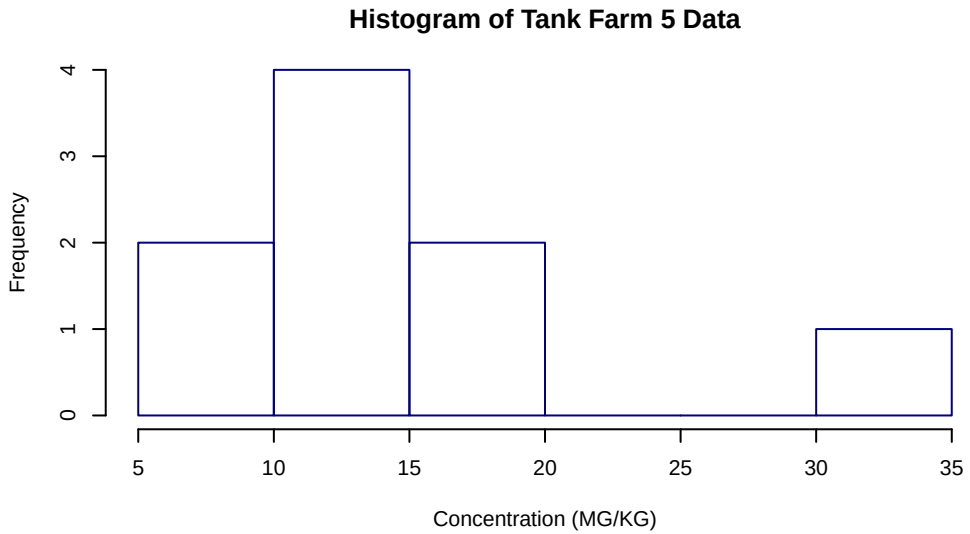


COPPER Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

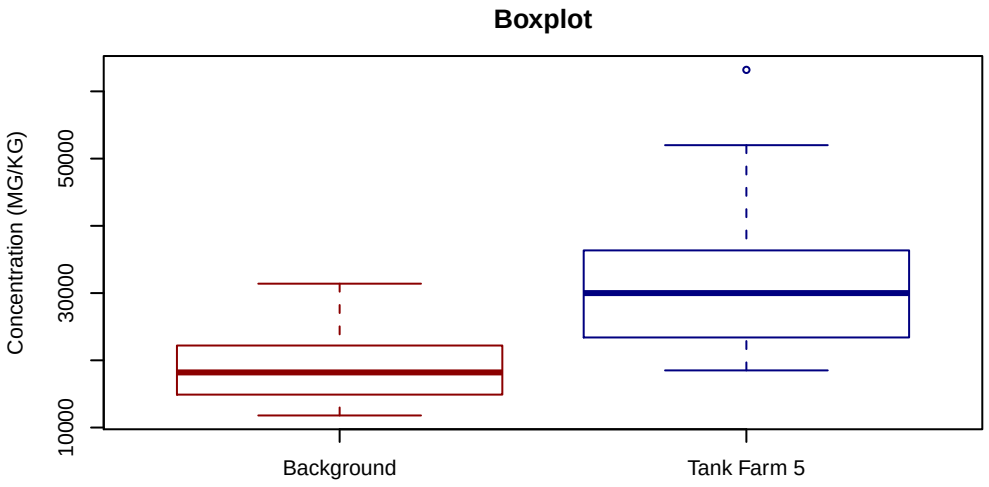


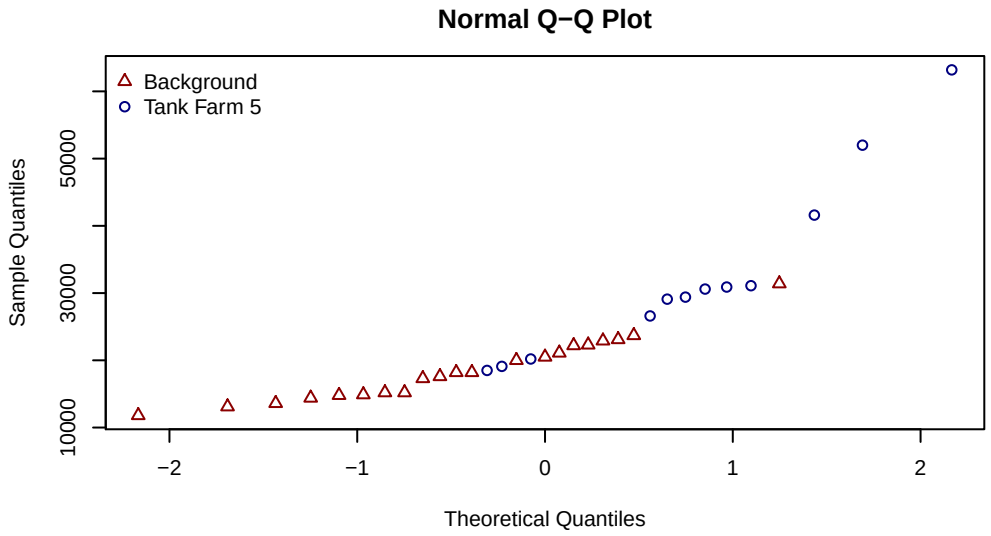


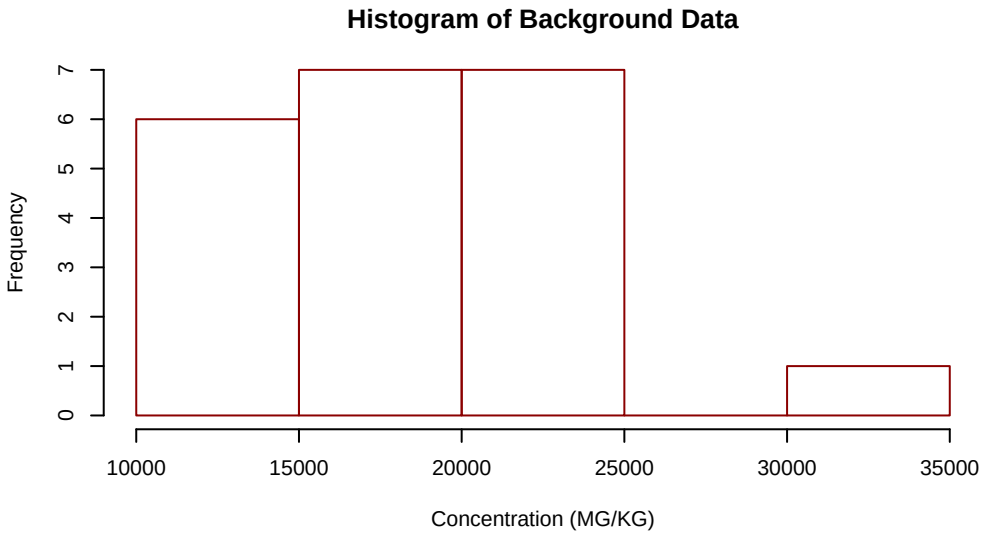


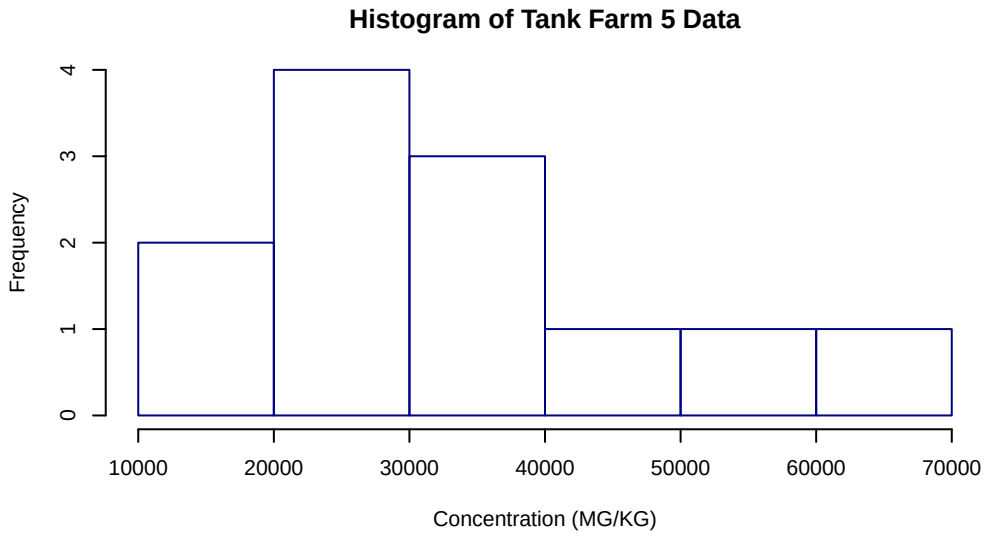


IRON Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

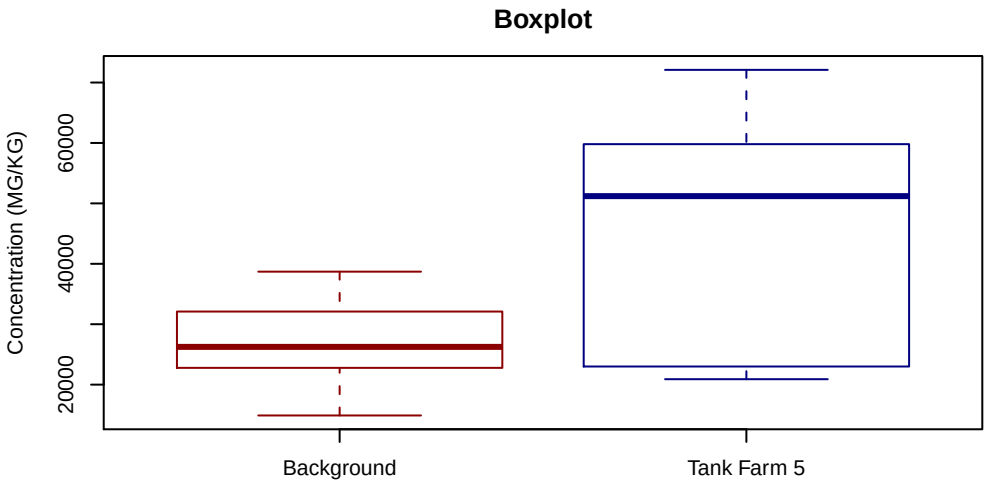


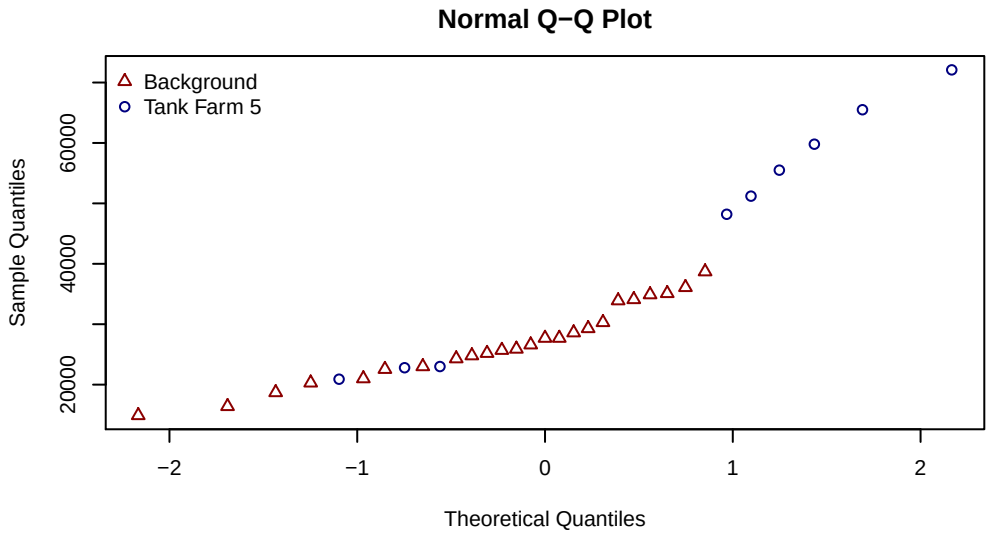


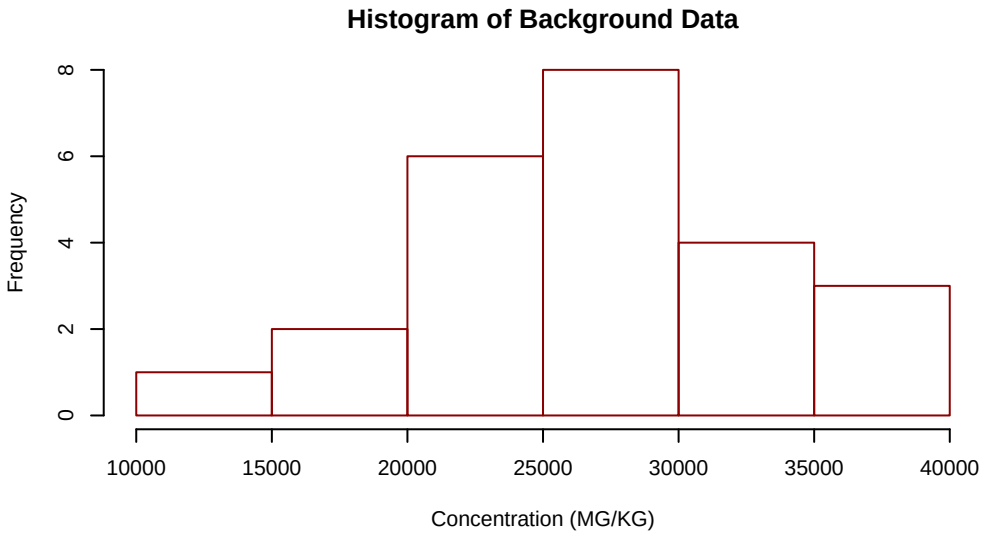


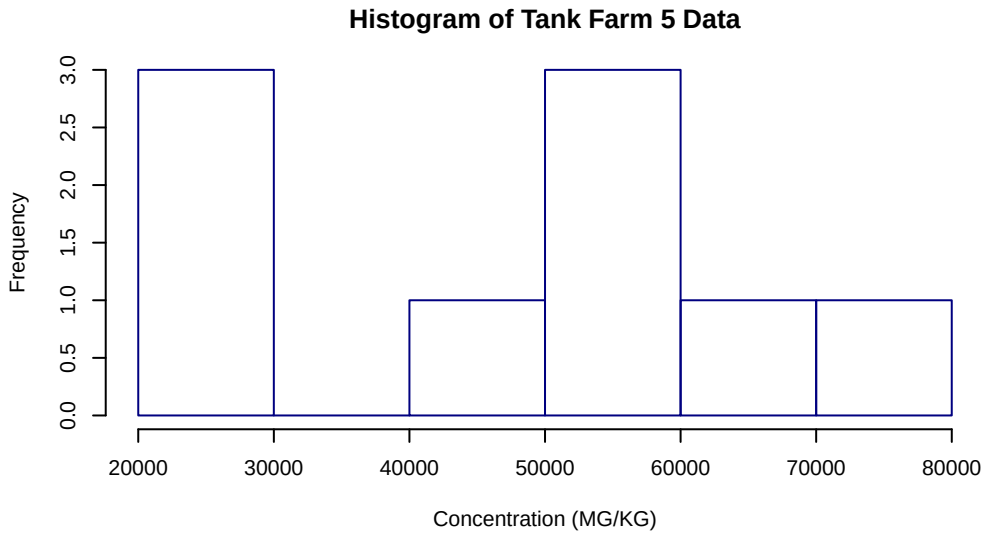


IRON Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

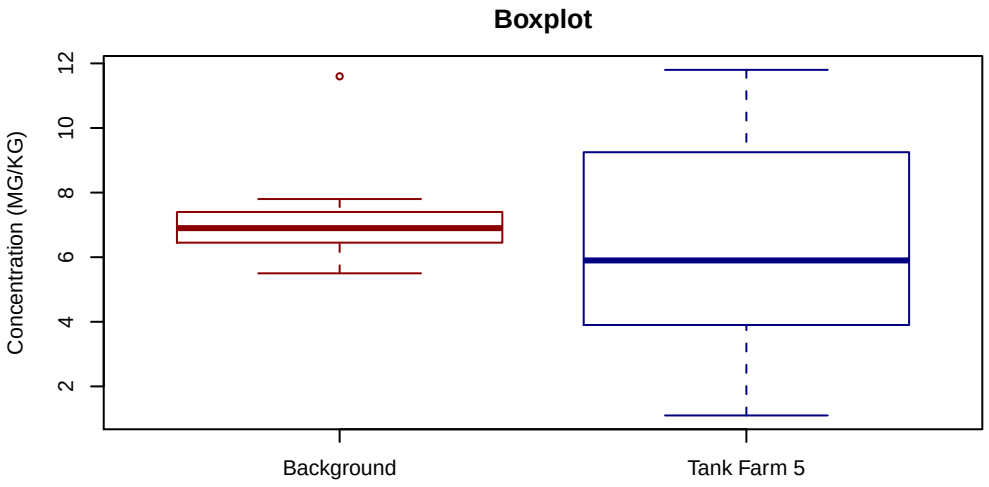


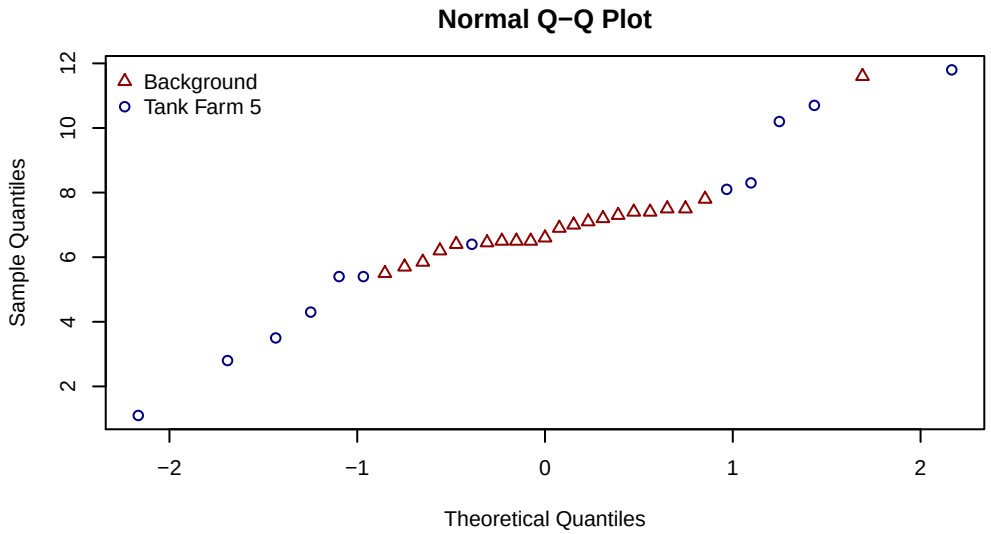


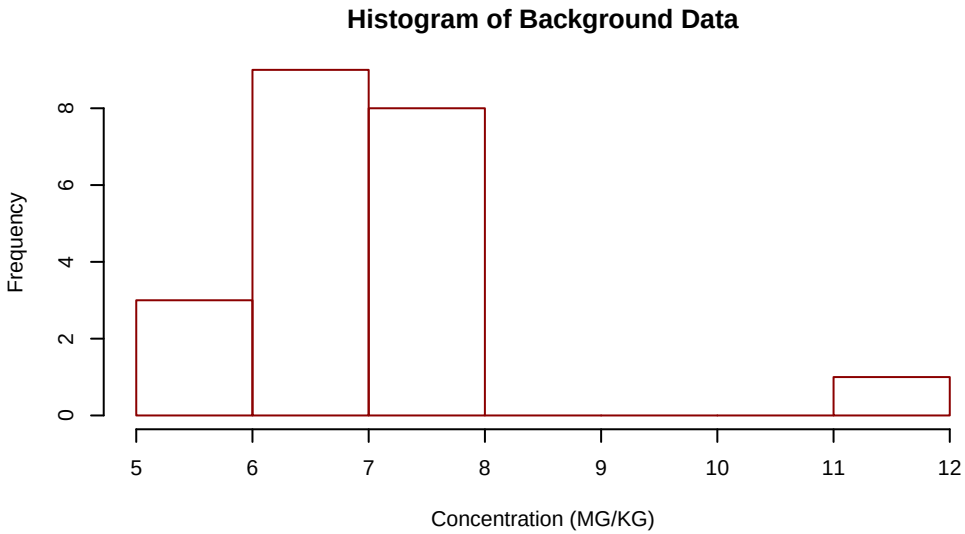


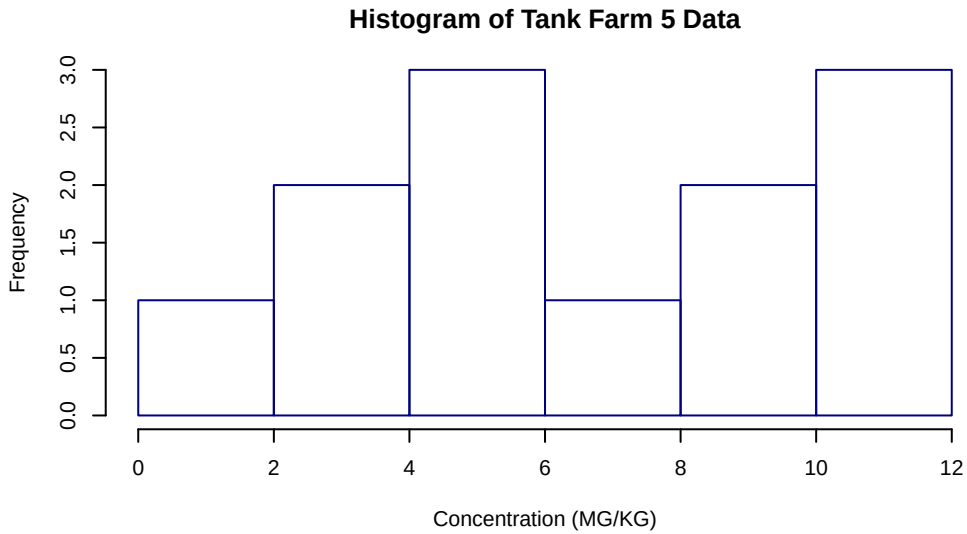


LEAD Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









LEAD Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
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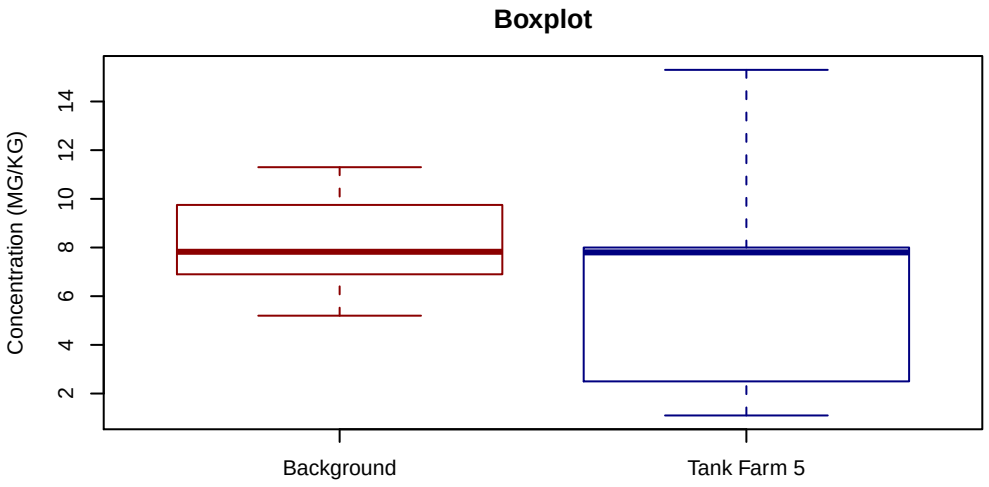
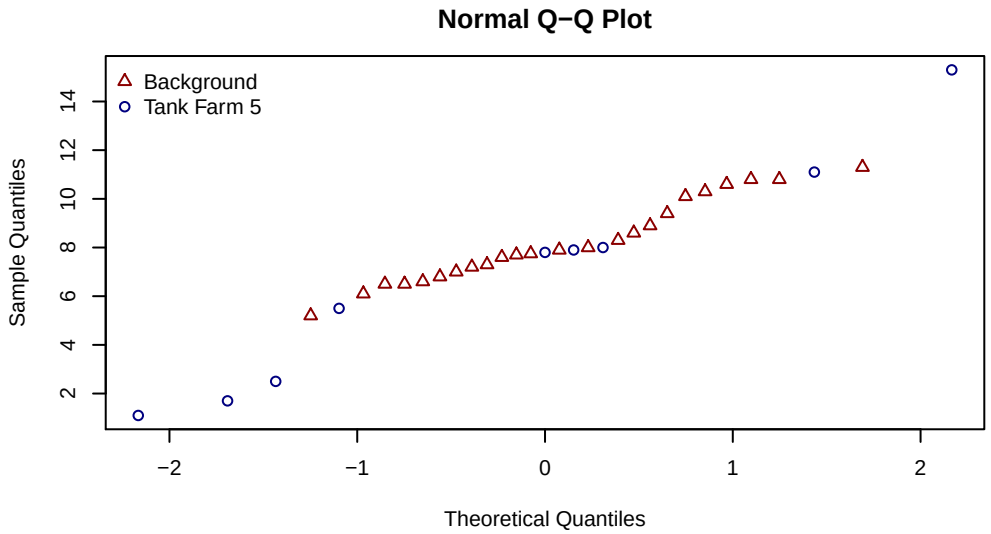
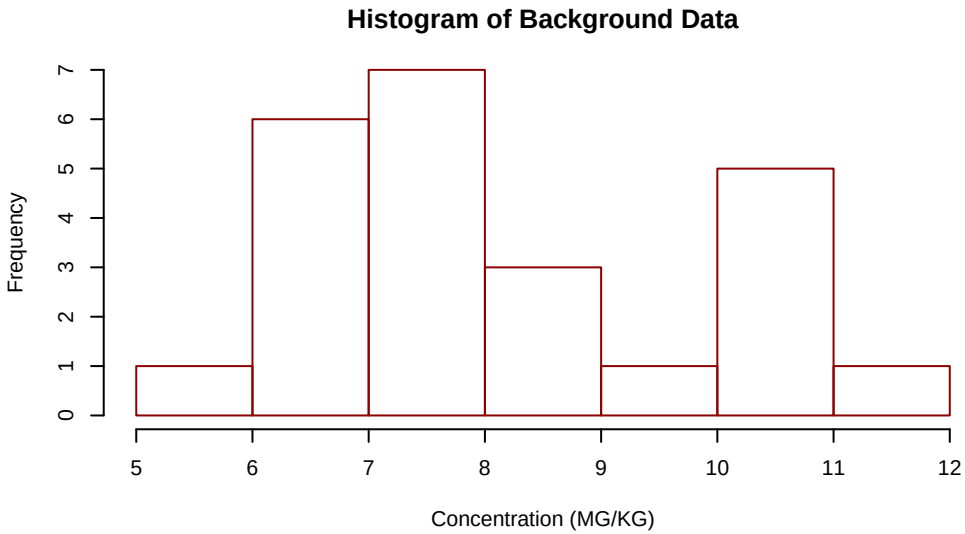
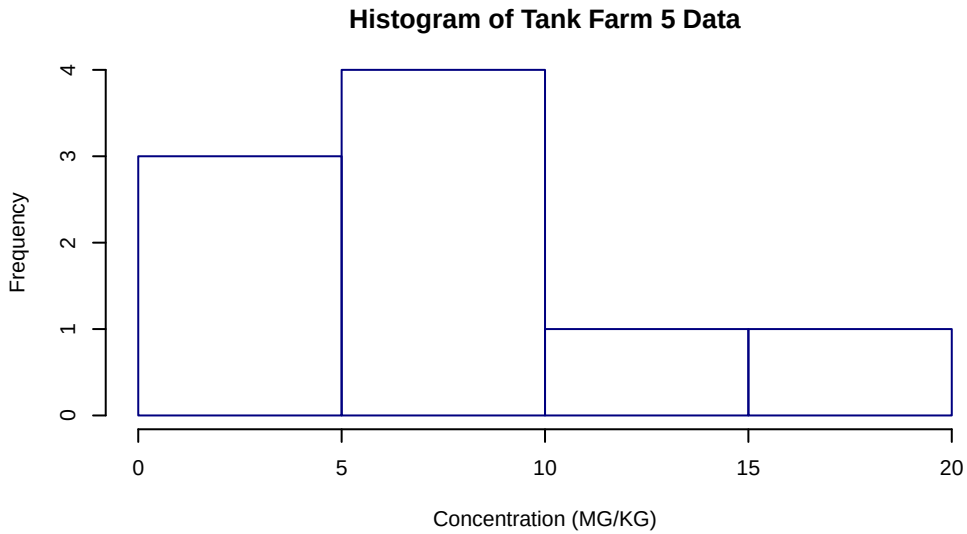
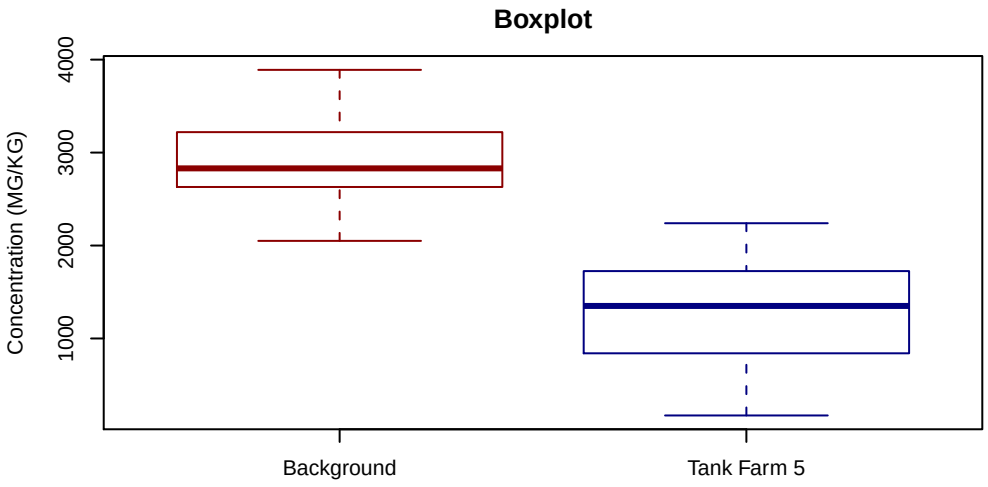


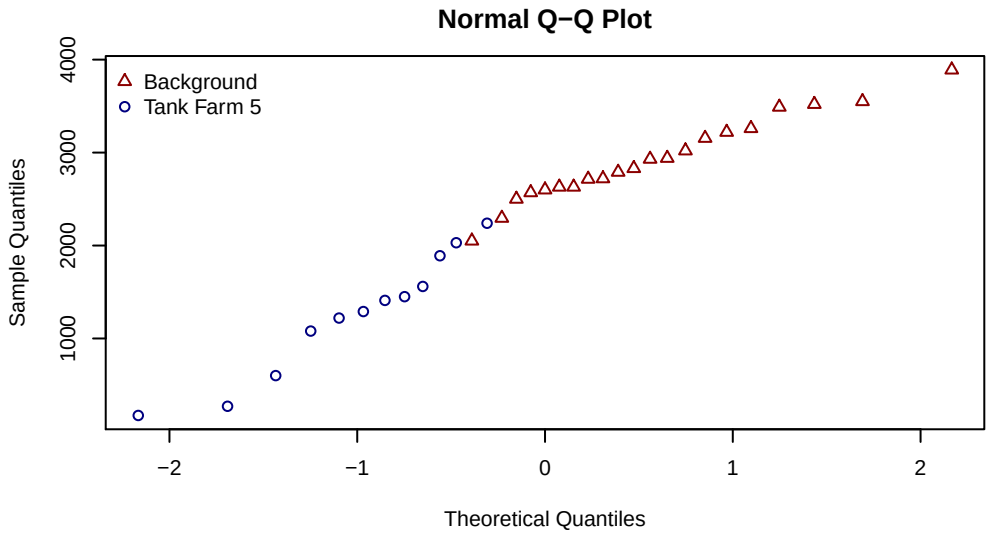


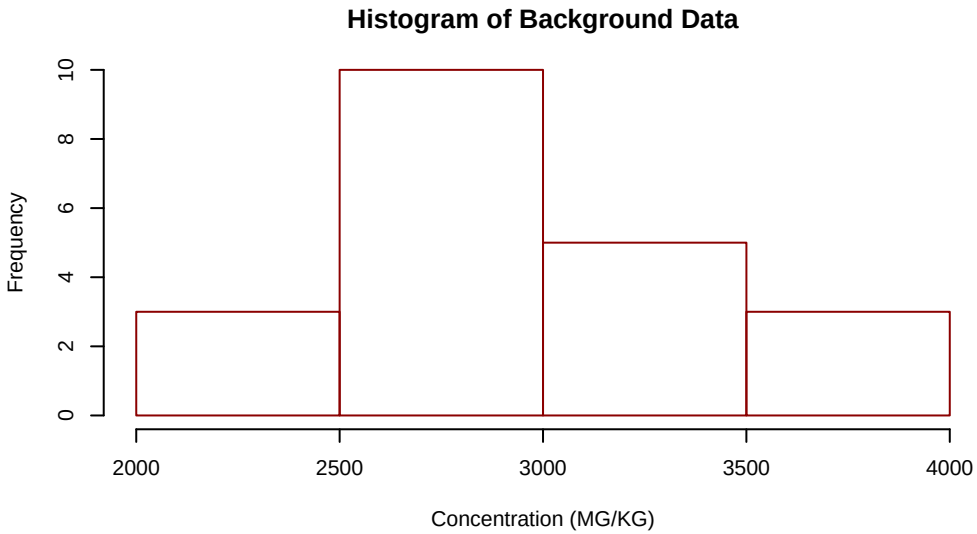


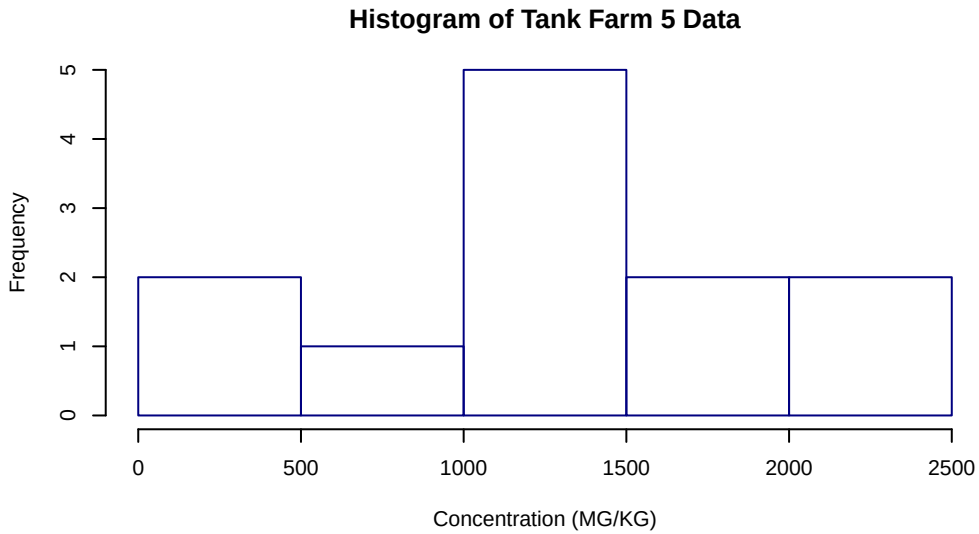


MAGNESIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MAGNESIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
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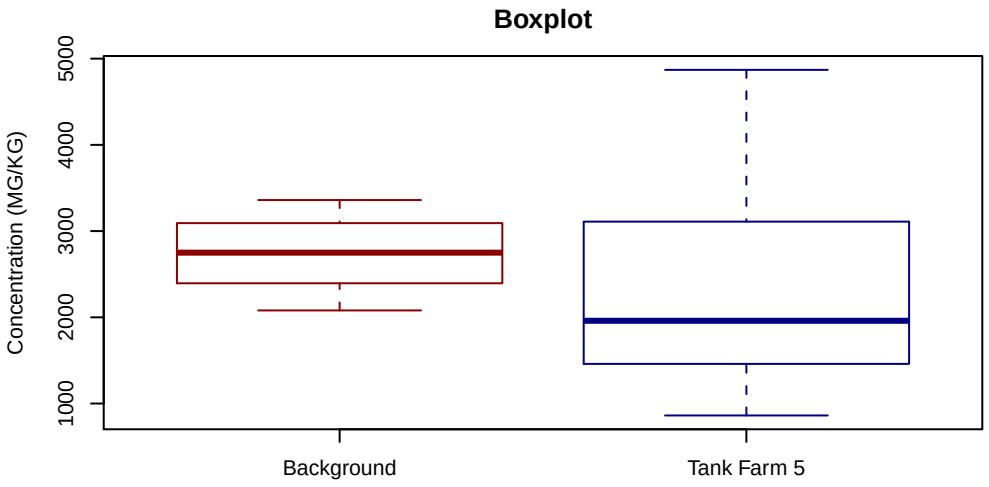
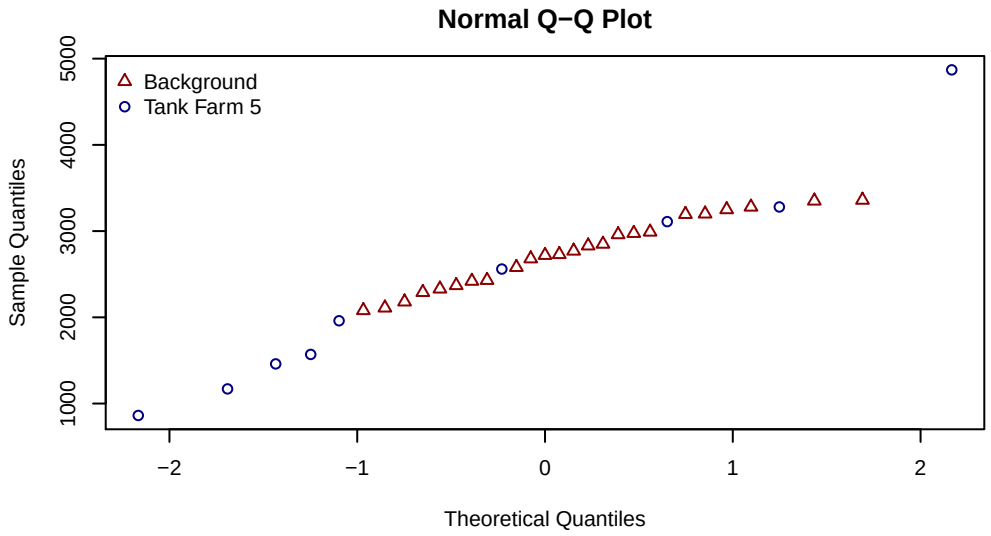
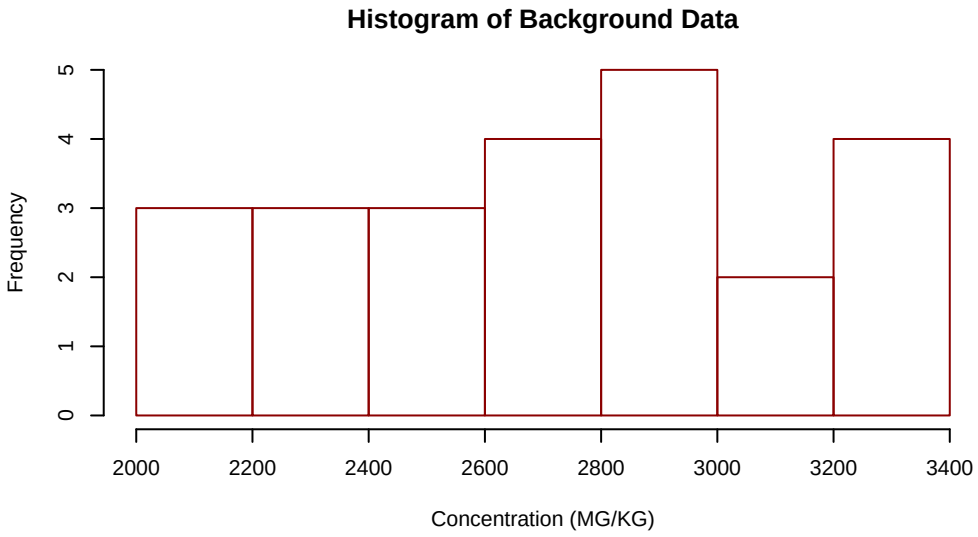
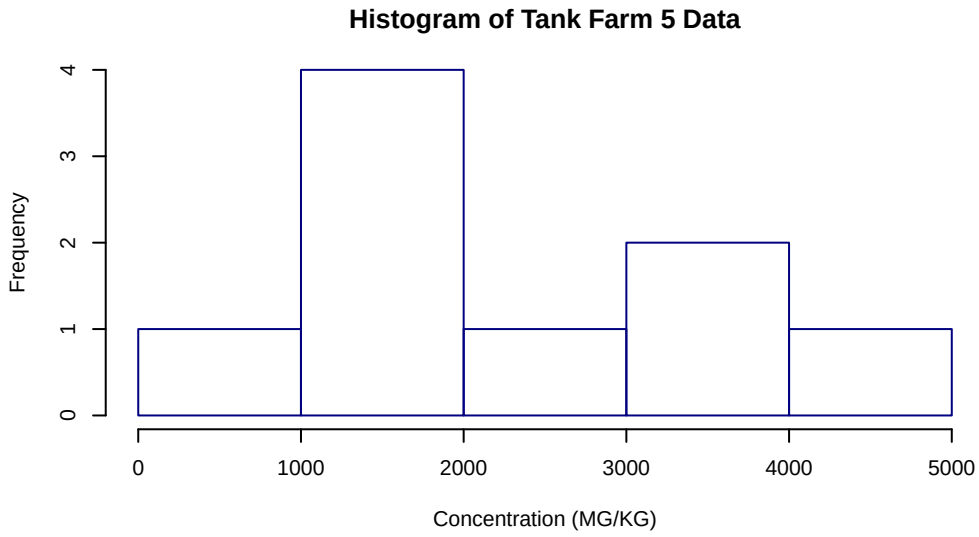
NEWPORT, RHODE ISLAND

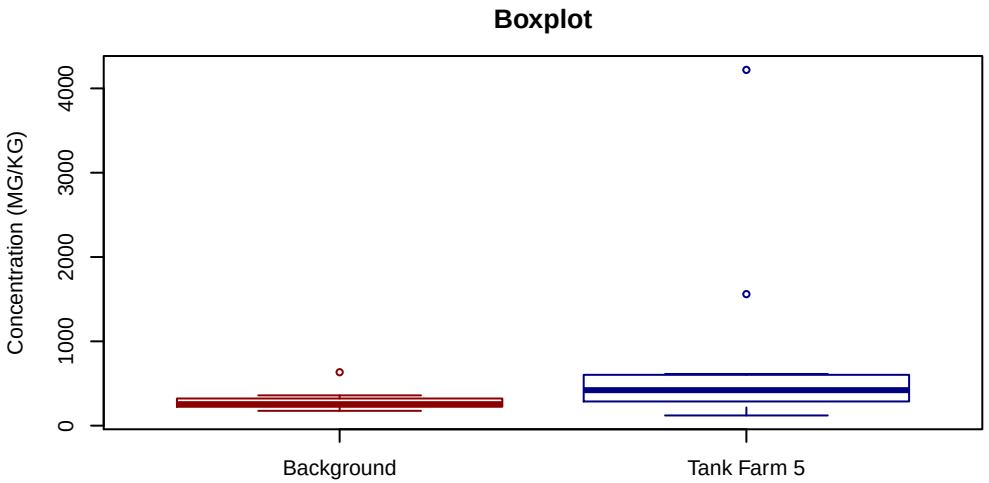


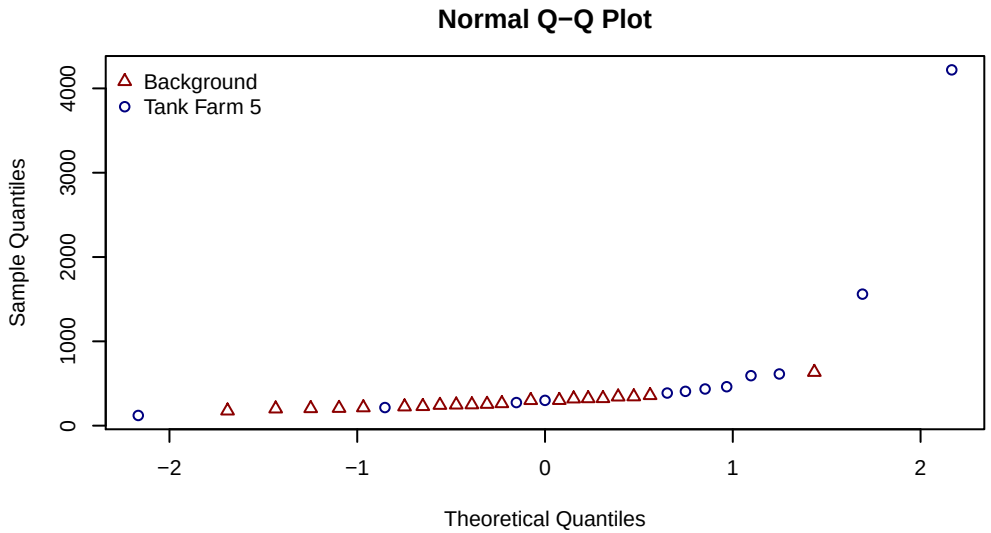


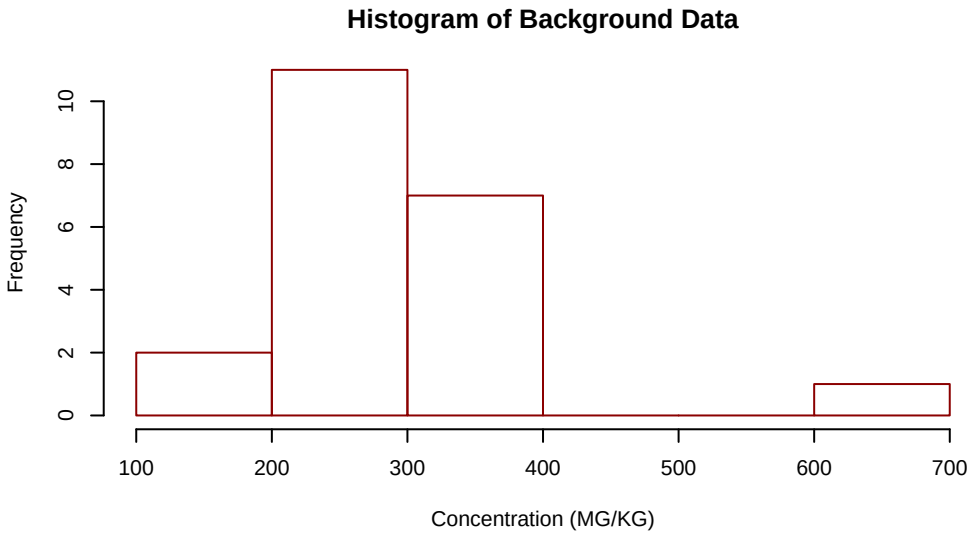


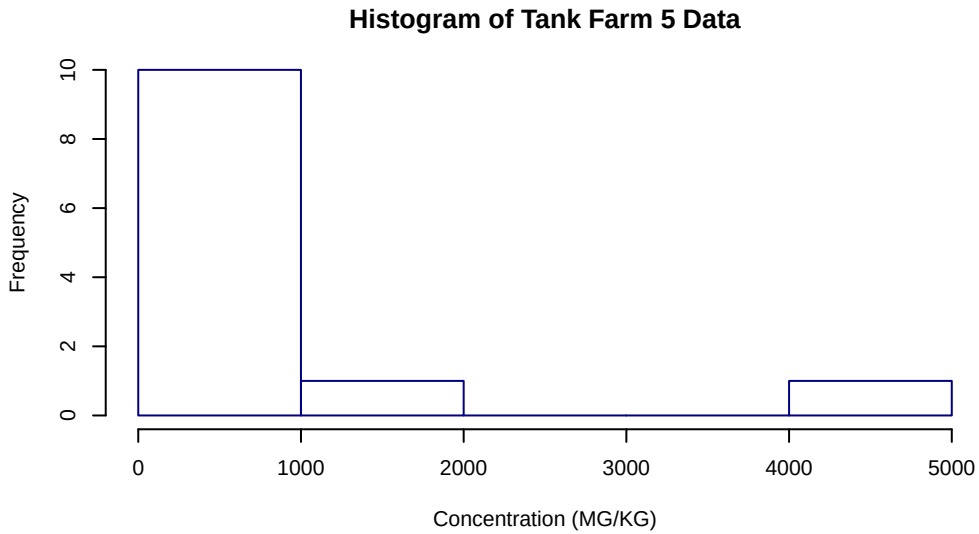


MANGANESE Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

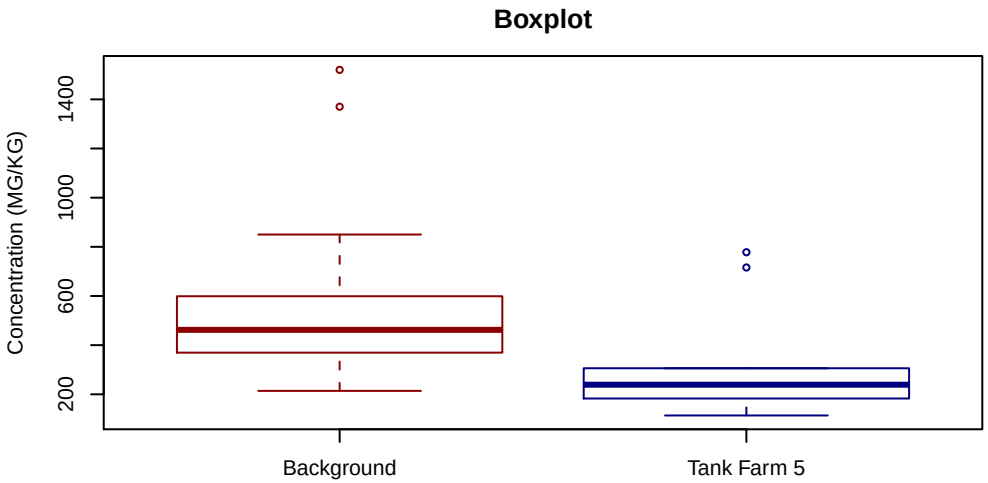


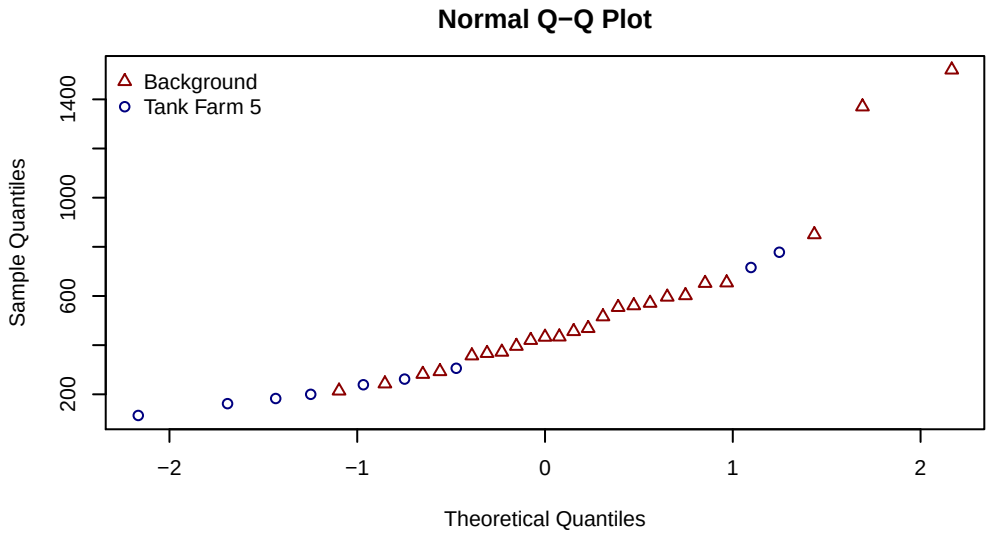


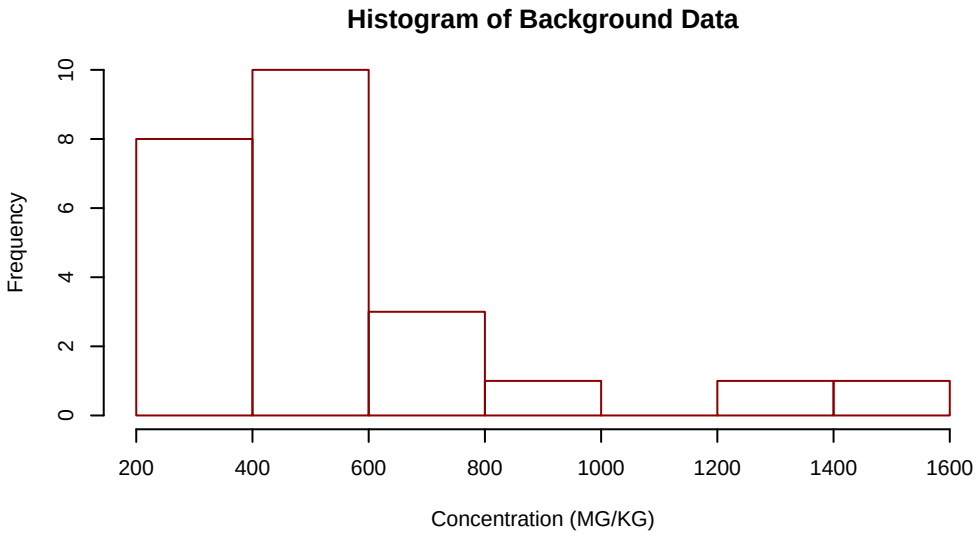


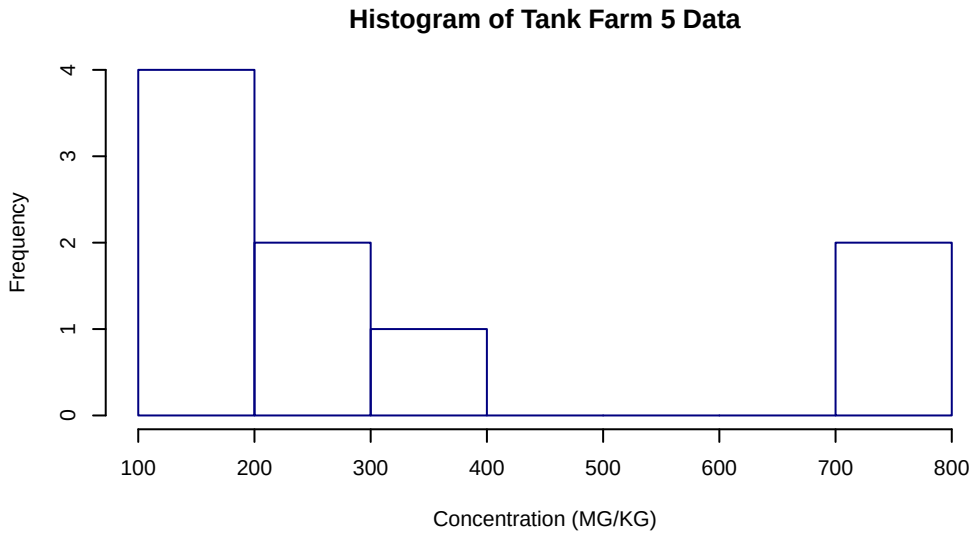


MANGANESE Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

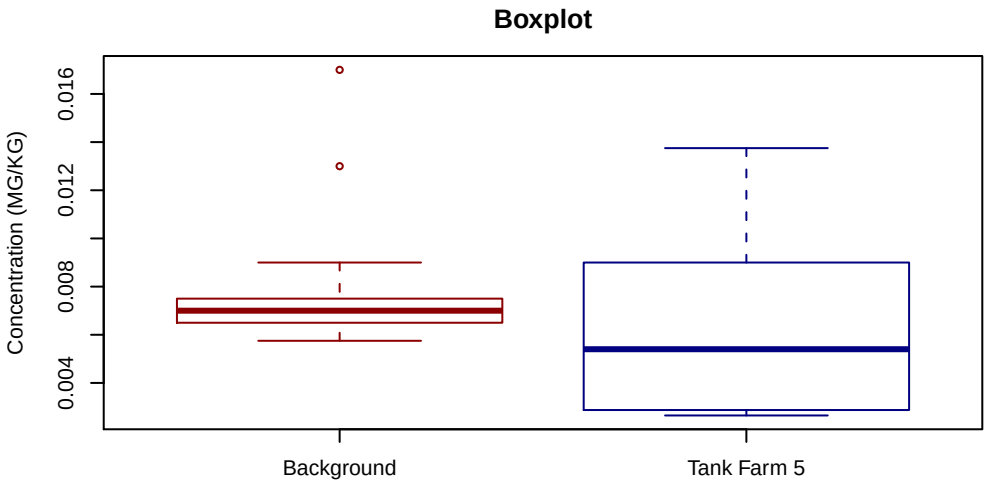


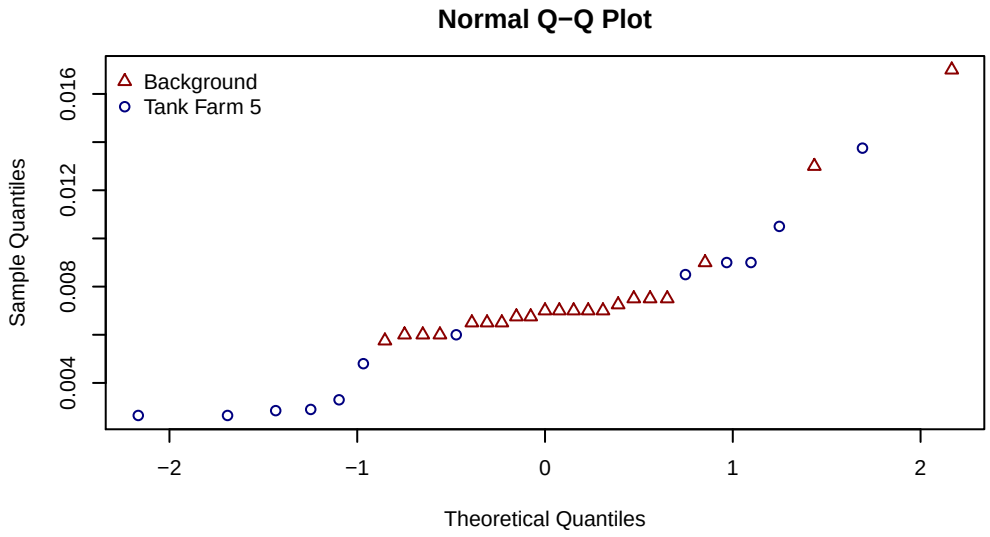


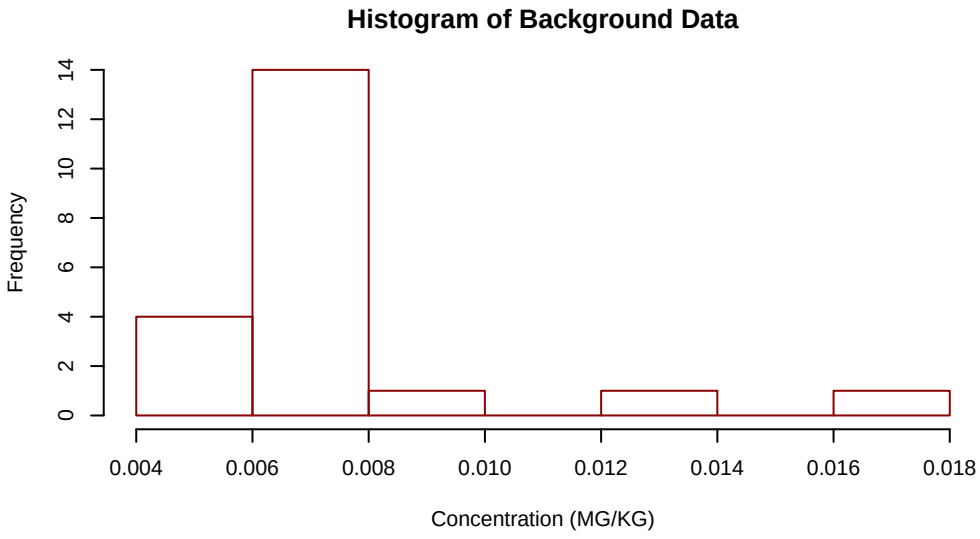


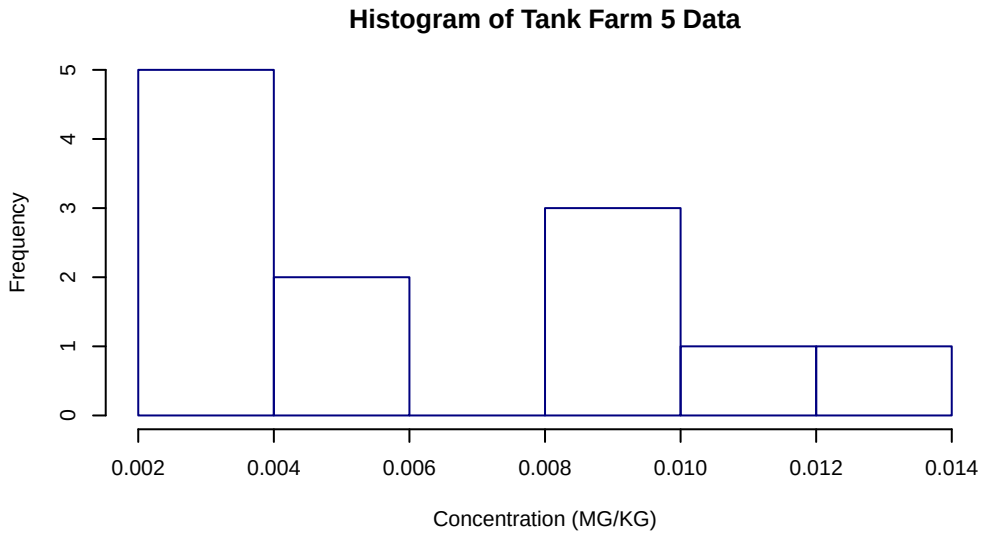


MERCURY Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

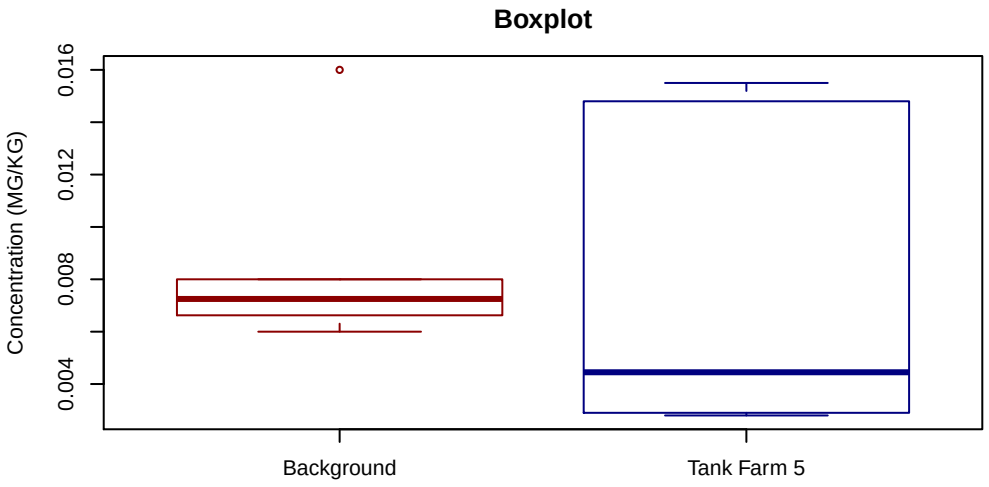


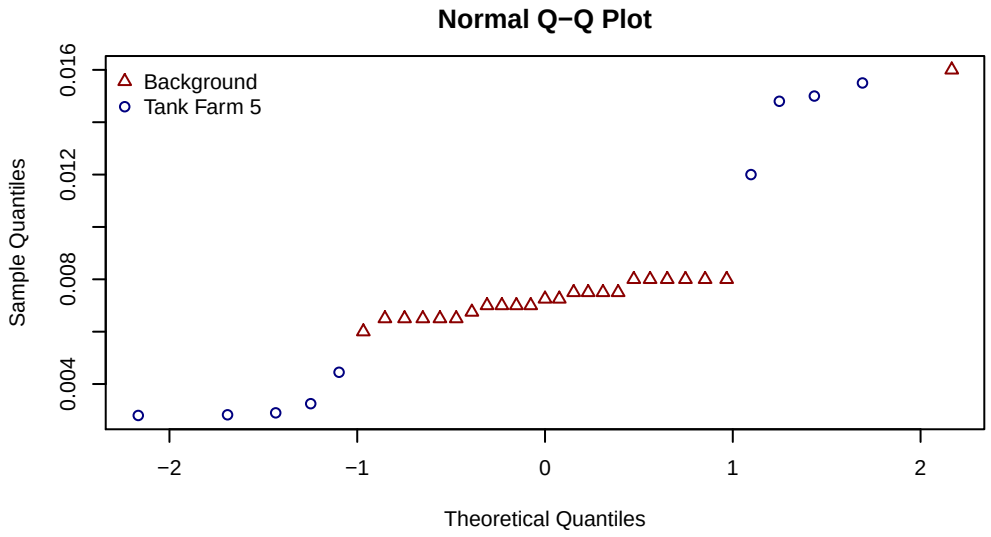


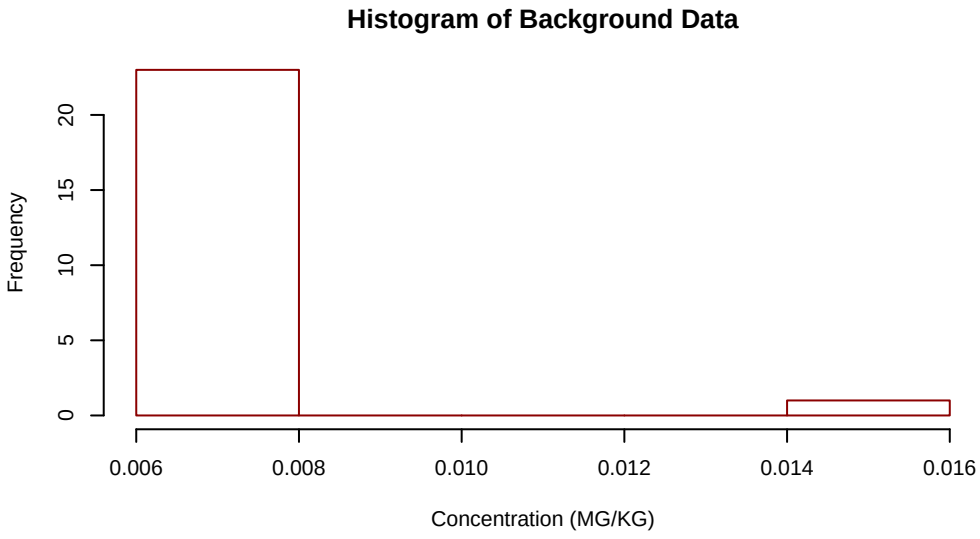


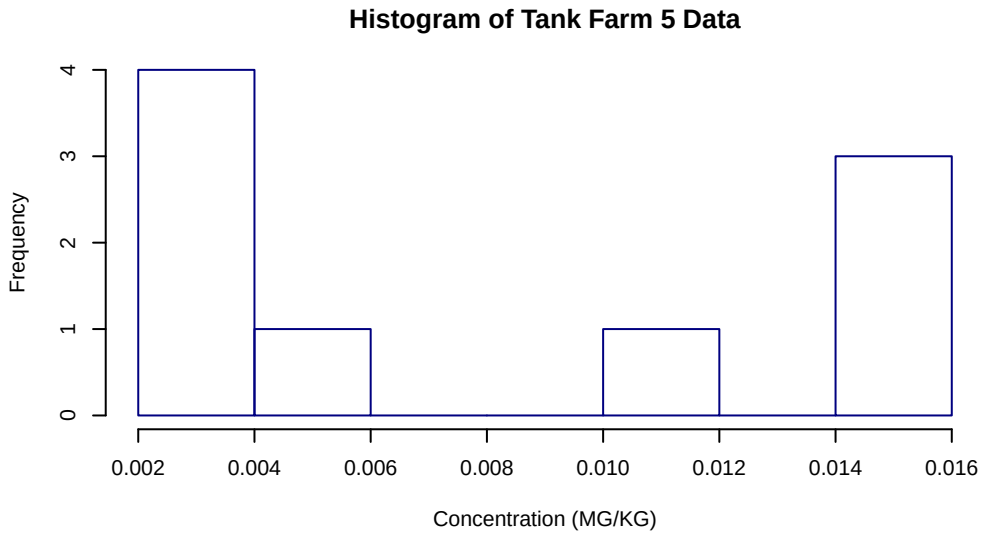


MERCURY Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

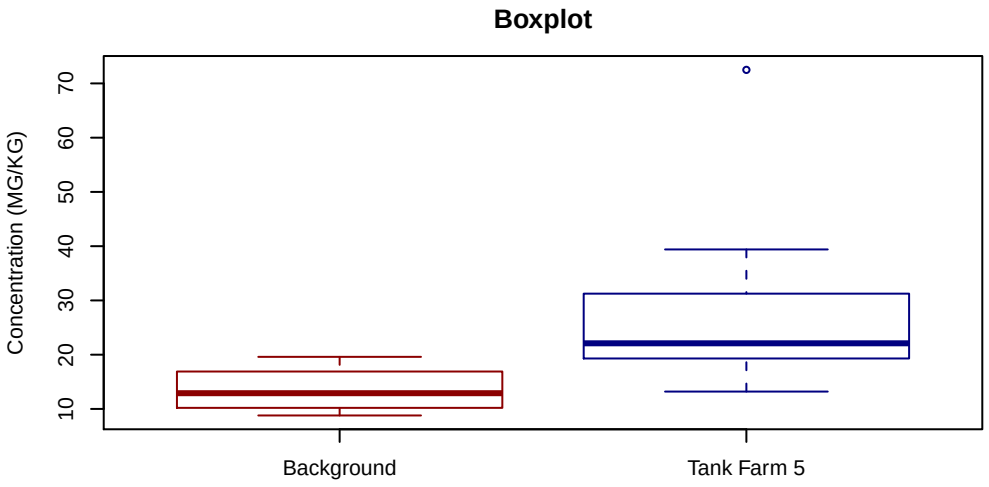


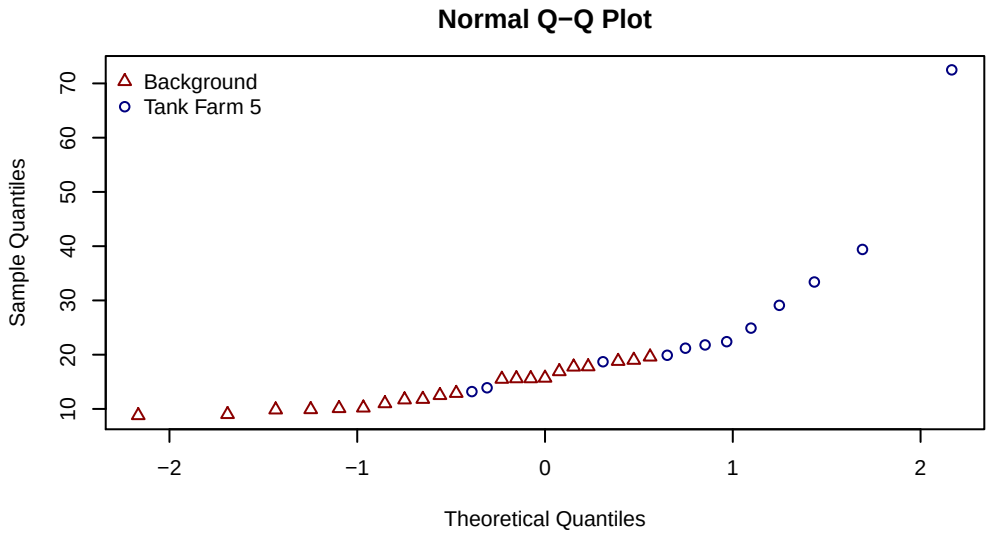


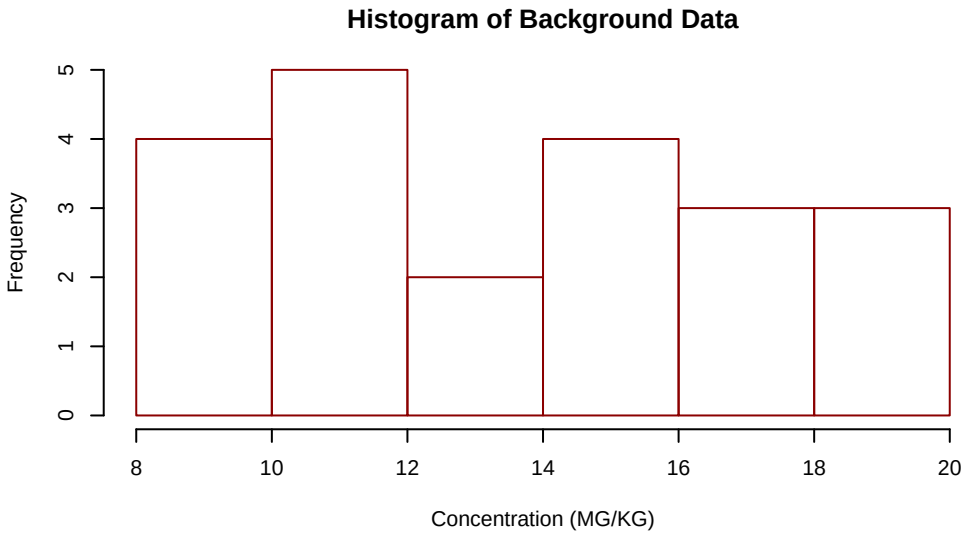


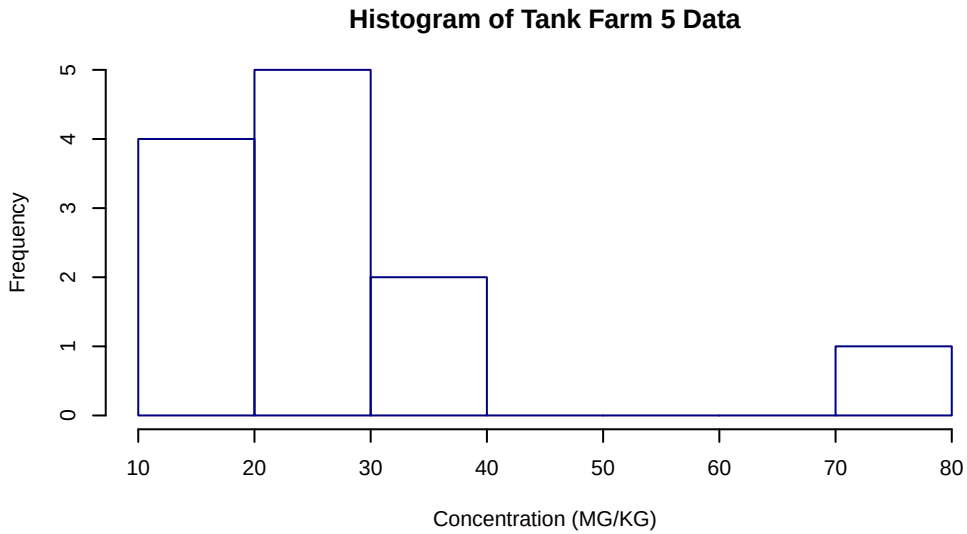


NICKEL Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

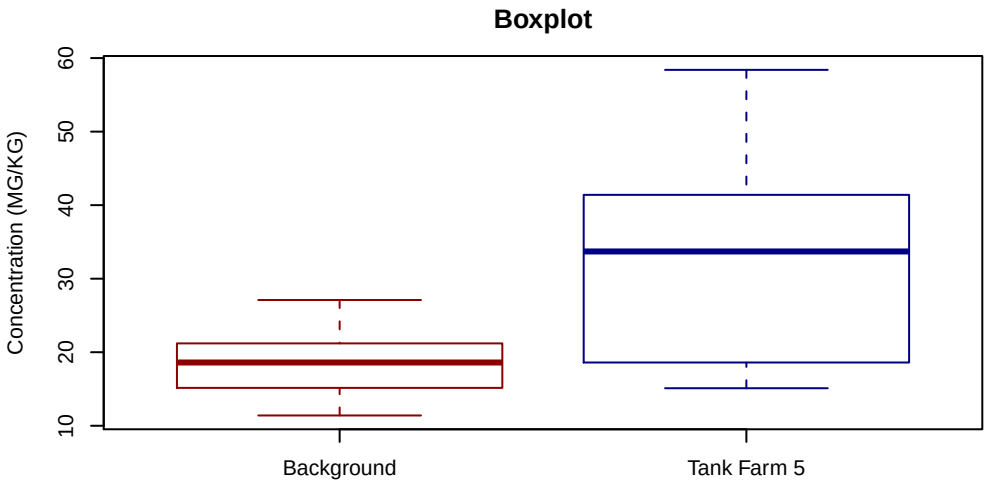


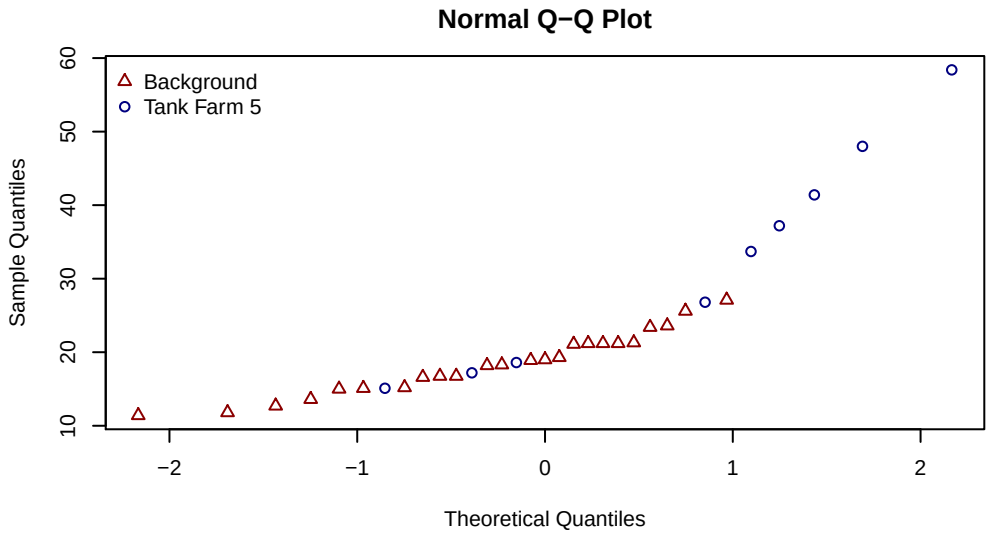


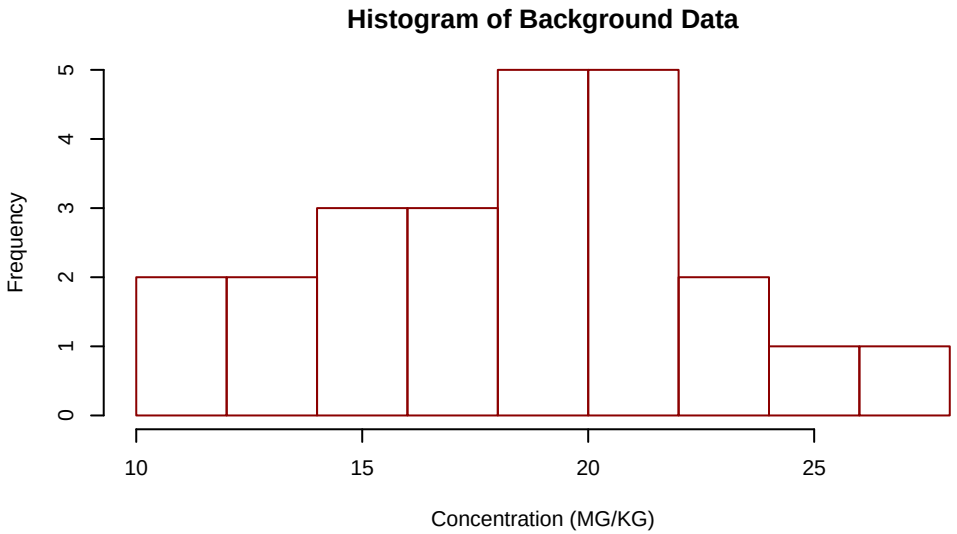


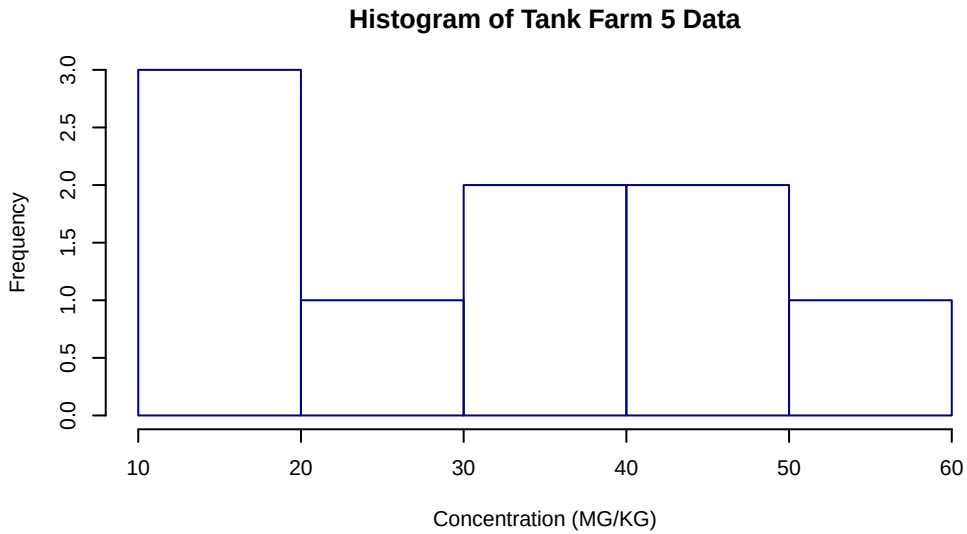


NICKEL Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

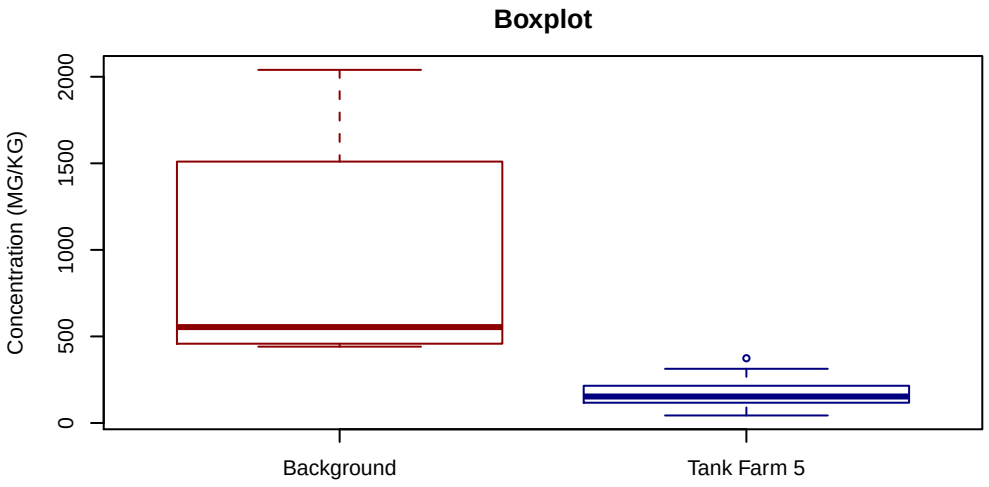


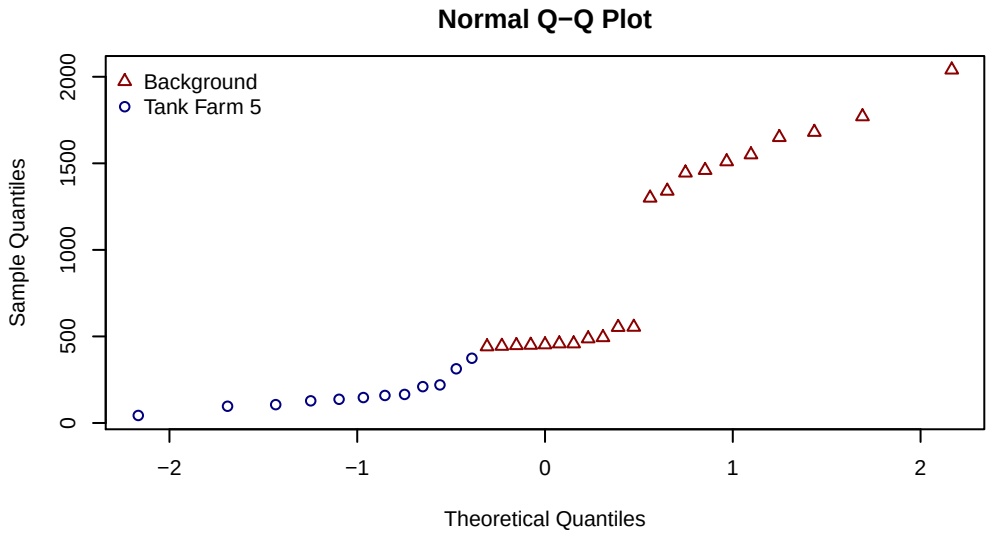


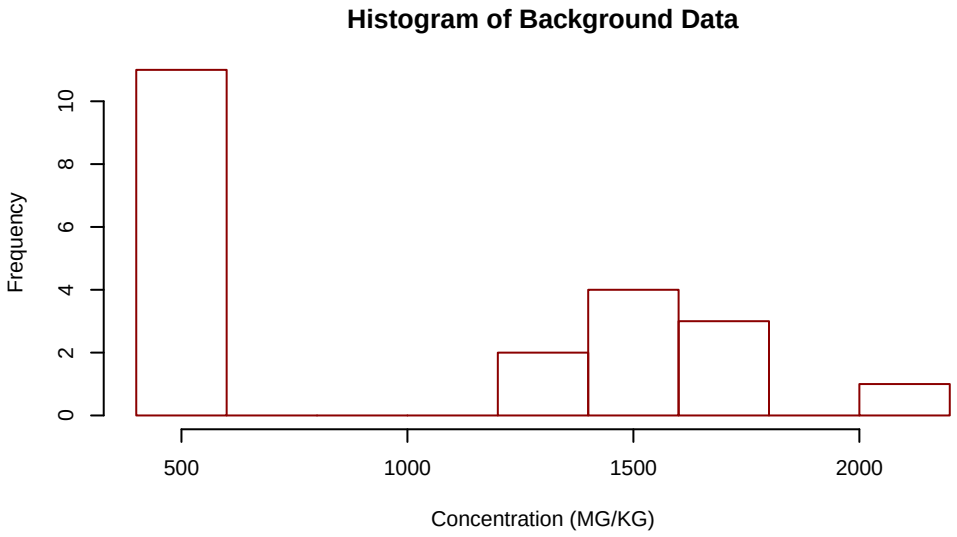


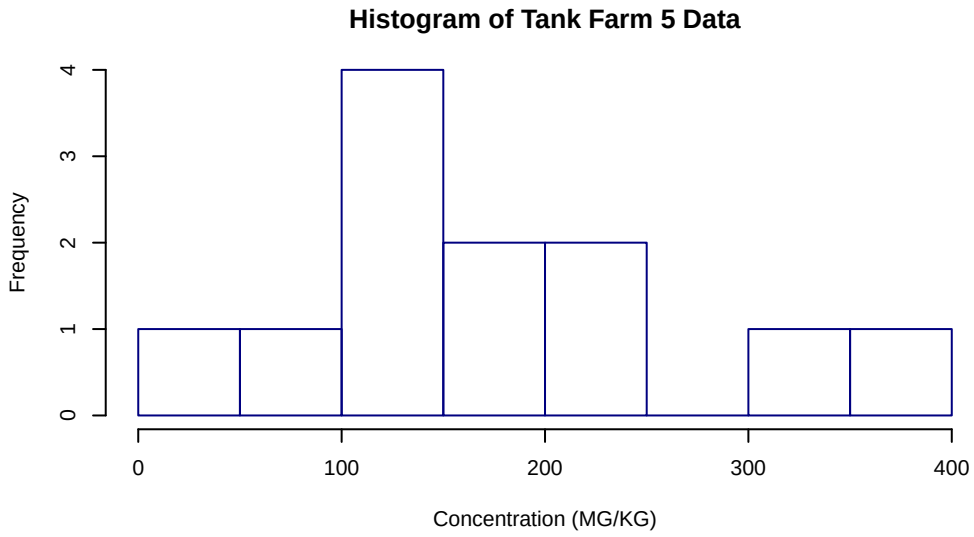


POTASSIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

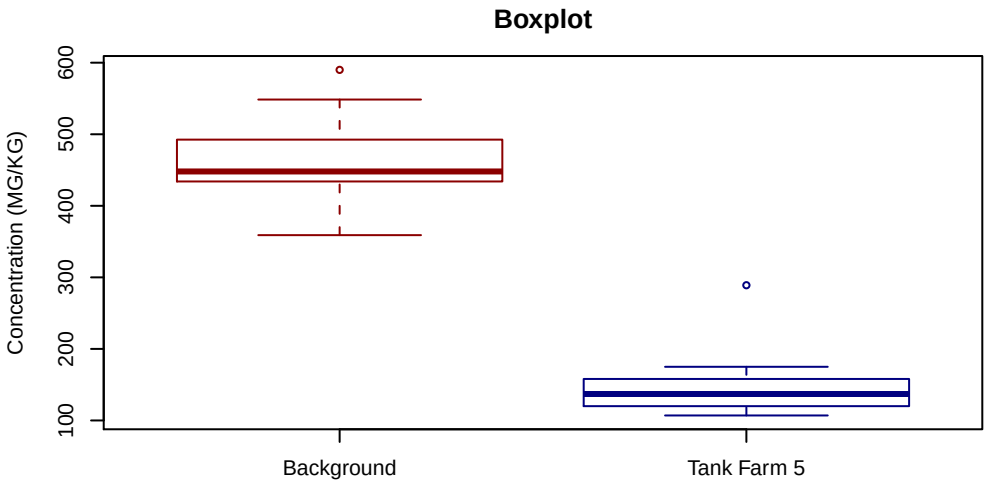


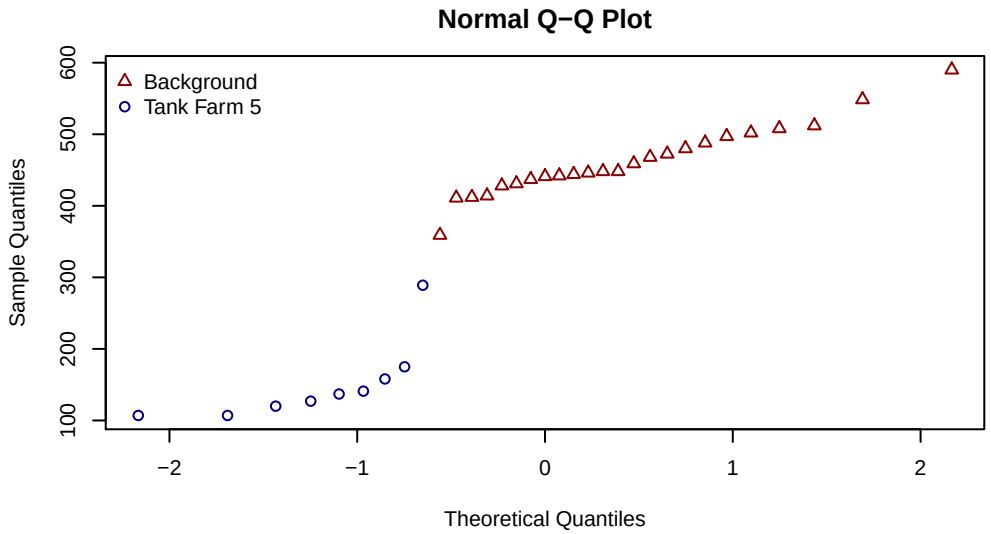


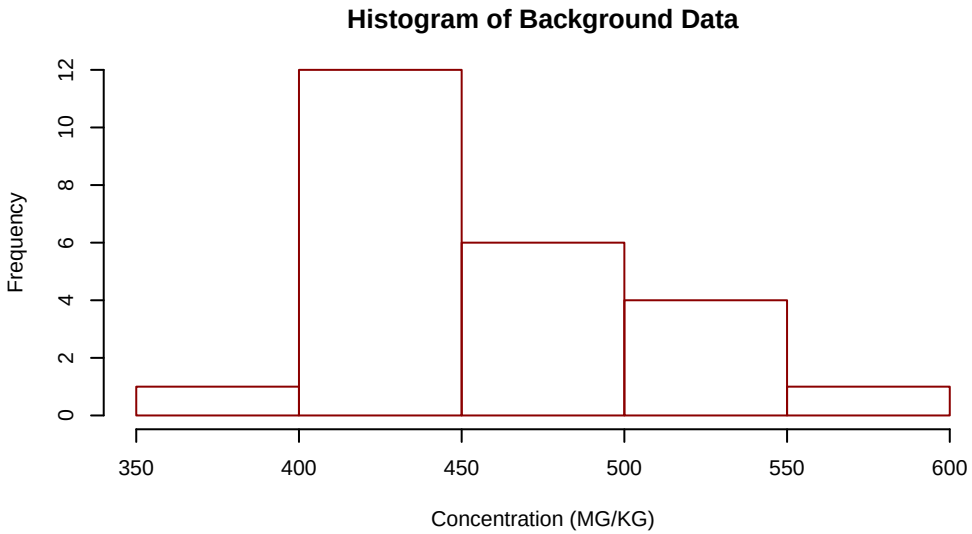


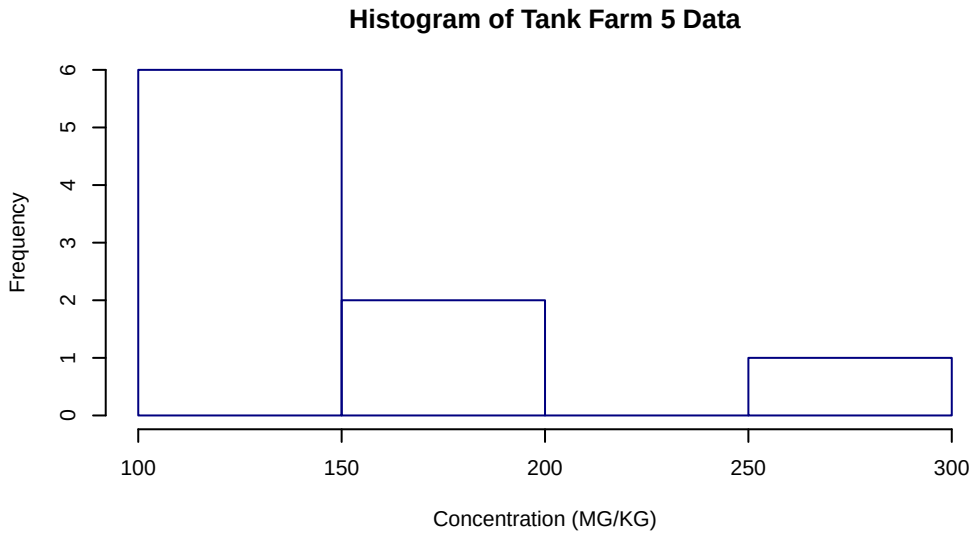


POTASSIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

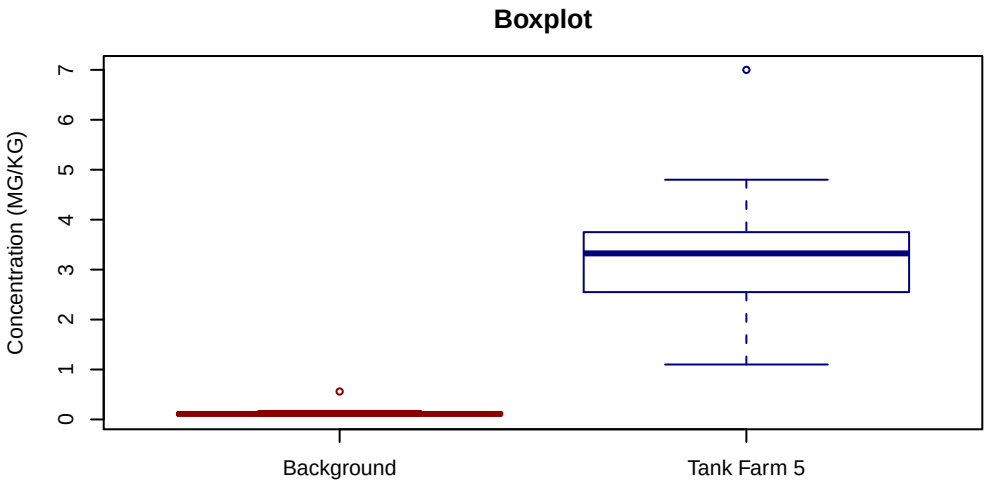


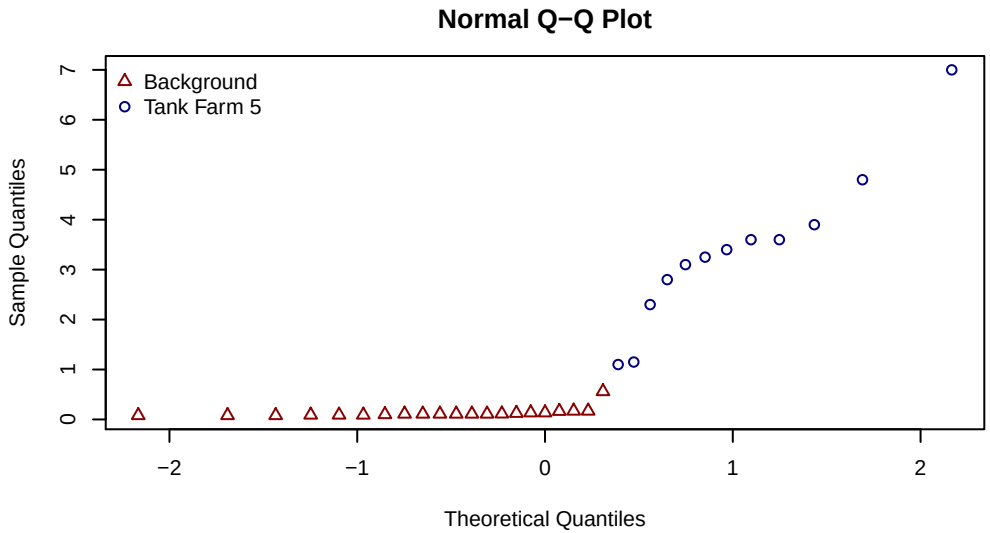


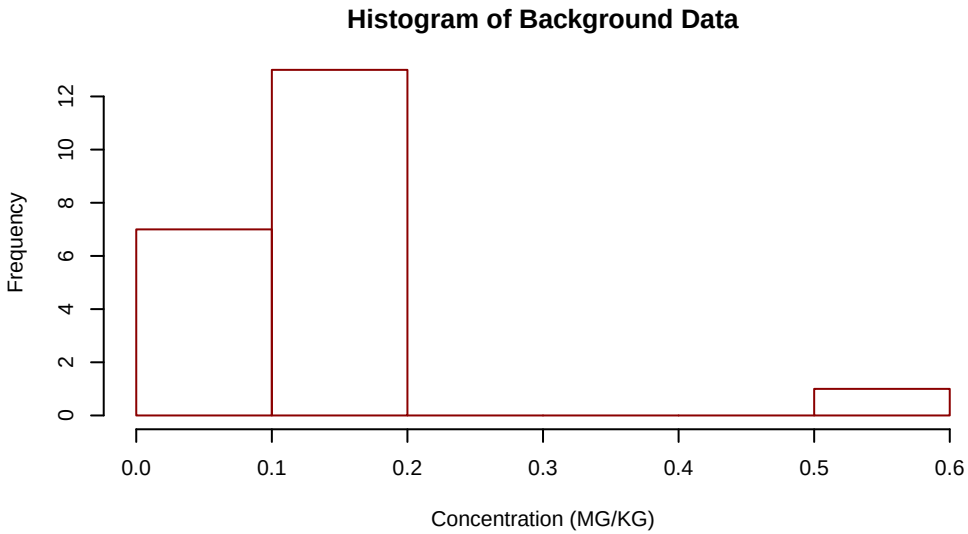


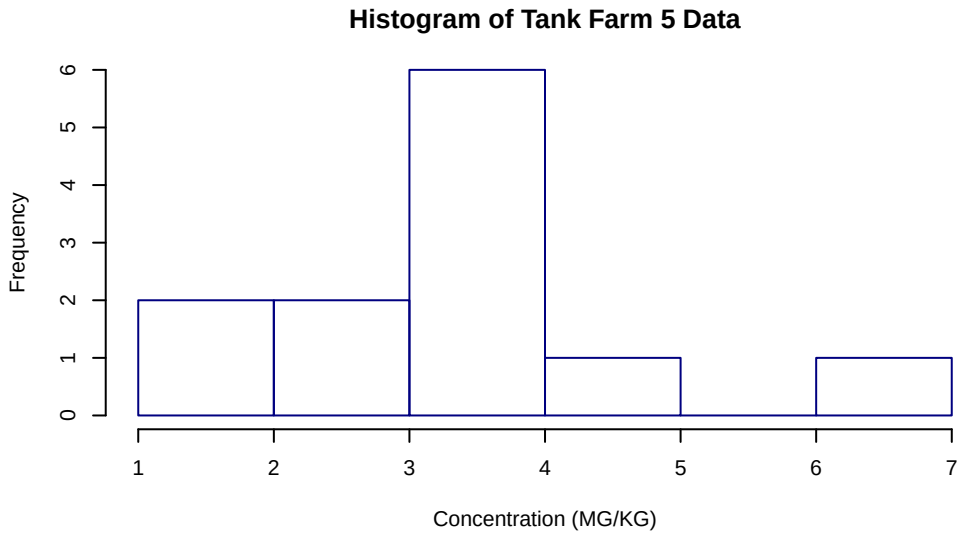


SELENIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

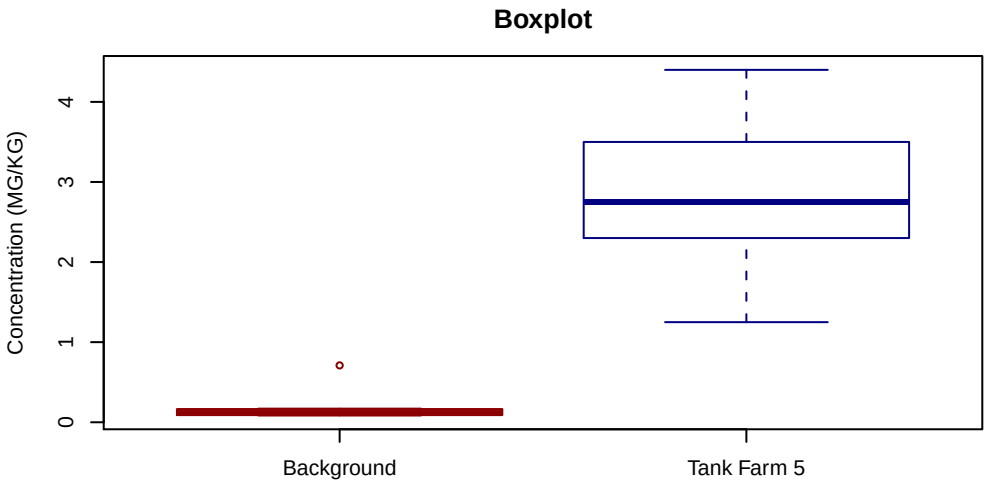


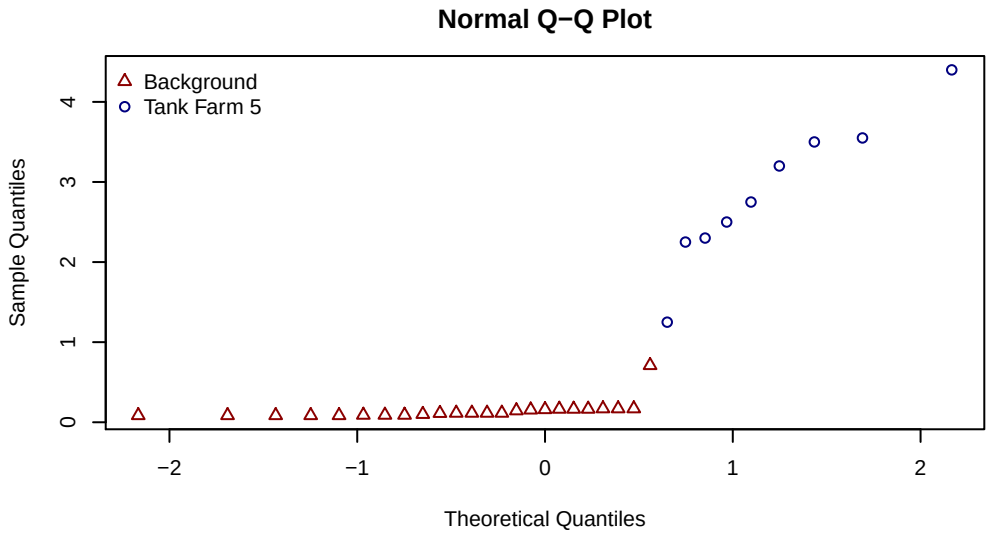


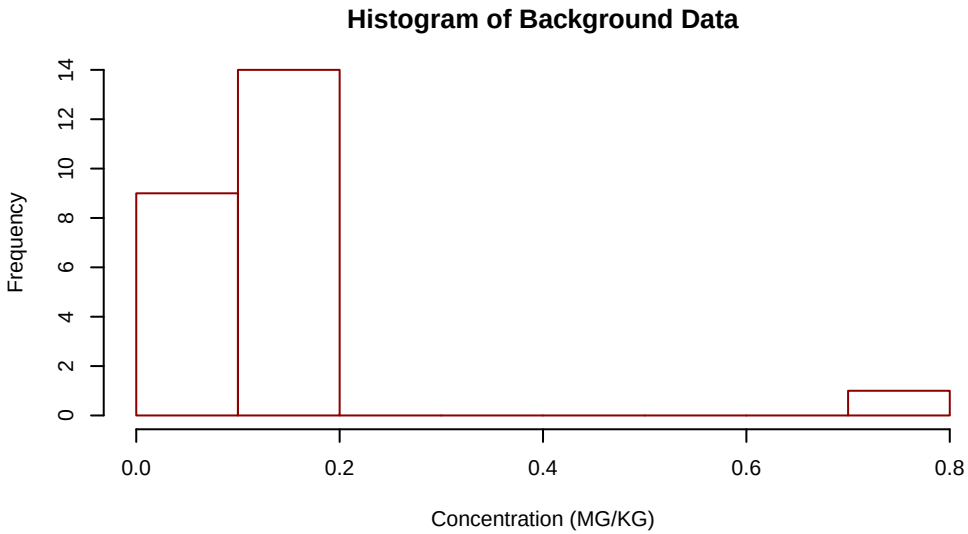


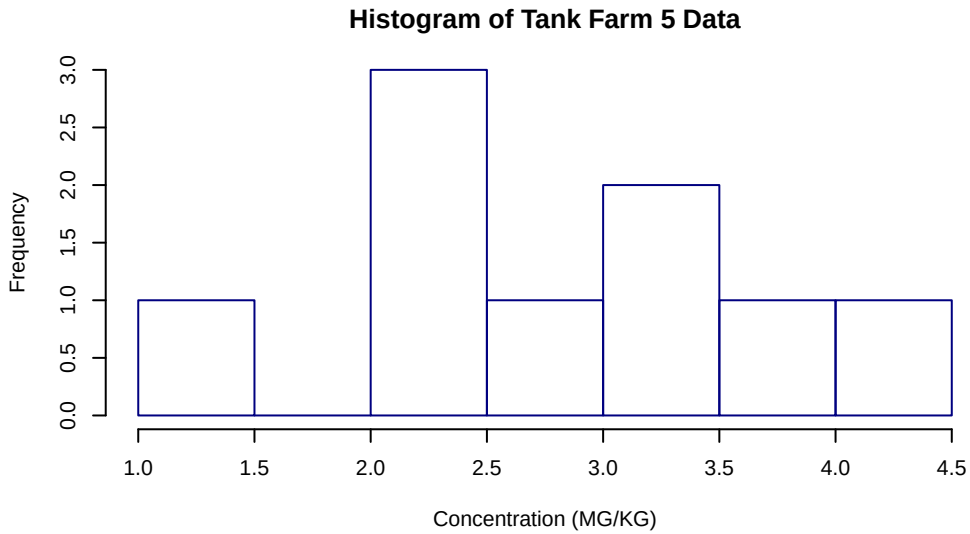


SELENIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

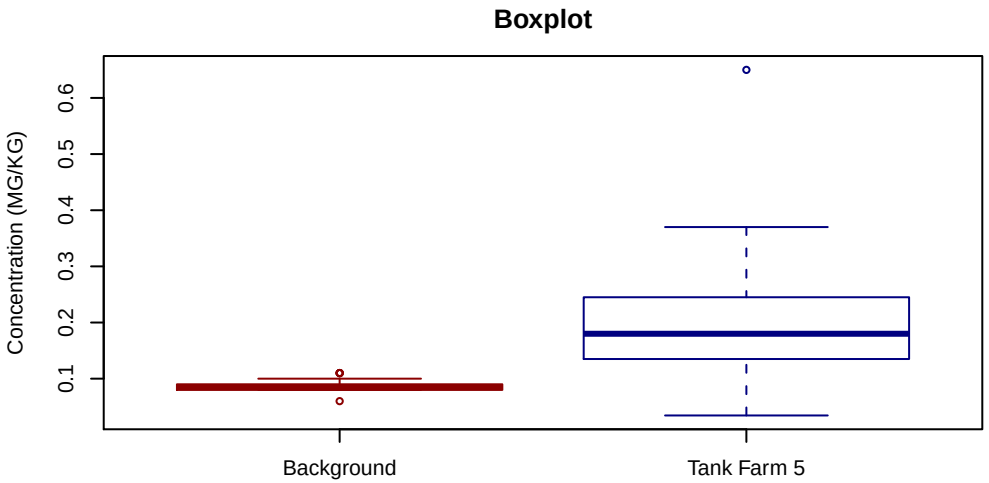


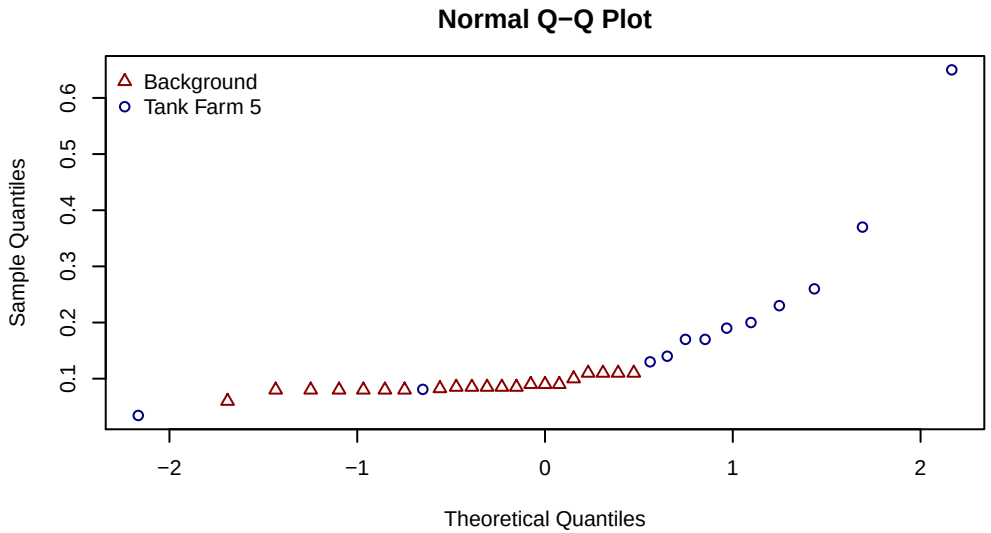


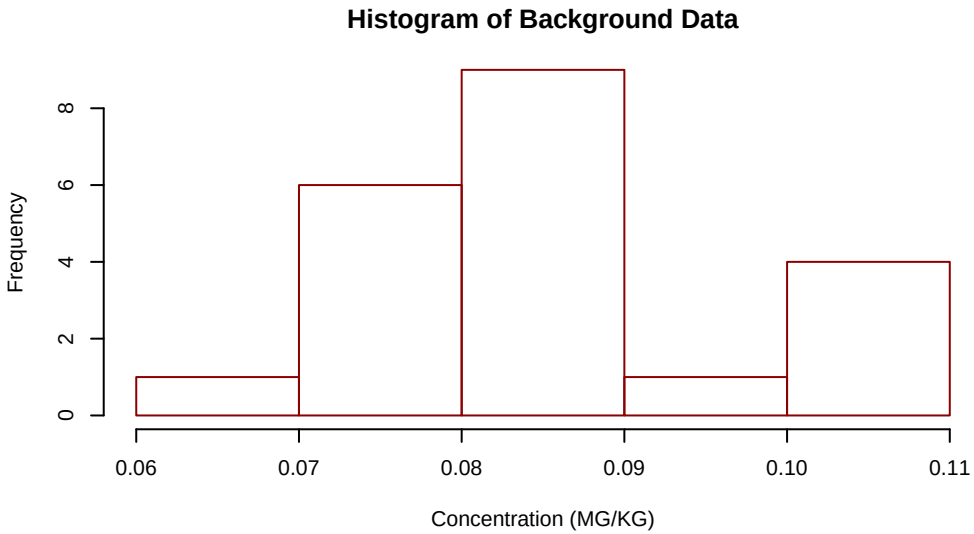


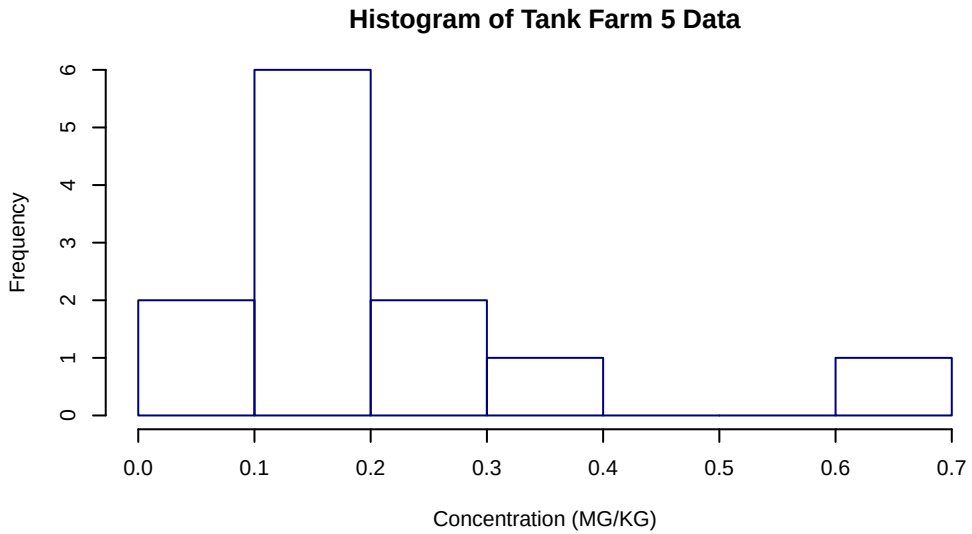


SILVER Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

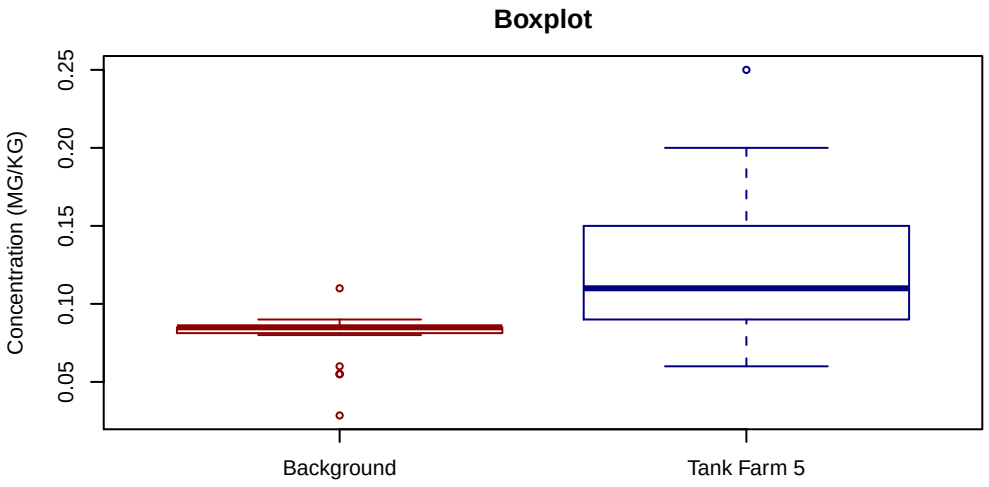


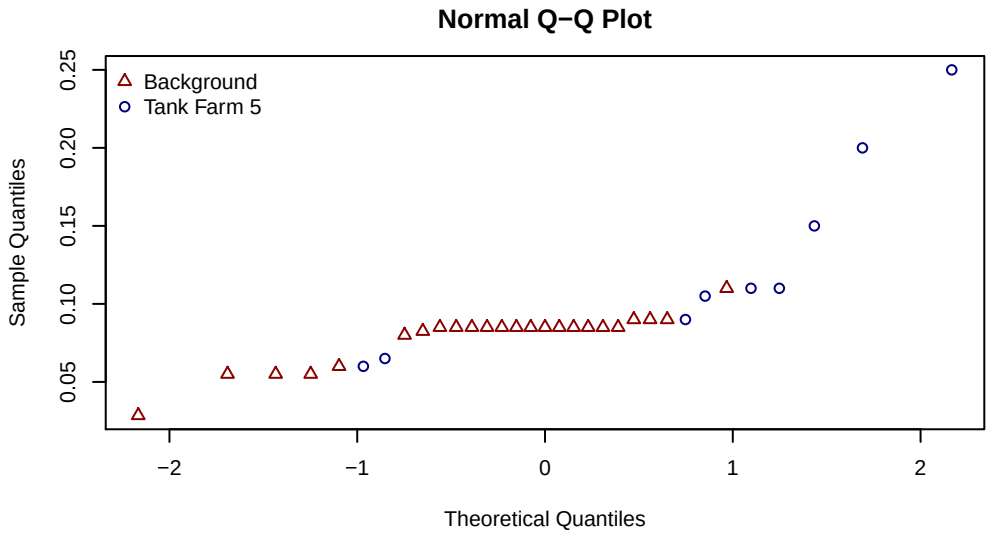


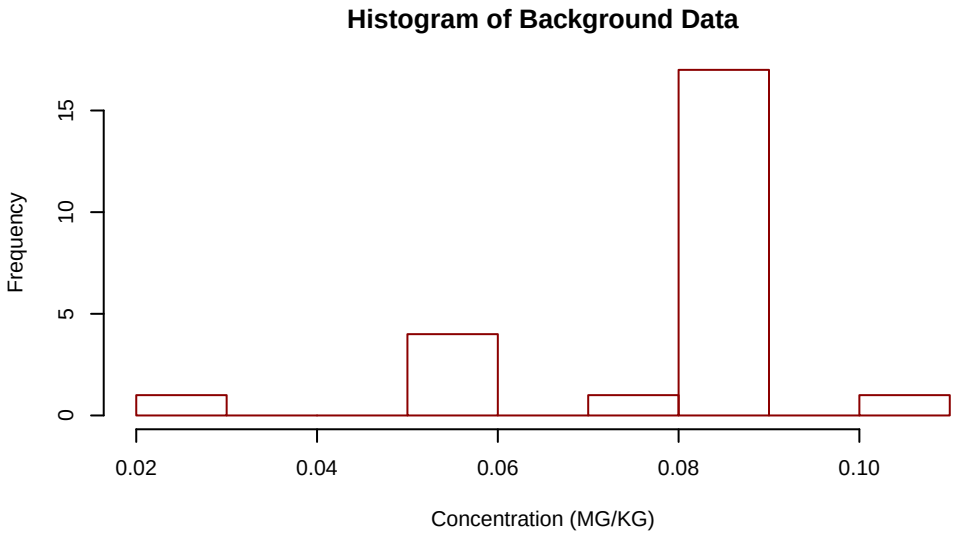


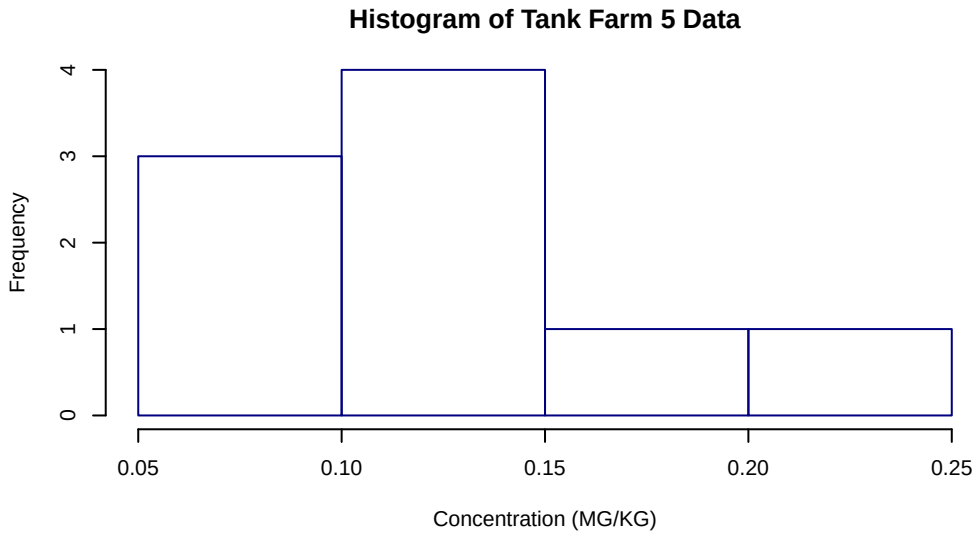


SILVER Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

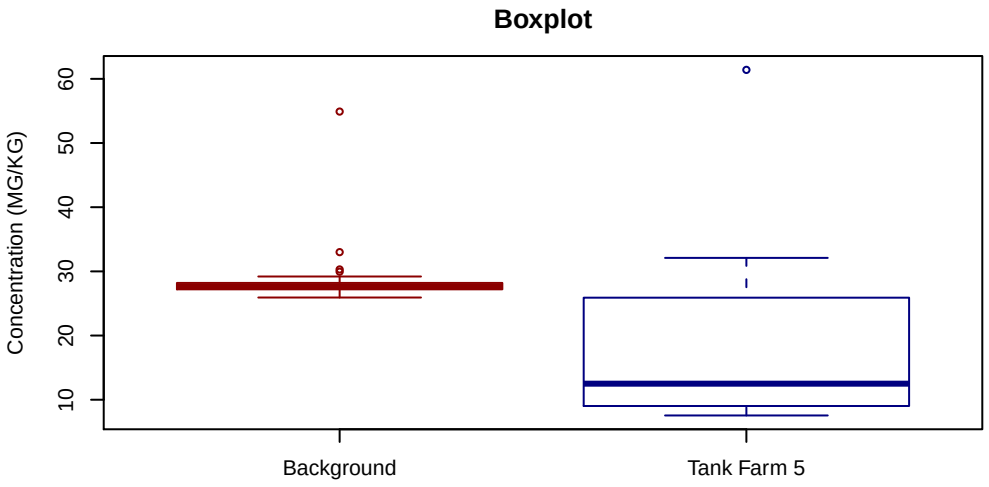


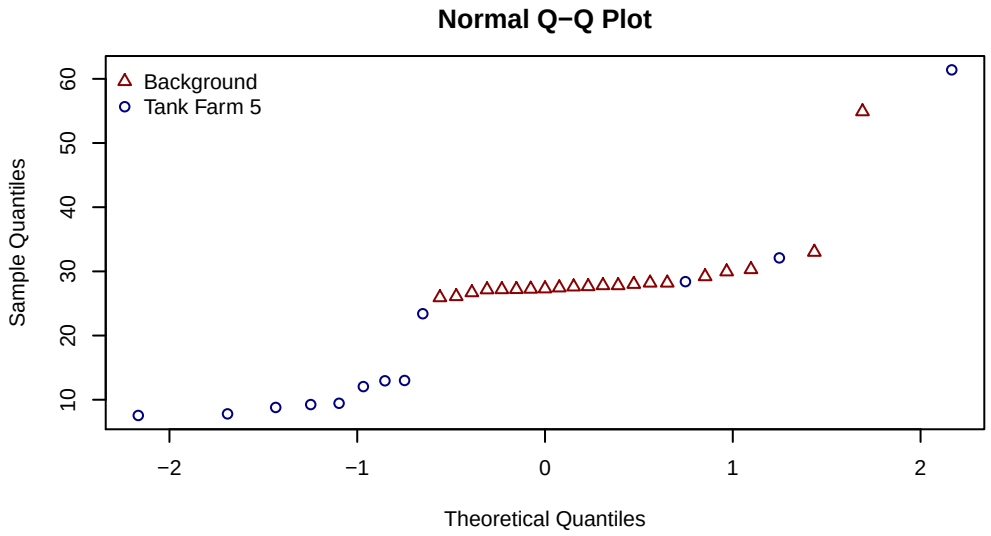


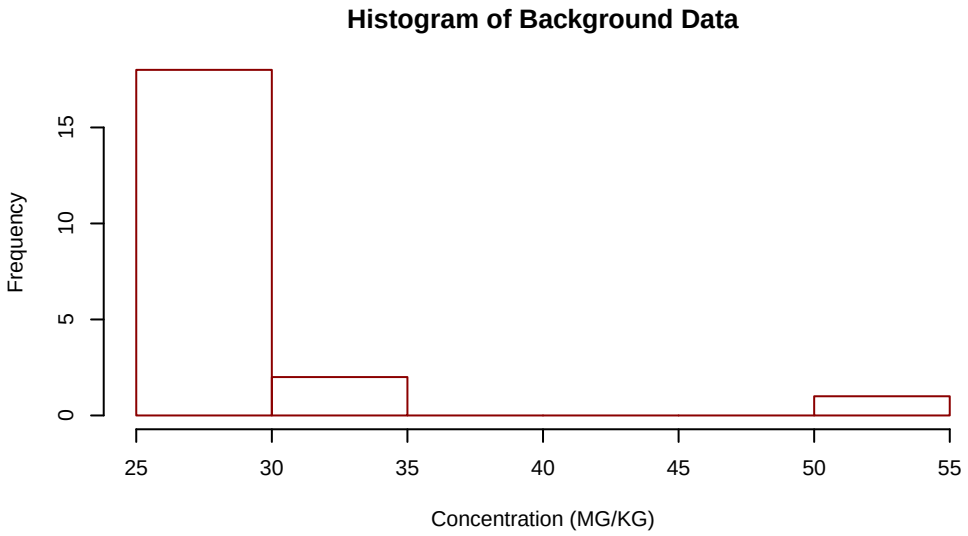


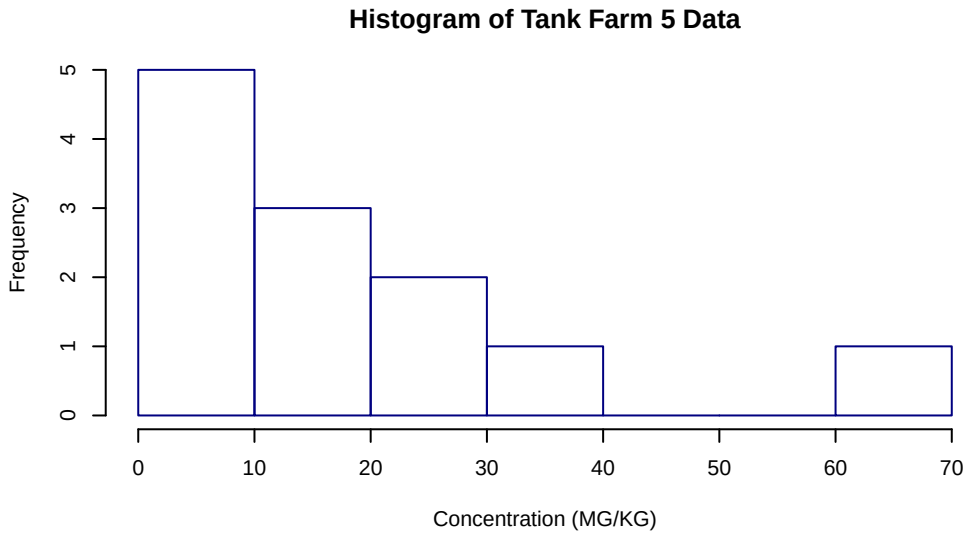


SODIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

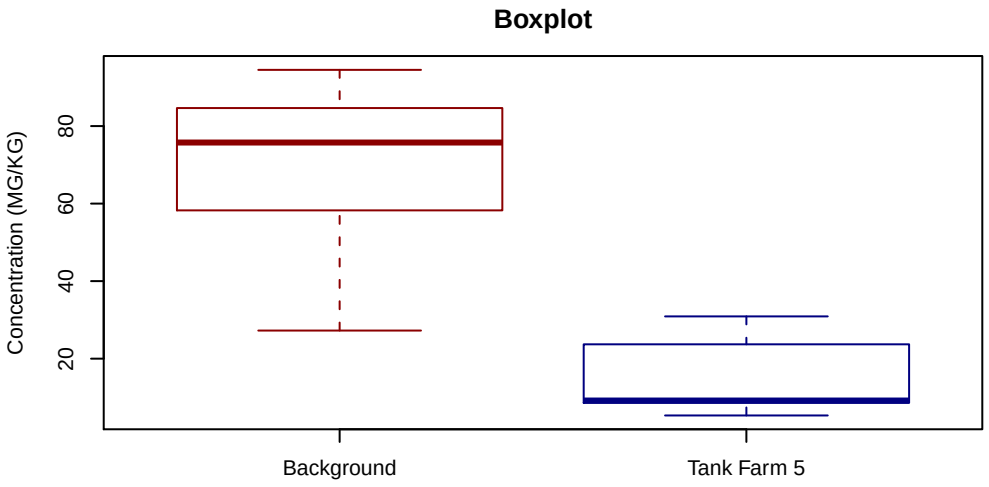


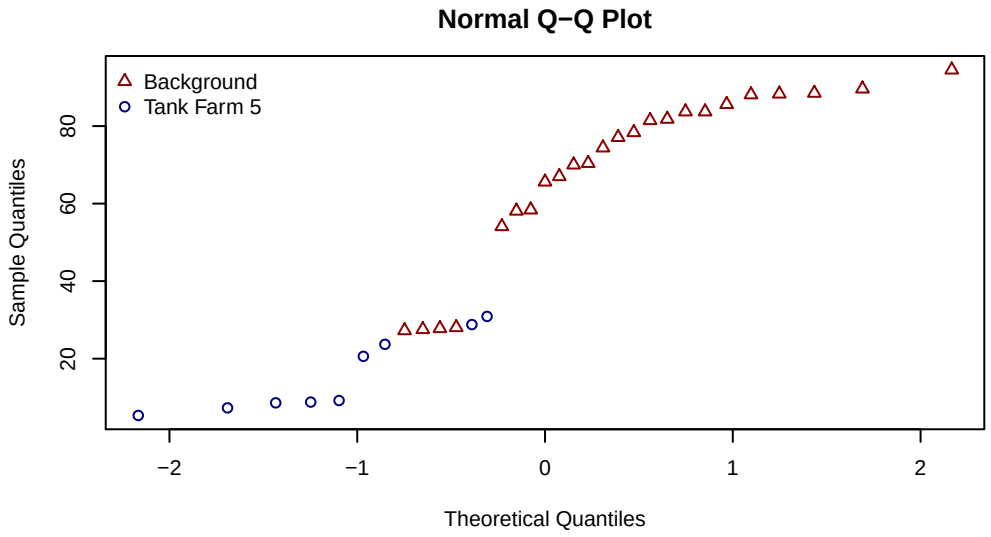


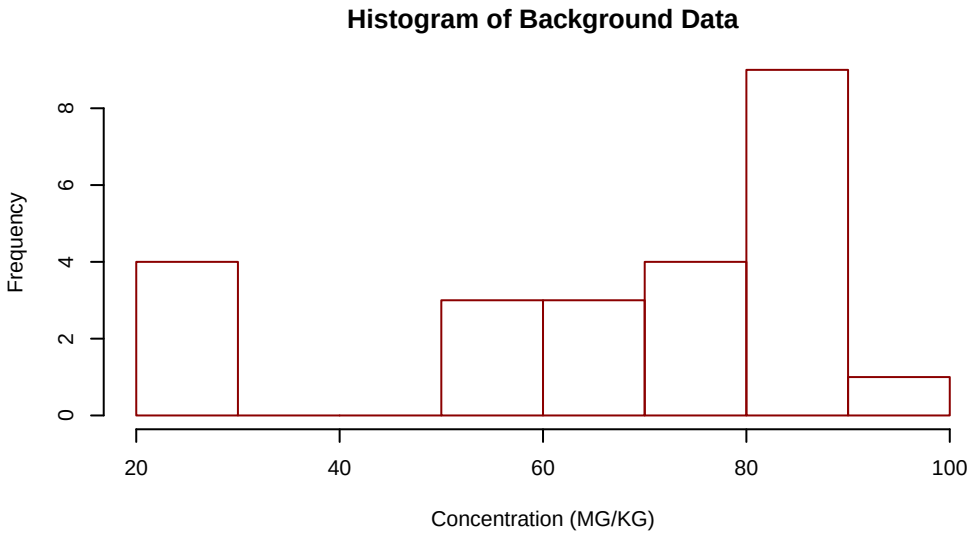


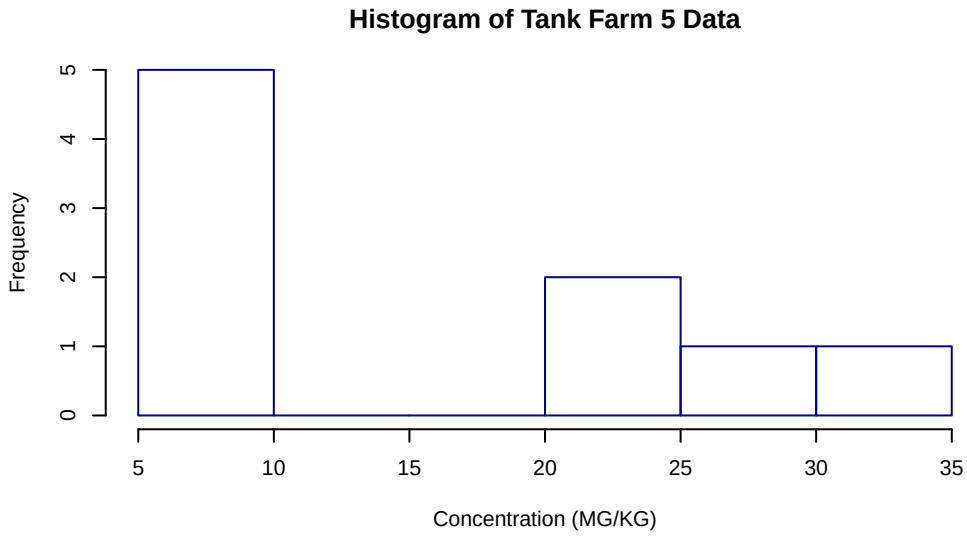


SODIUM Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

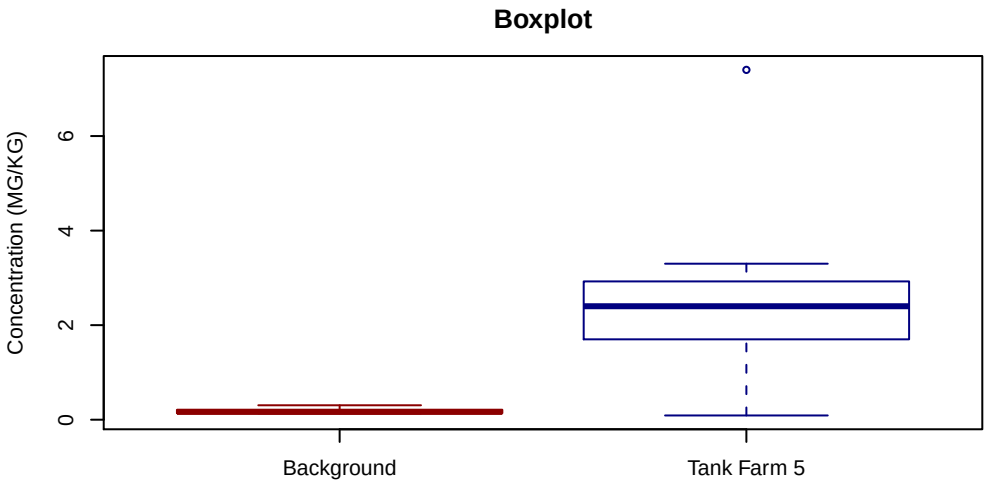


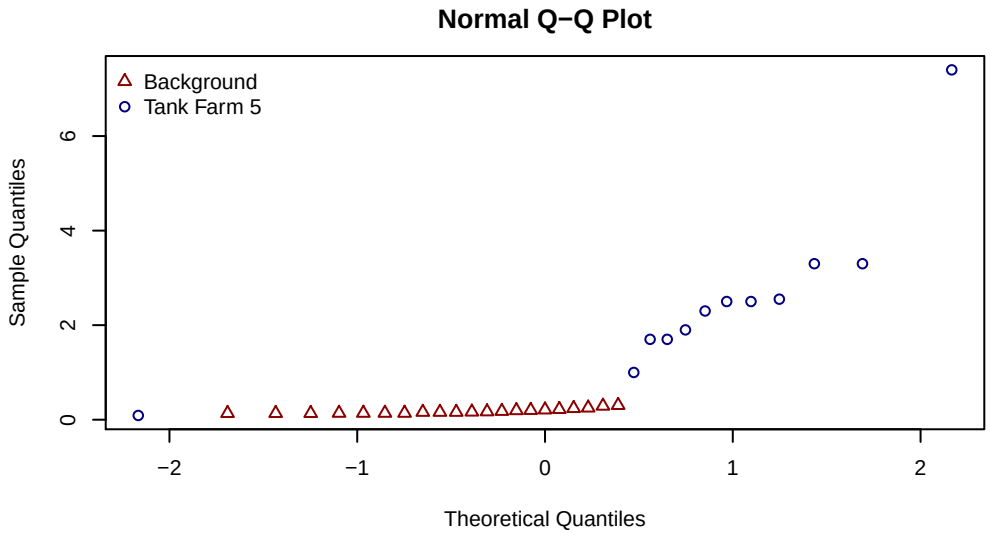


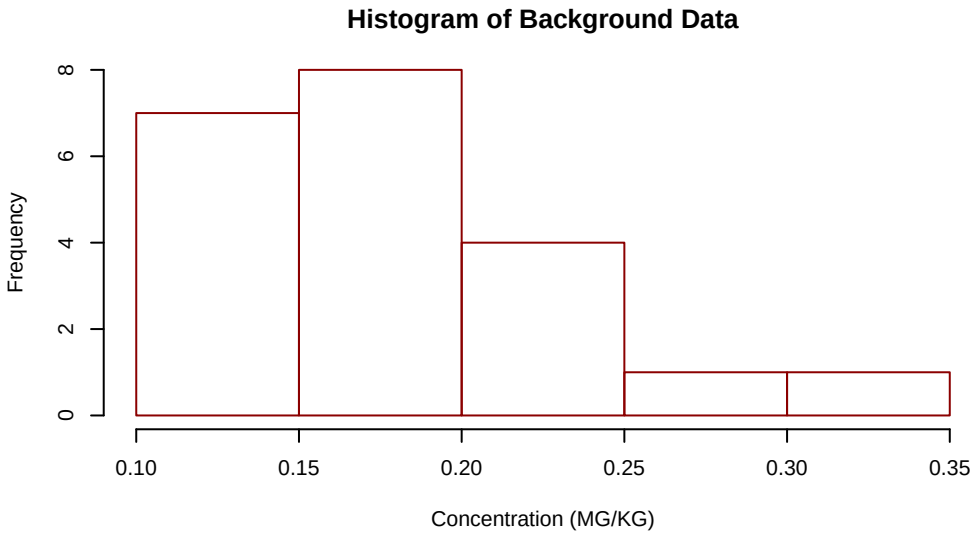


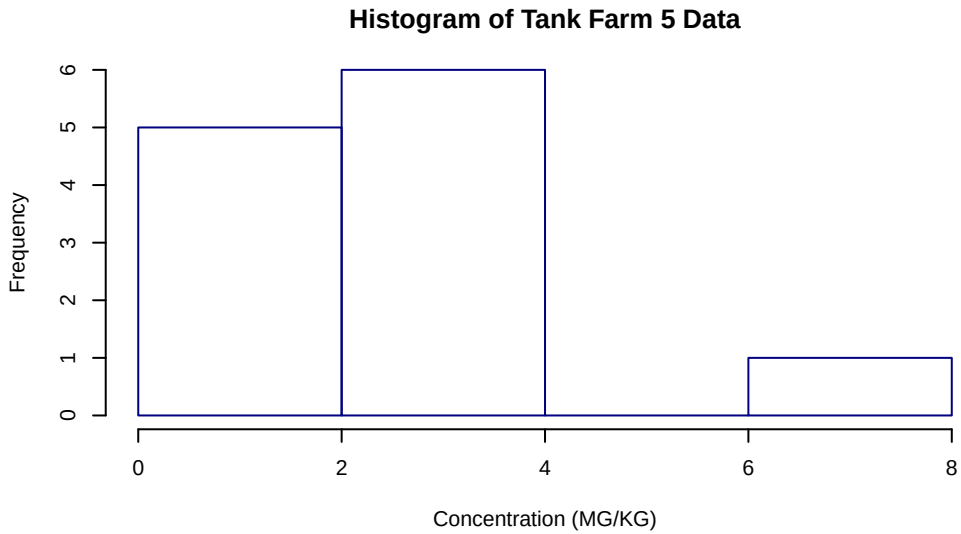


THALLIUM Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









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TANK FARM 5 BACKGROUND COMPARISON
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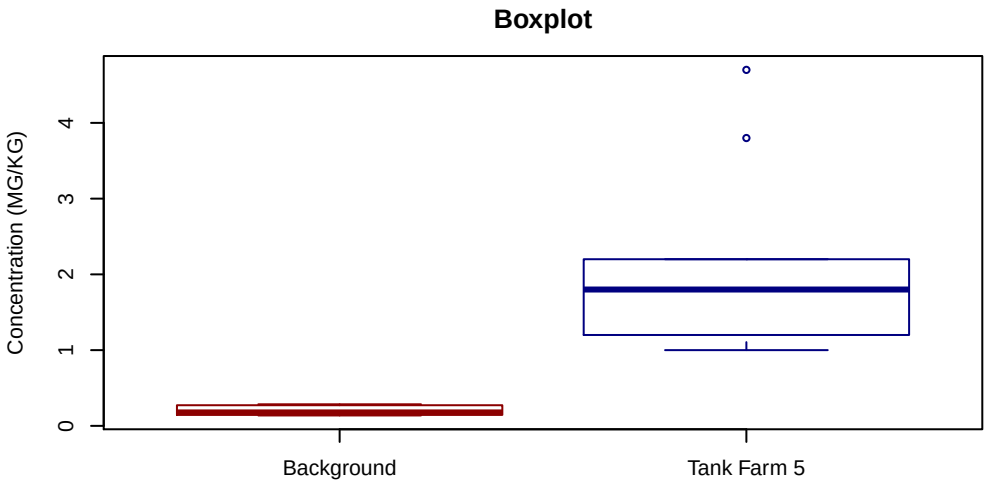
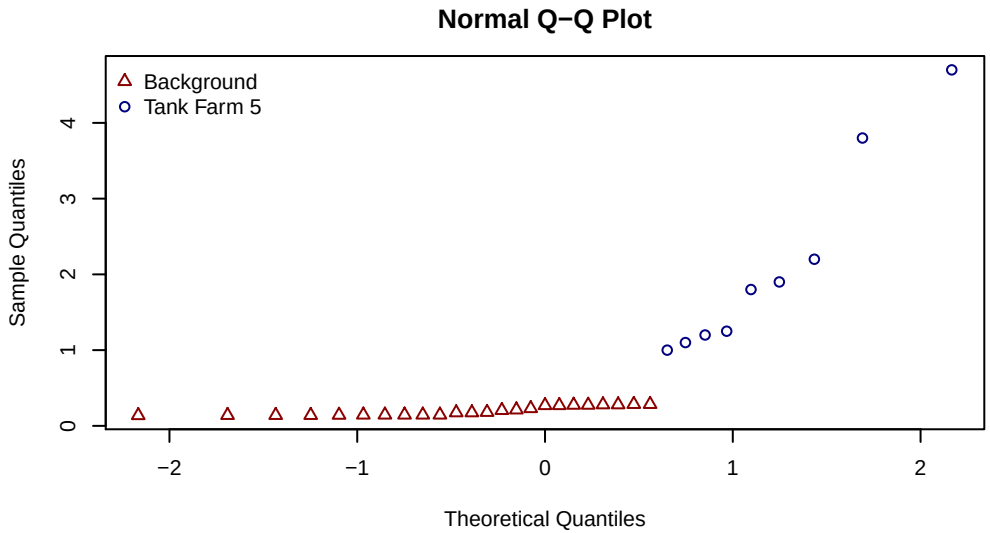
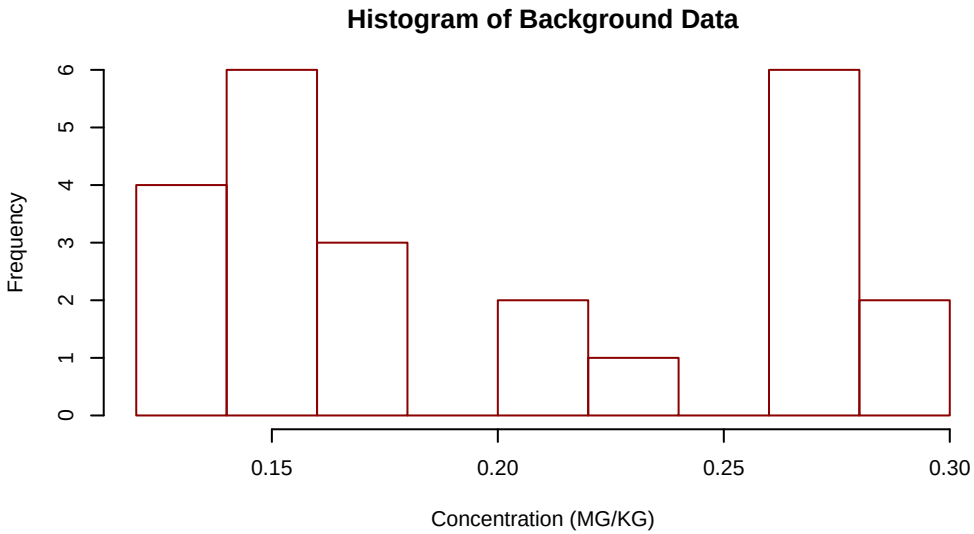
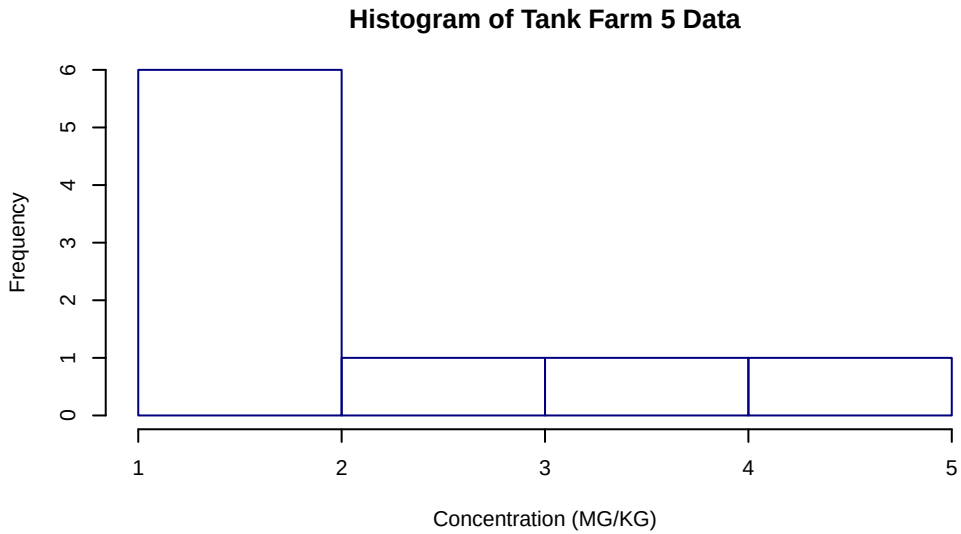
NEWPORT, RHODE ISLAND









VANADIUM Ne SUBSURFACESOIL
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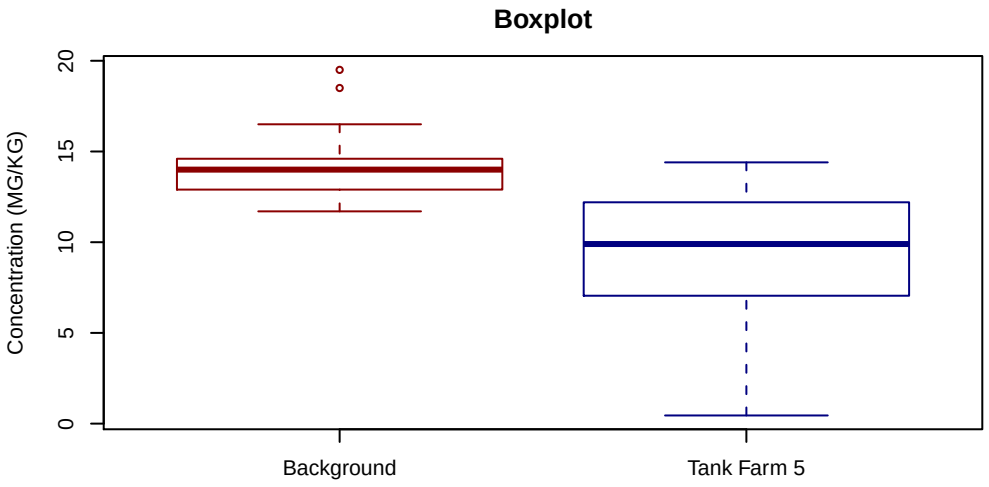
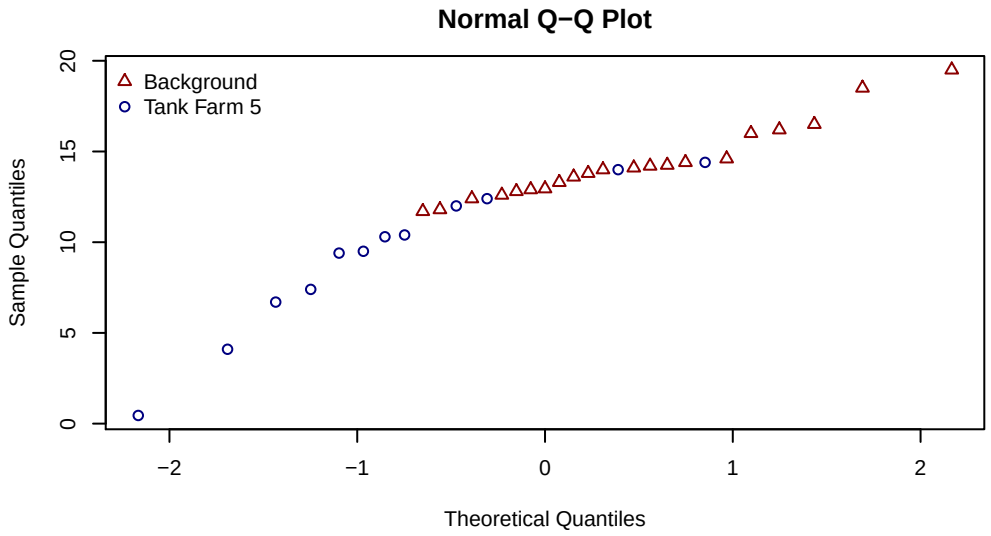
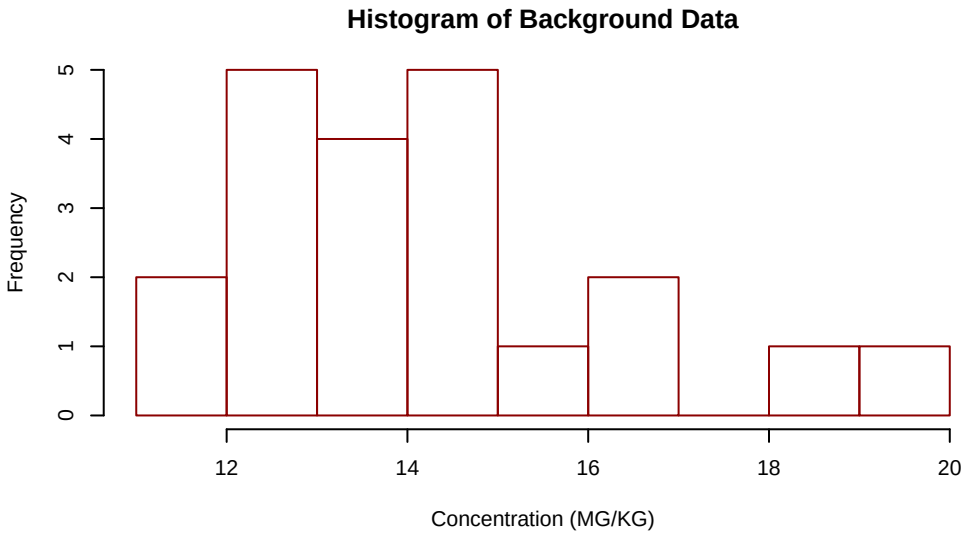
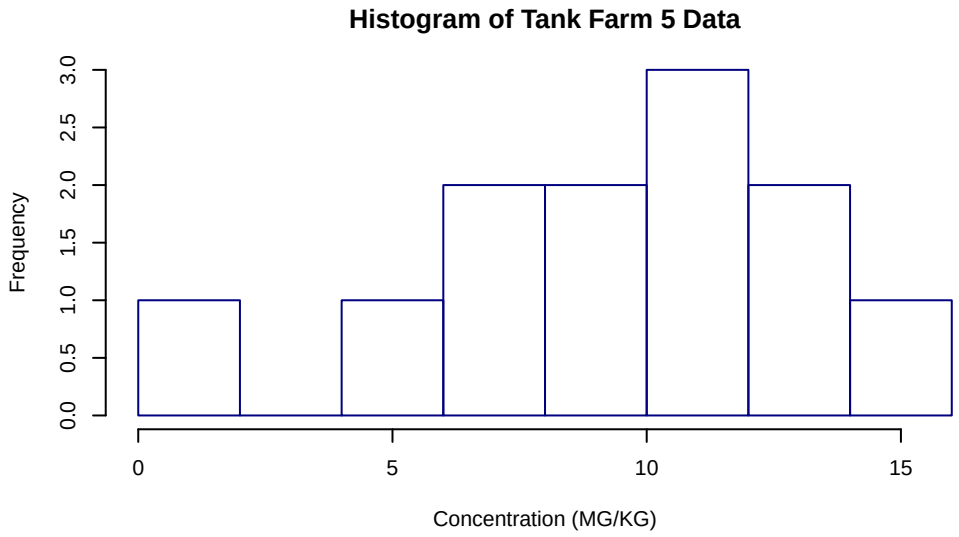
NEWPORT, RHODE ISLAND









VANADIUM Pm SUBSURFACESOIL
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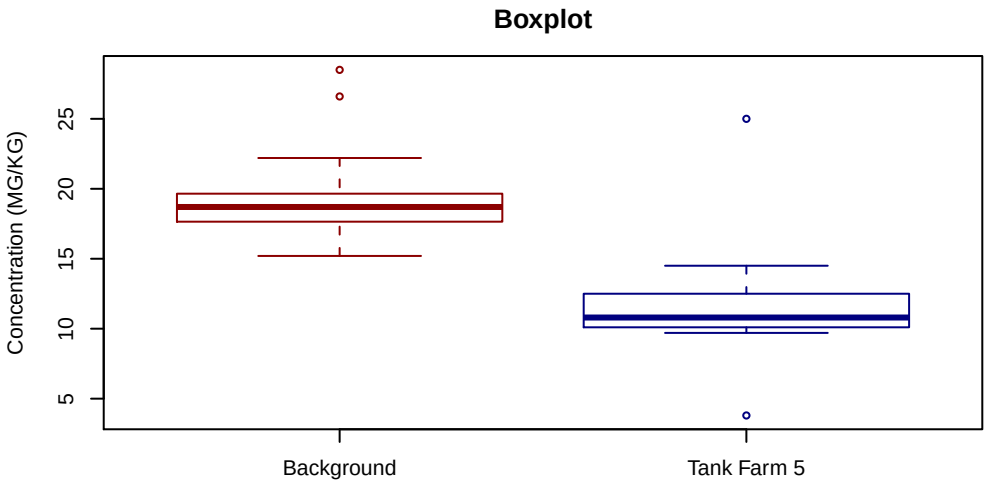
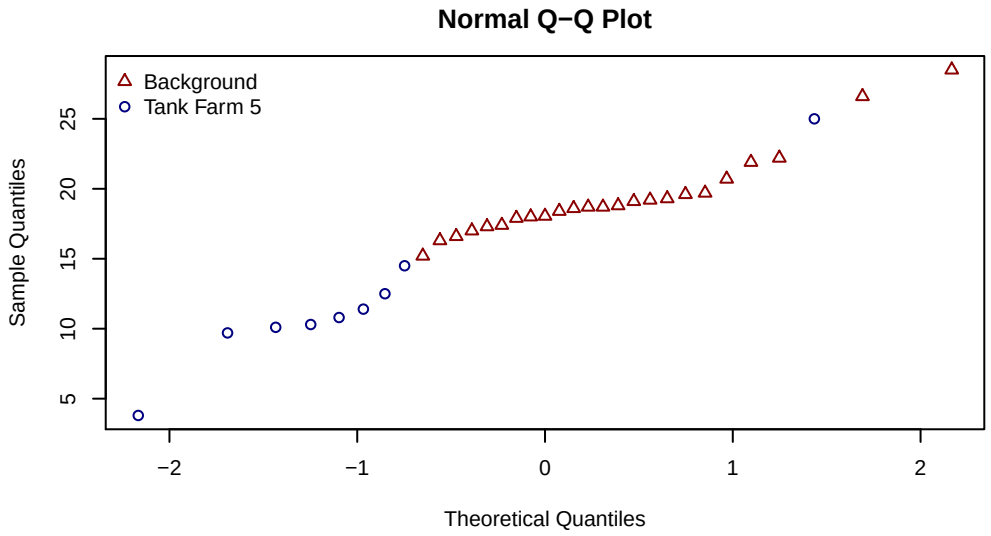
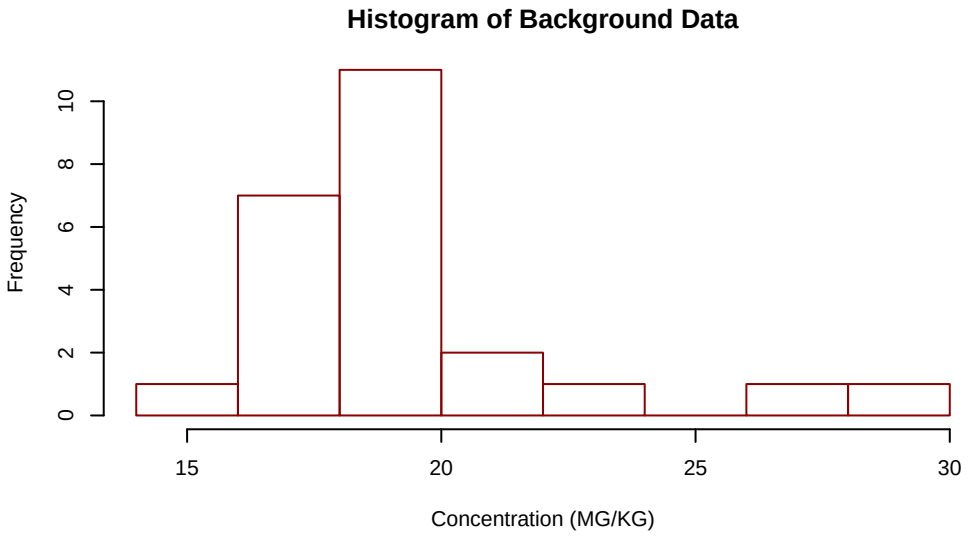
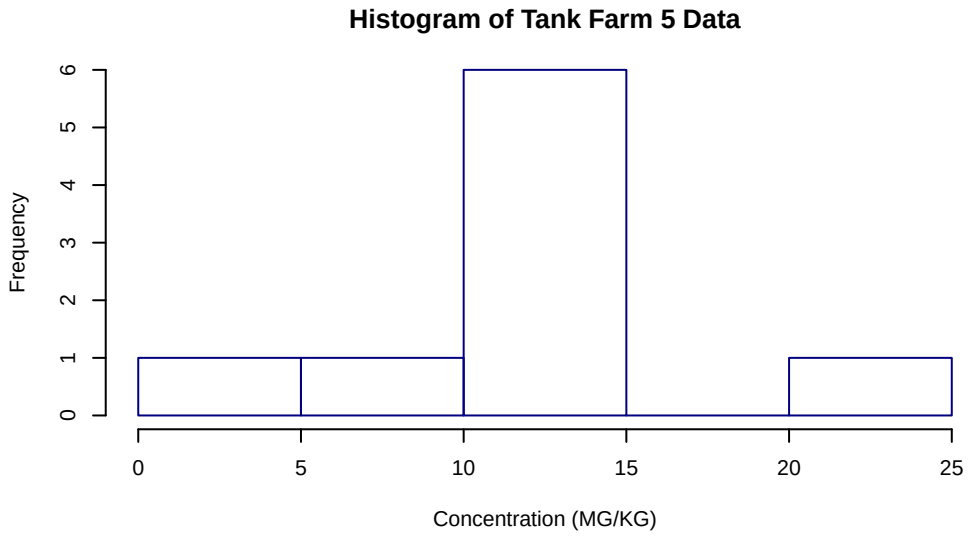
NEWPORT, RHODE ISLAND









ZINC Ne SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
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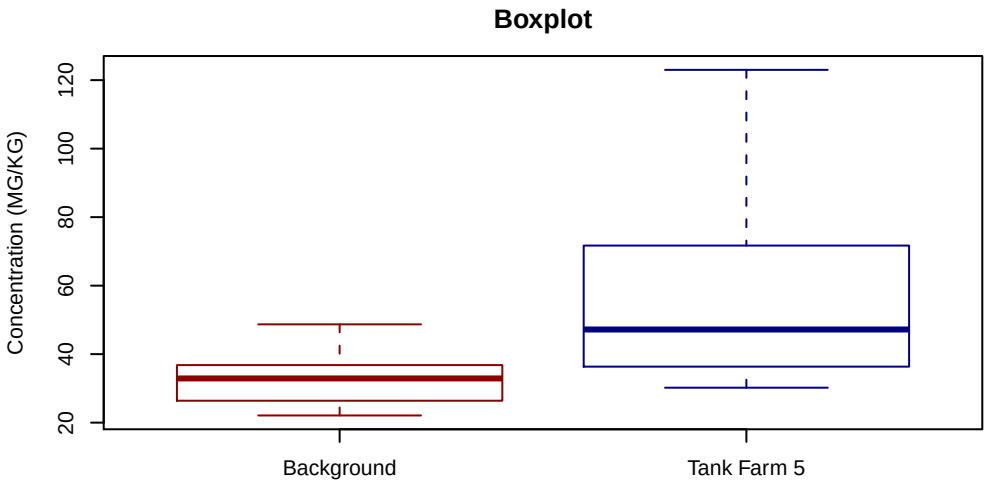
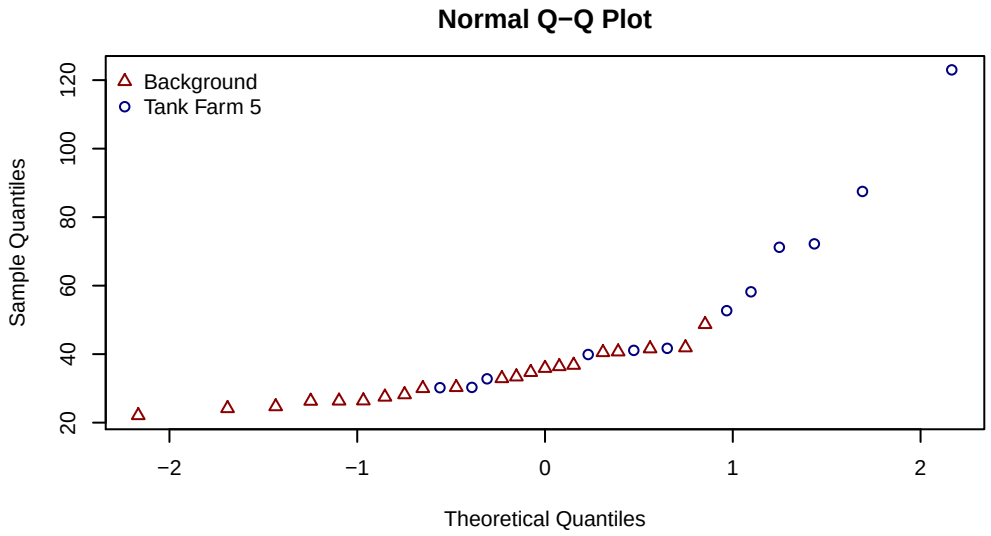
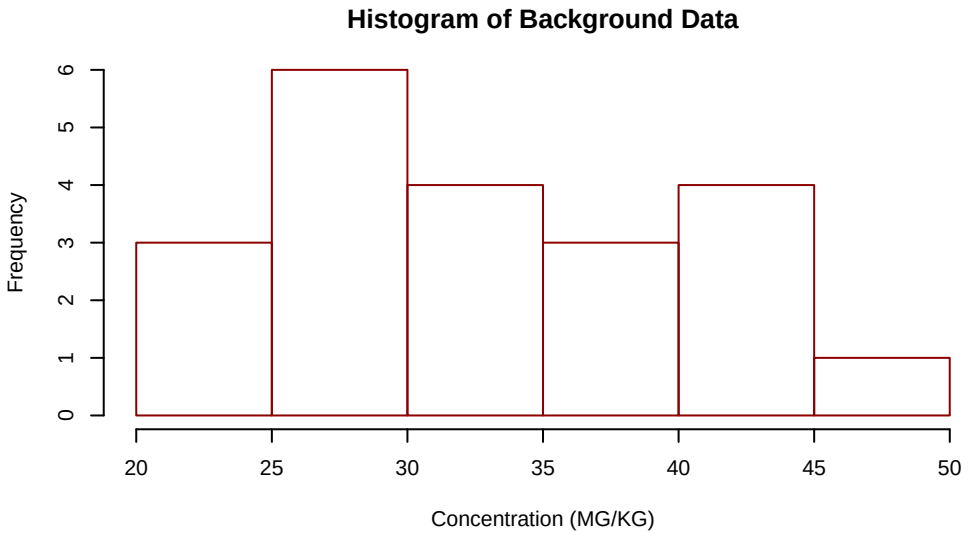
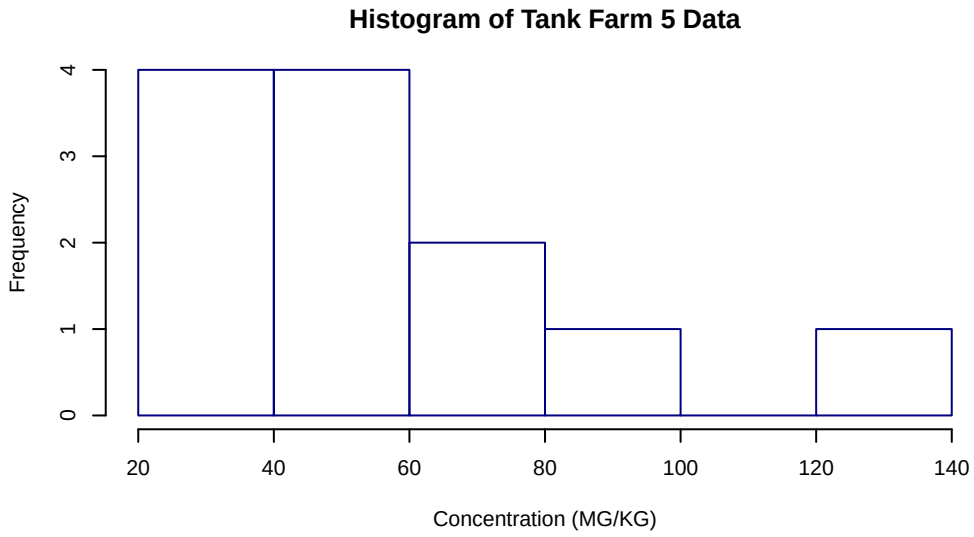
NEWPORT, RHODE ISLAND









ZINC Pm SUBSURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
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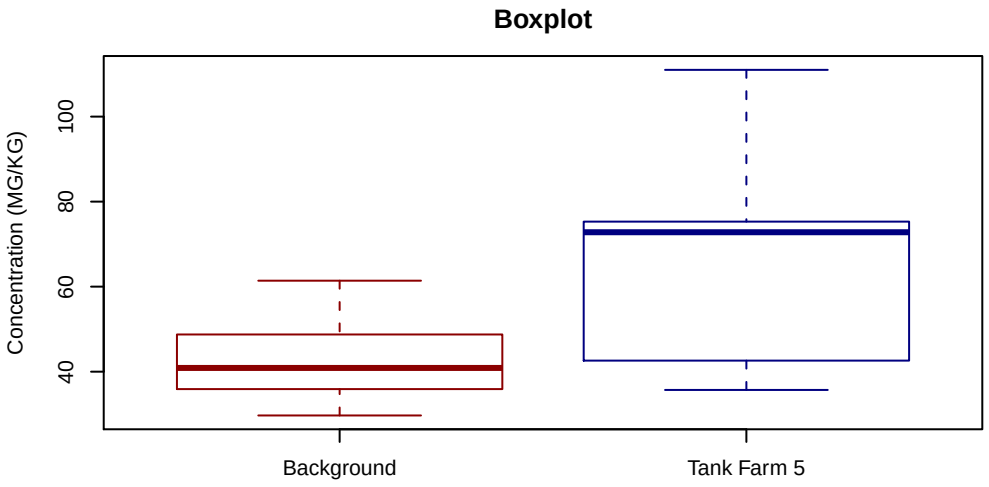
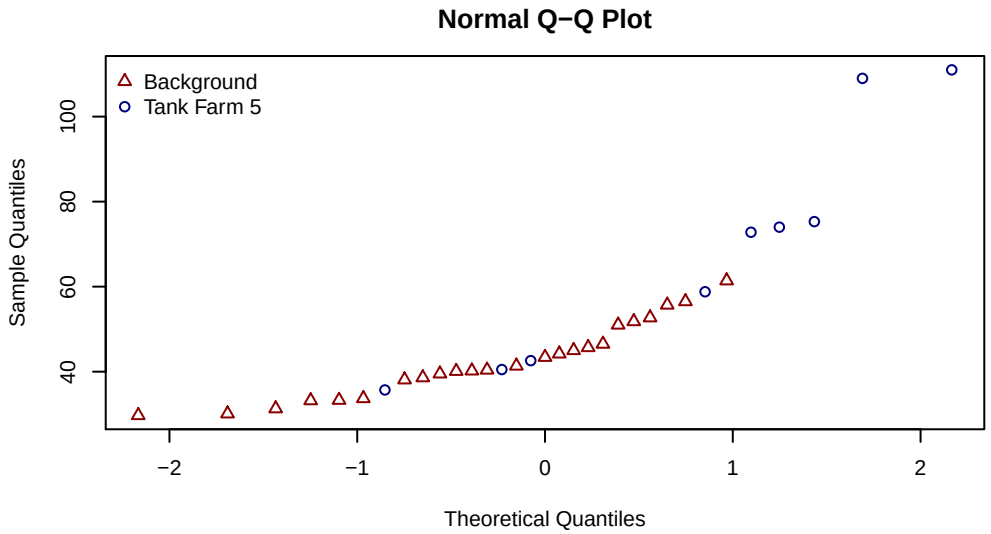
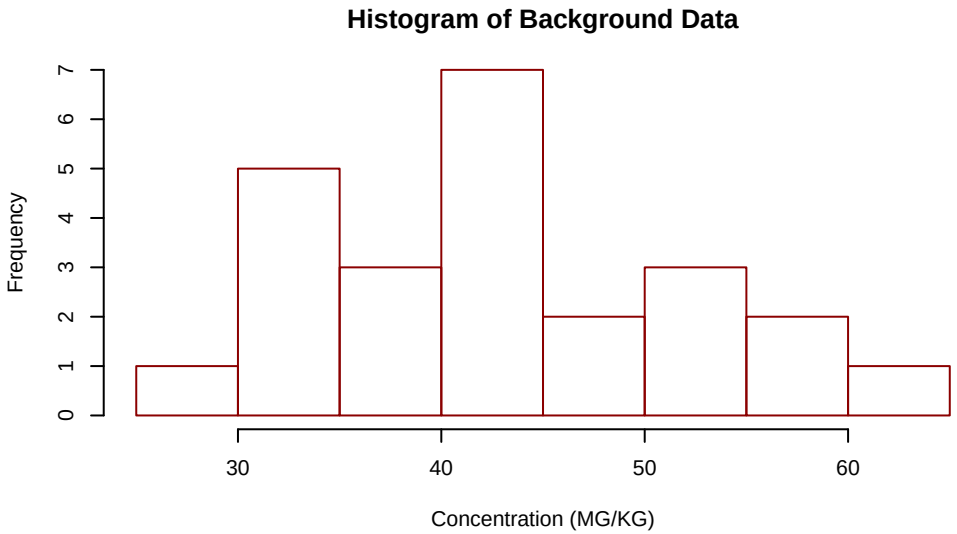
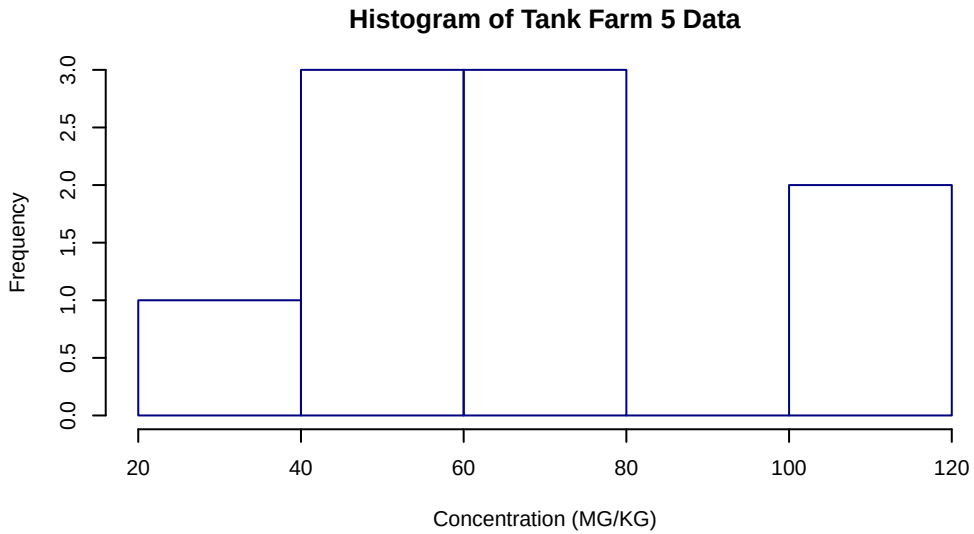
NEWPORT, RHODE ISLAND

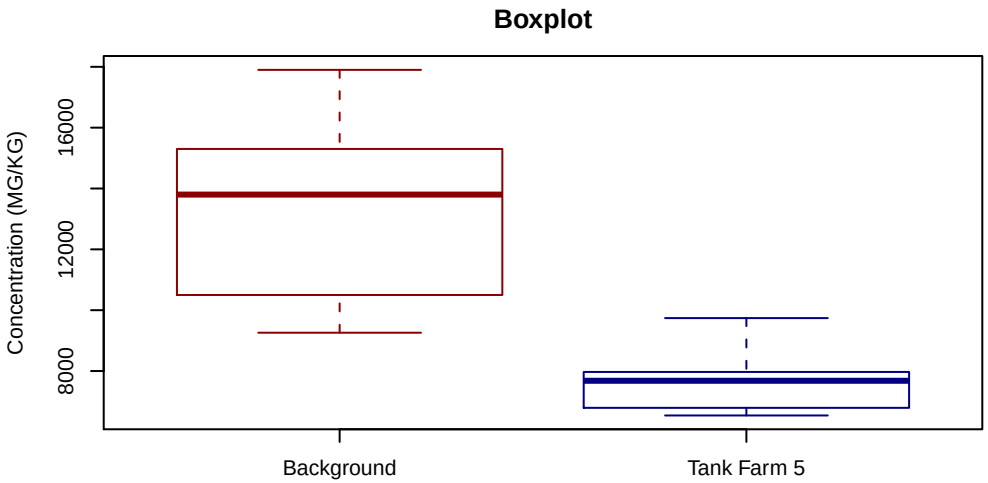


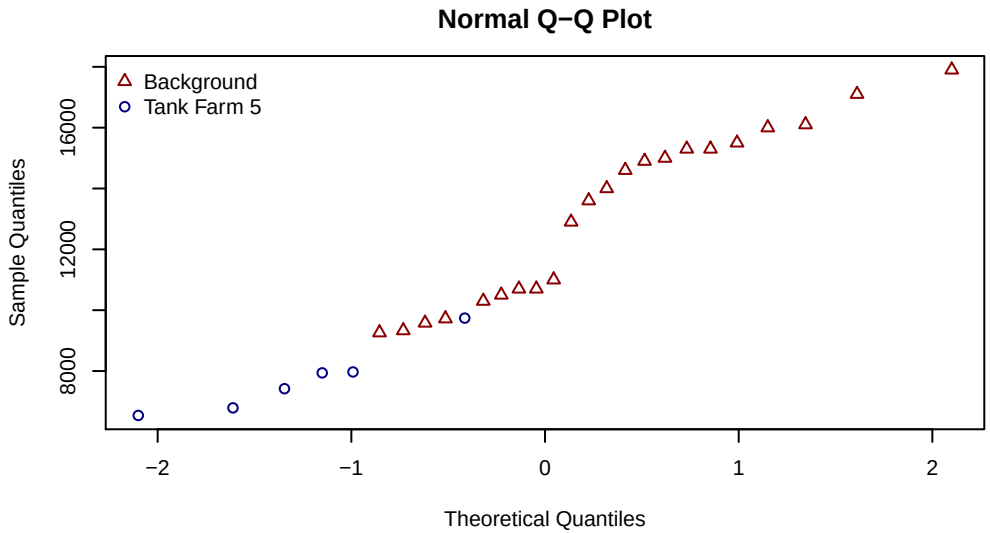


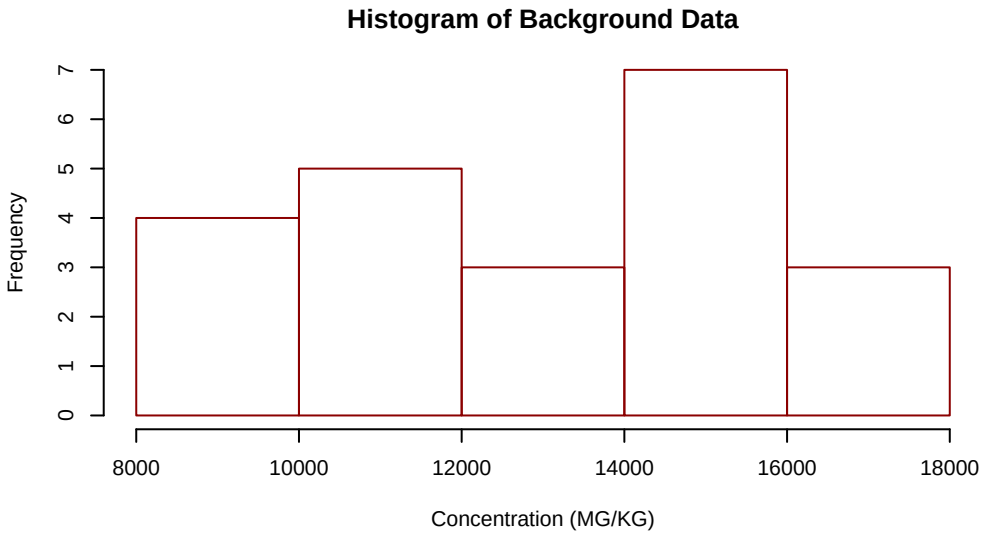


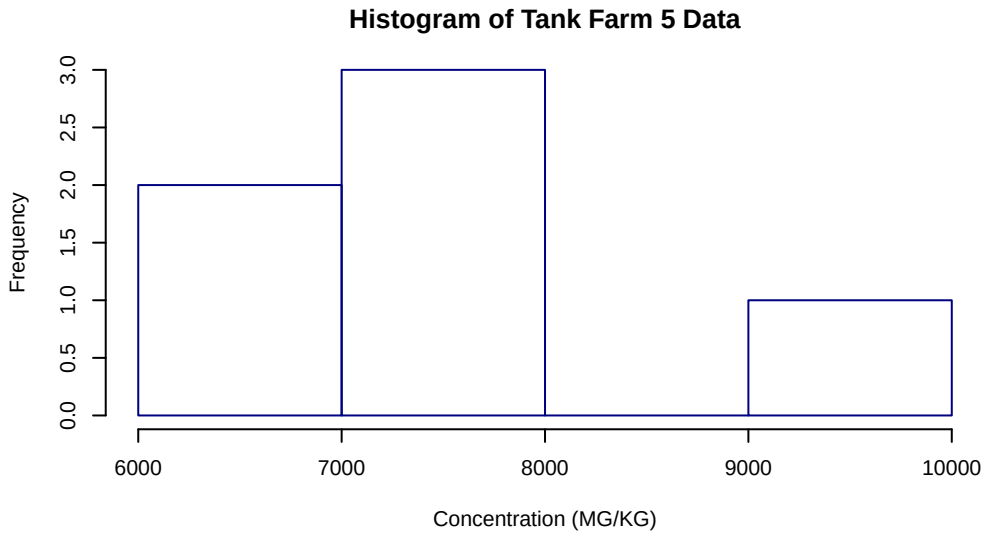


ALUMINUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

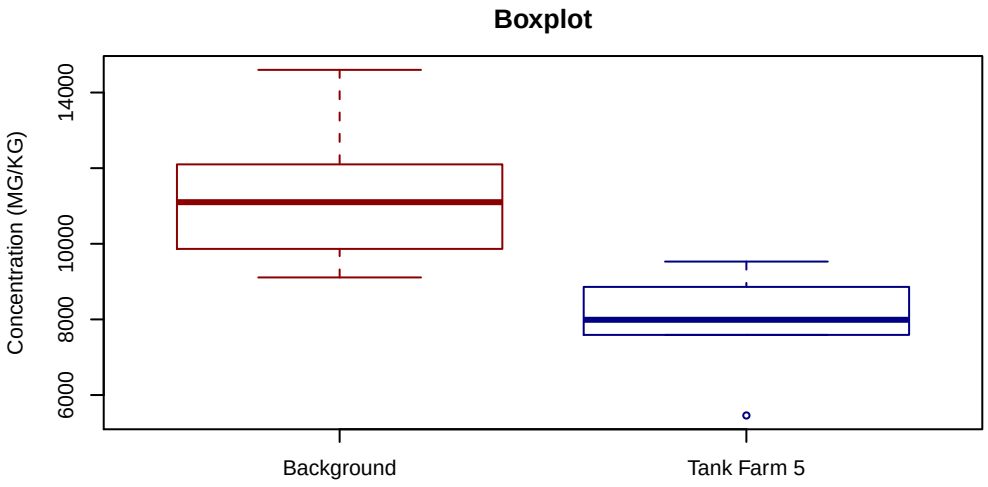


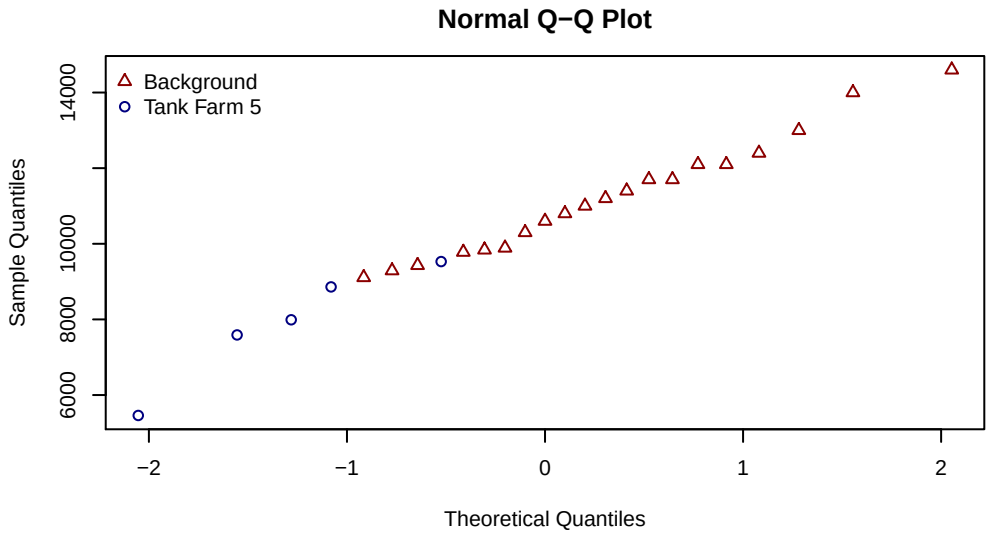


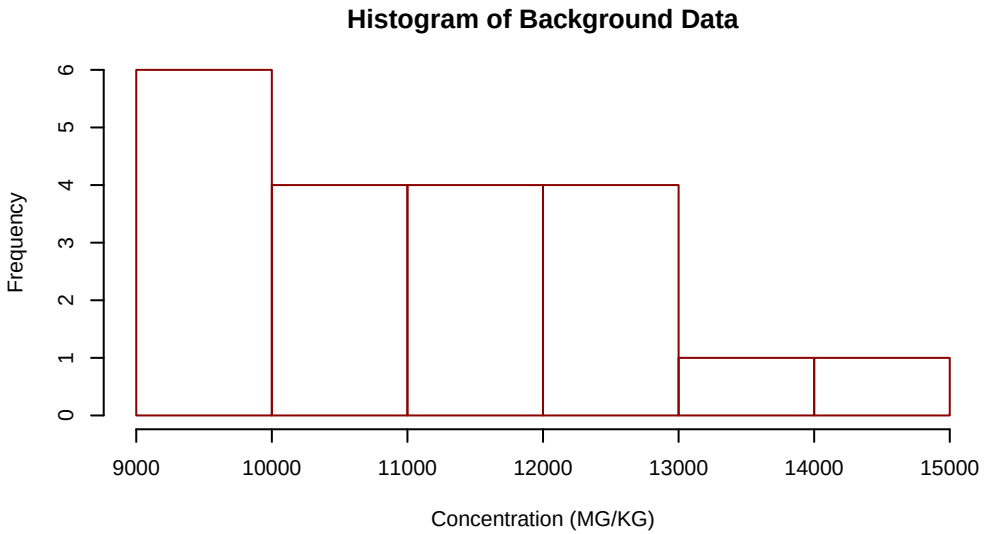


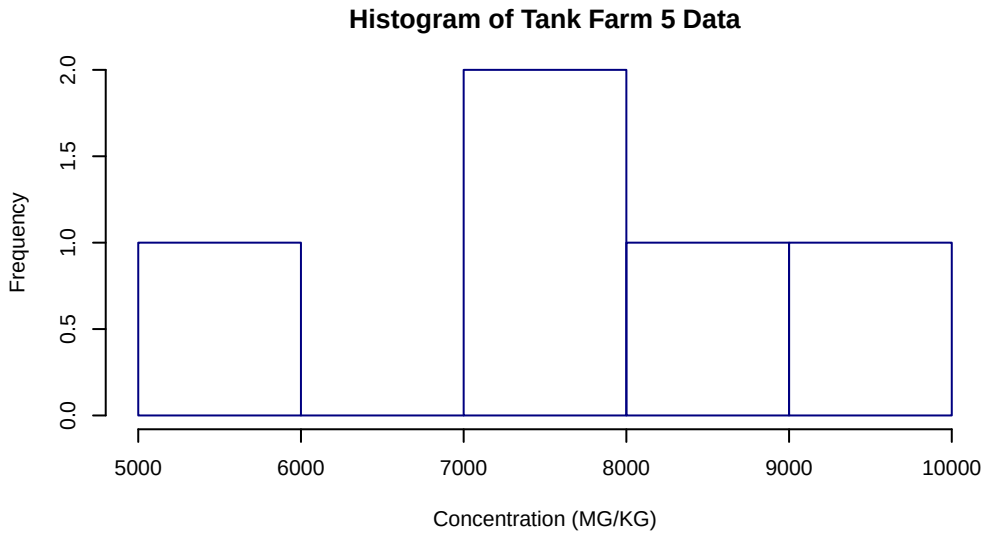


ALUMINUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

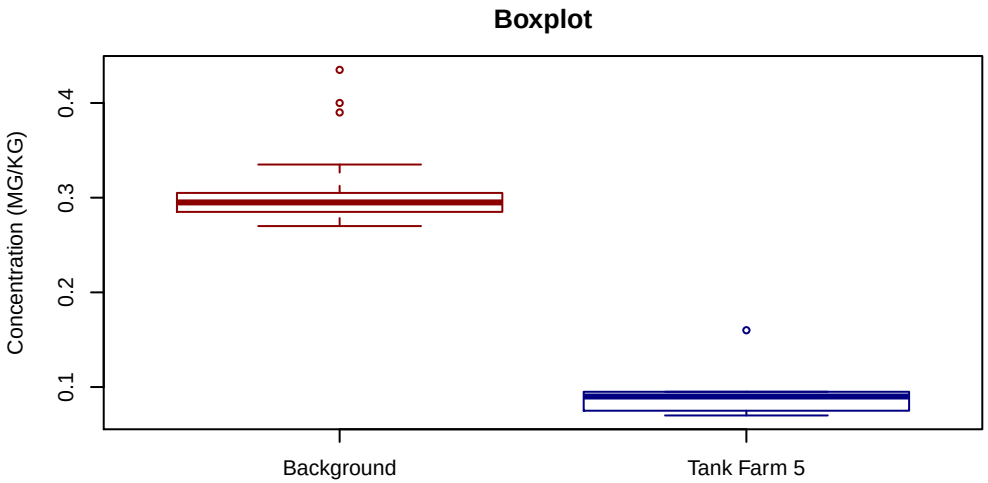


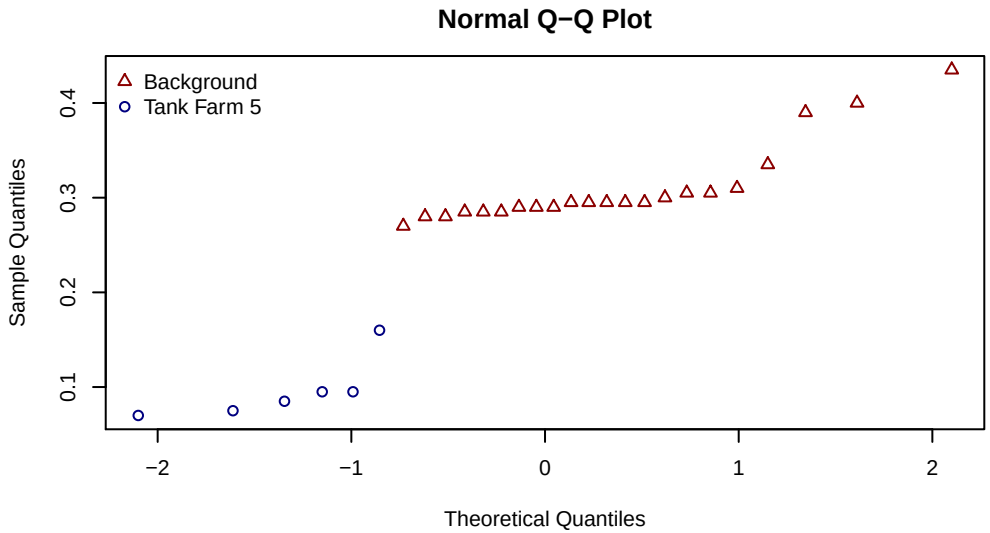


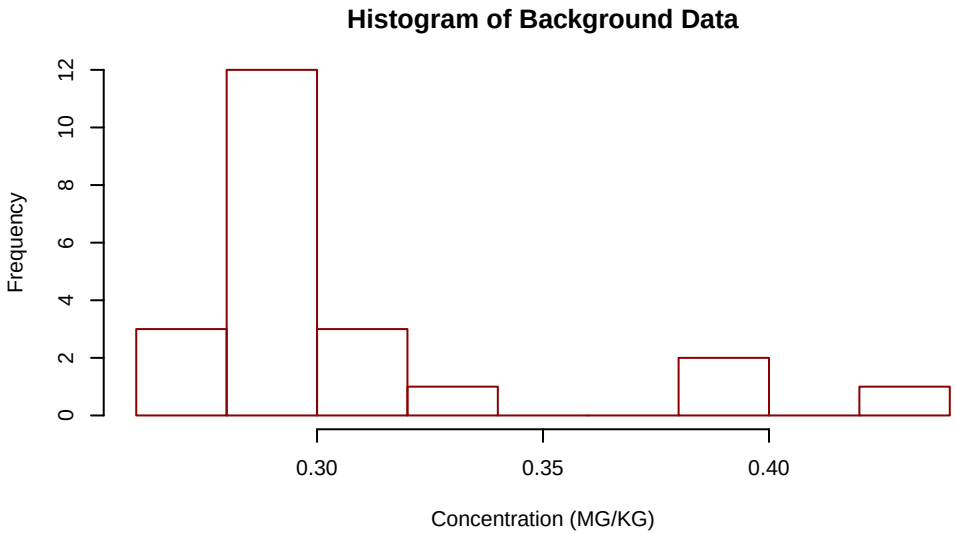


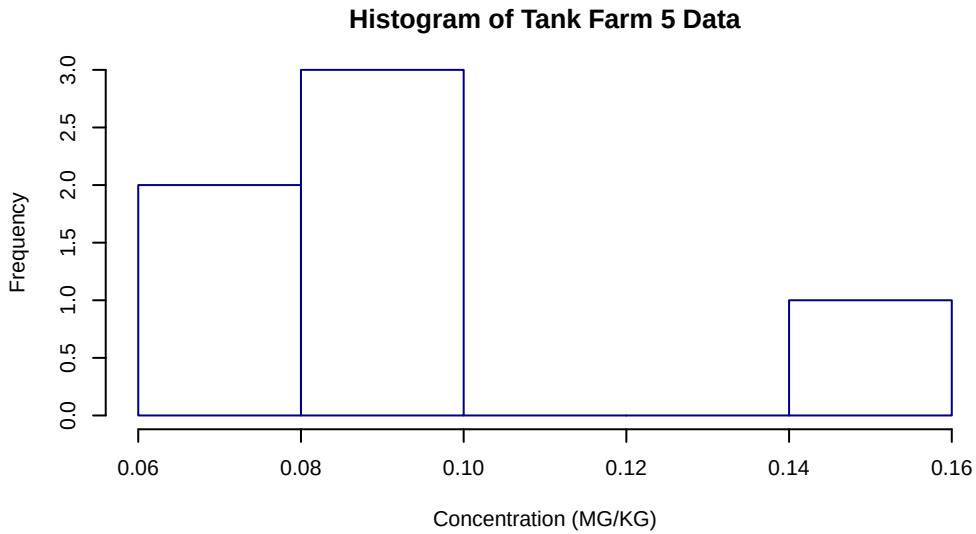


ANTIMONY Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

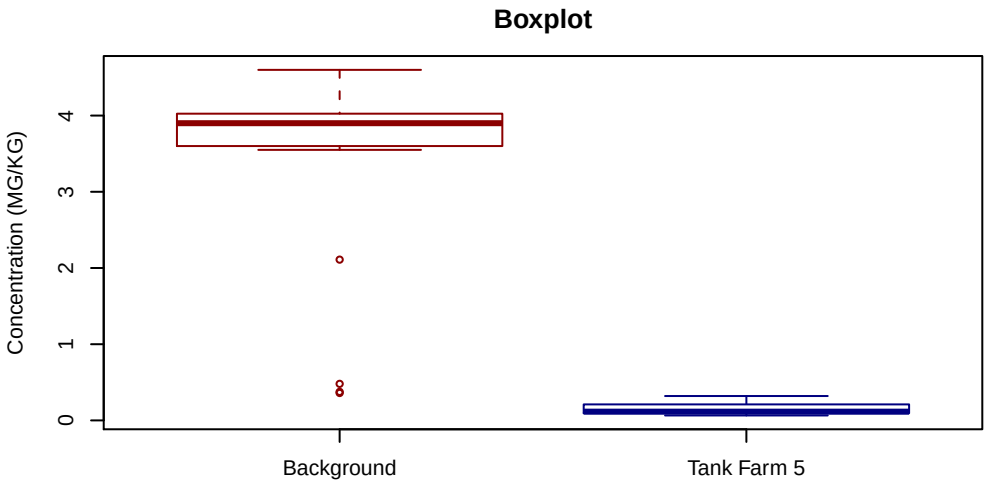


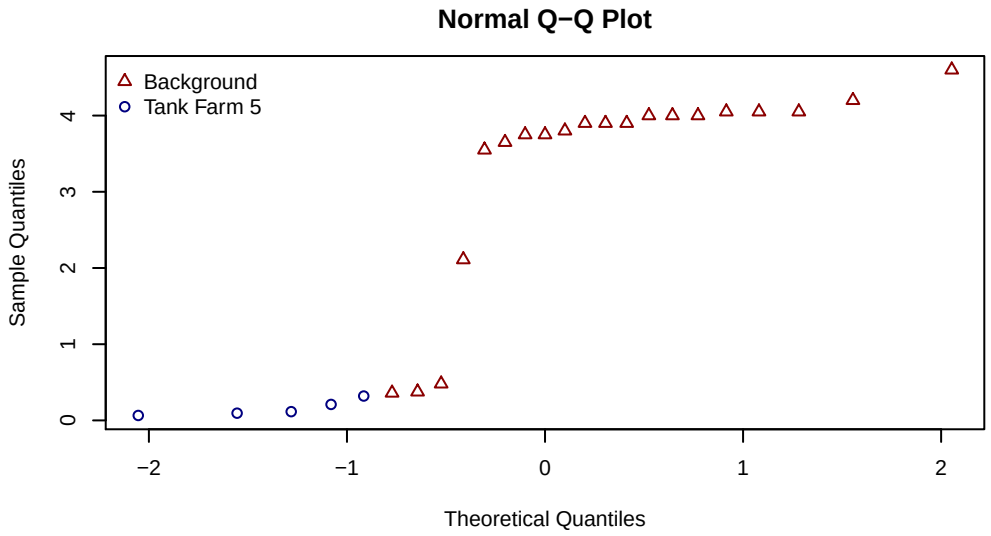


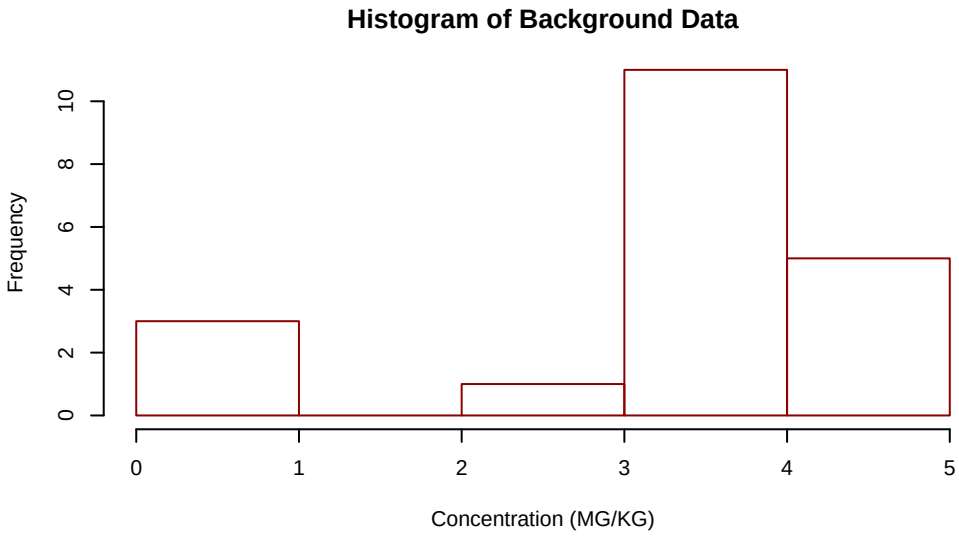


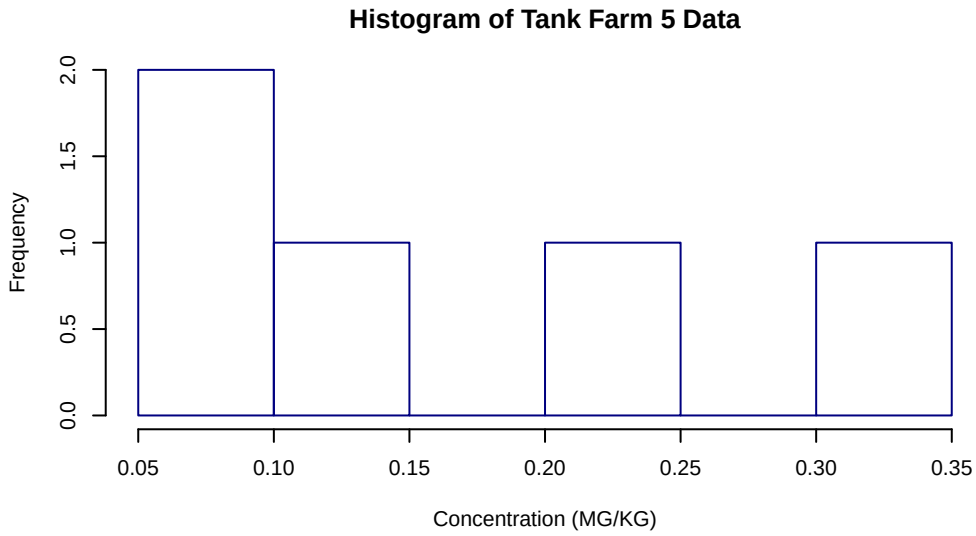


ANTIMONY Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

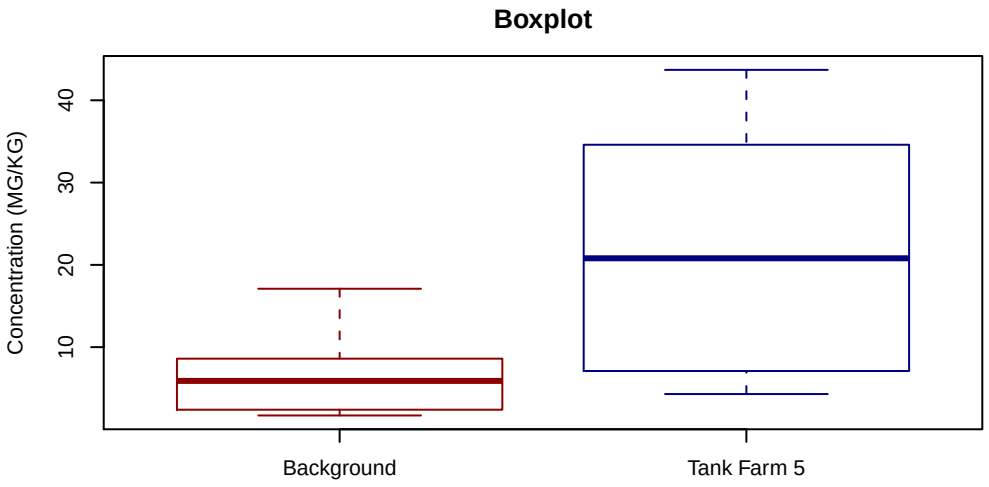


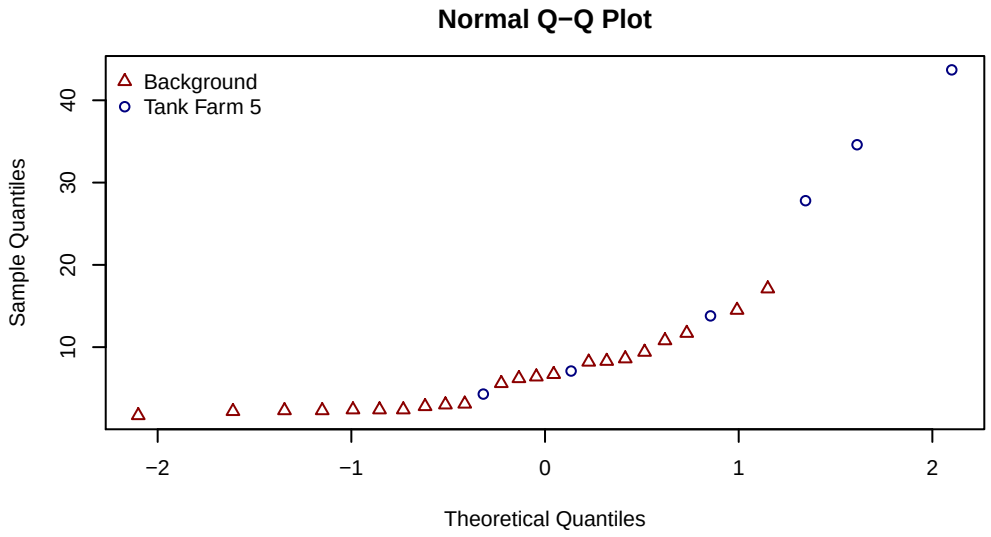


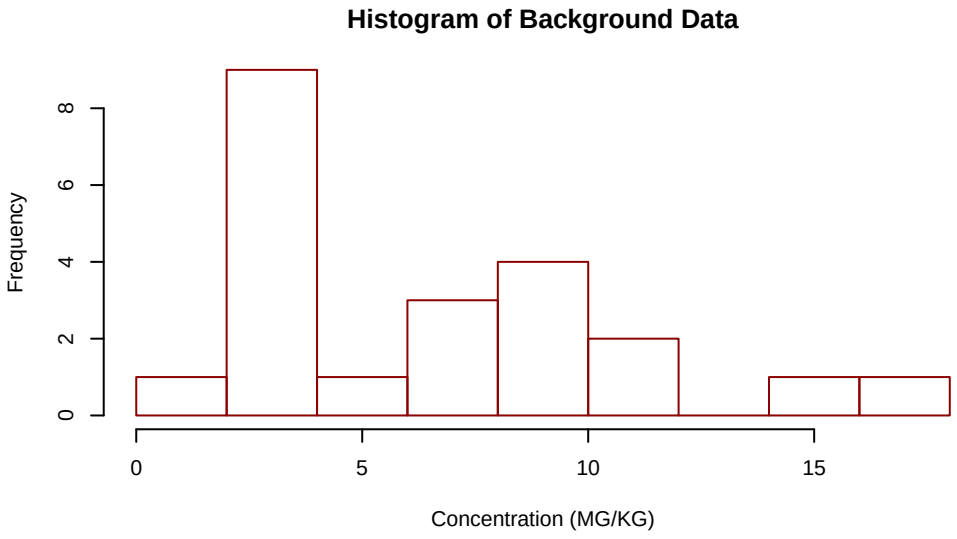


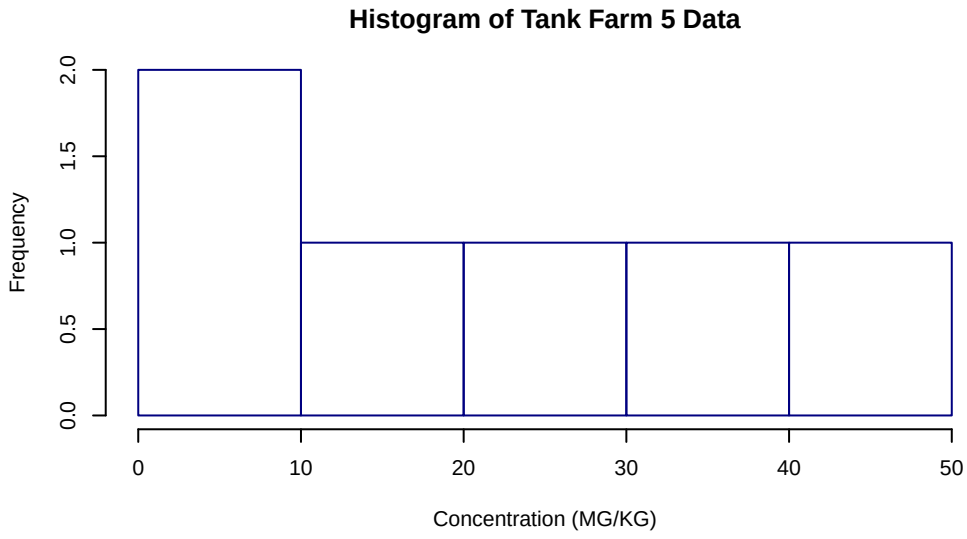


ARSENIC Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

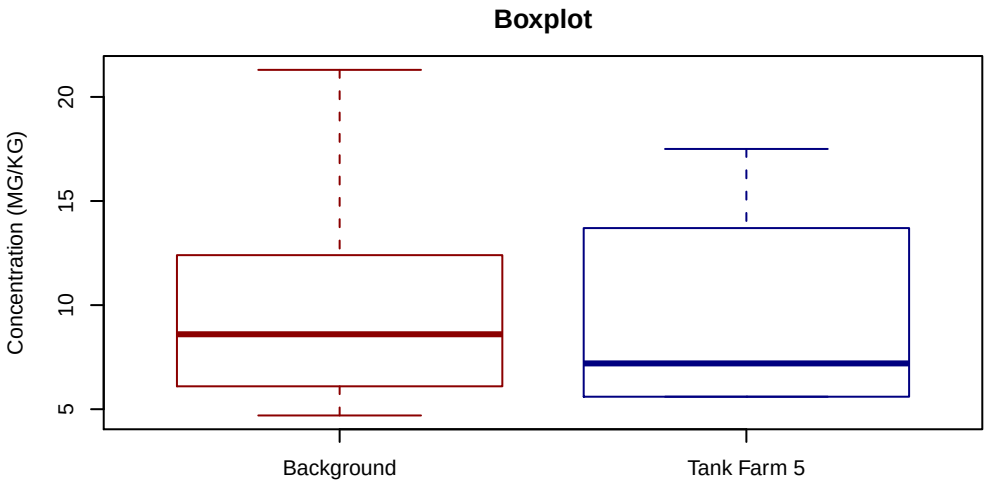


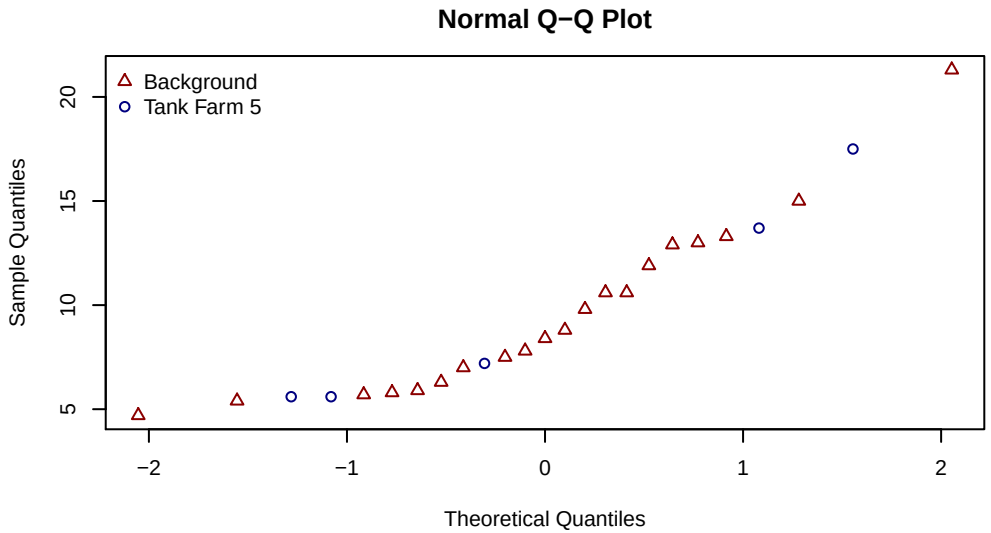


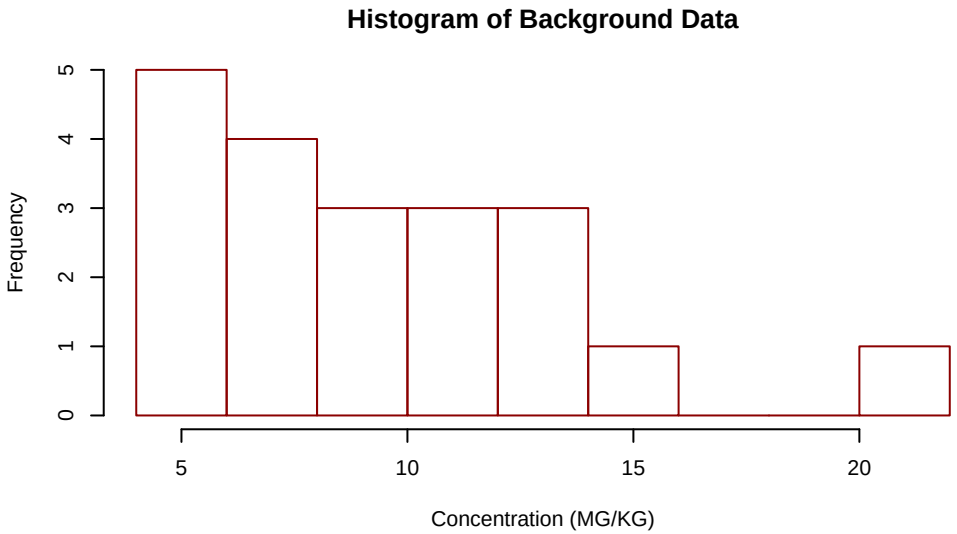


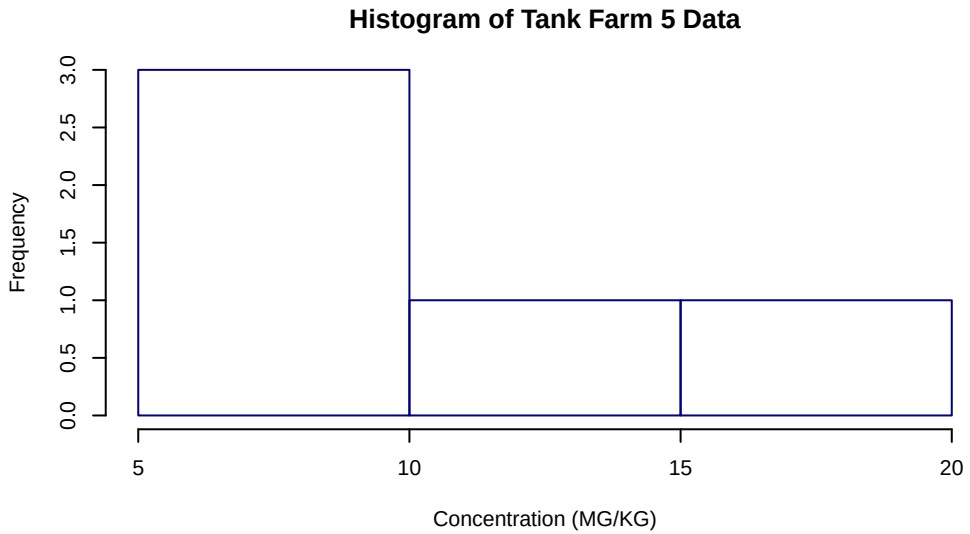


ARSENIC Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

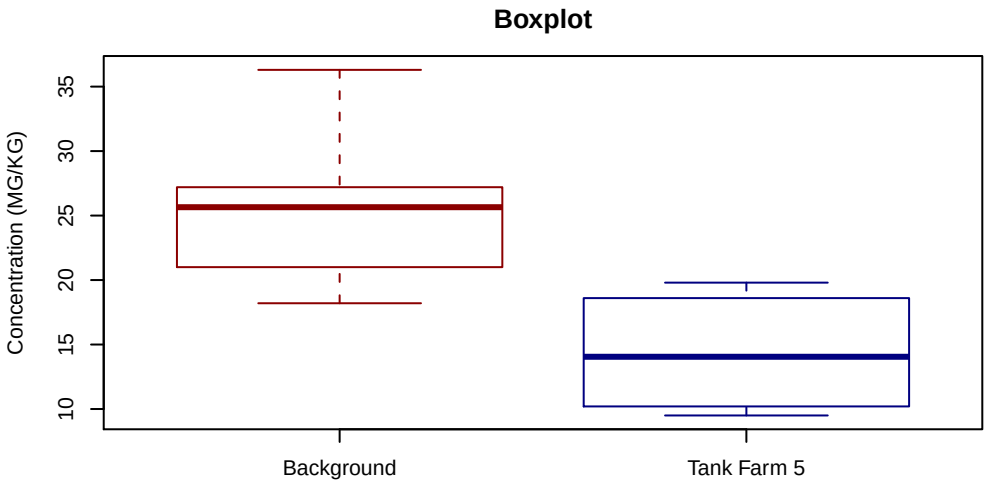


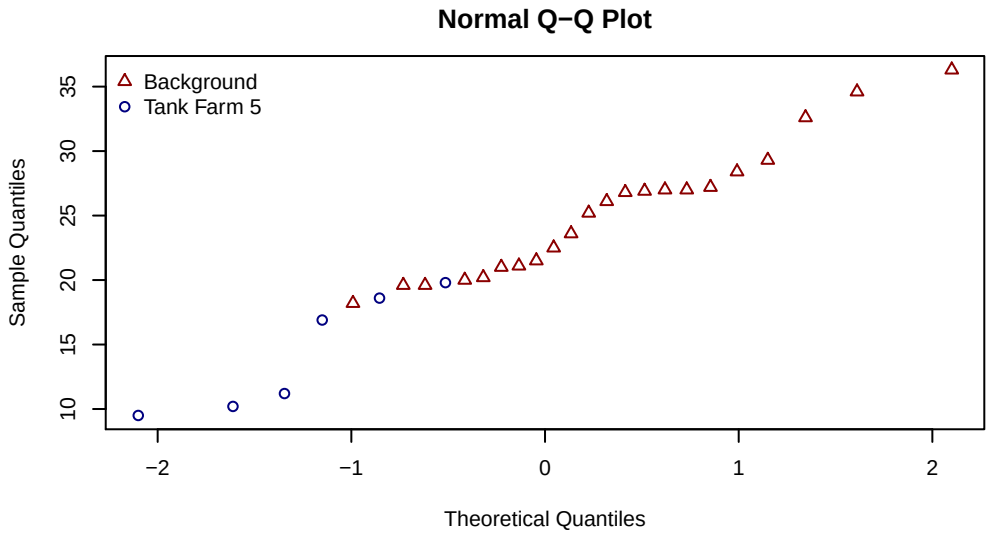


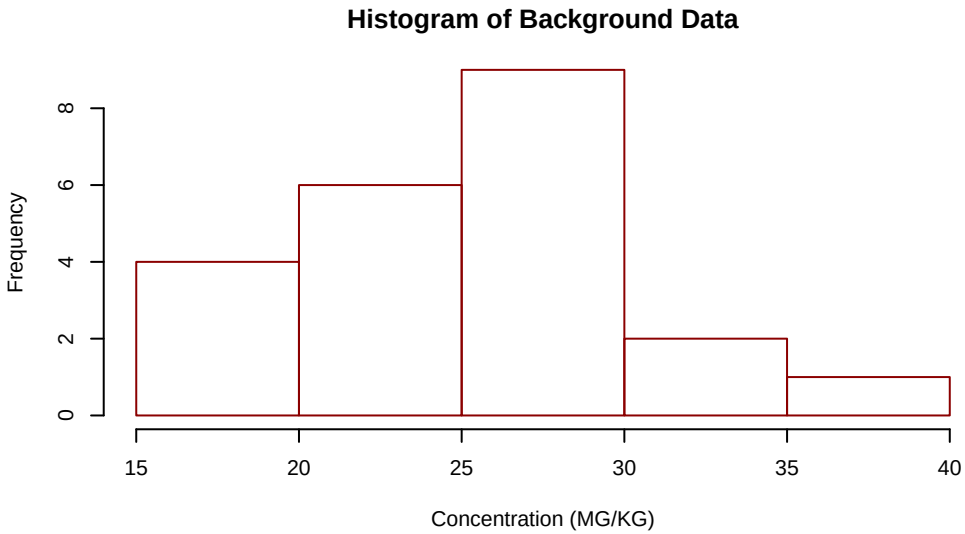


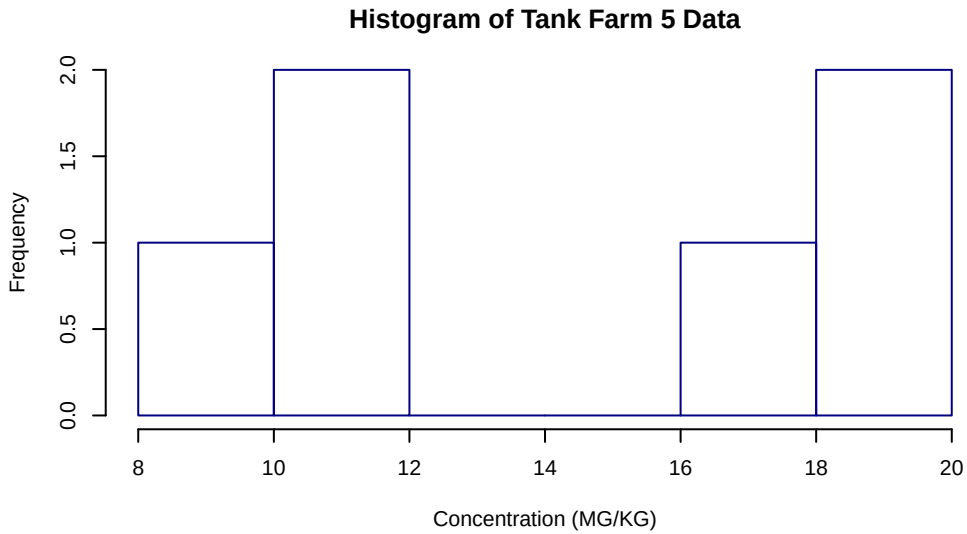


BARIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

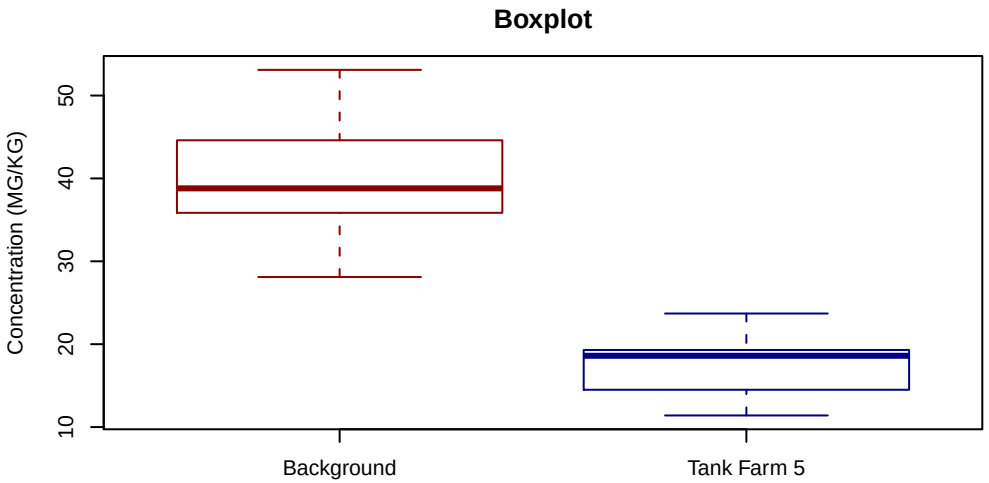


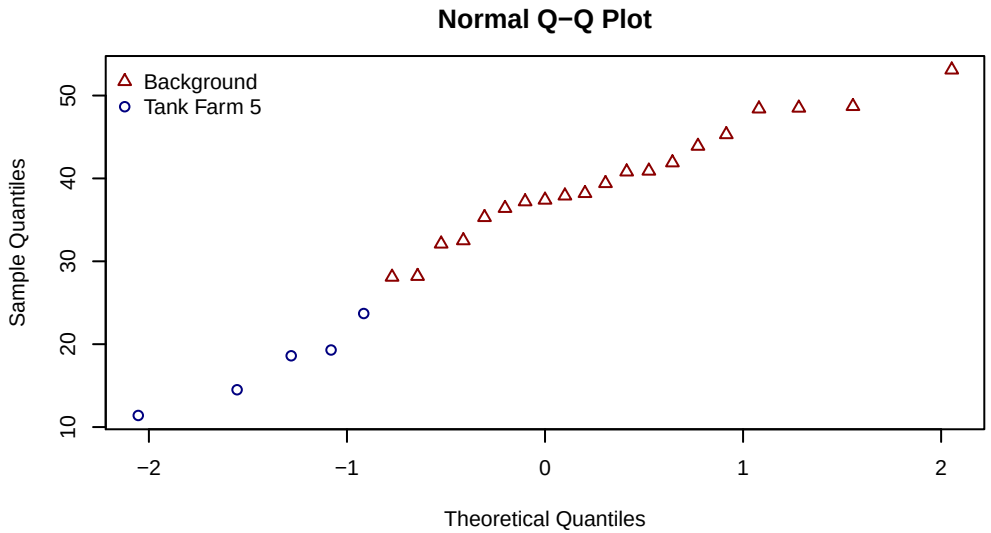


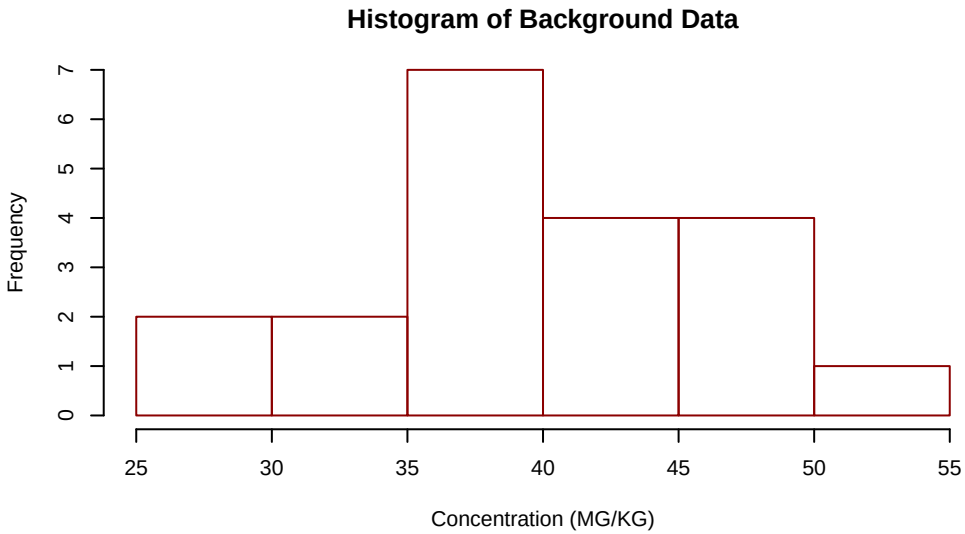


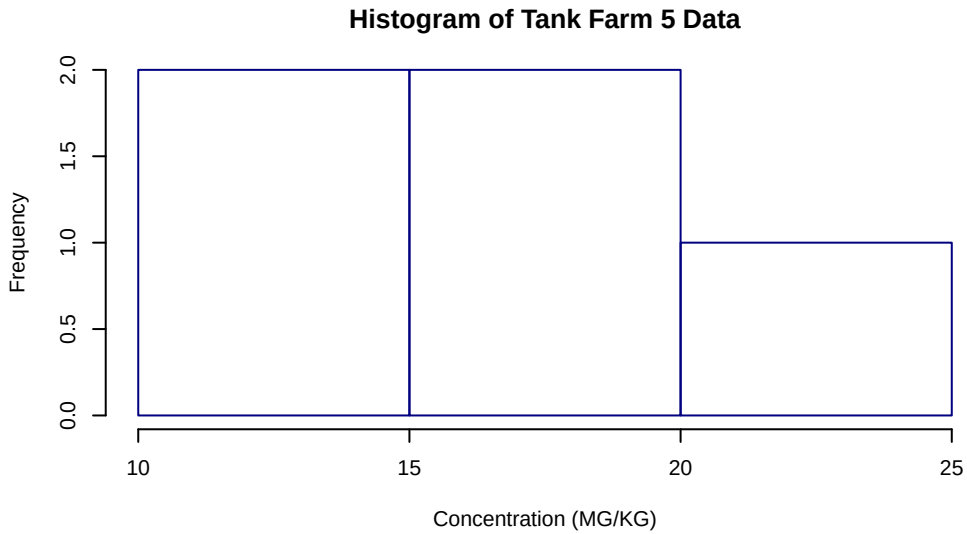


BARIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

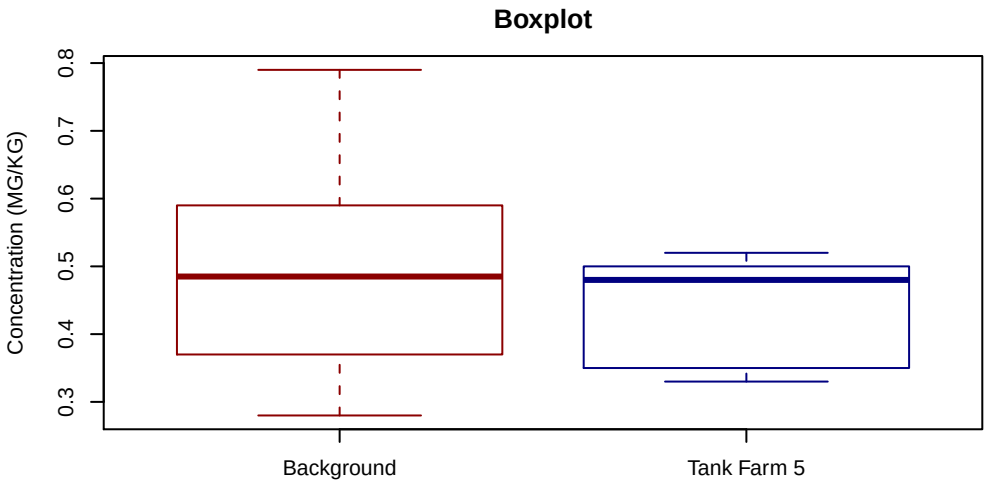


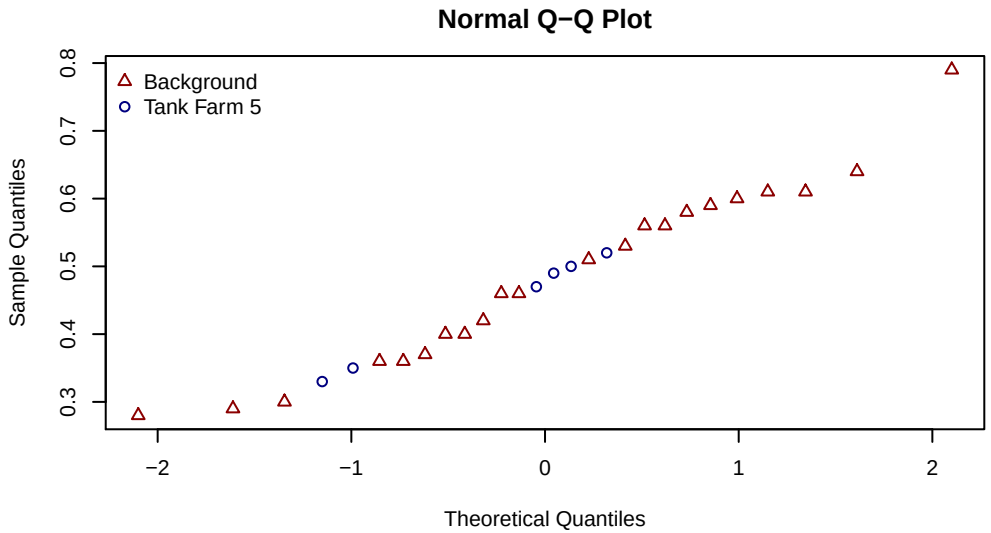


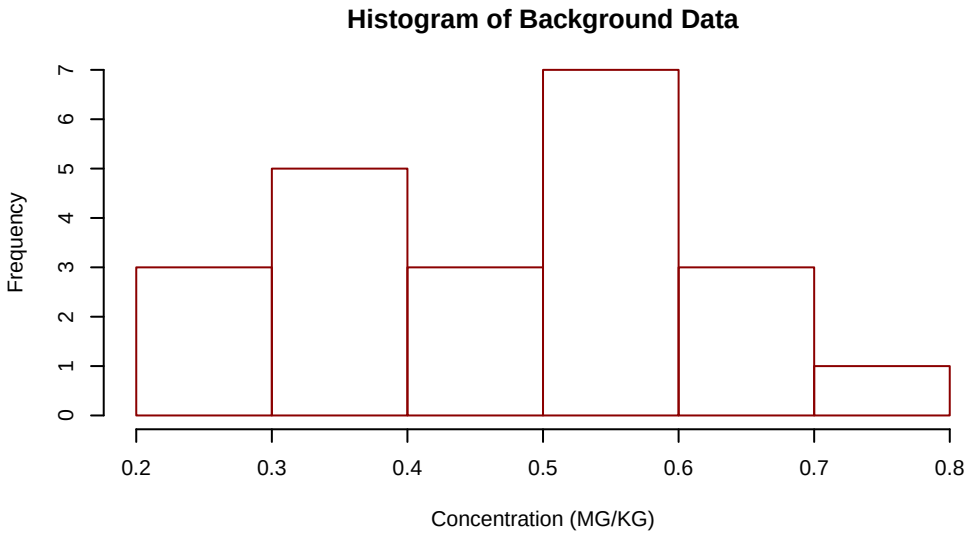


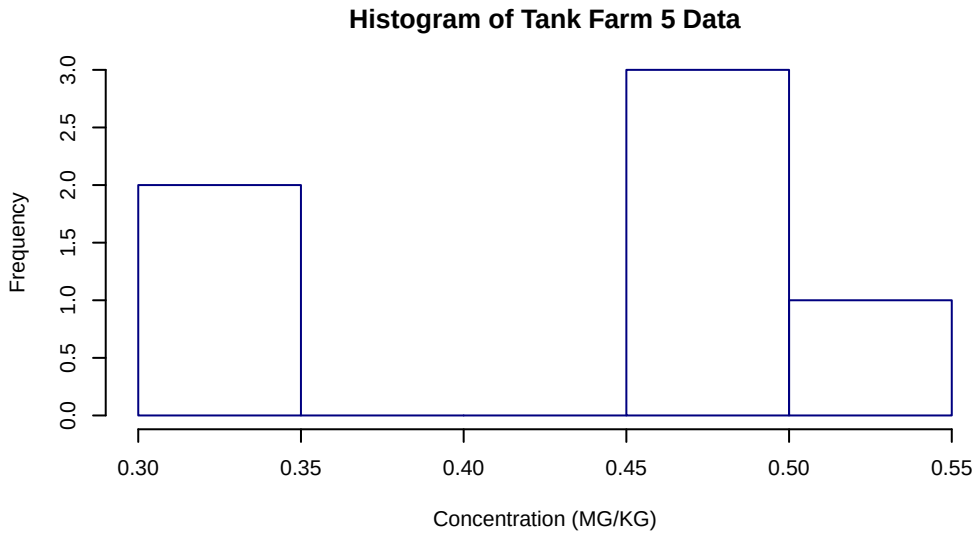


BERYLLIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

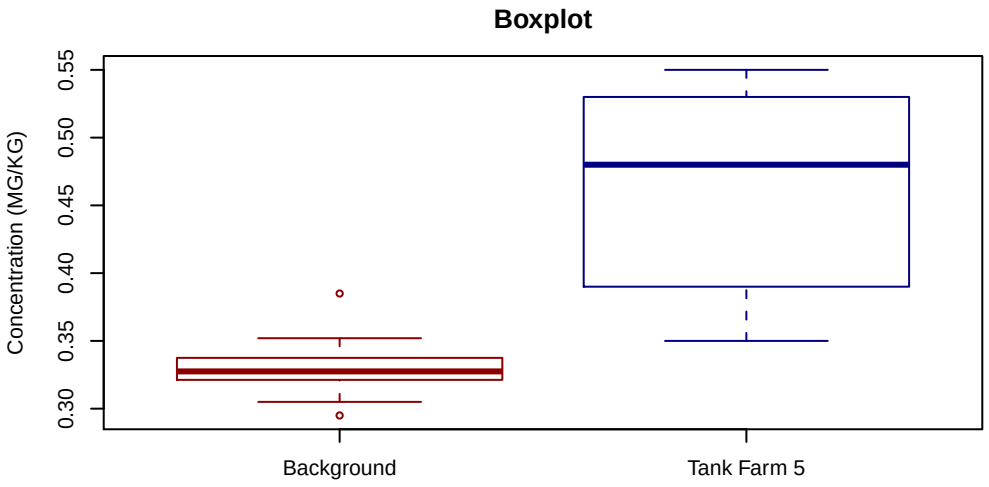


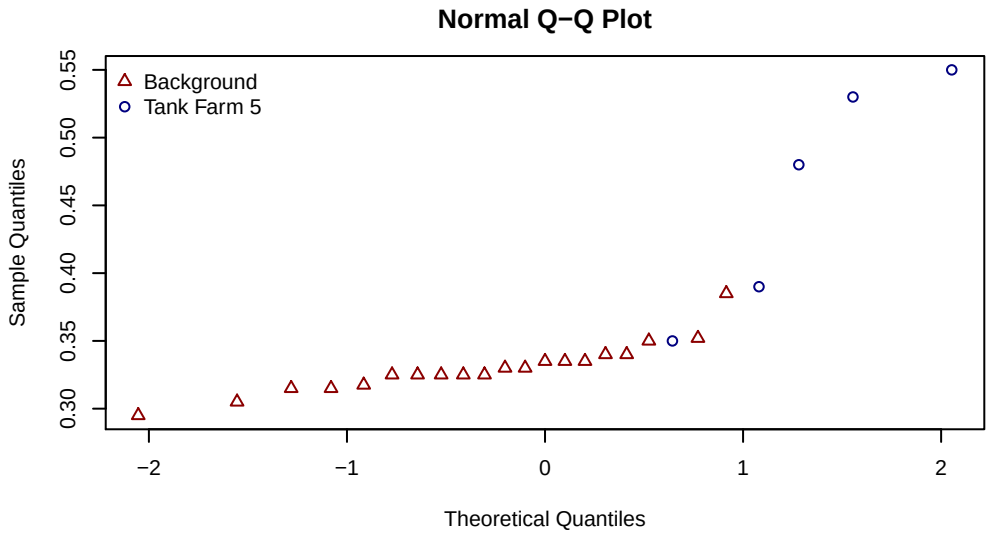


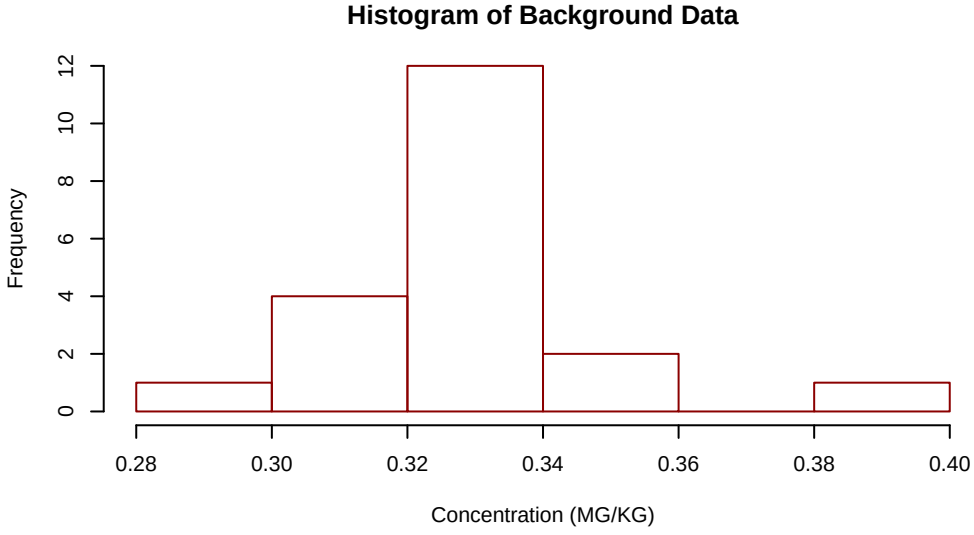


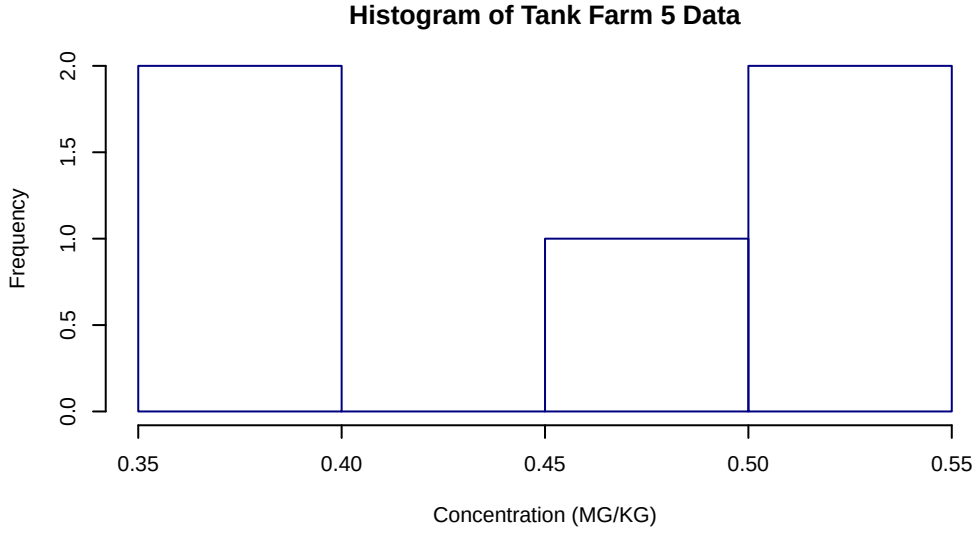


BERYLLIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

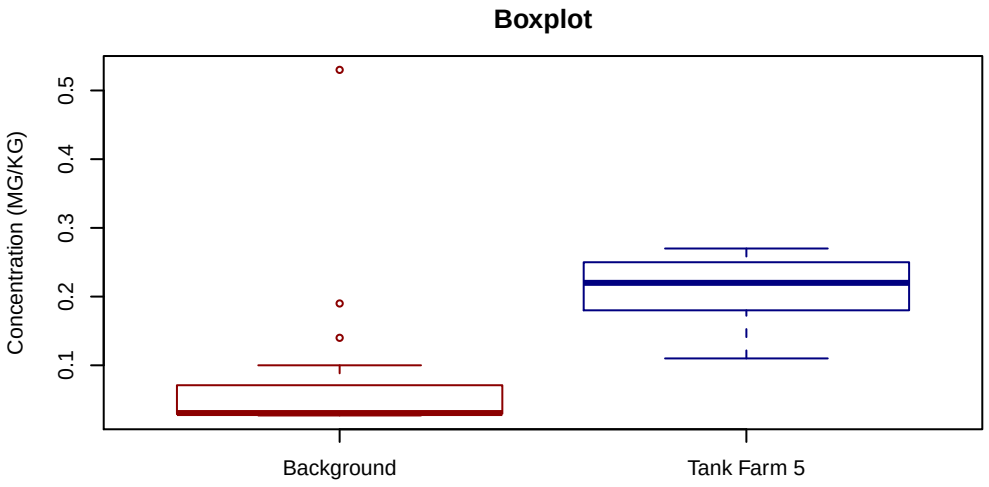


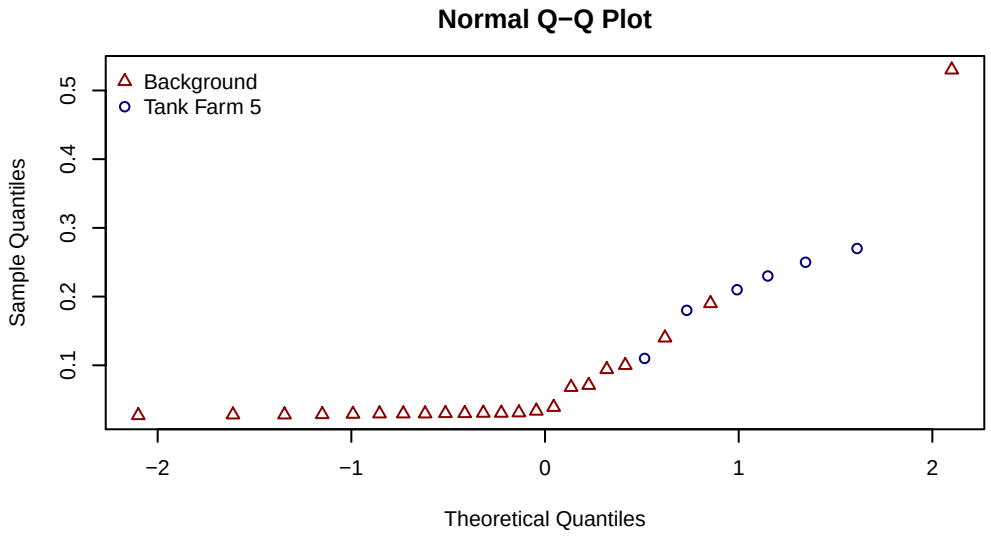


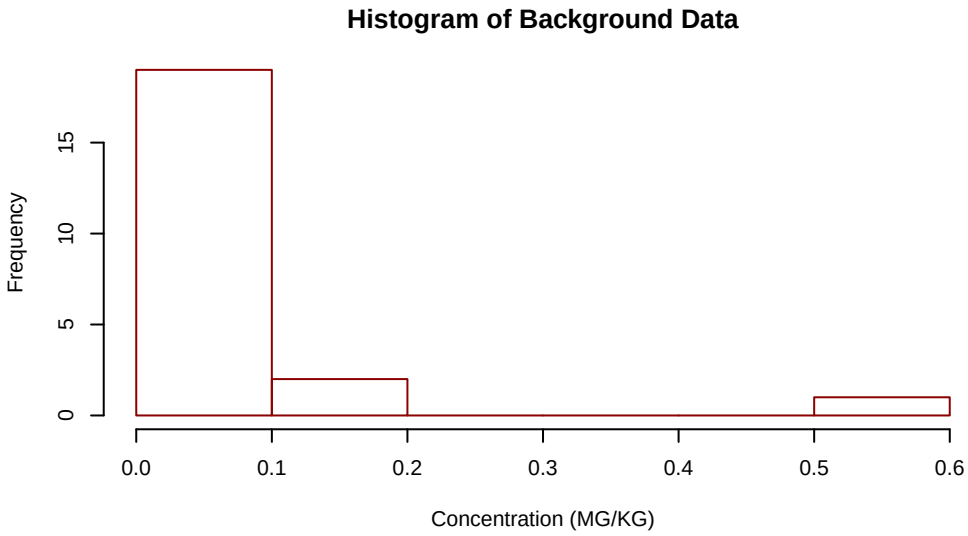


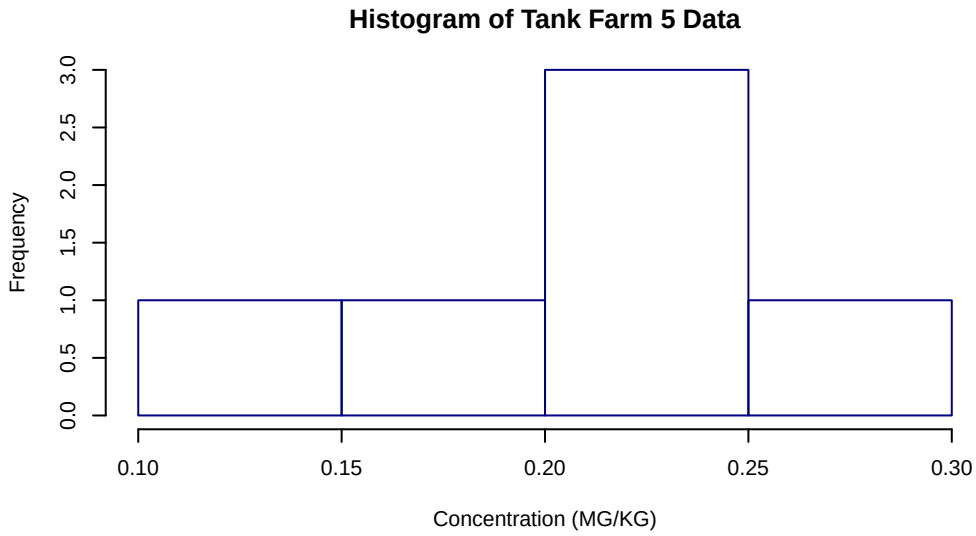


CADMIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

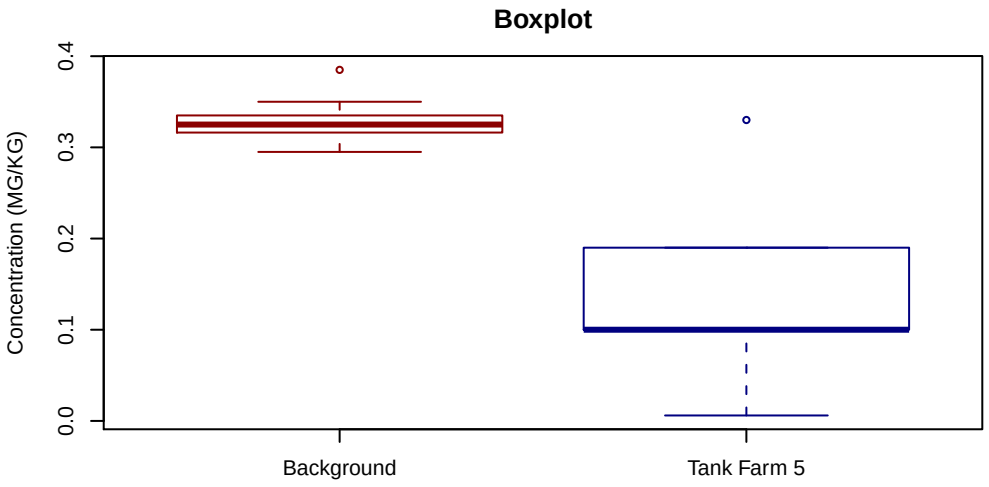


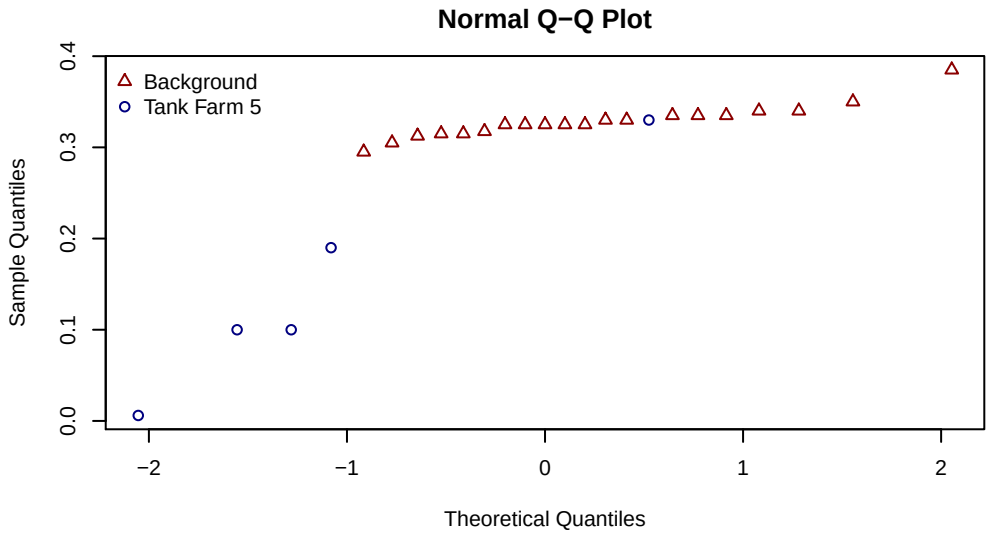


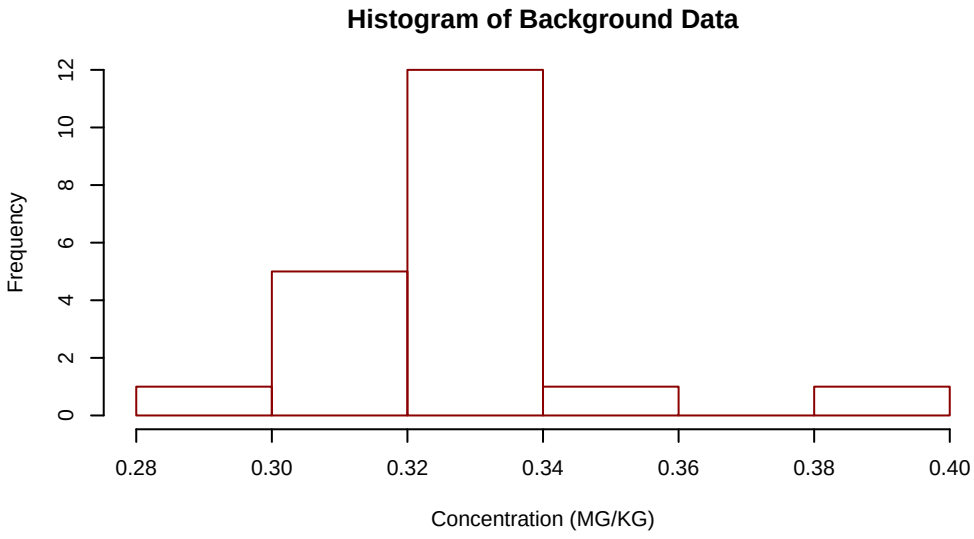


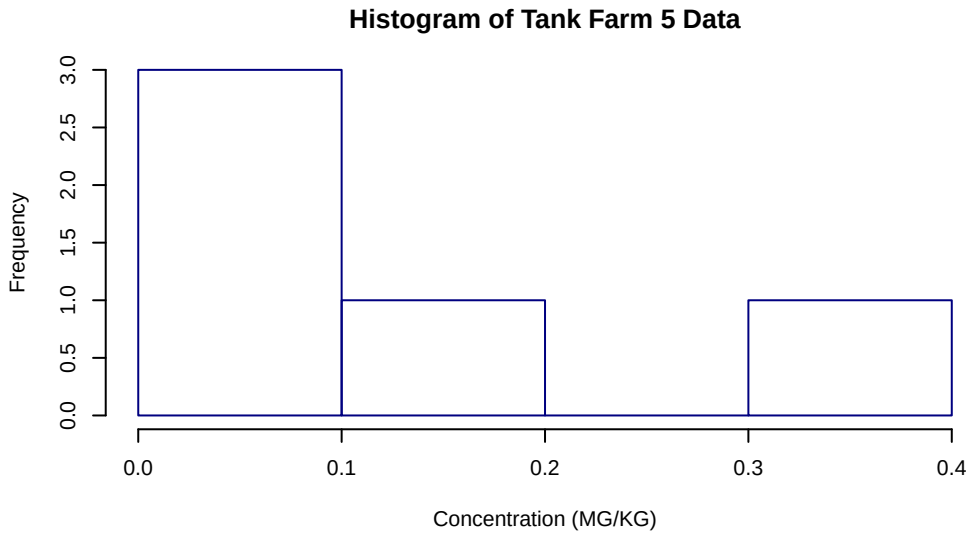


CADMIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

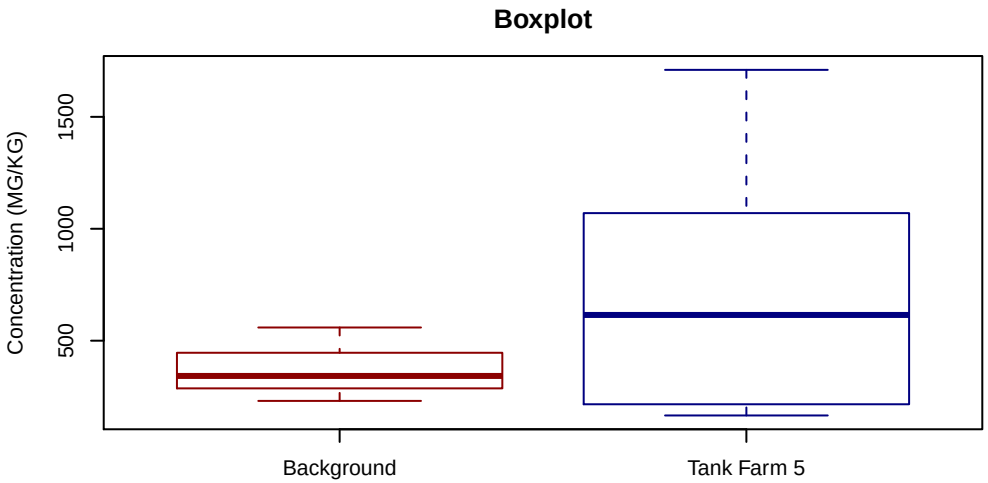


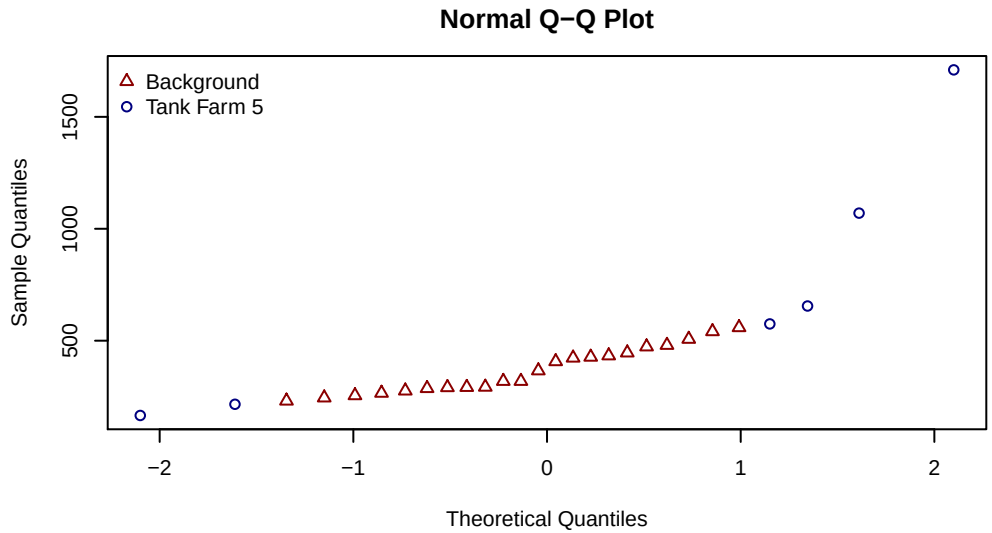


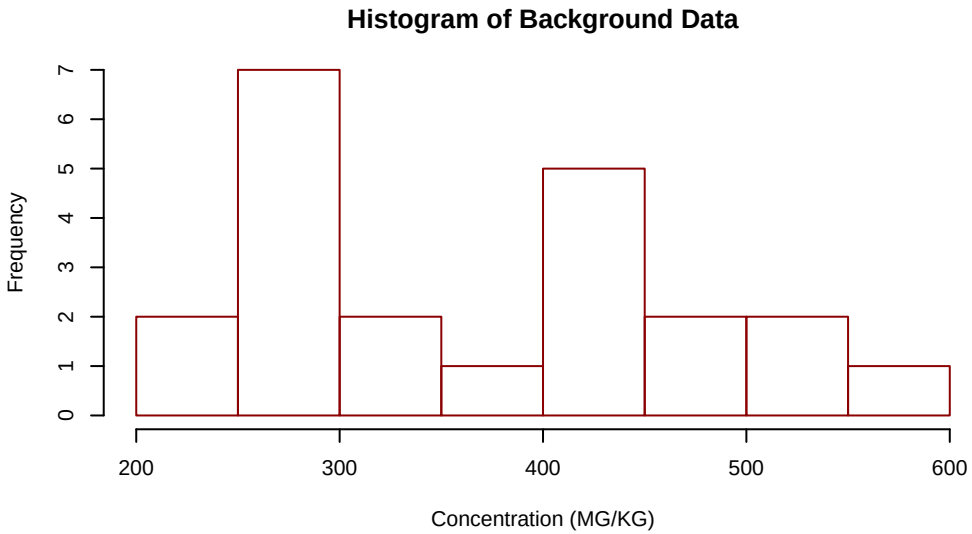


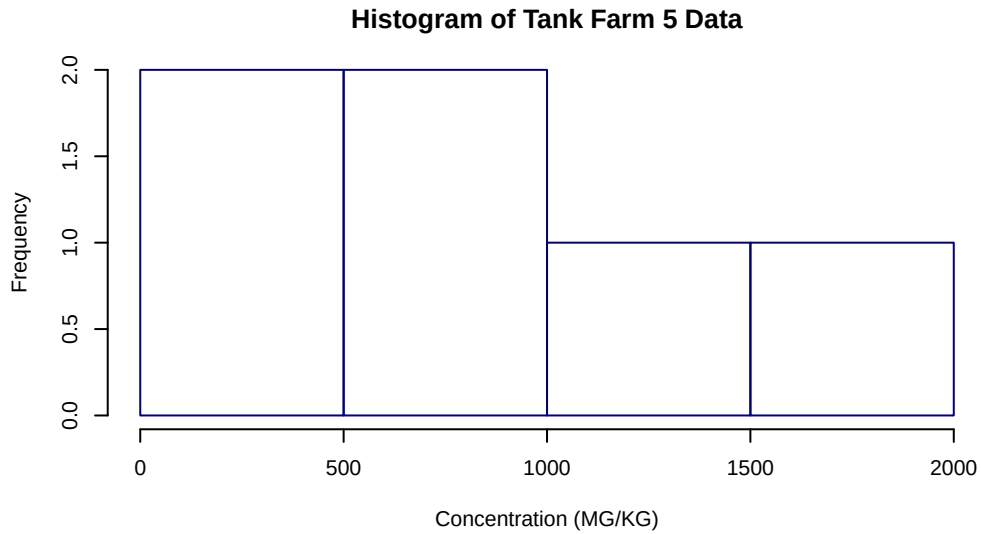


CALCIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

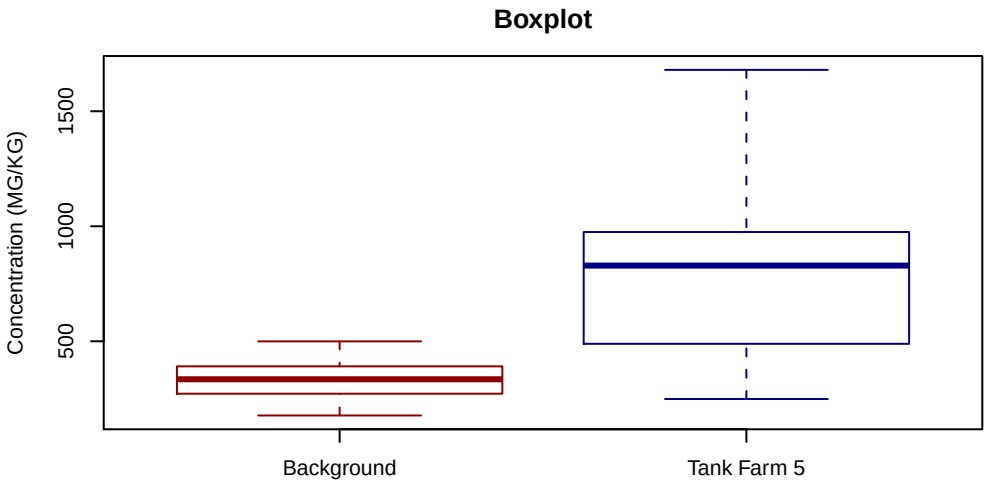


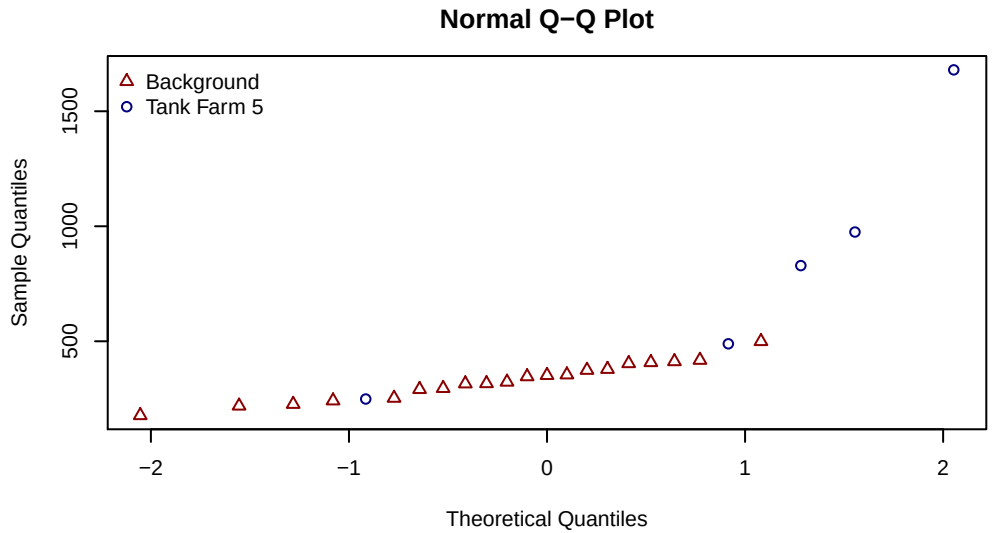


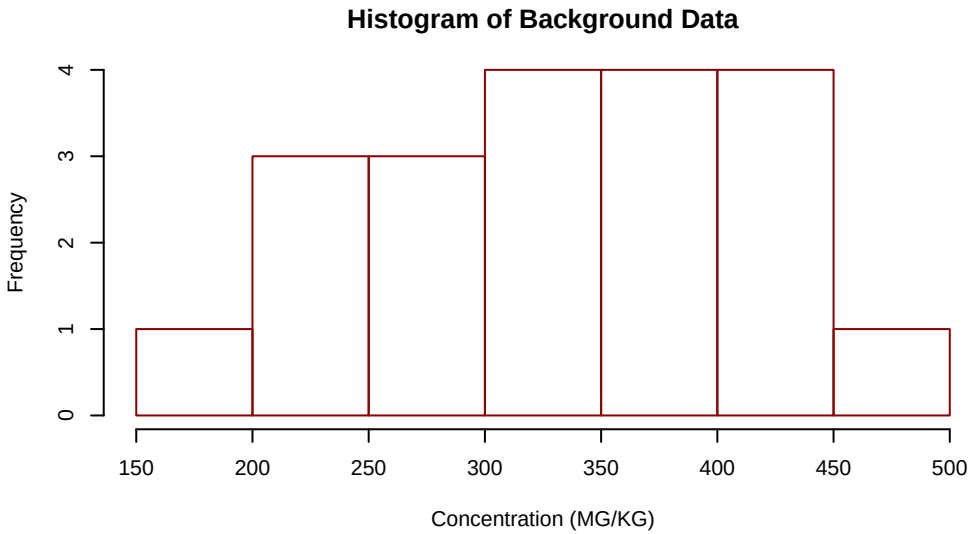


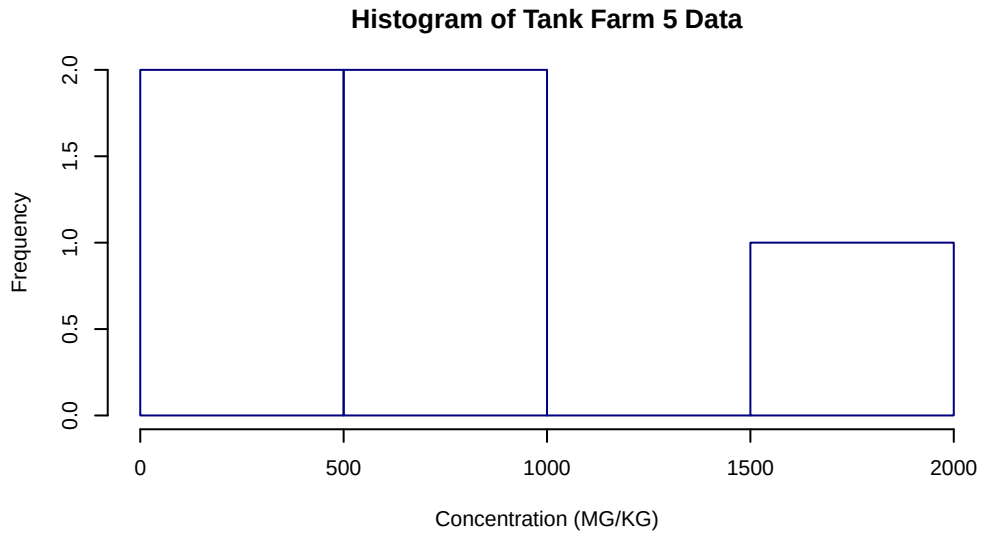


CALCIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

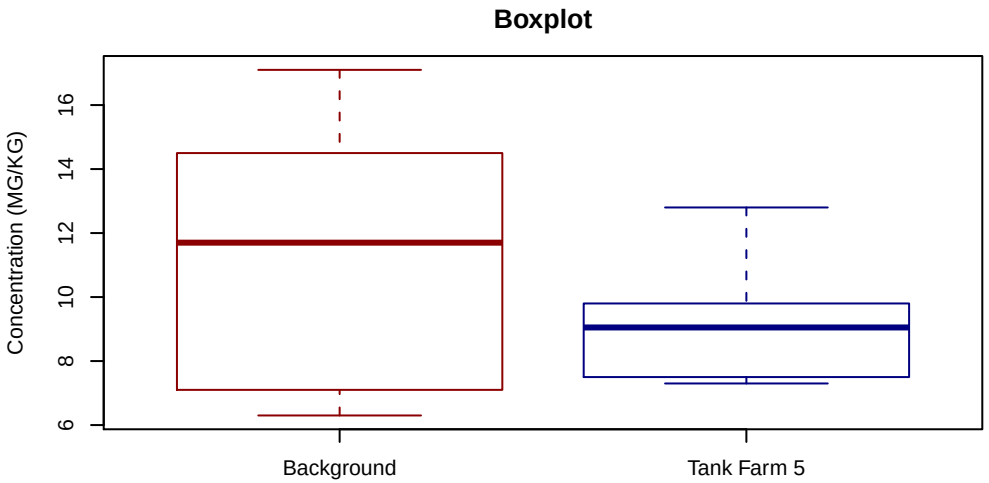


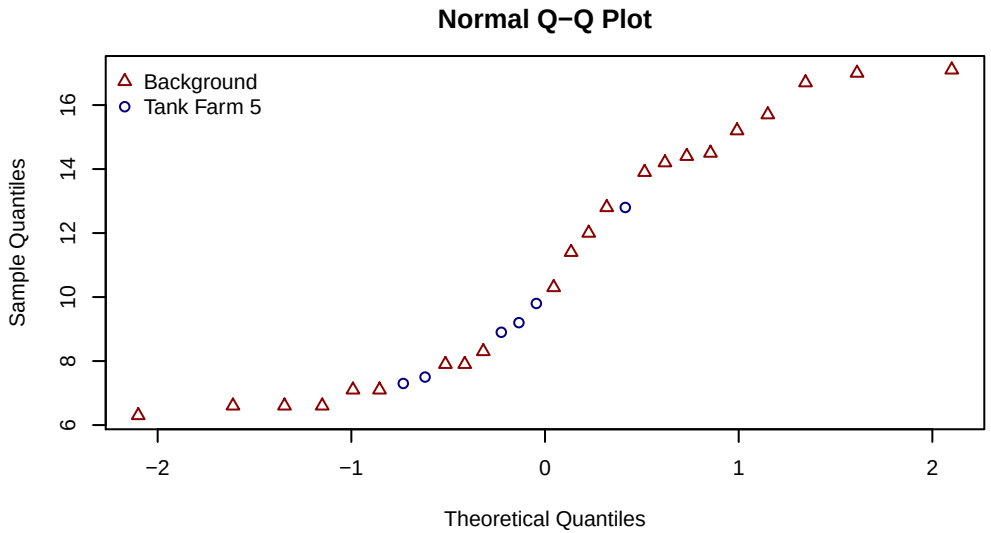


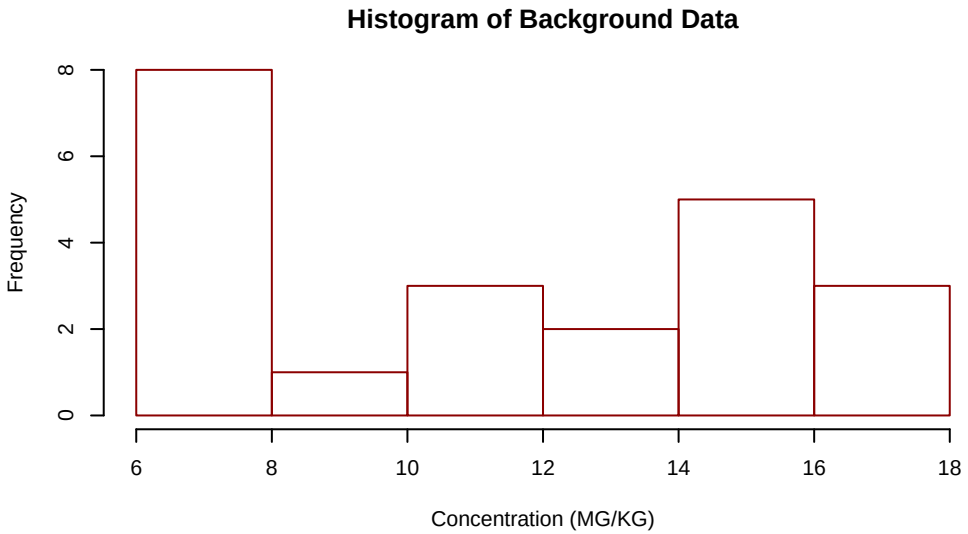


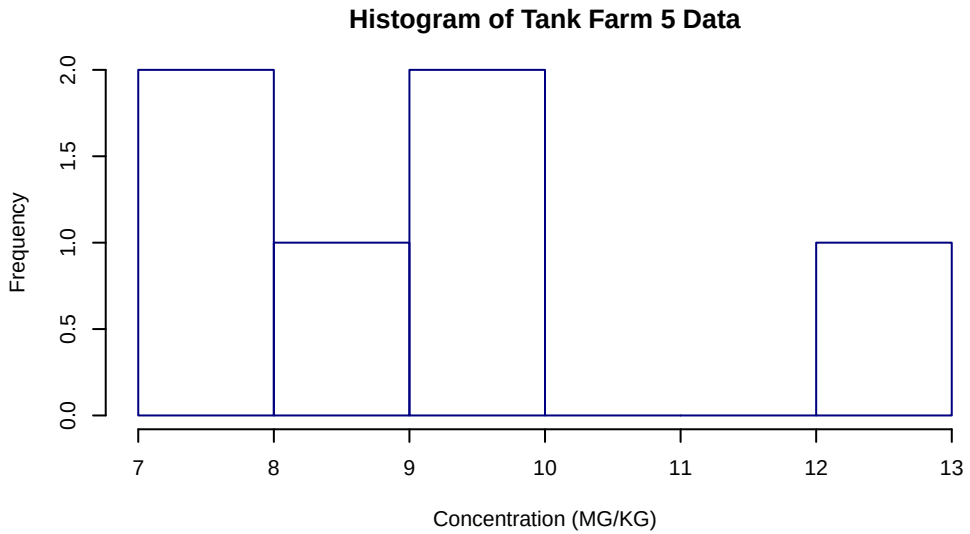


CHROMIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

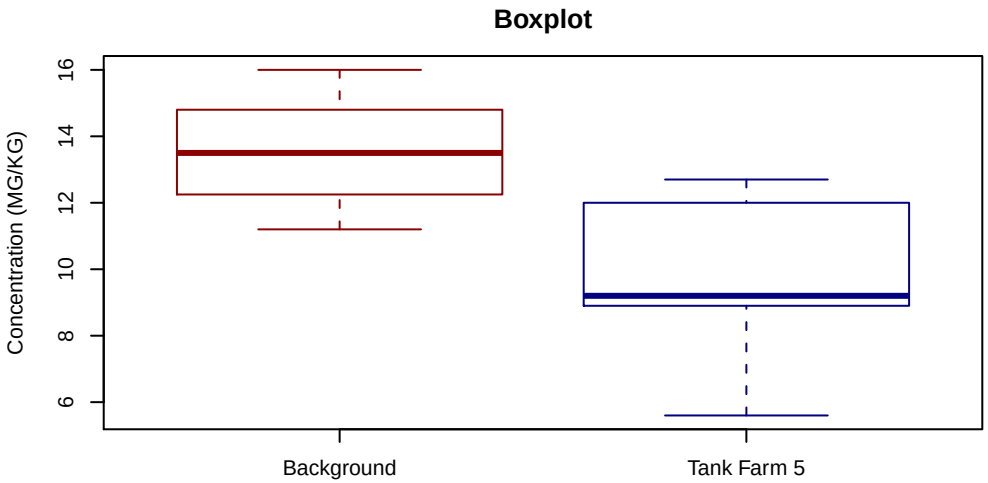


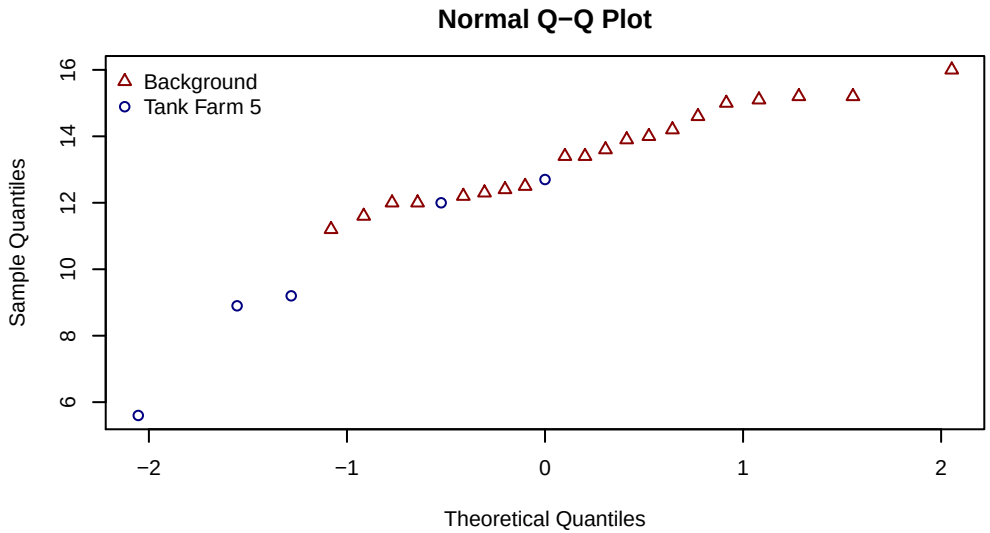


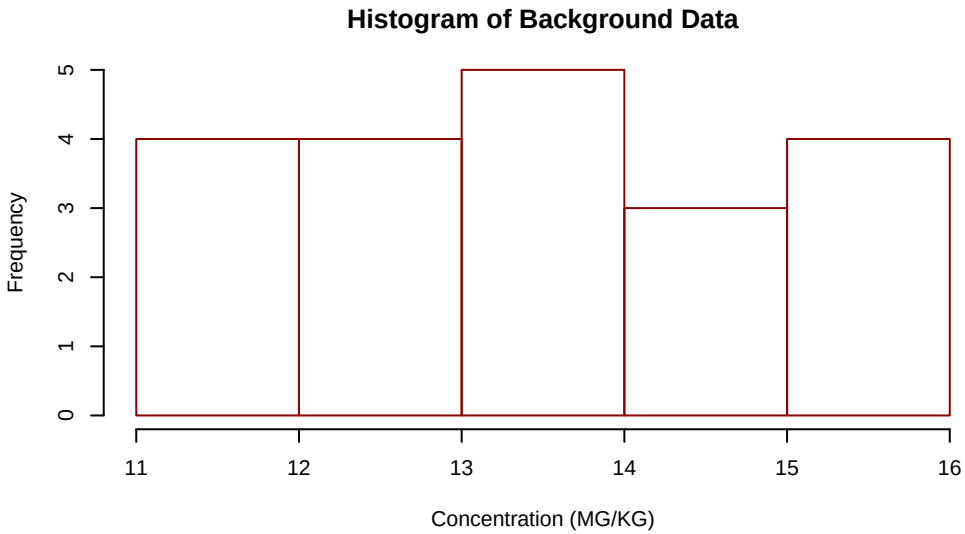


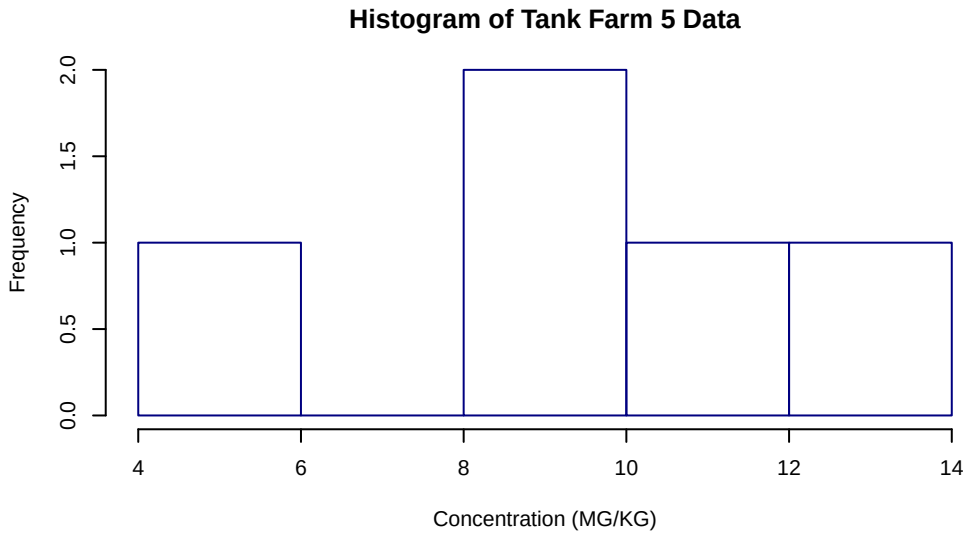


CHROMIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

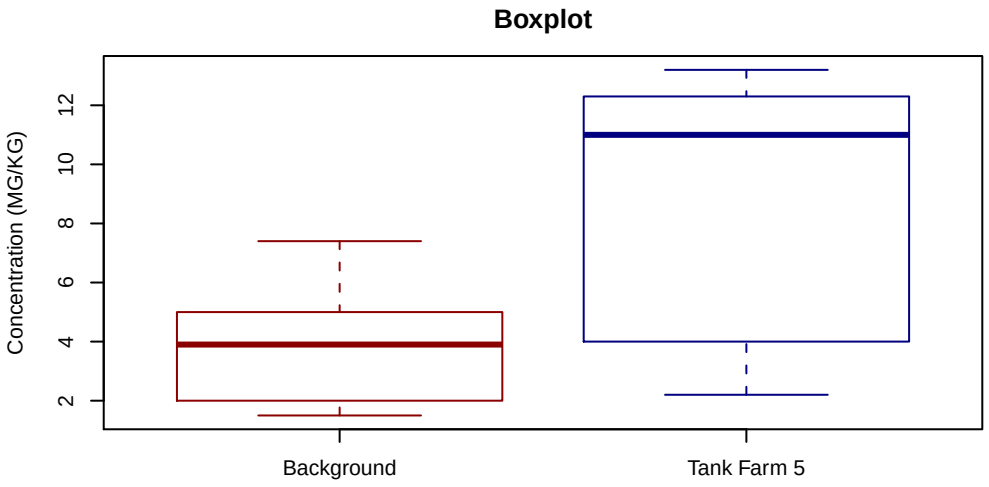


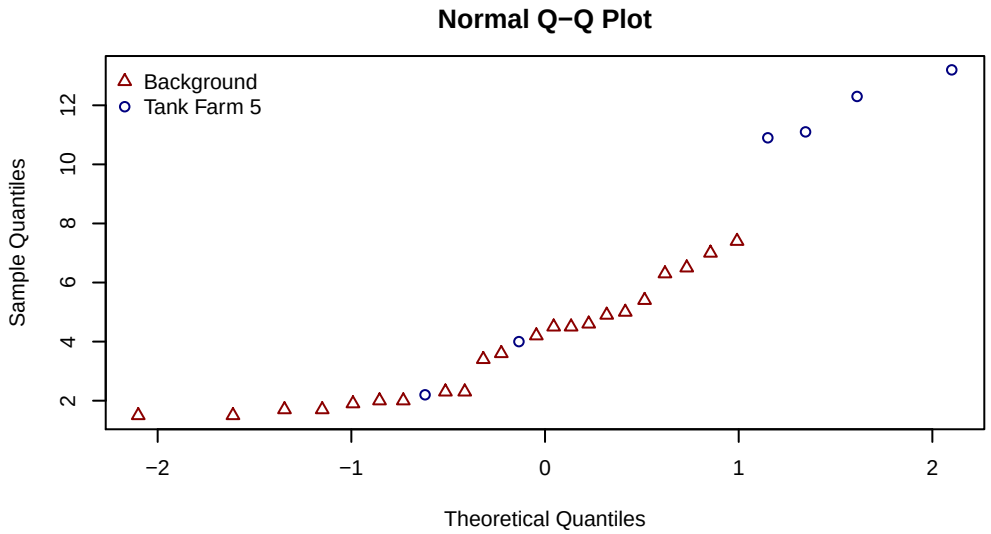


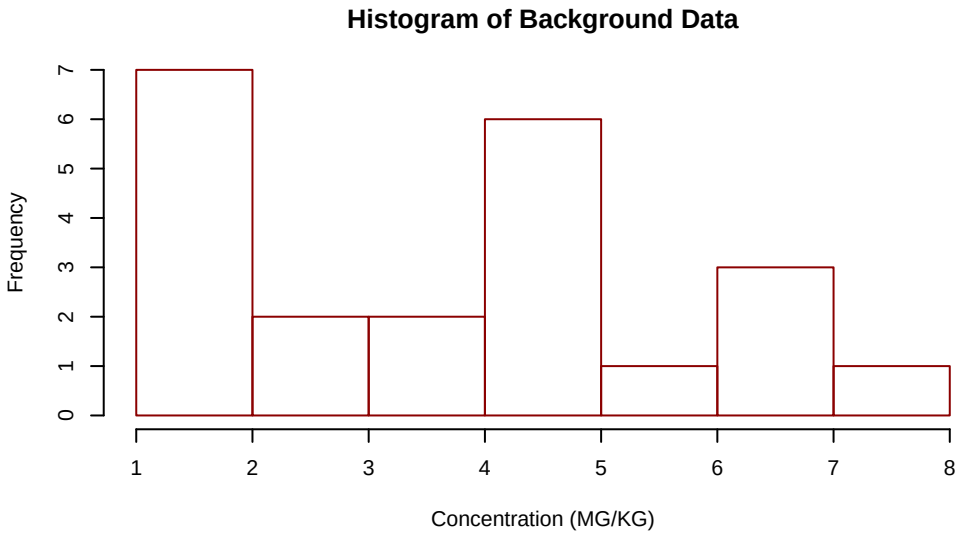


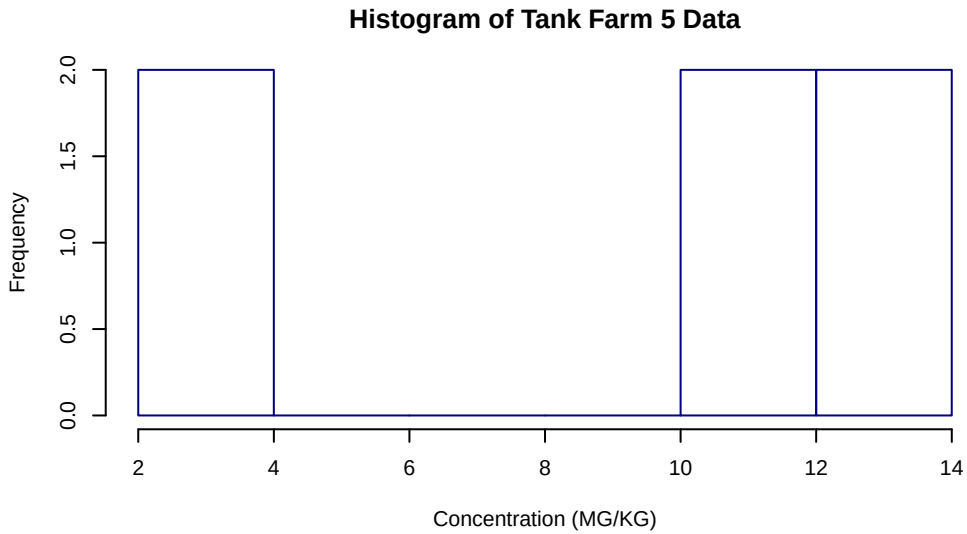


COBALT Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

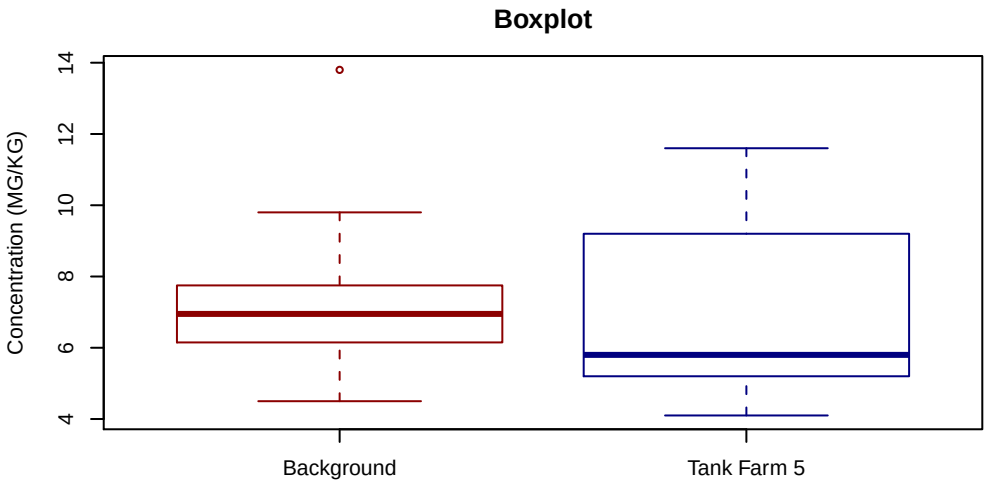


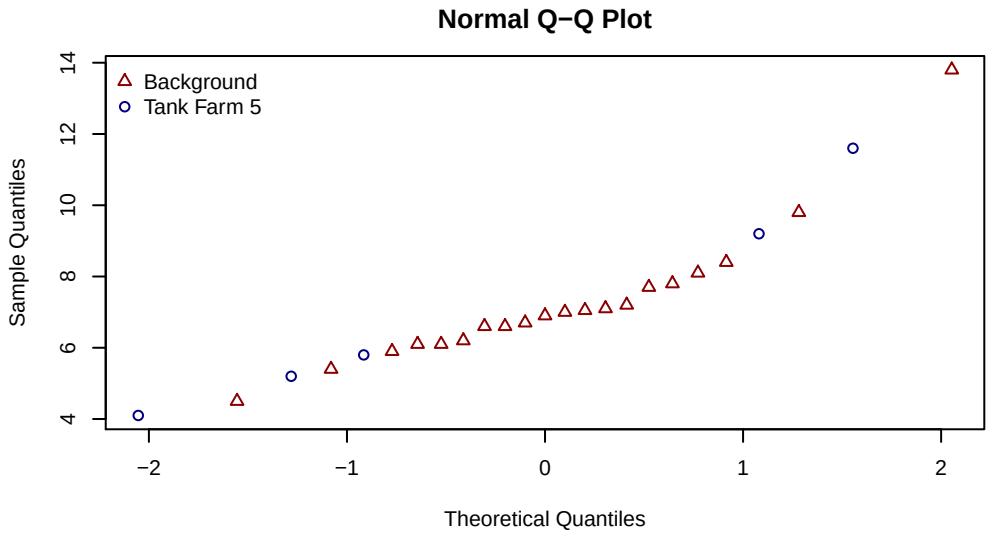


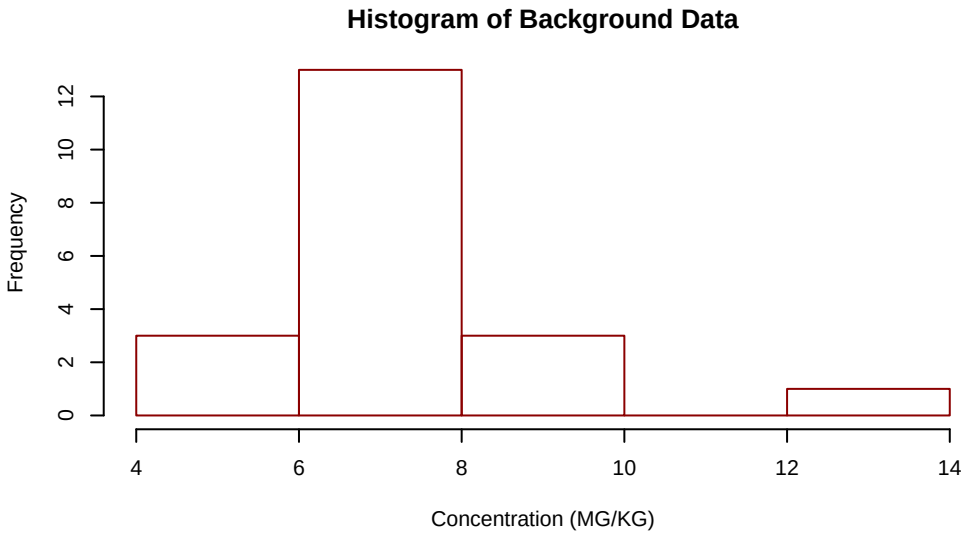


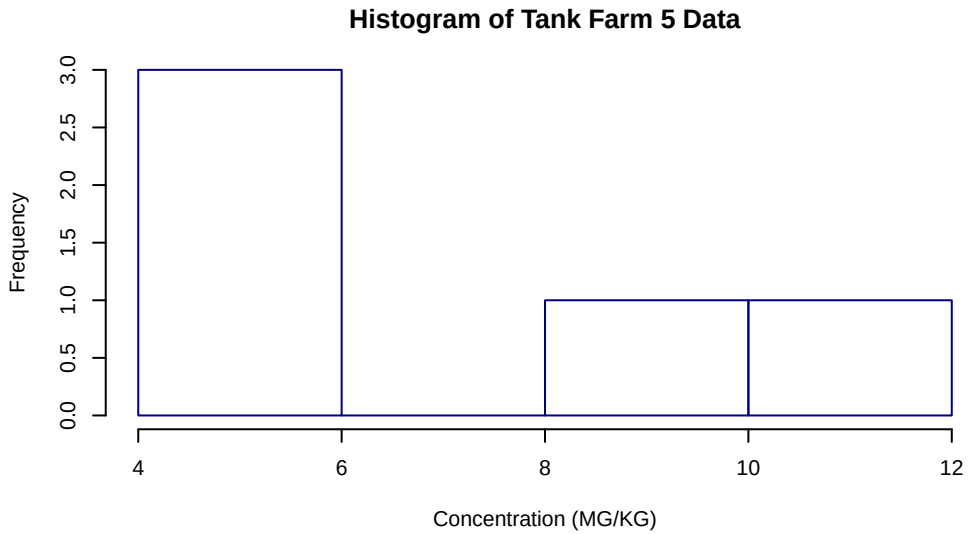


COBALT Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

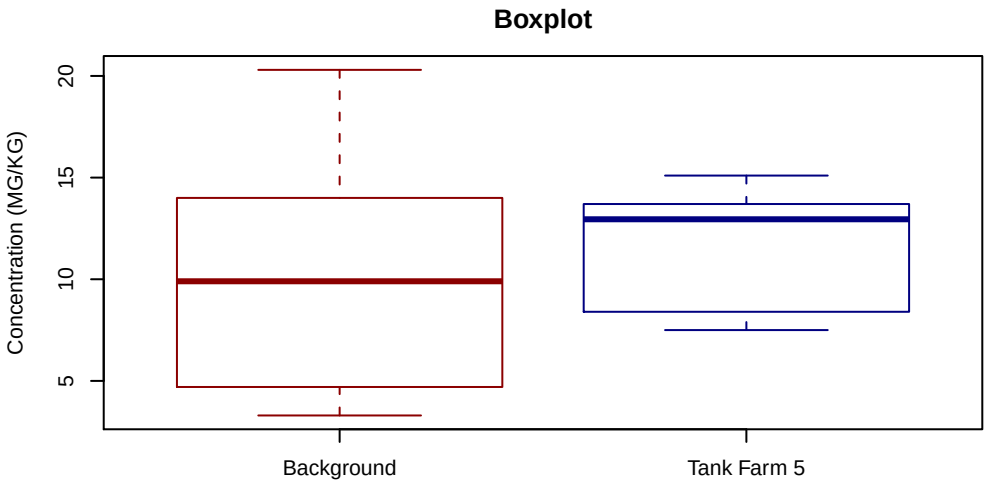


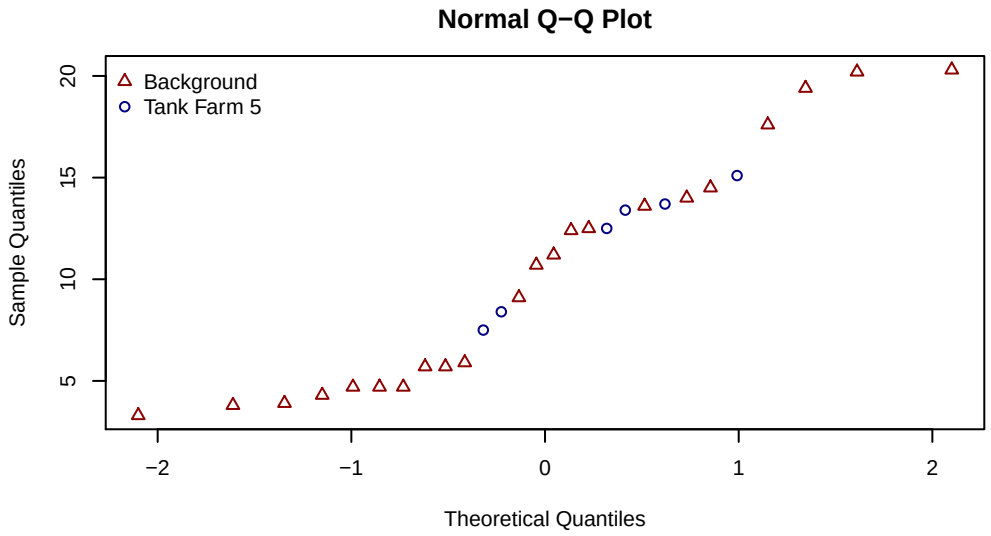


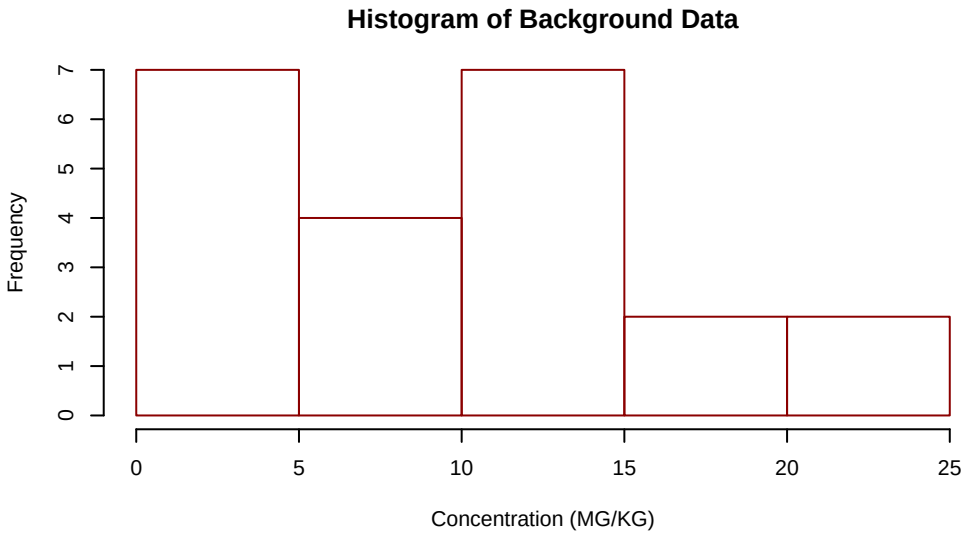


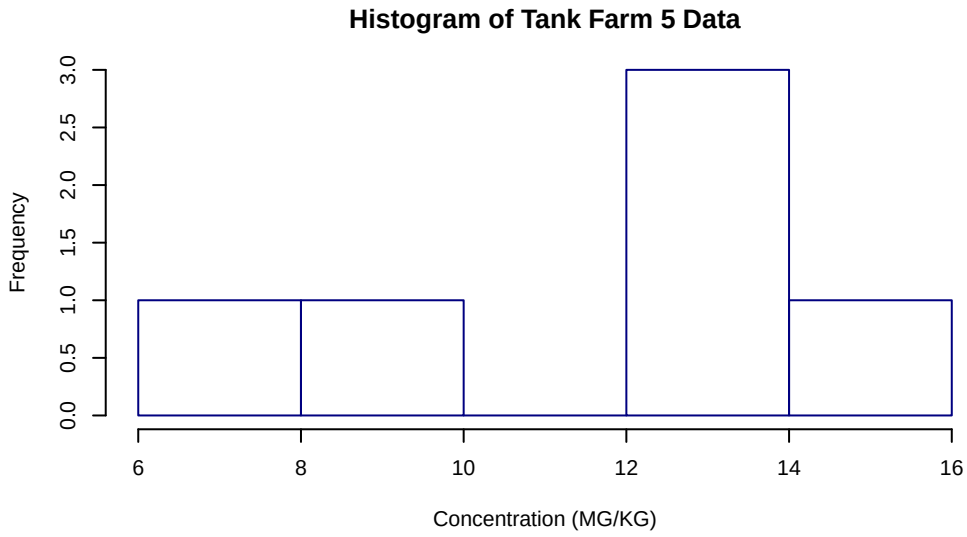


COPPER Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

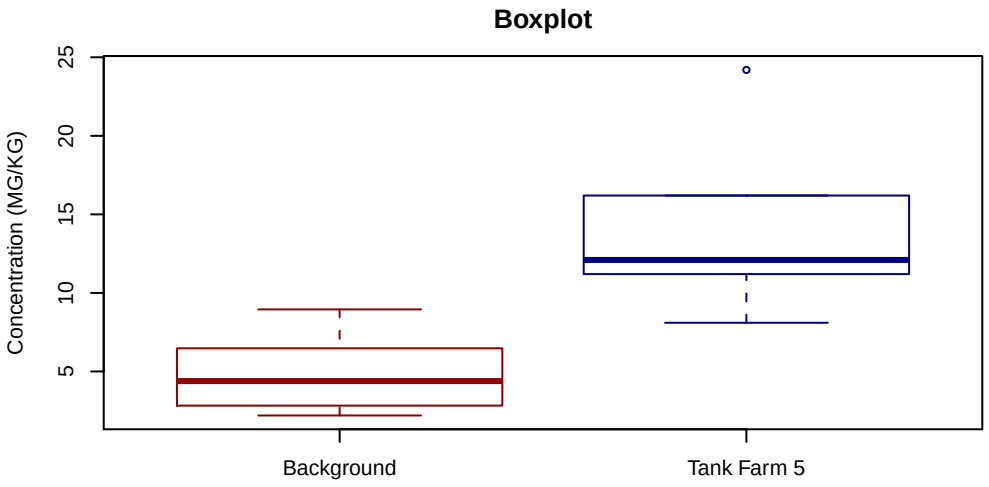


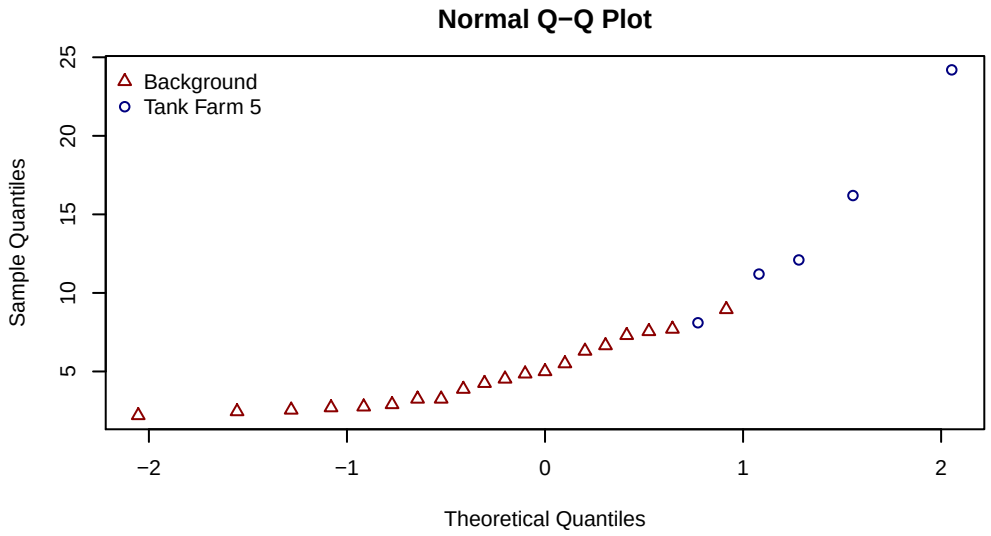


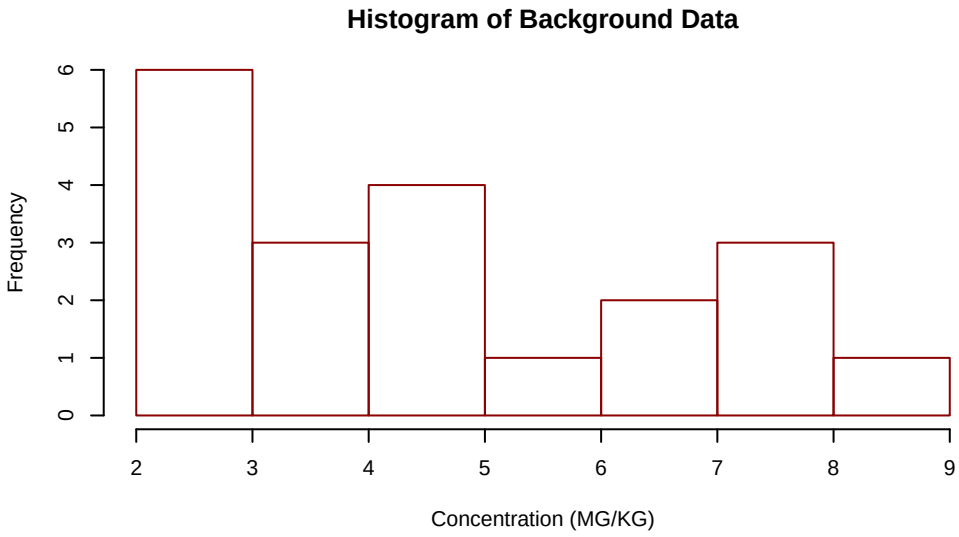


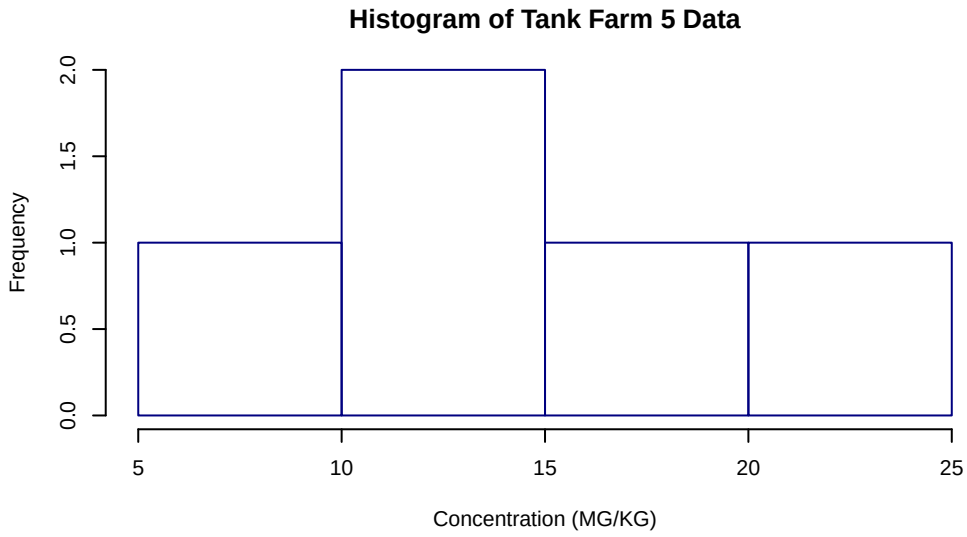


COPPER Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

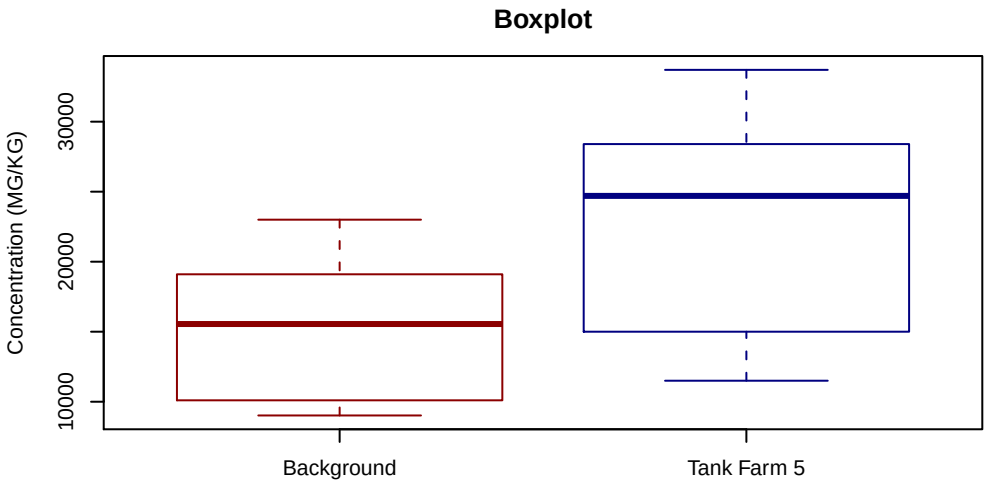


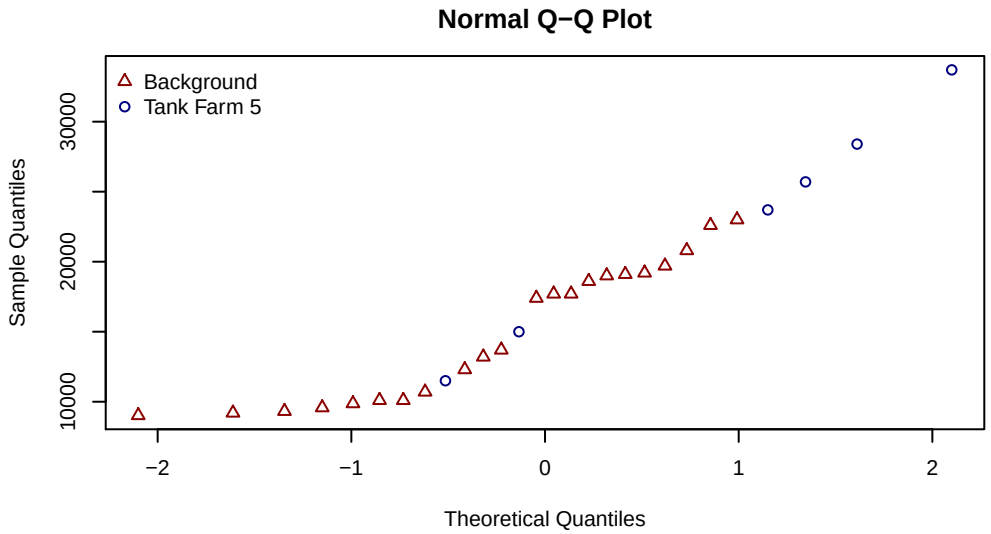


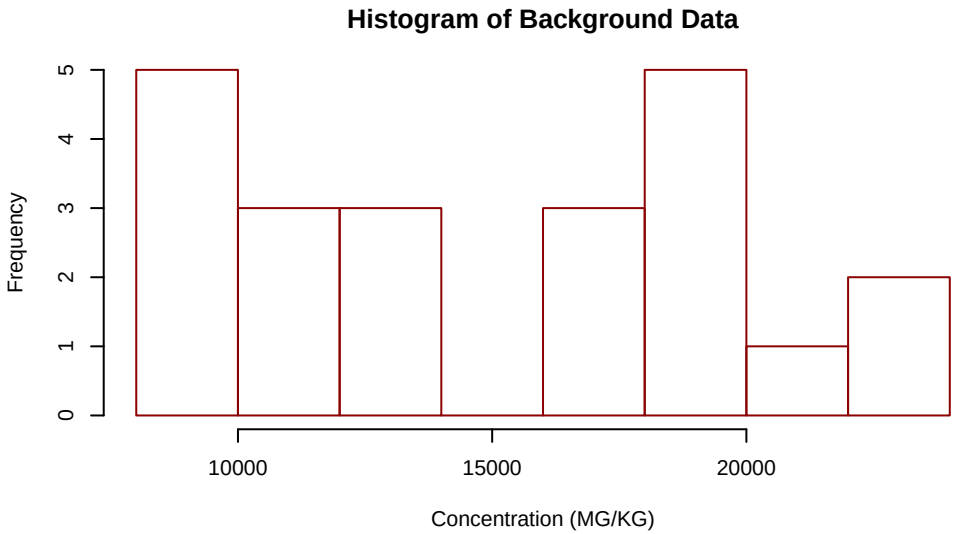


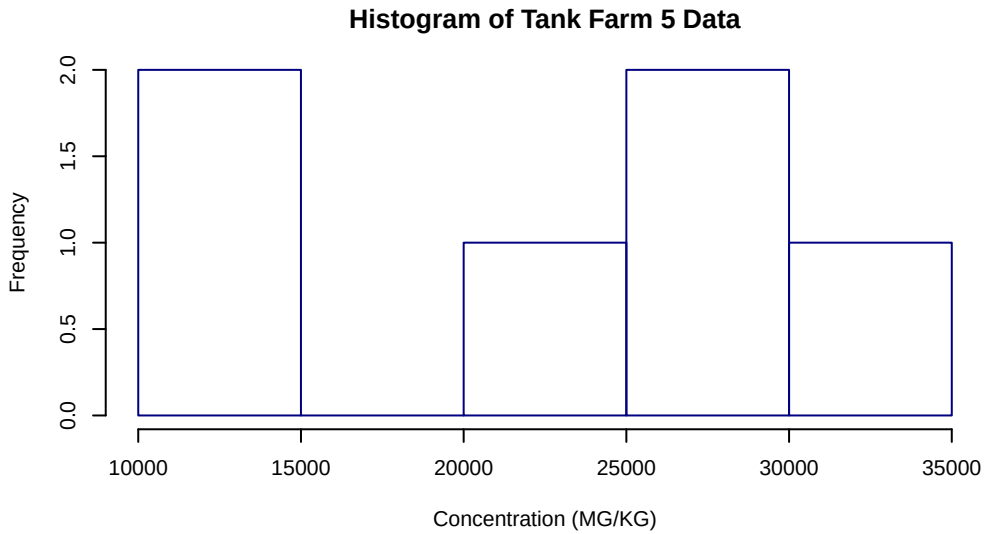


IRON Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

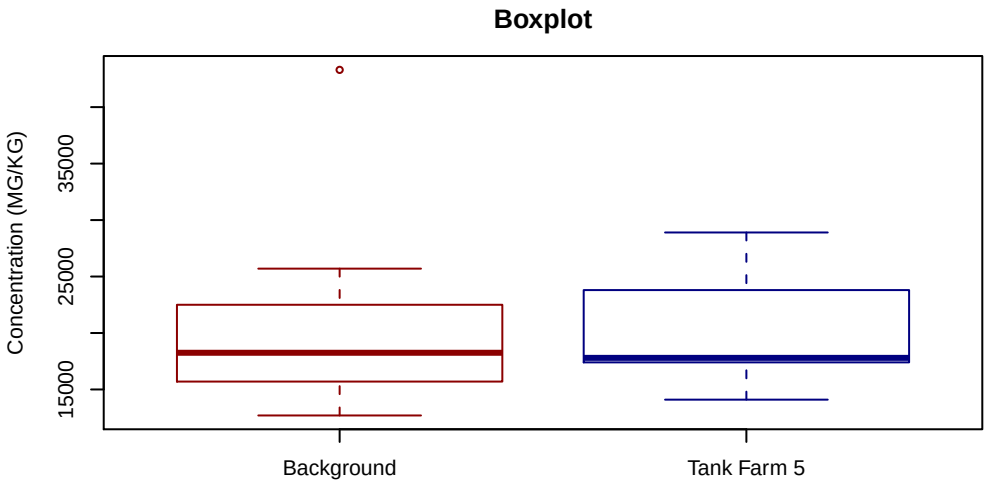


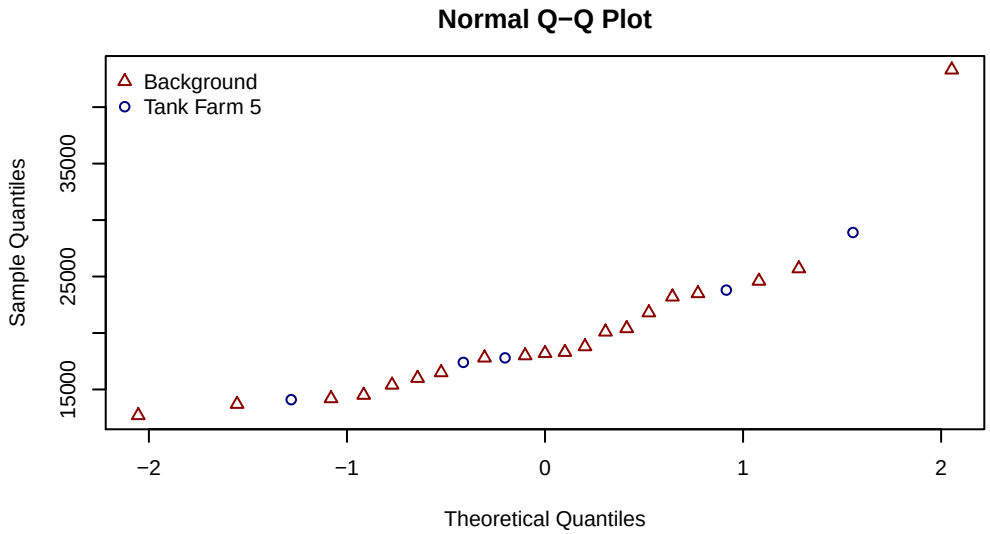


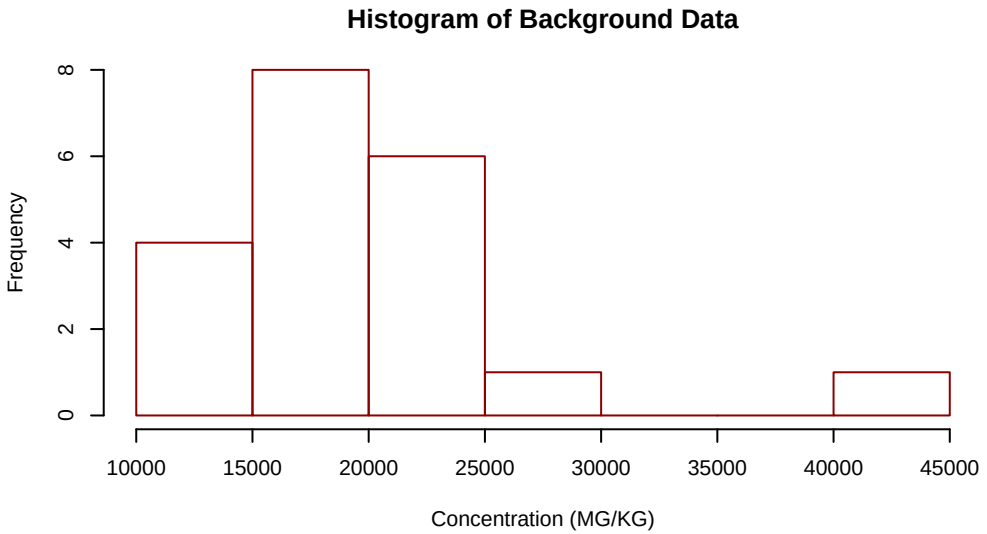


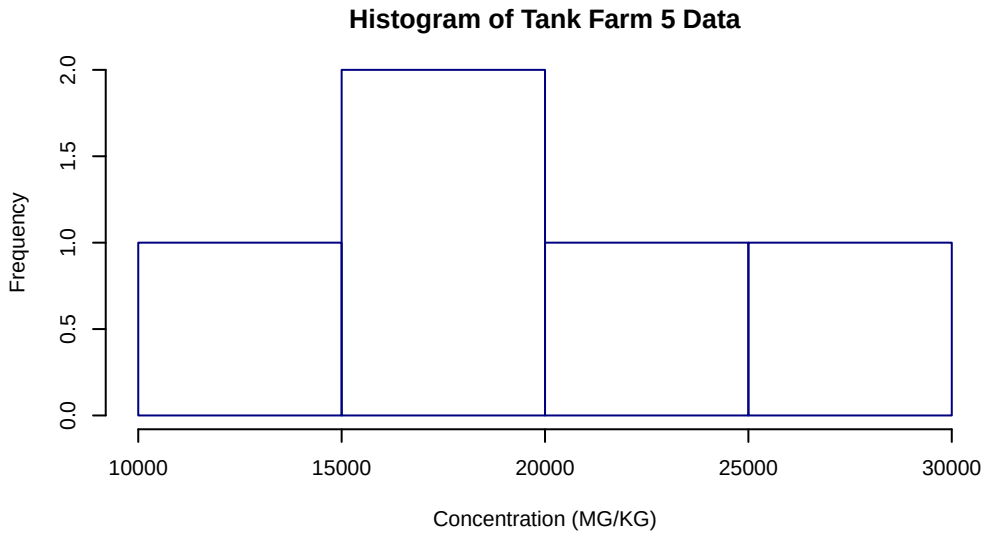


IRON Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

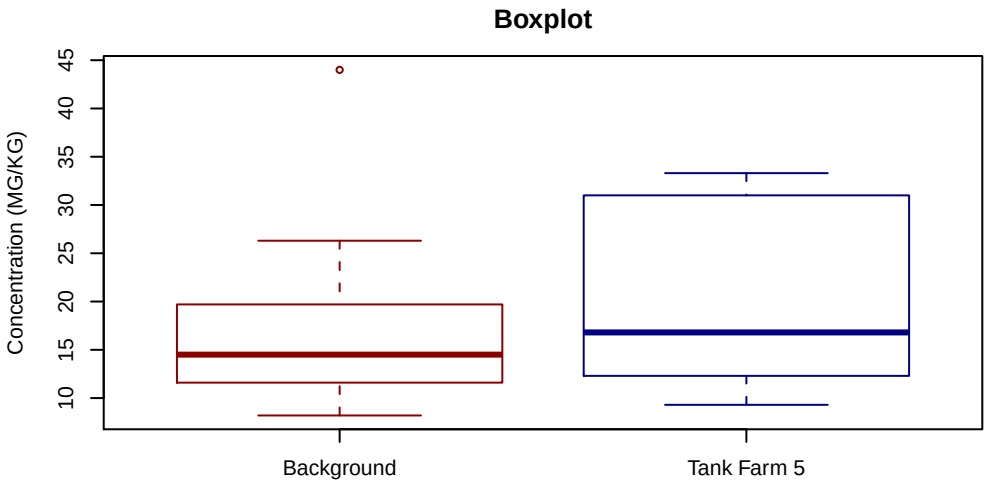


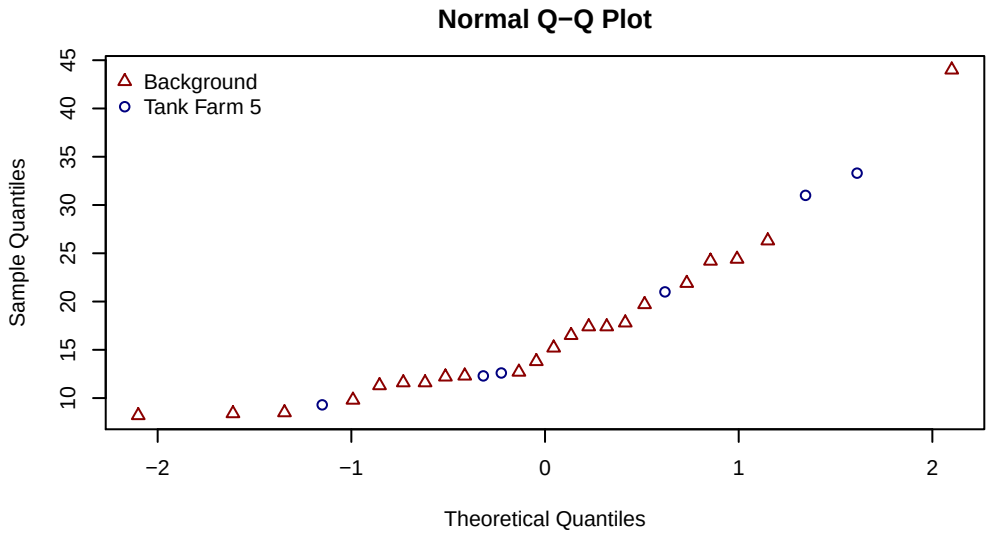


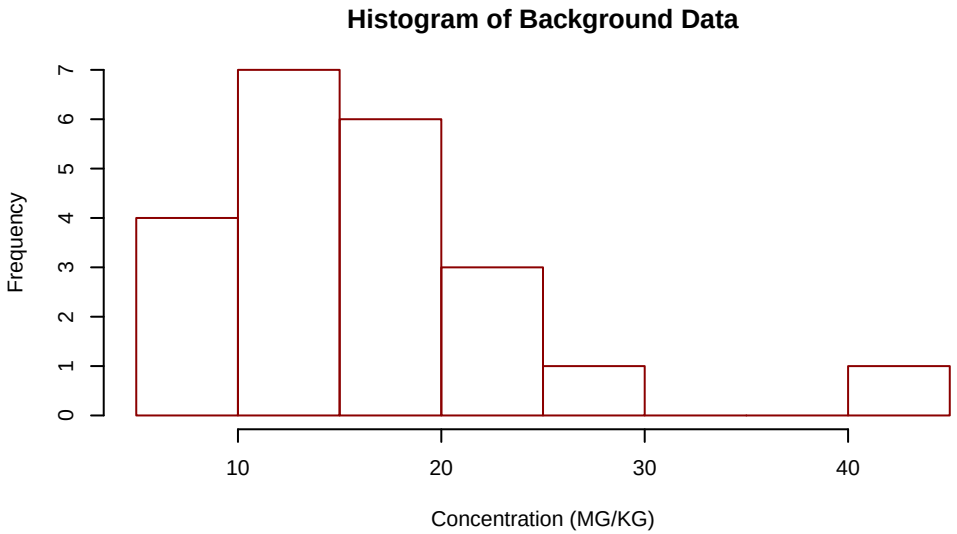


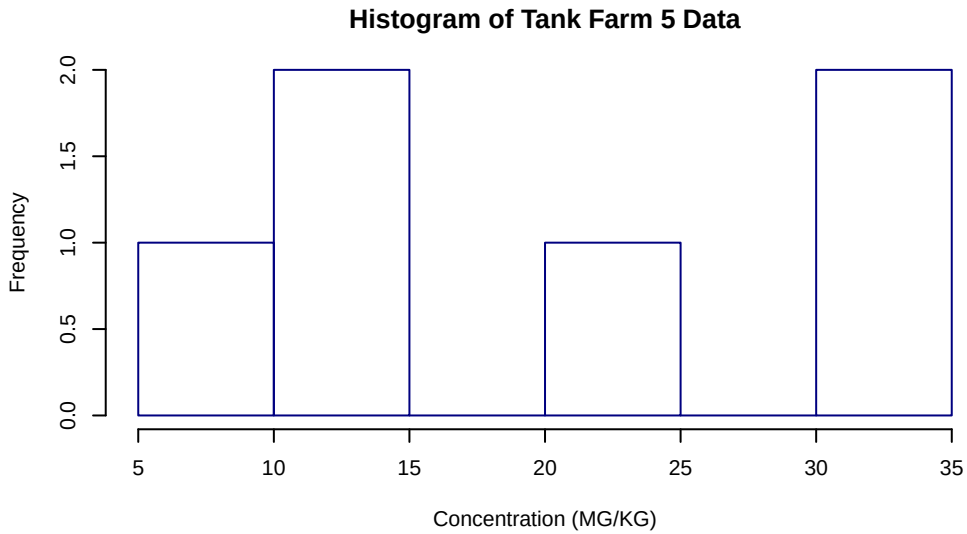


LEAD Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

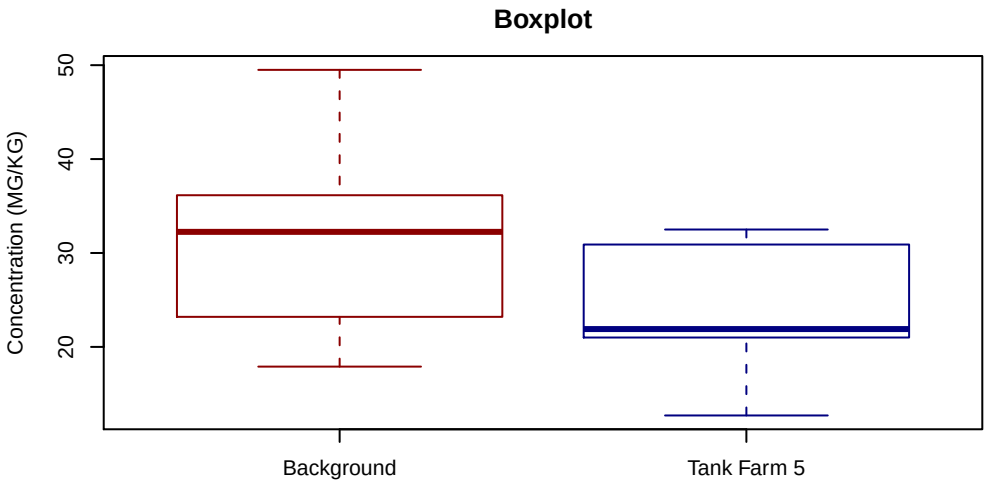


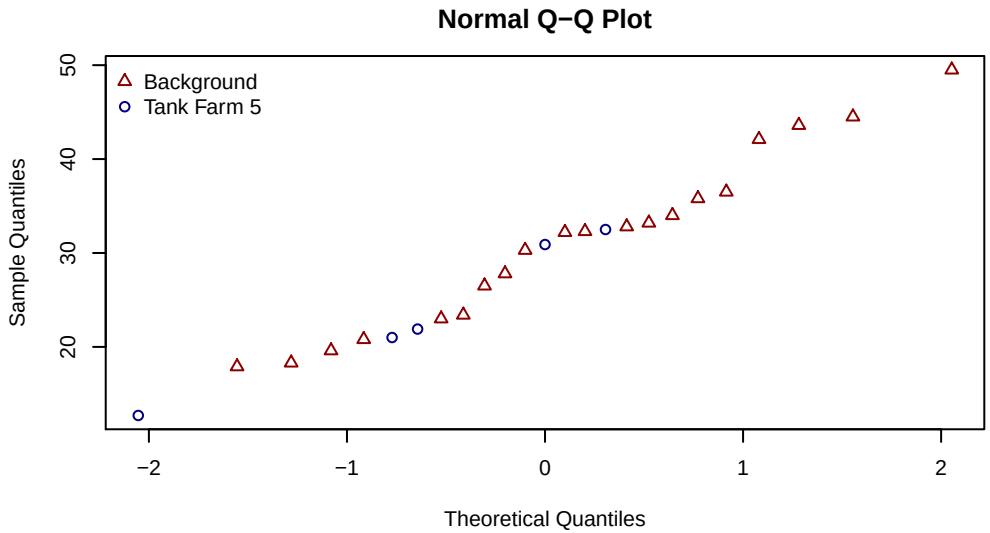


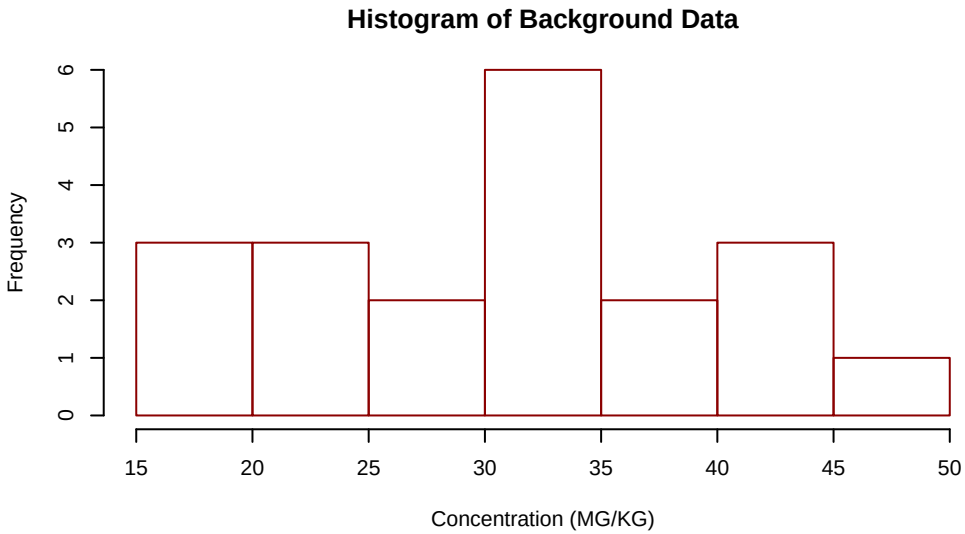


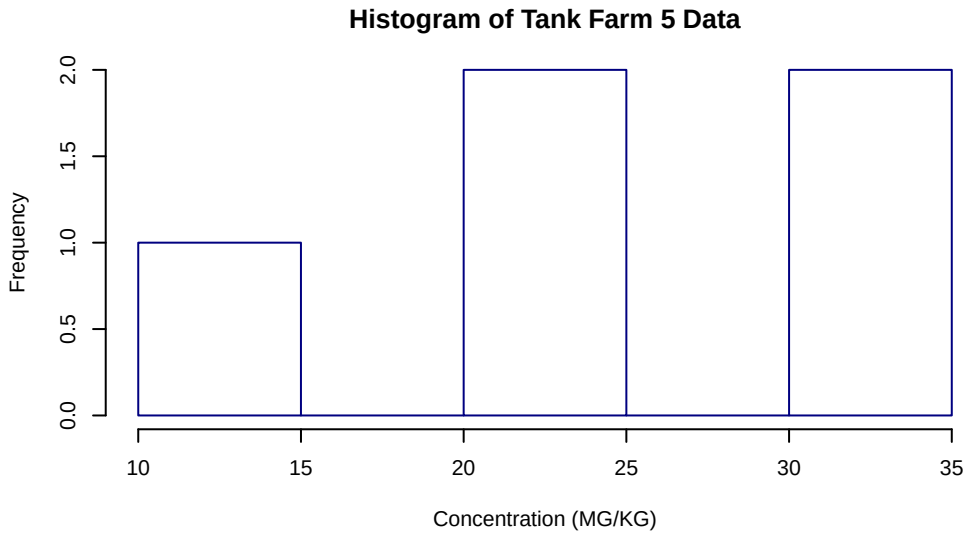


LEAD Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









MAGNESIUM Ne SURFACESOIL
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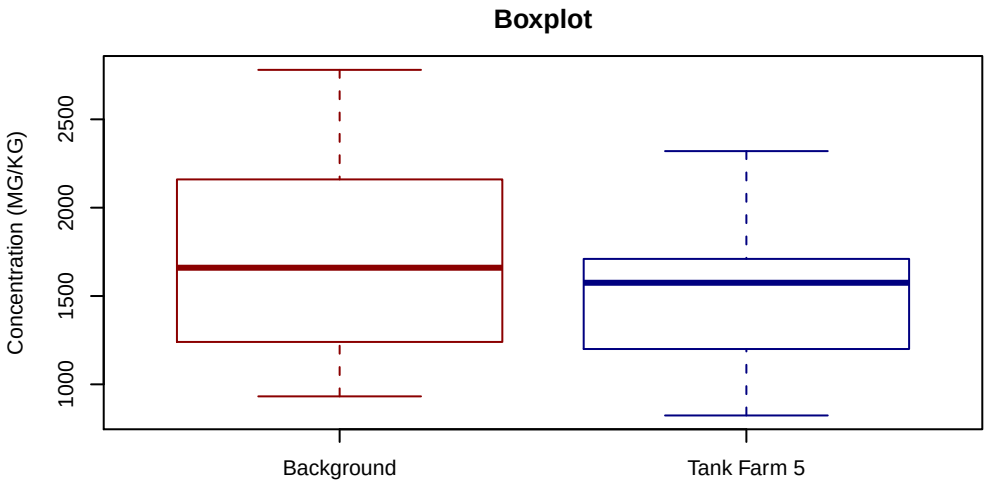
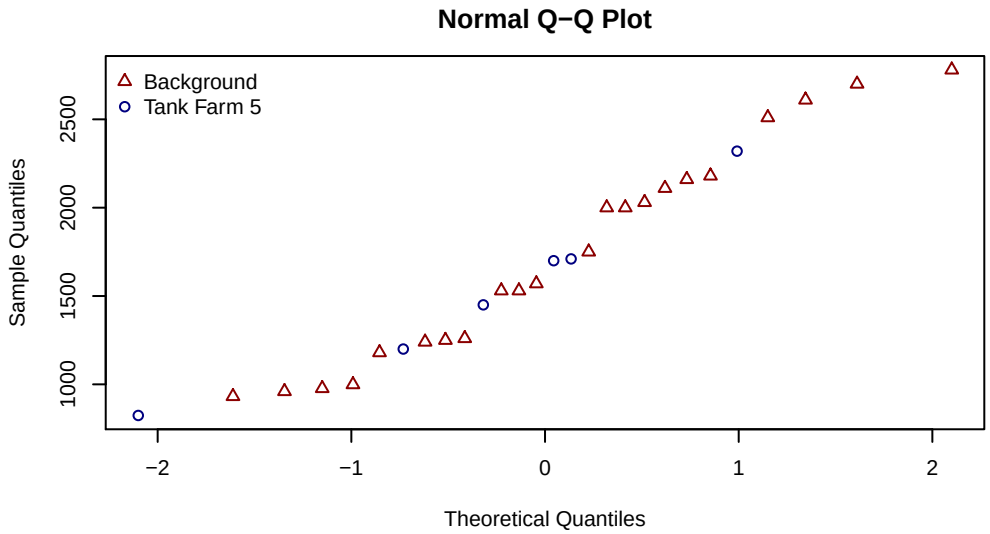
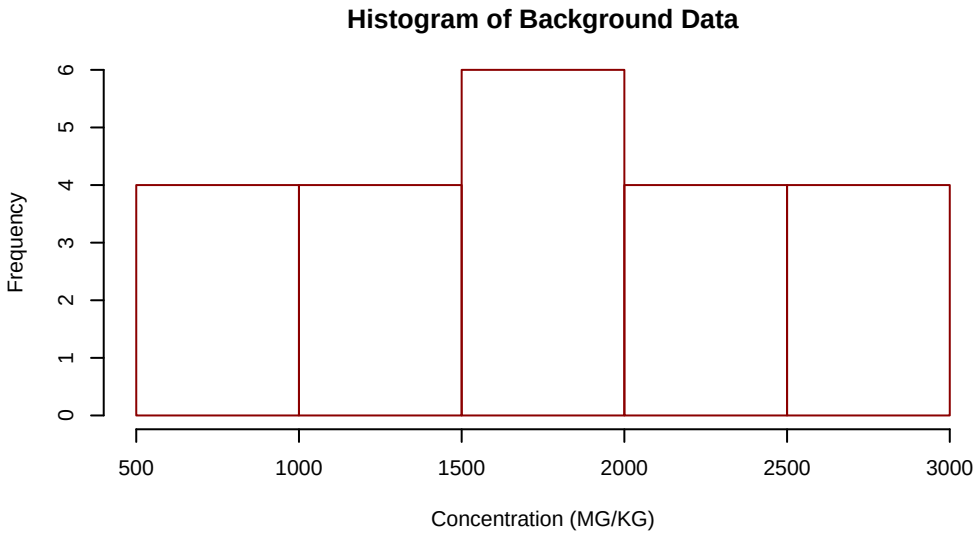
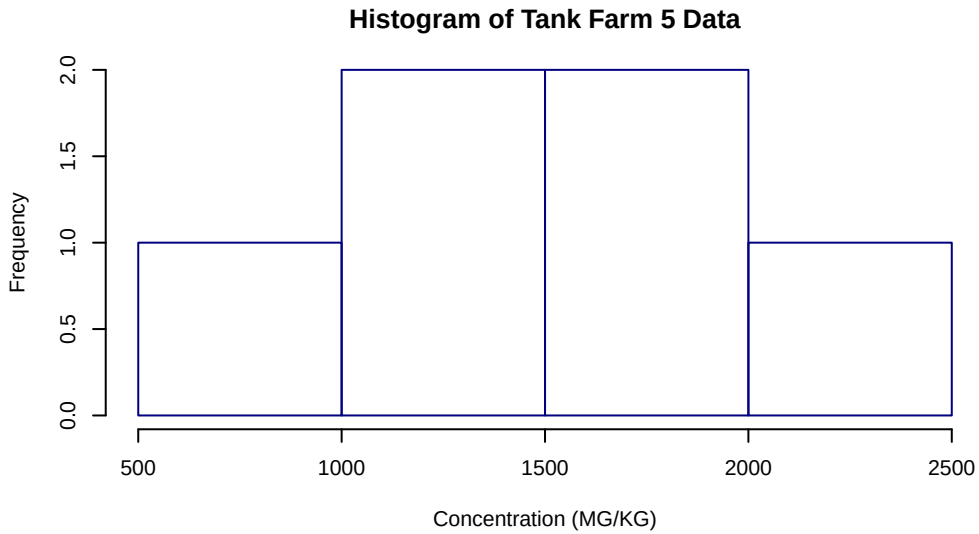
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

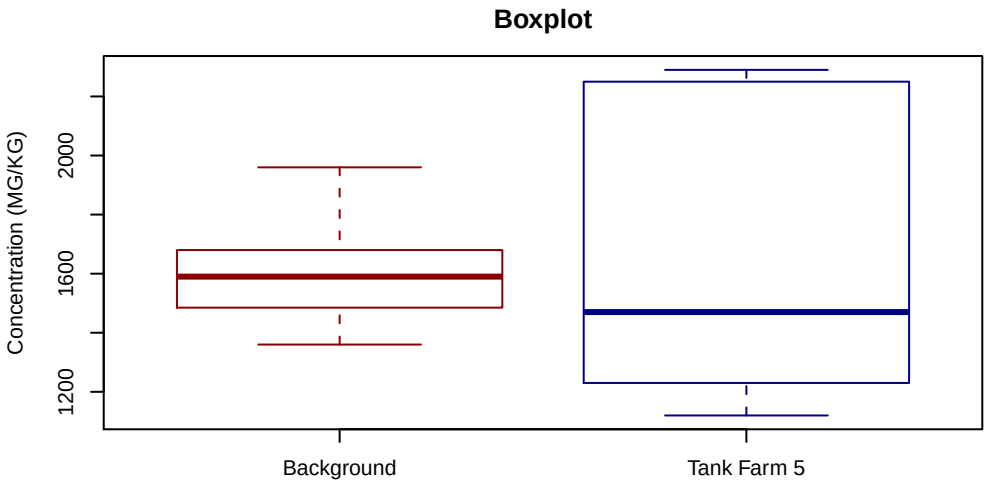


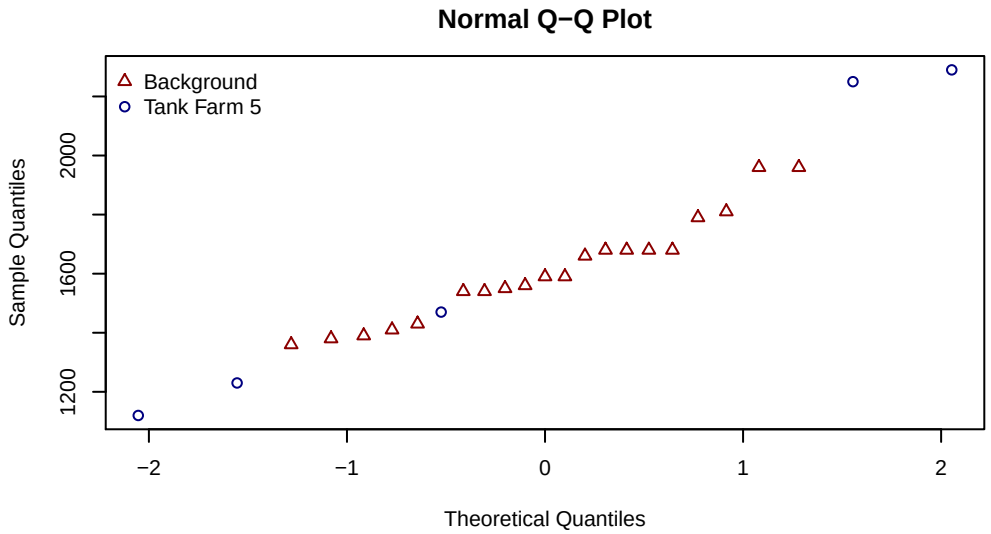


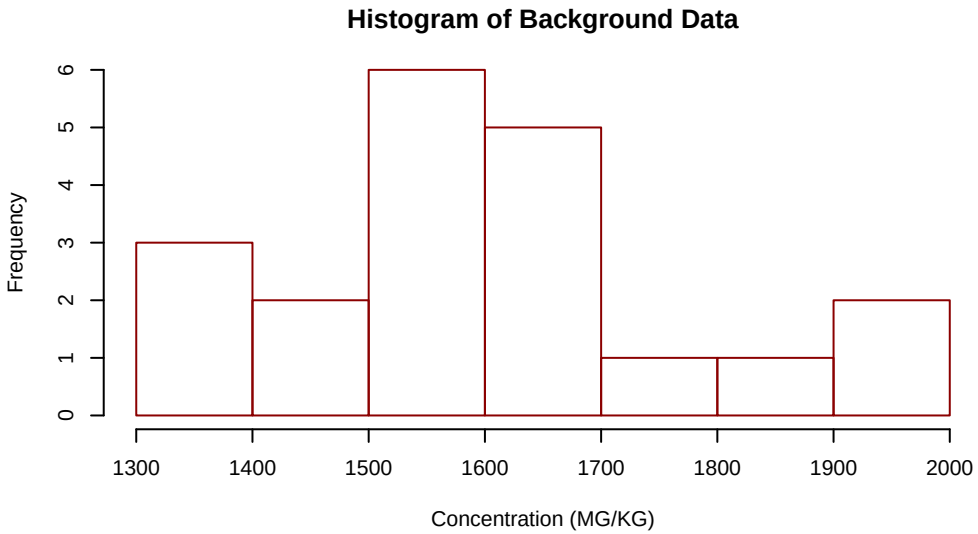


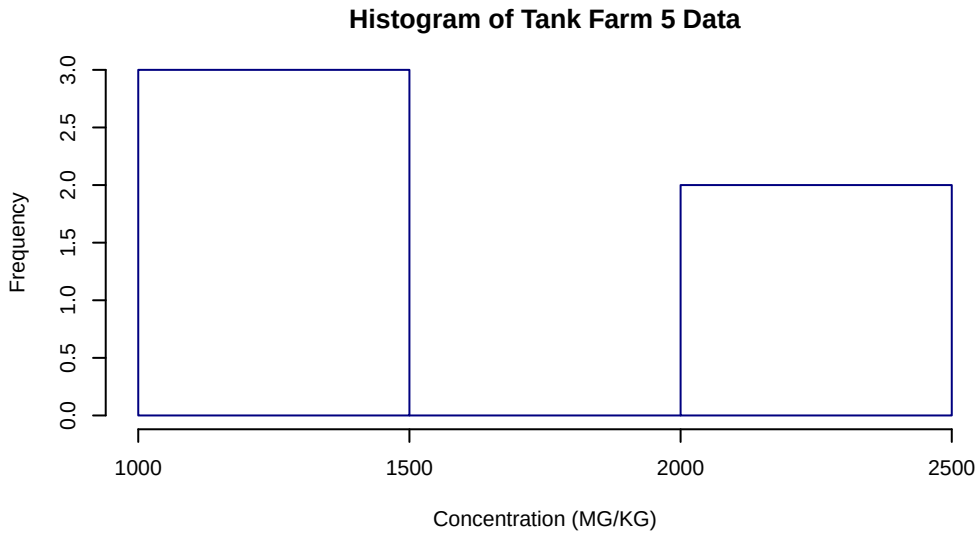


MAGNESIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

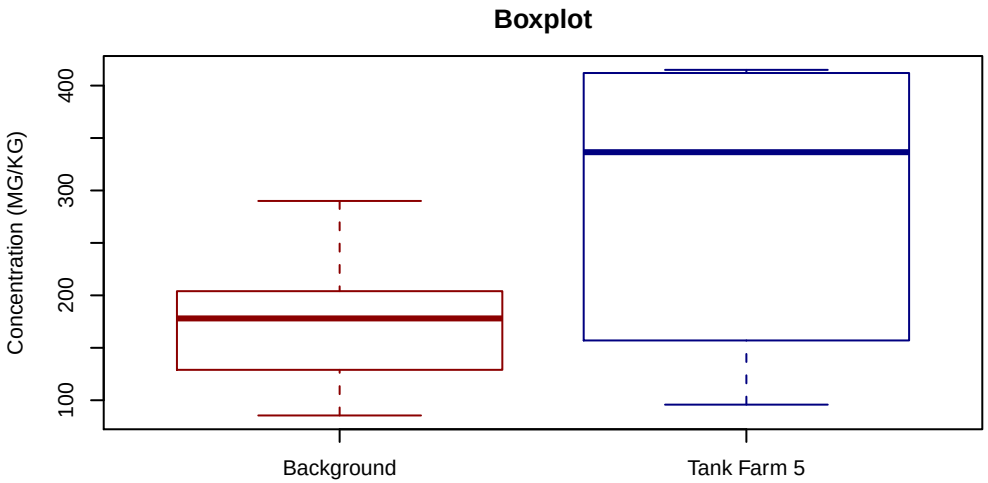


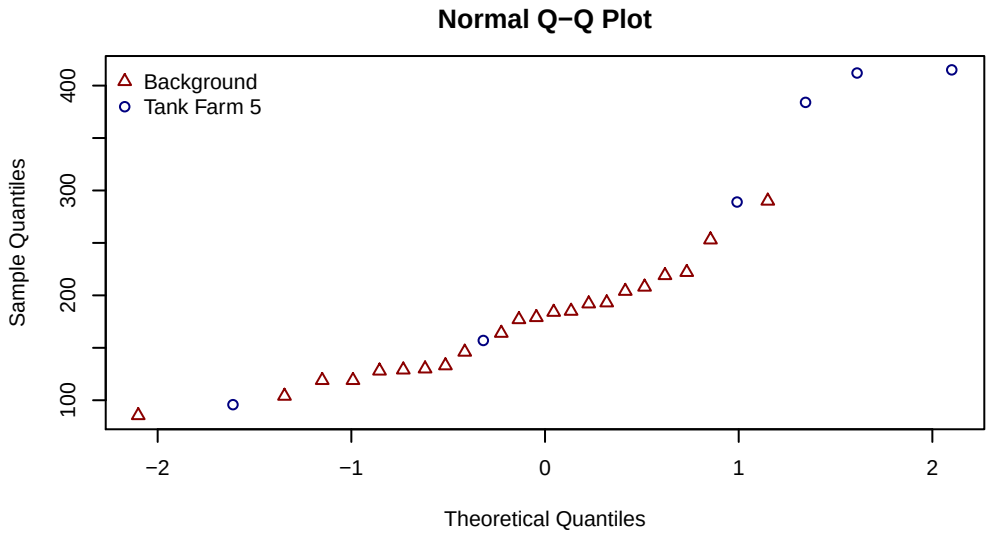


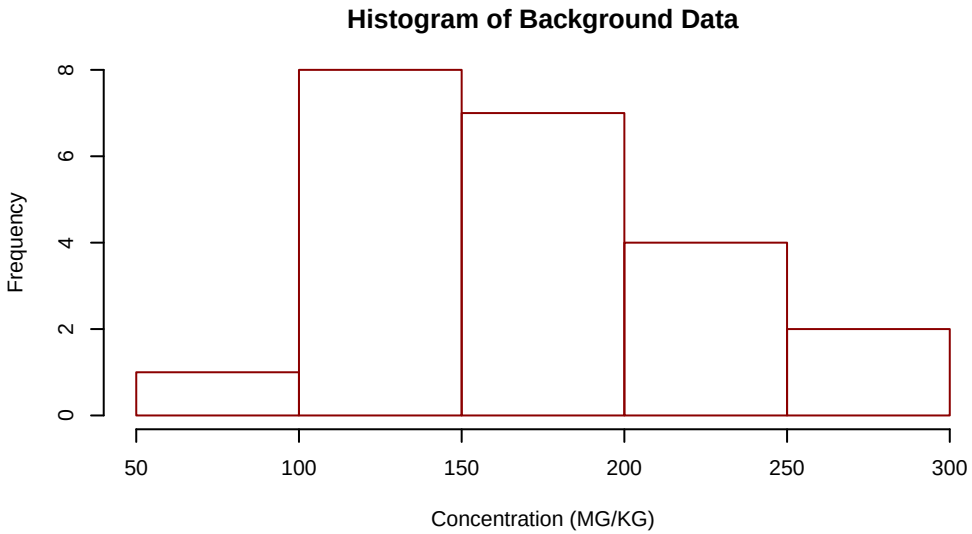


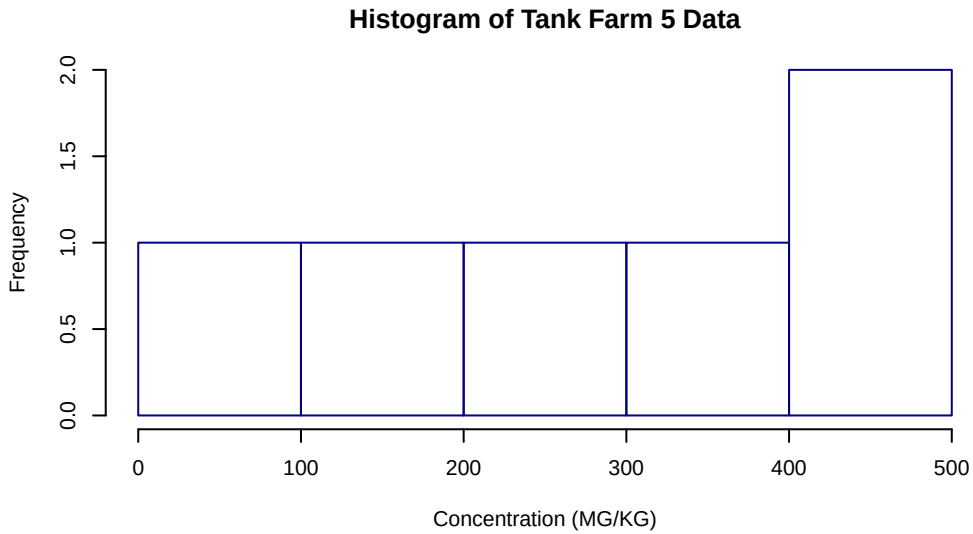


MANGANESE Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

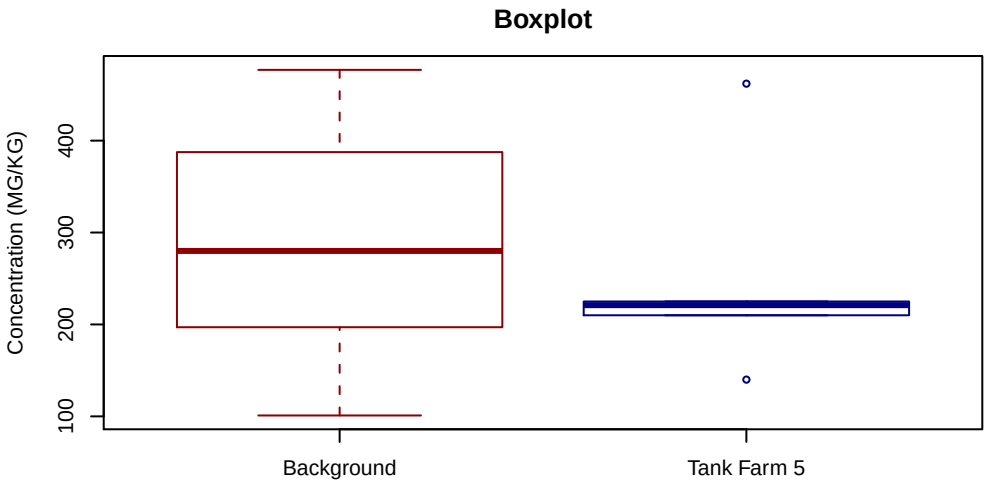


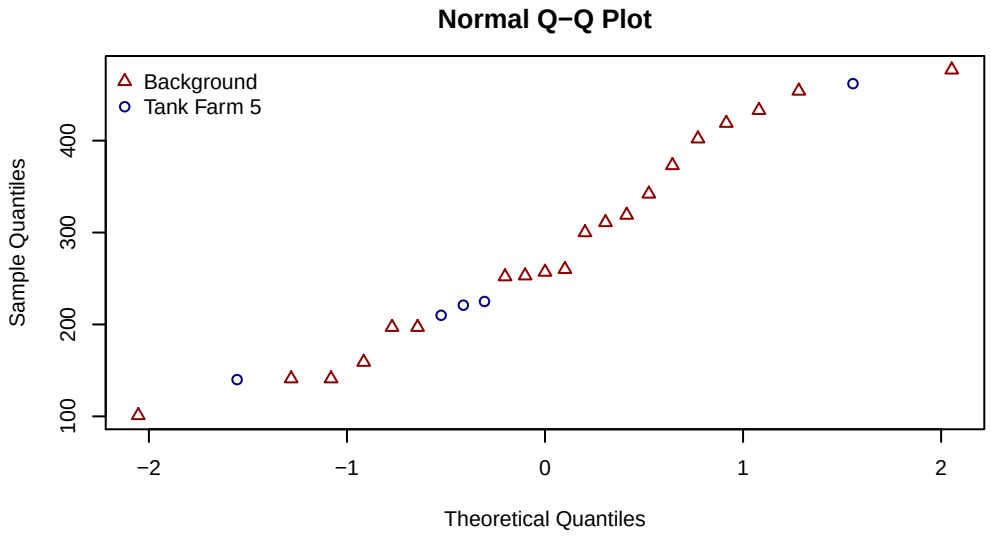


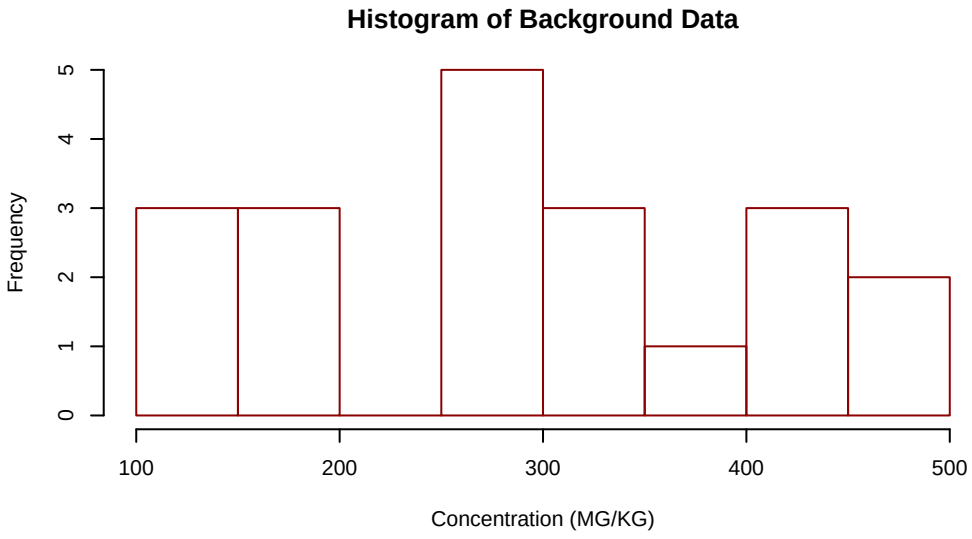


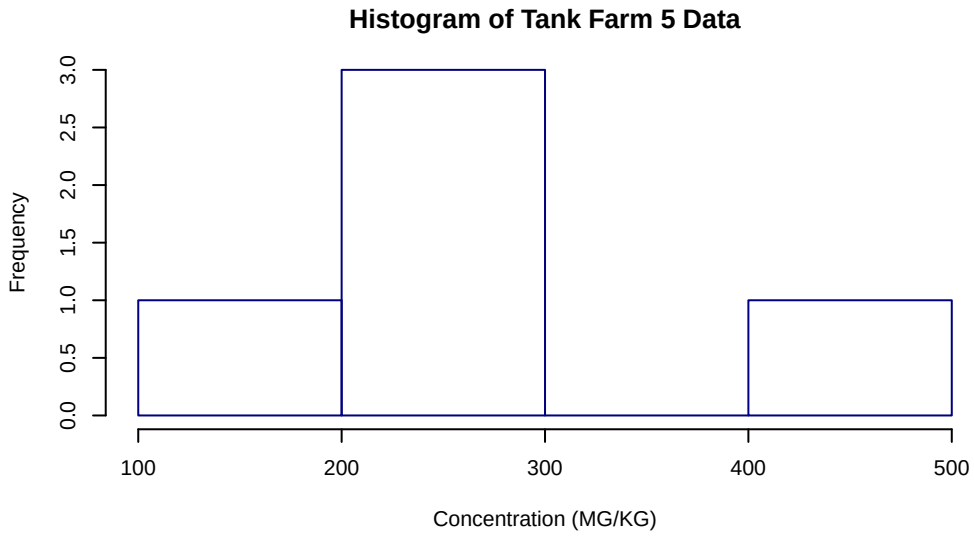


MANGANESE Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

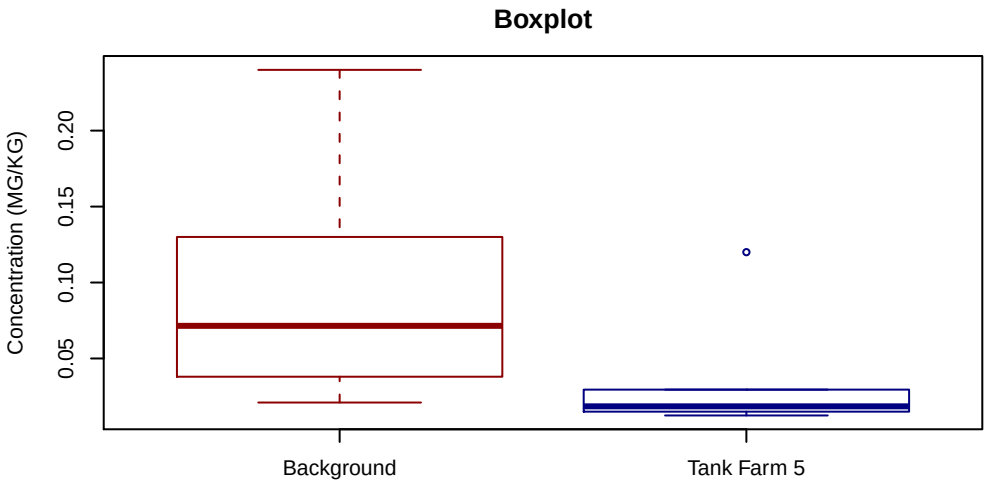


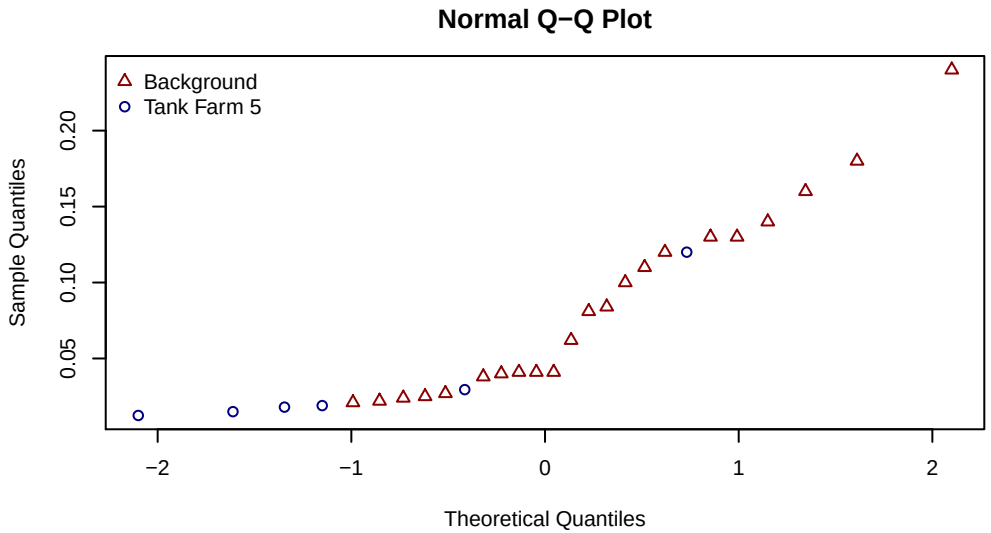


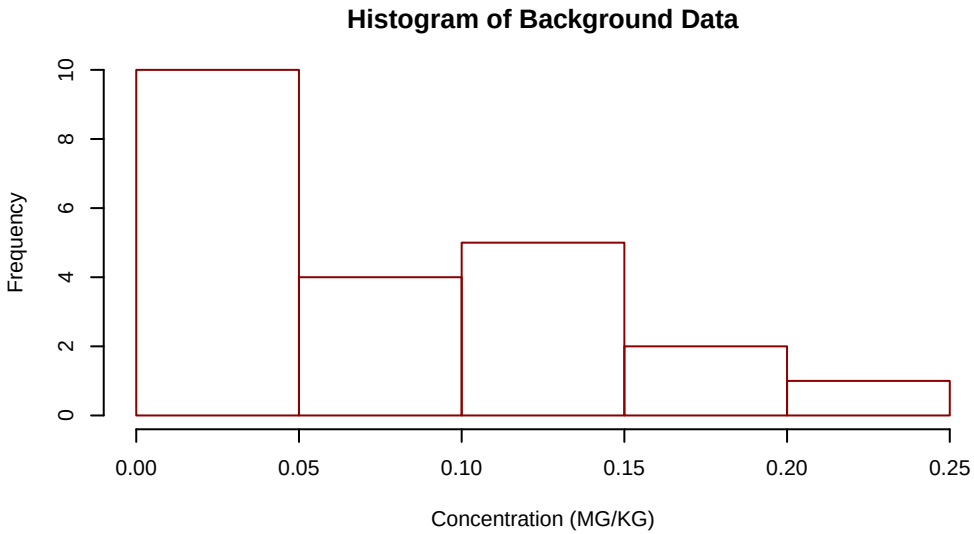


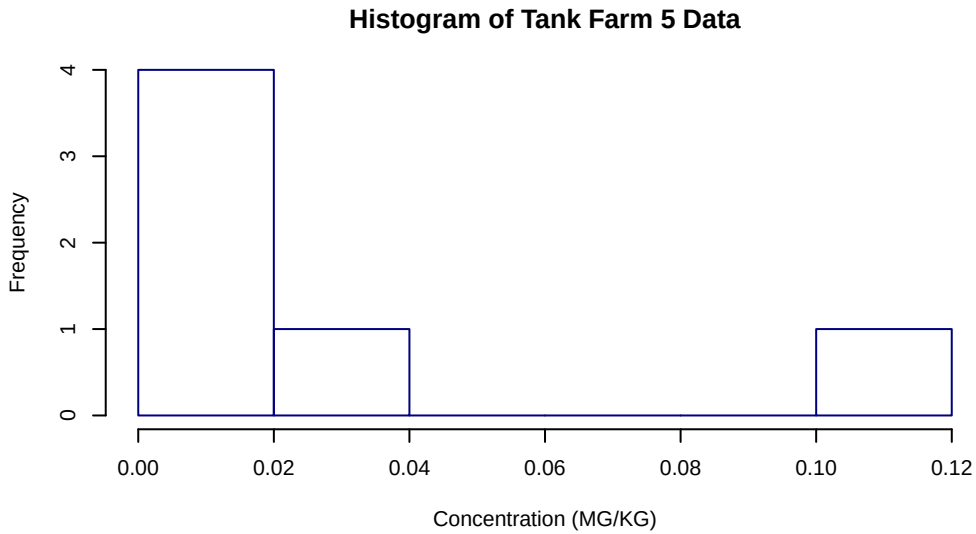


MERCURY Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

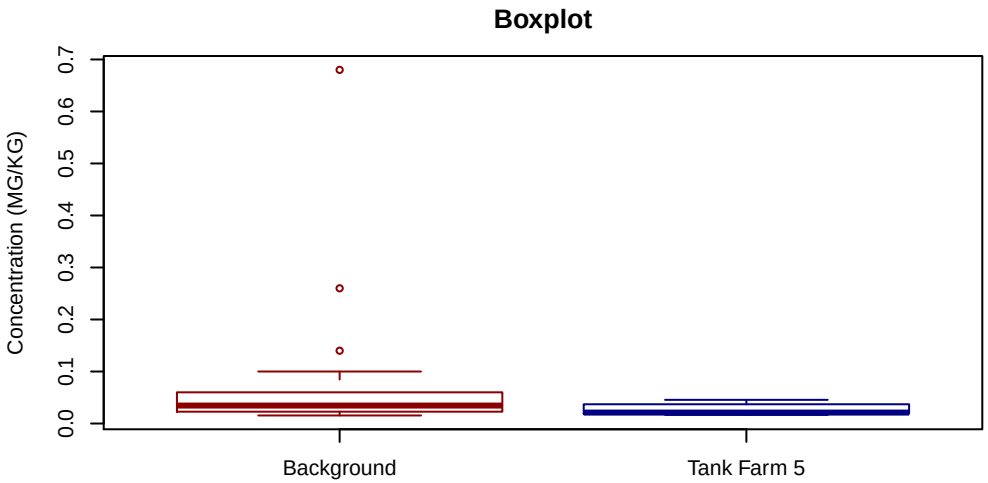


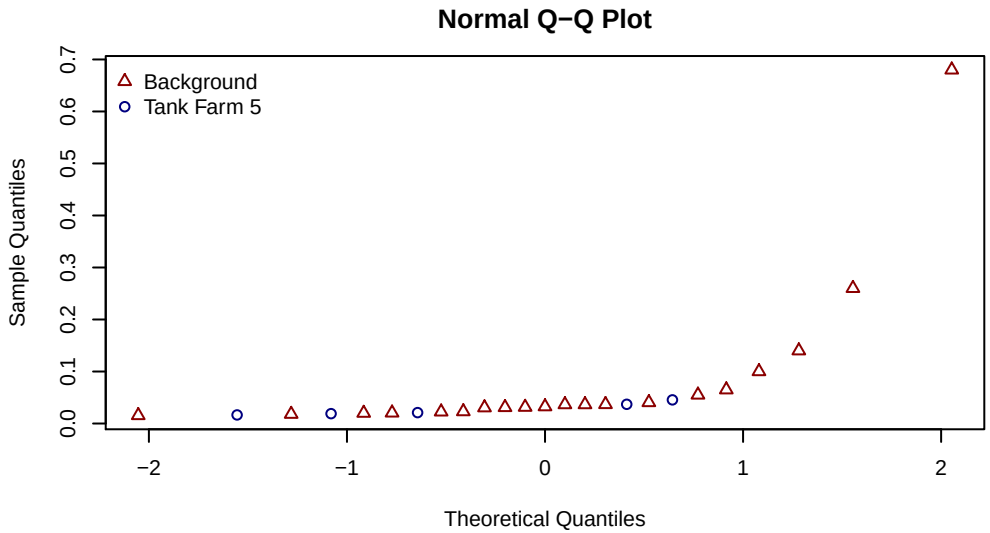


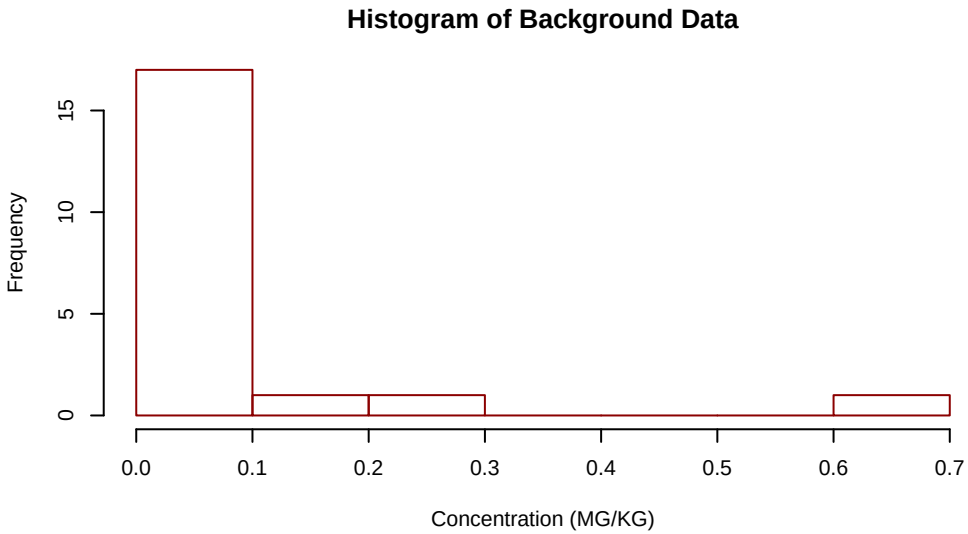


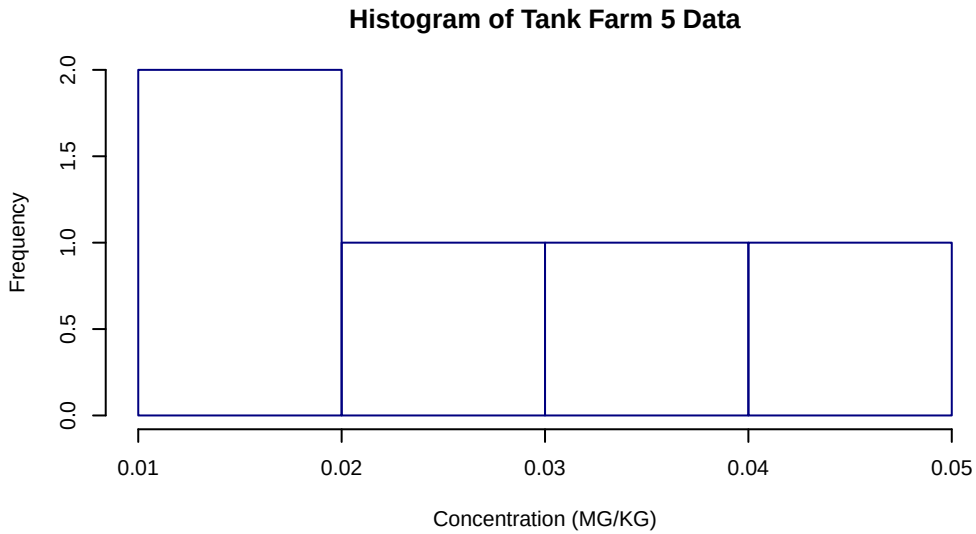


MERCURY Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

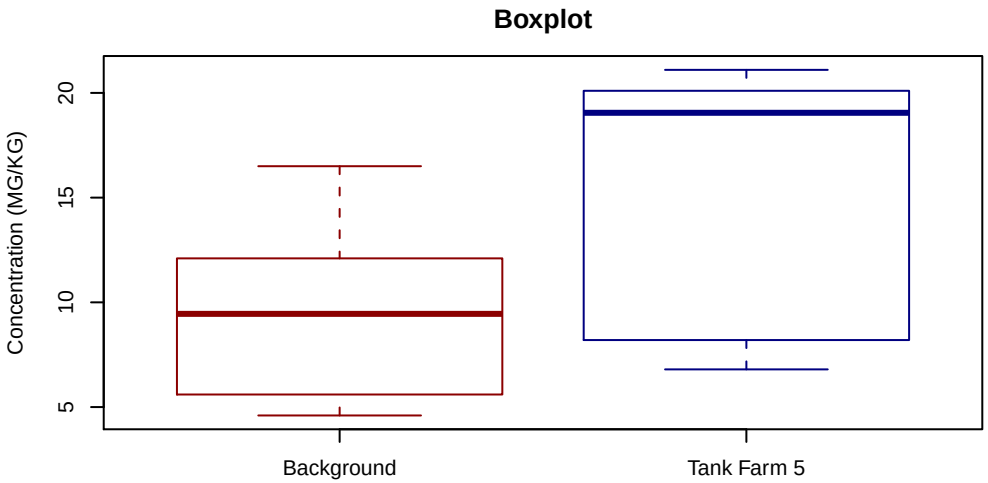


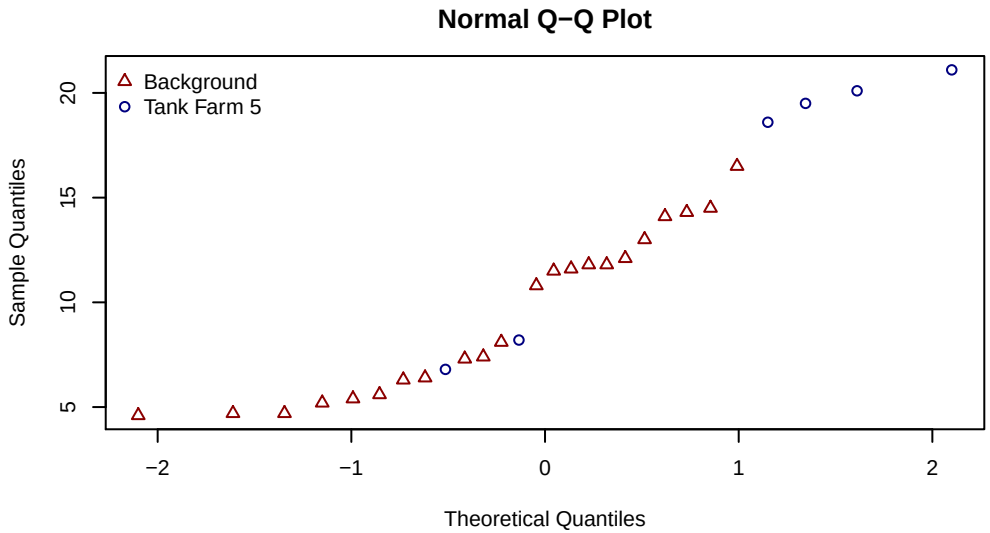


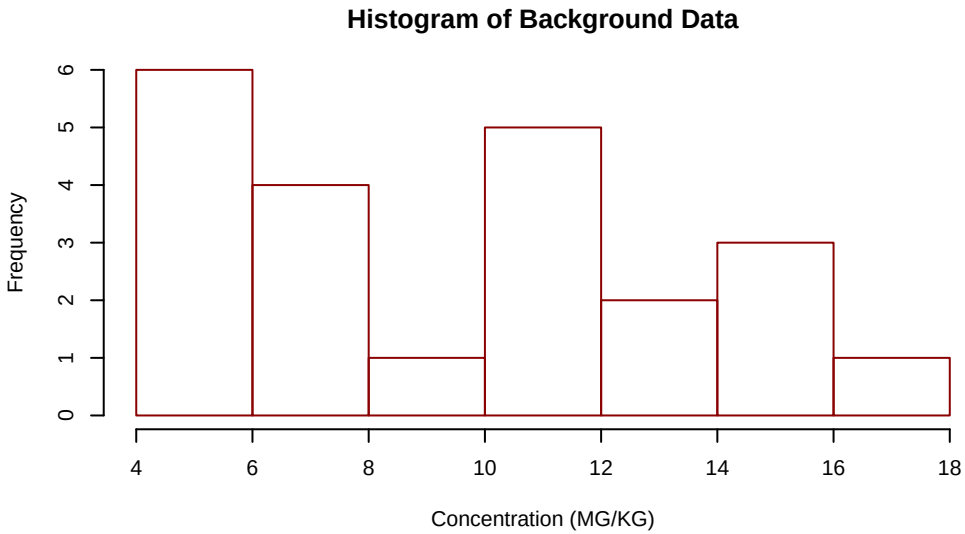


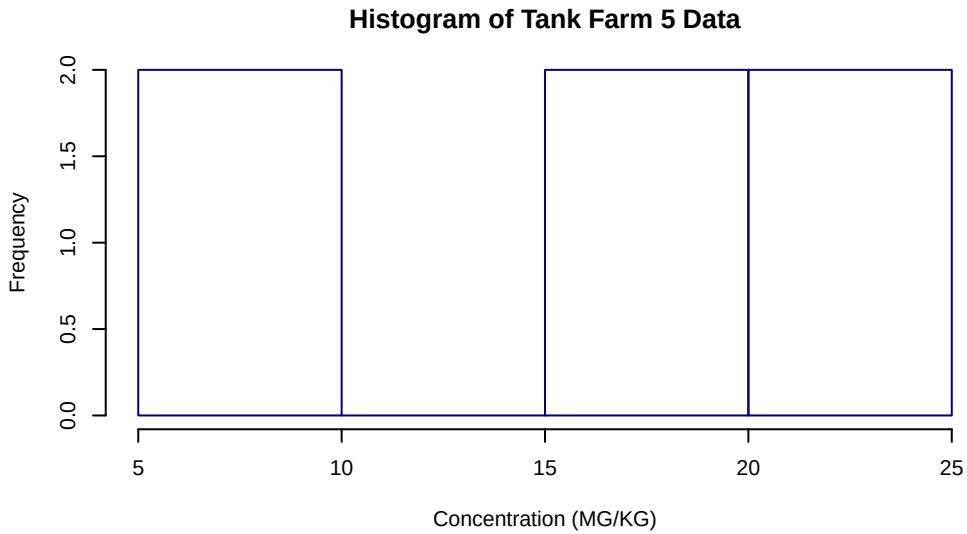


NICKEL Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

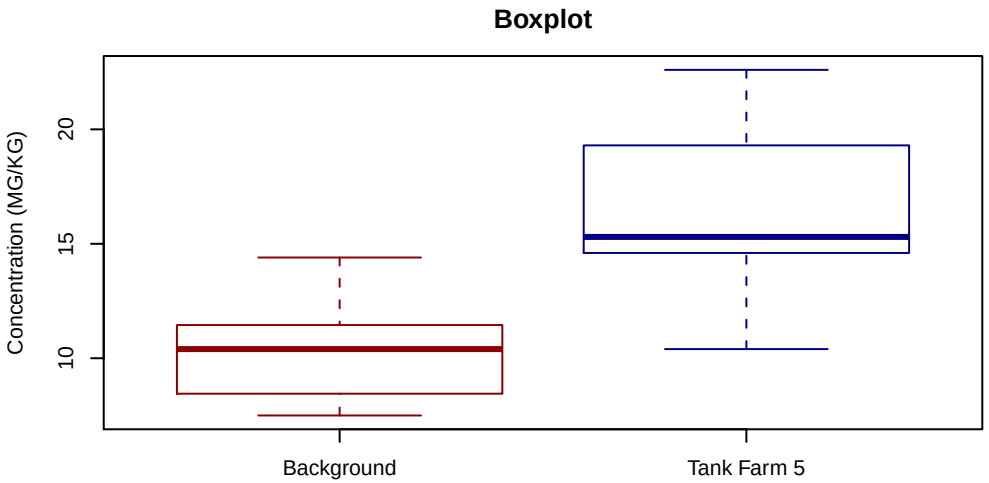


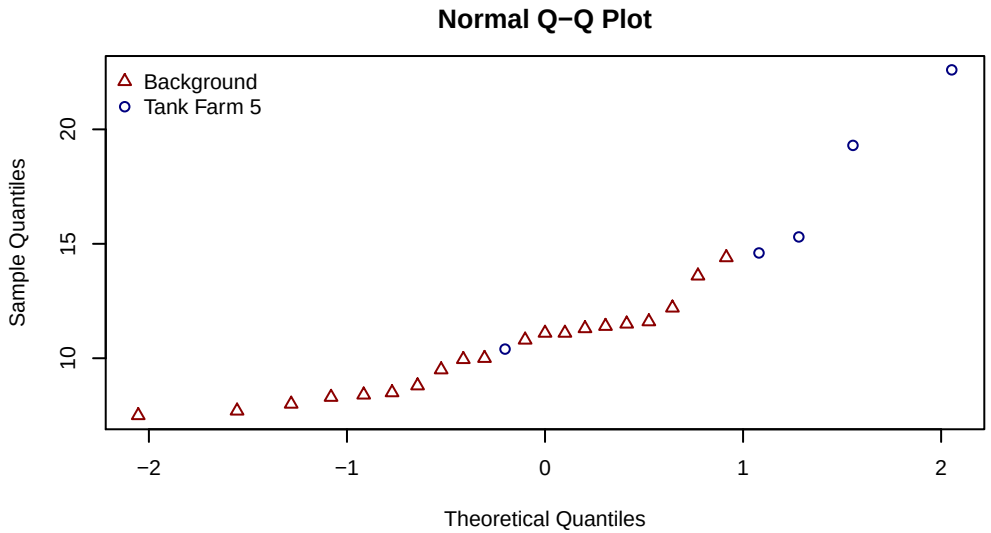


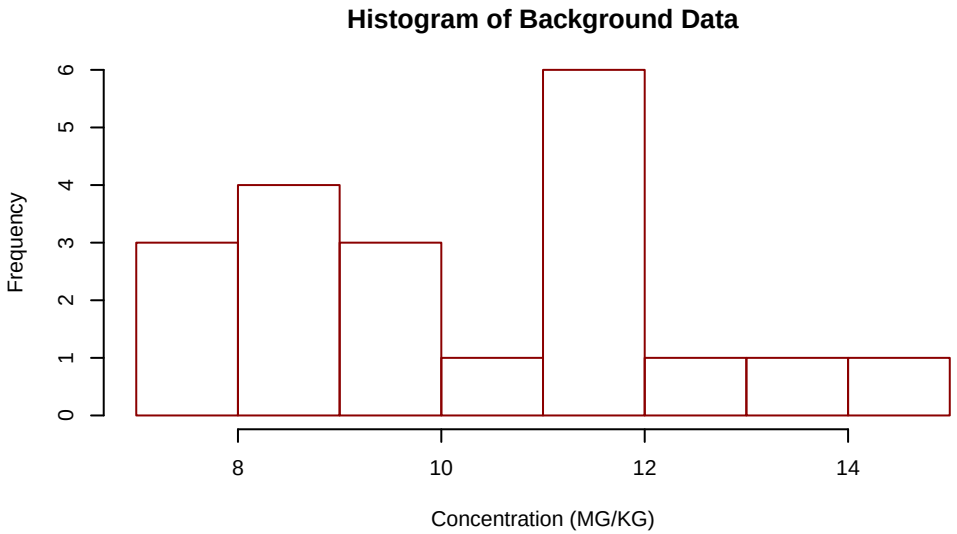


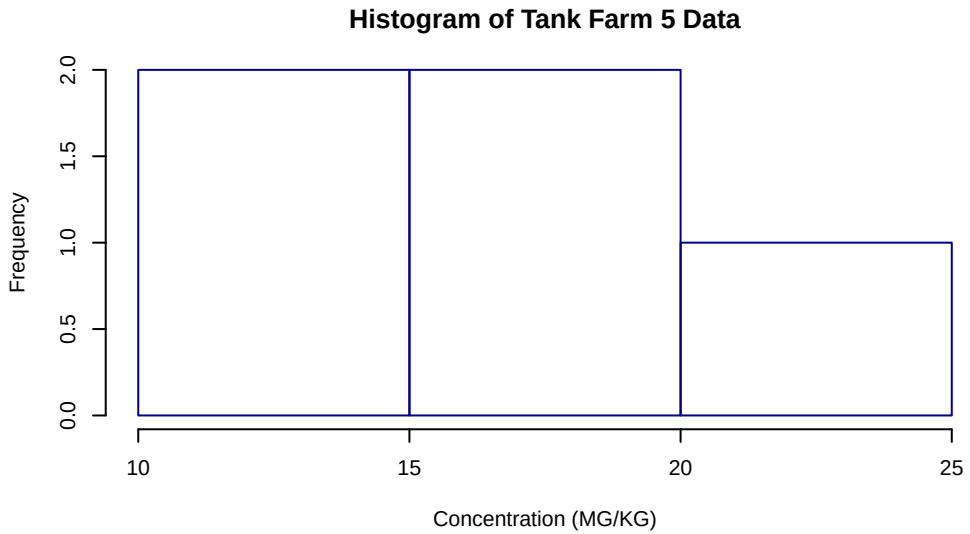


NICKEL Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

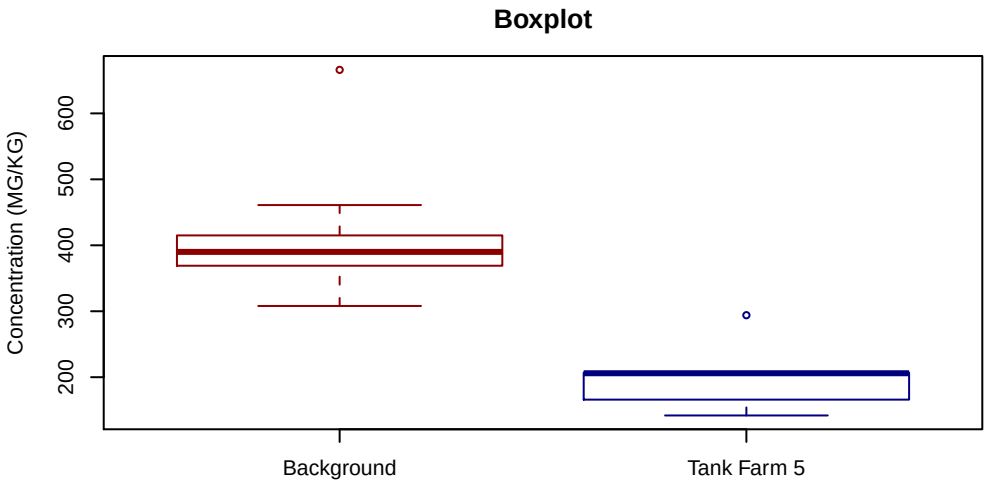


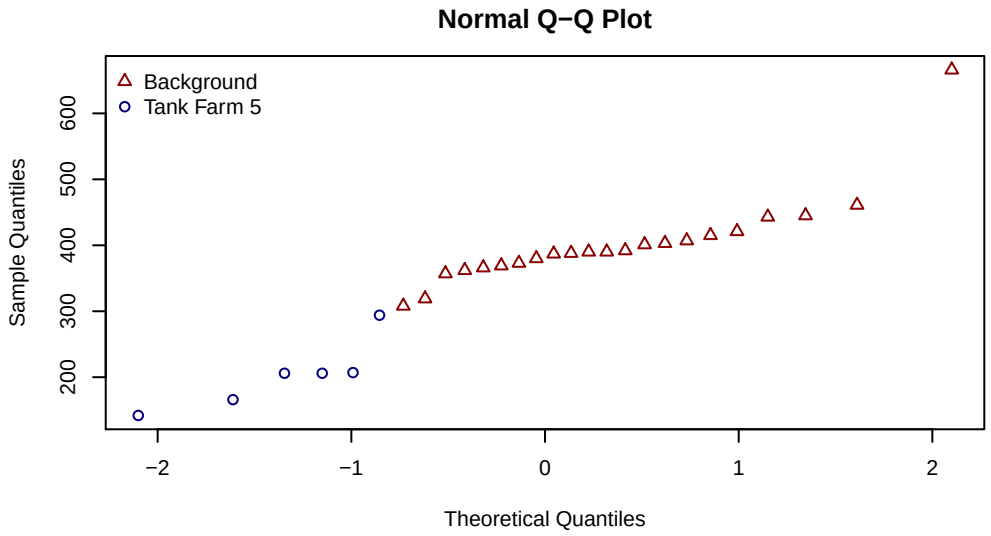


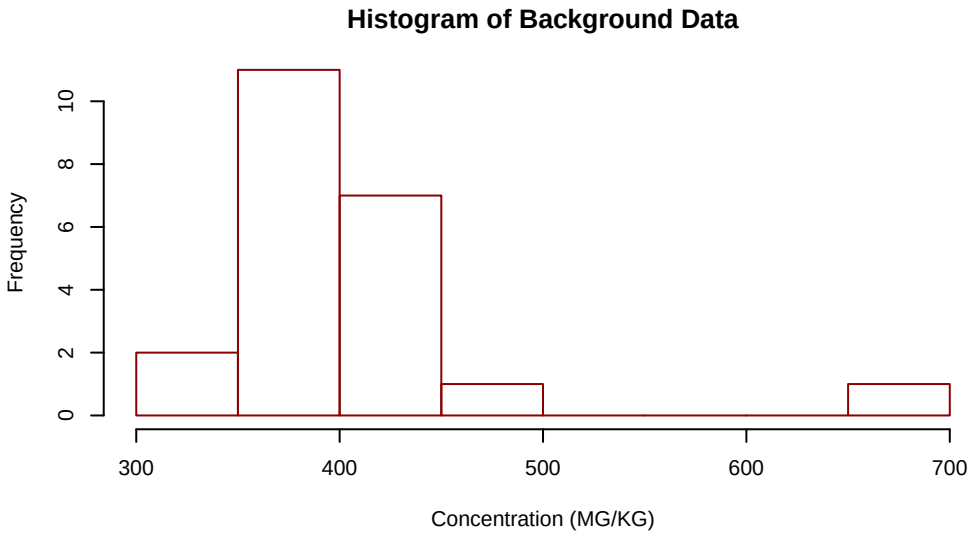


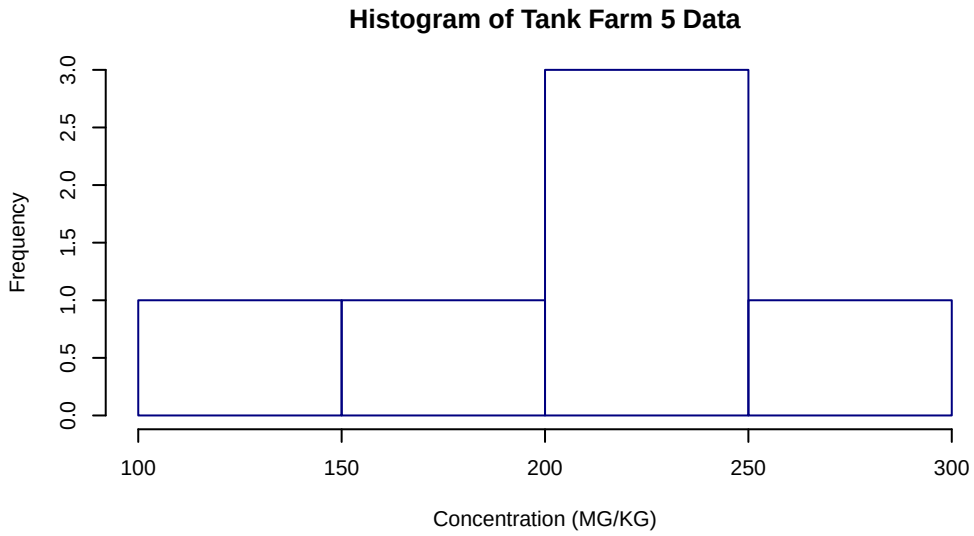


POTASSIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

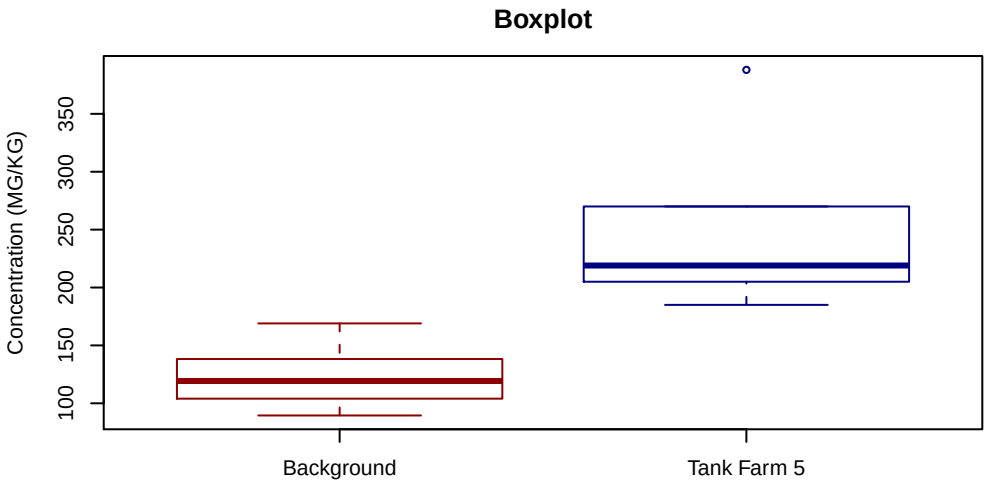


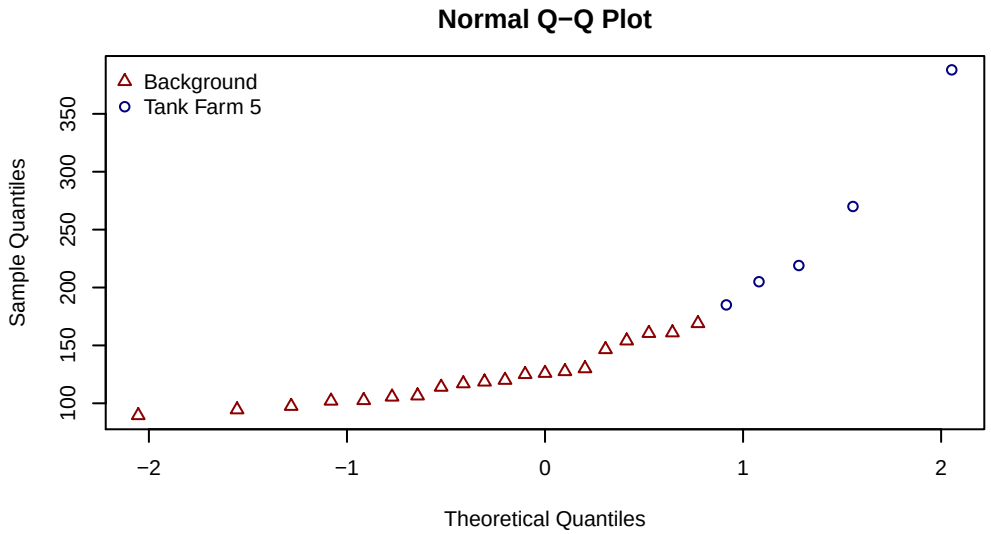


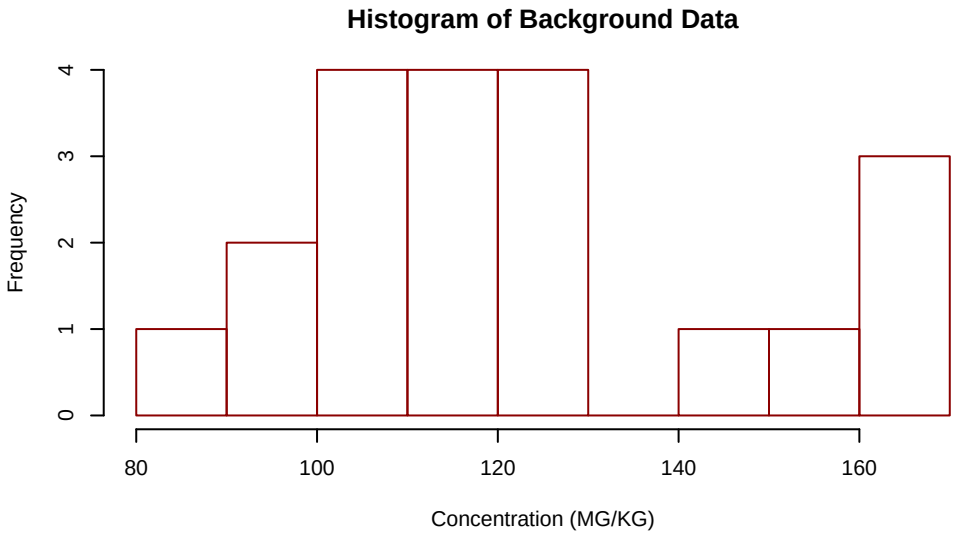


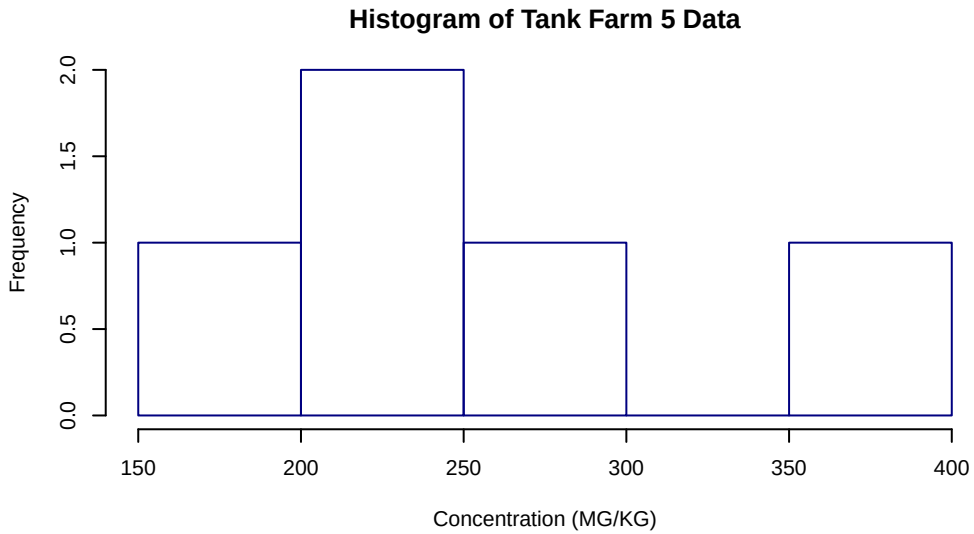


POTASSIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

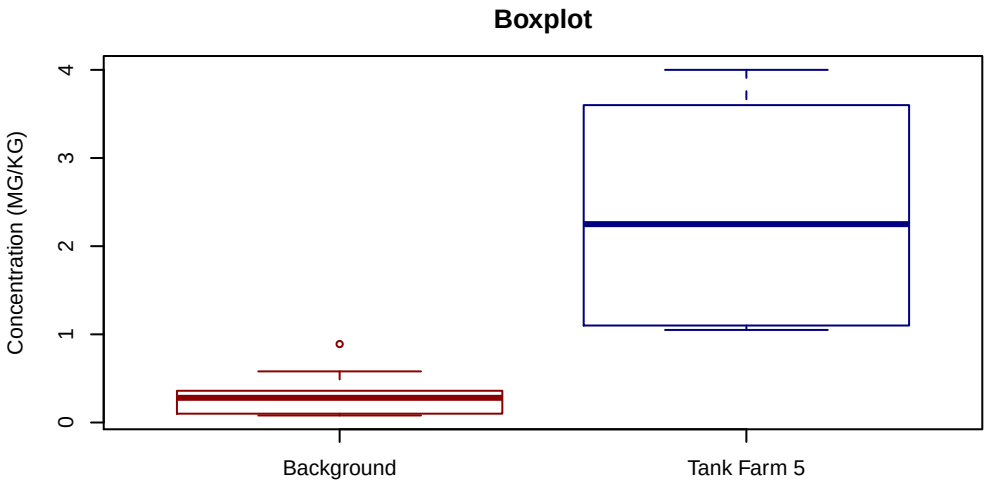


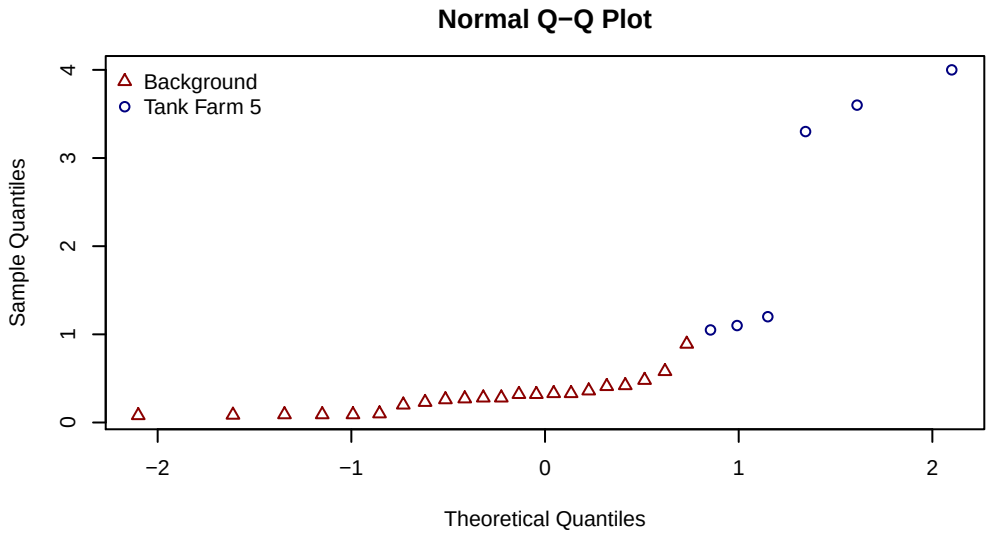


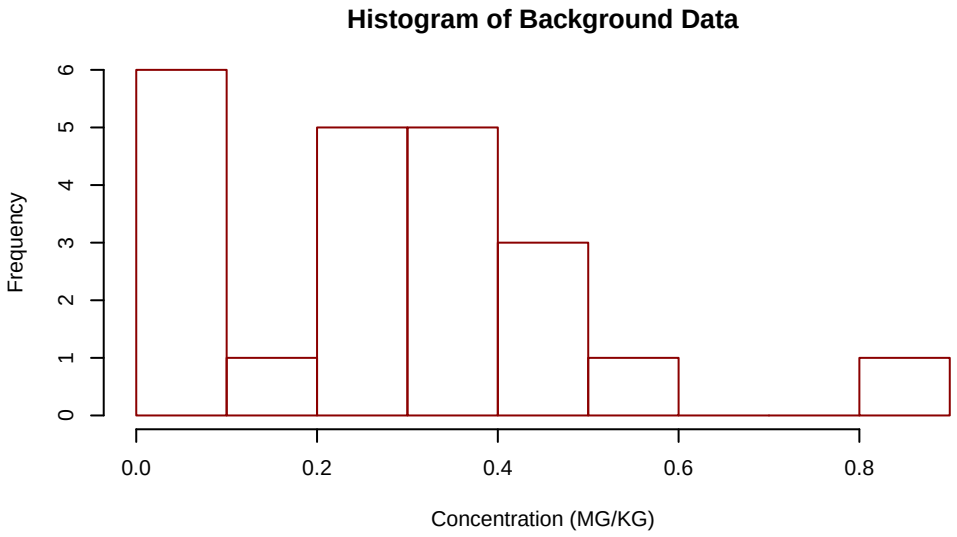


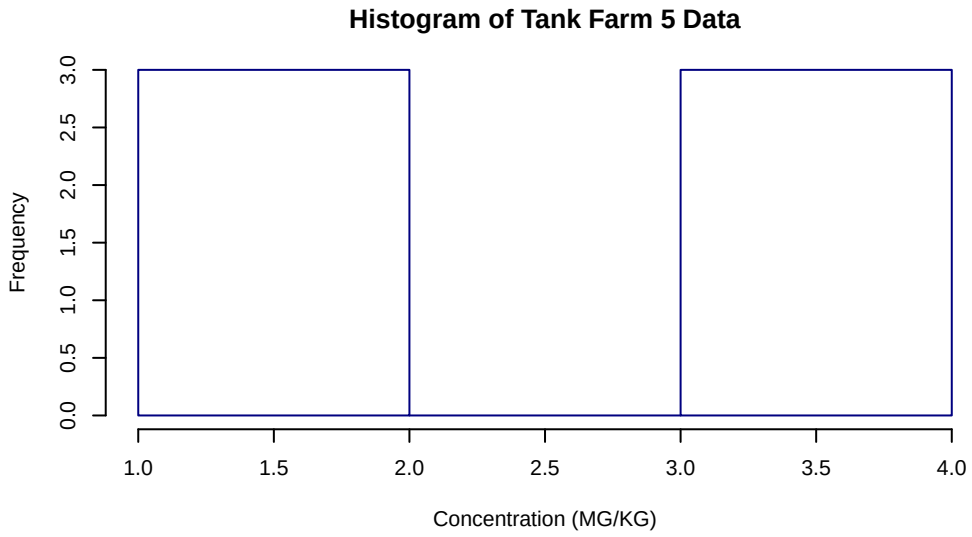


SELENIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

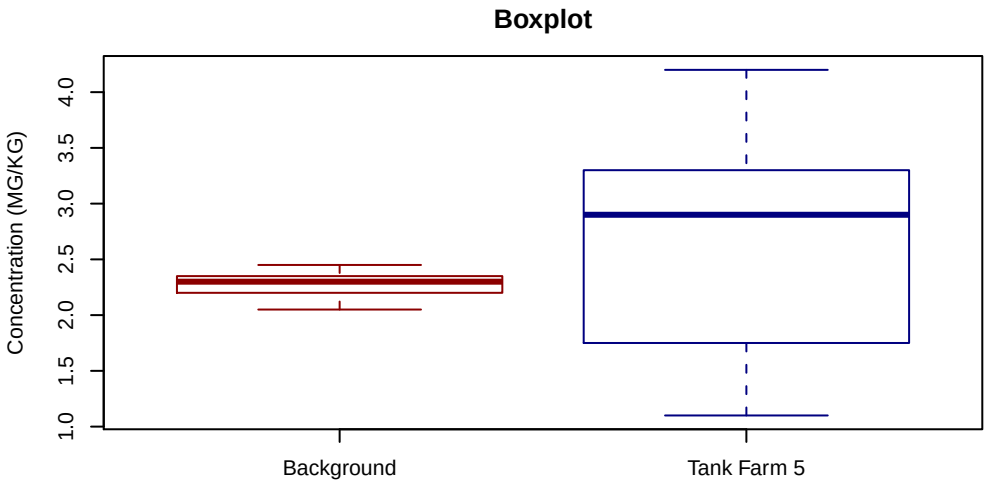


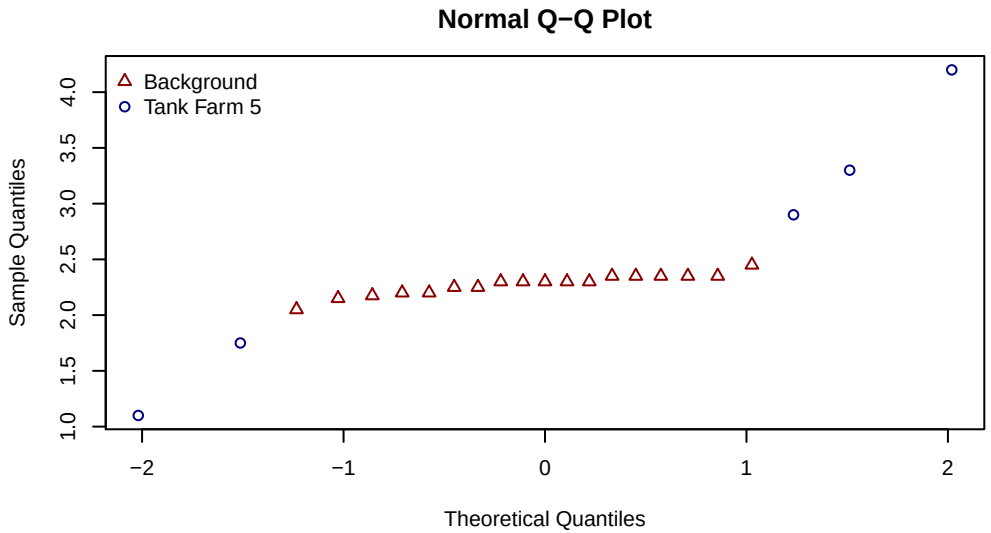


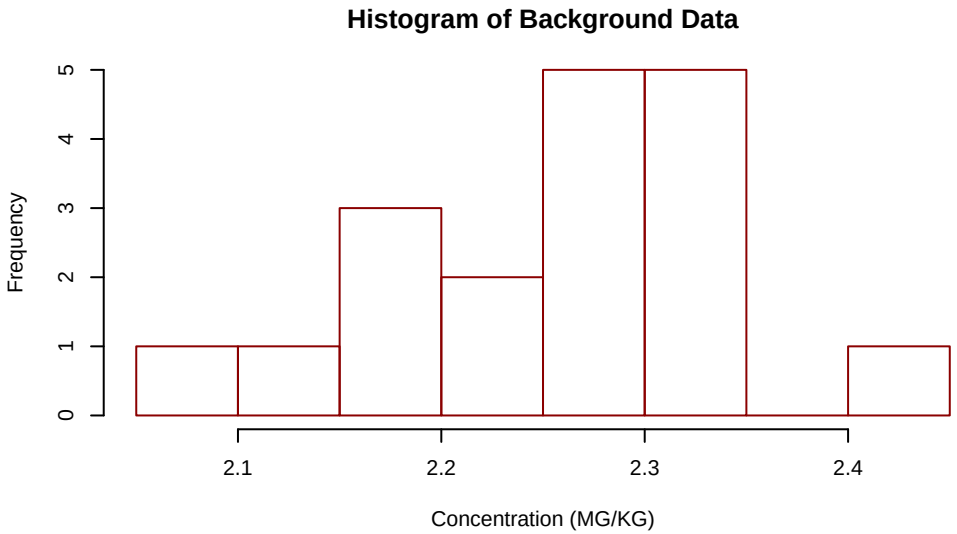


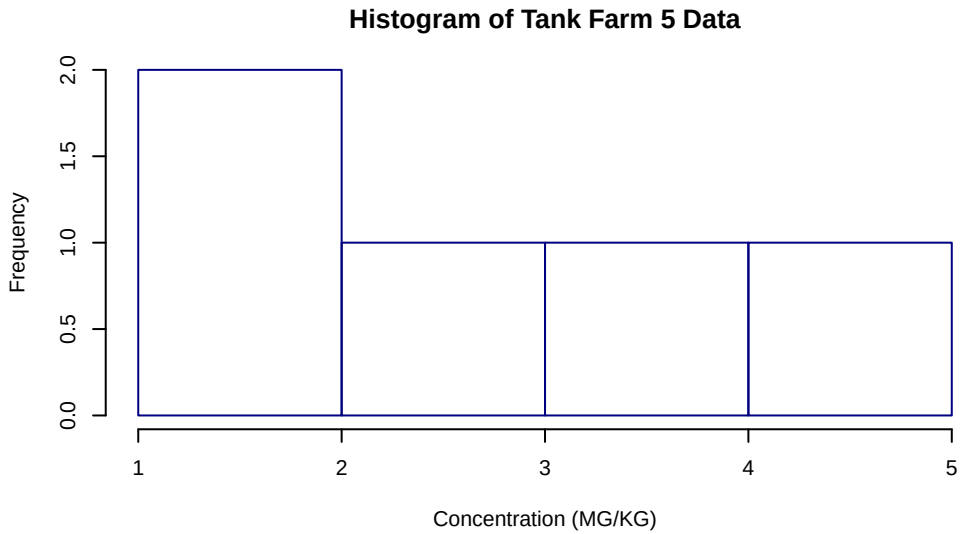


SELENIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

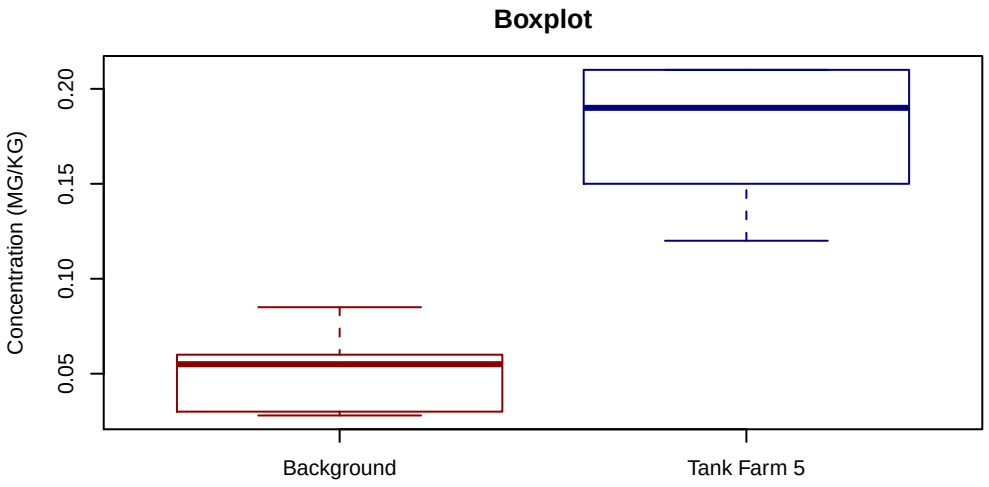


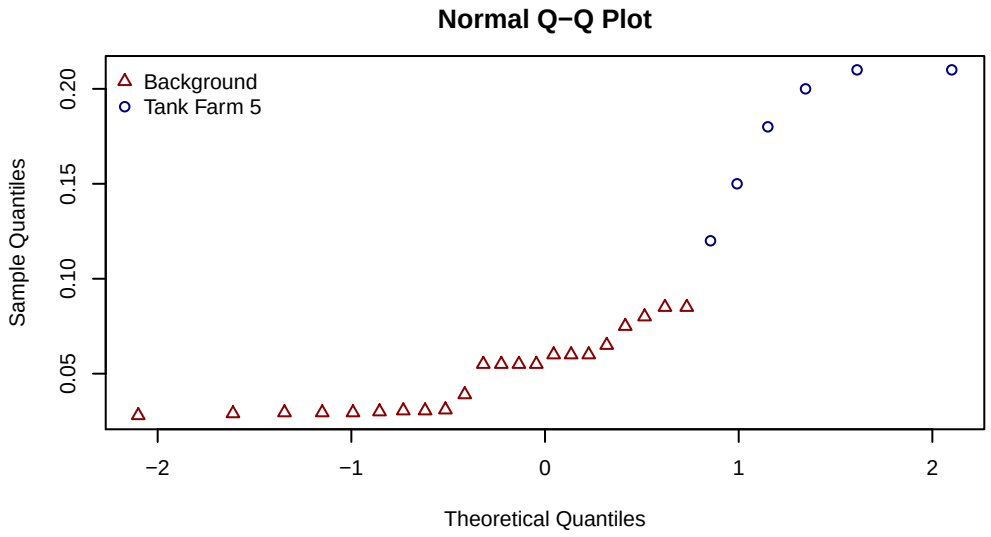


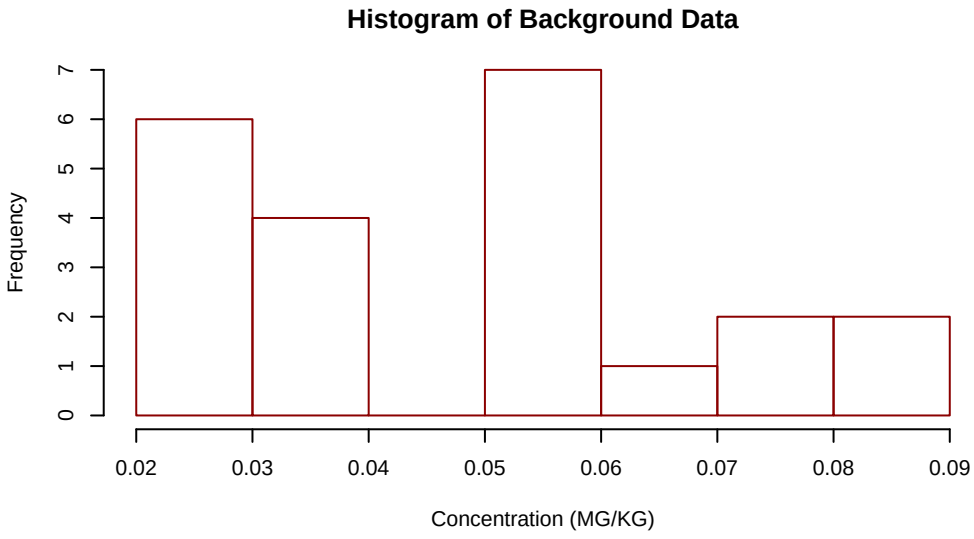


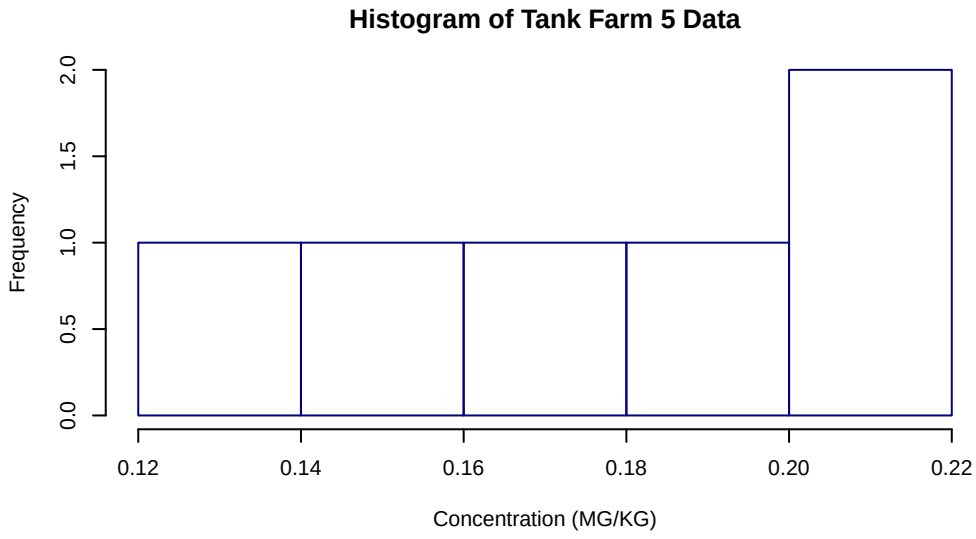


SILVER Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

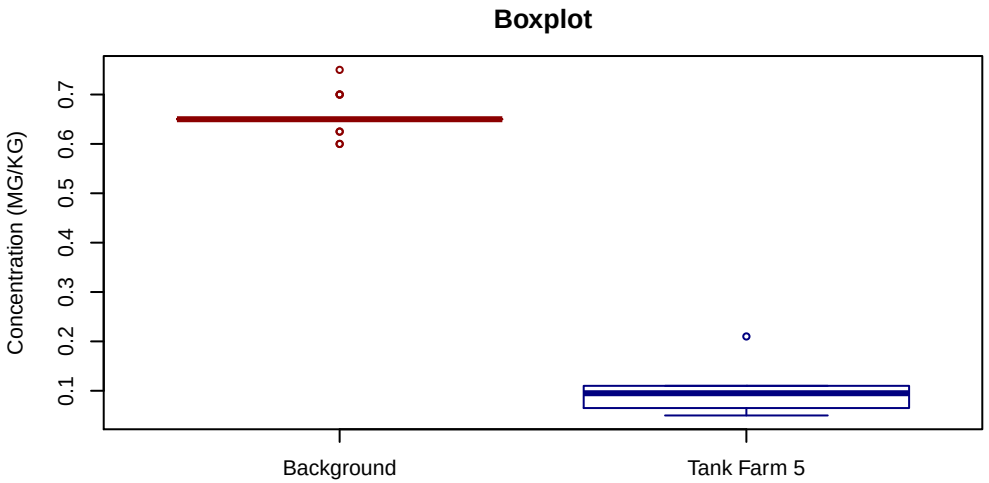


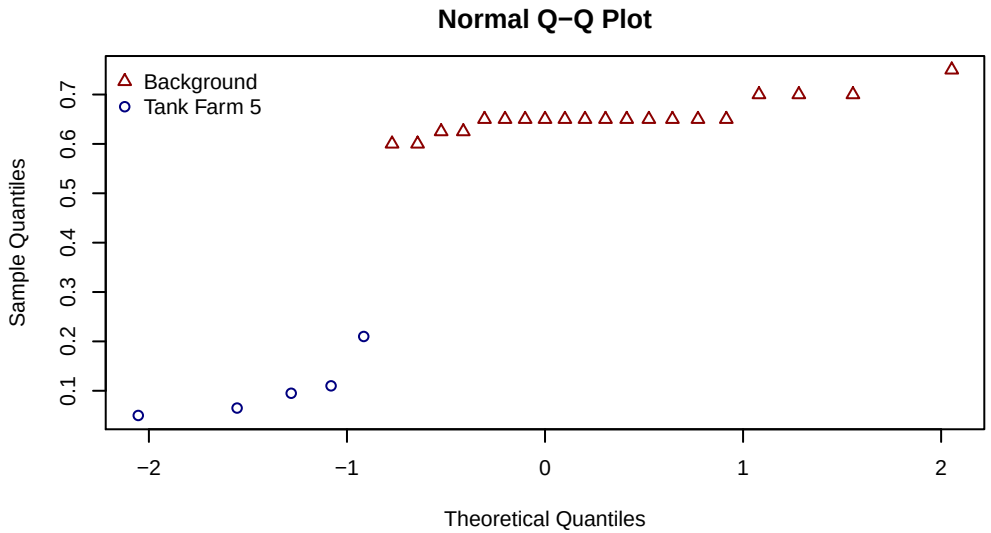


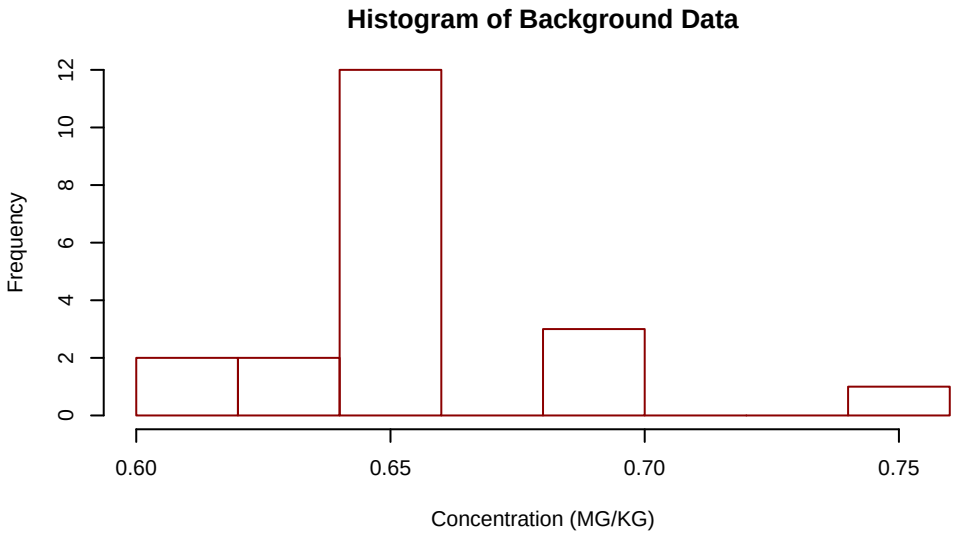


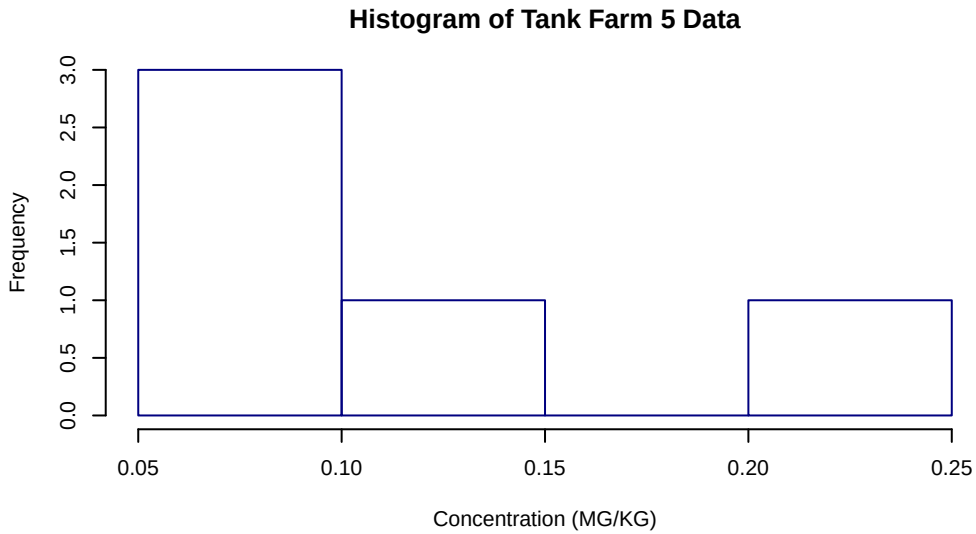


SILVER Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

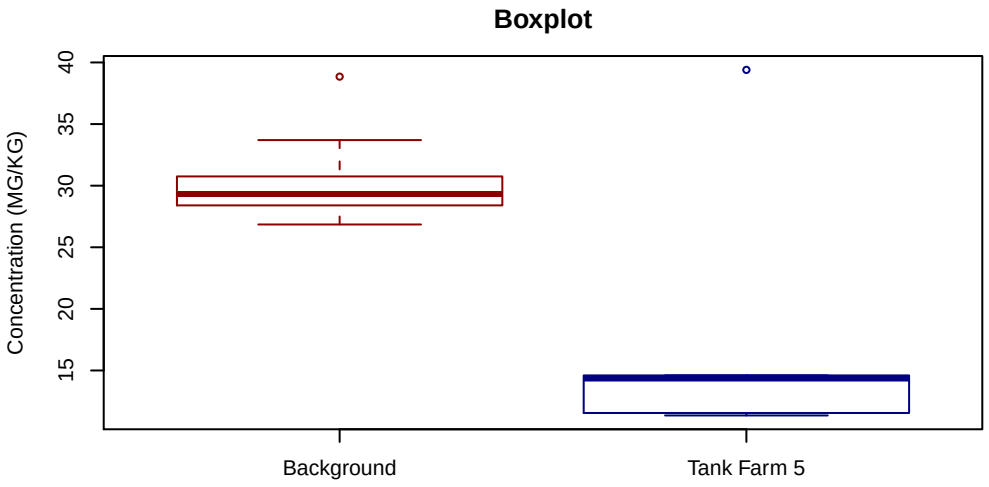


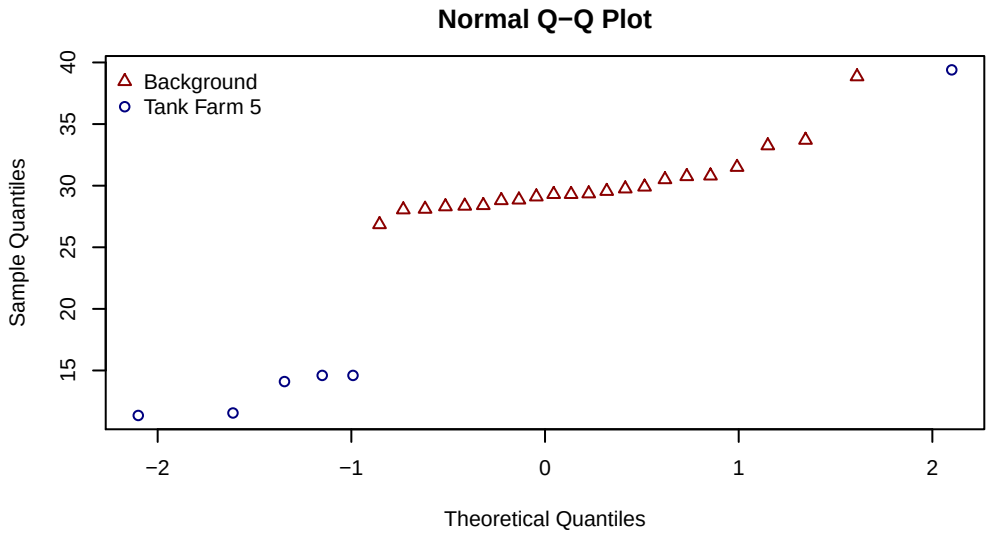


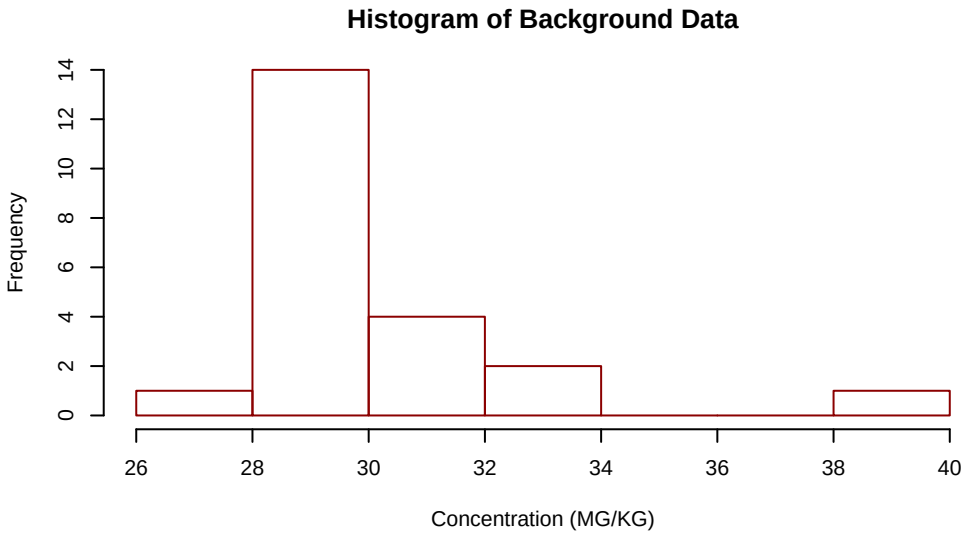


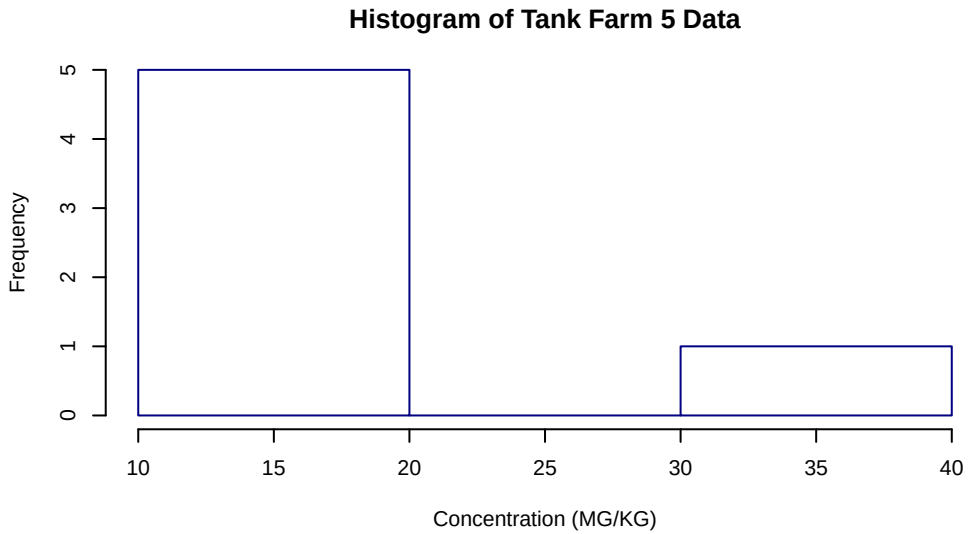


SODIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

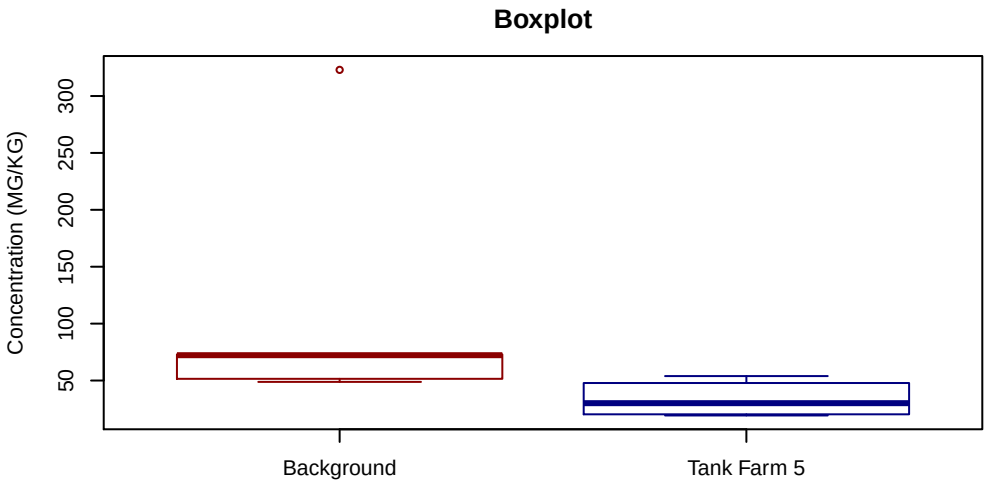


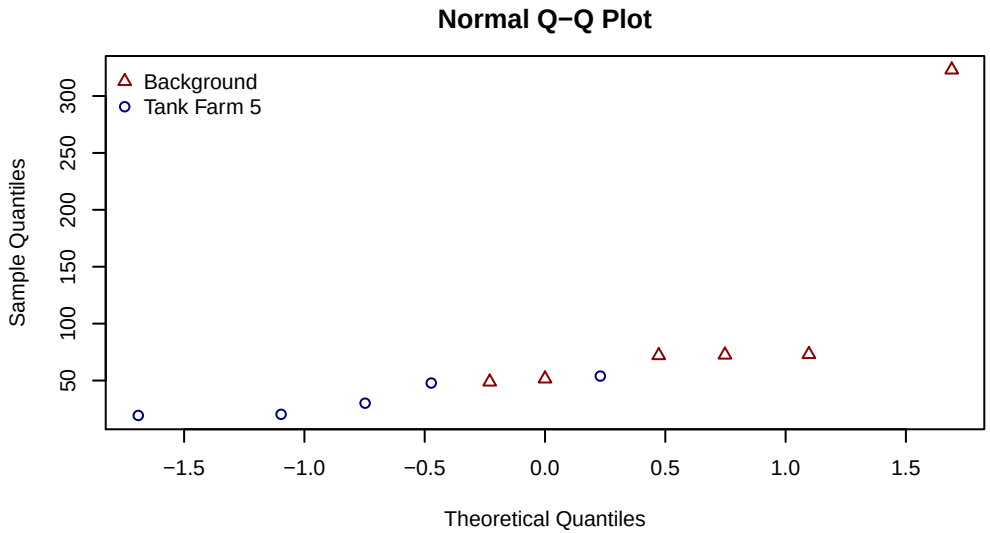


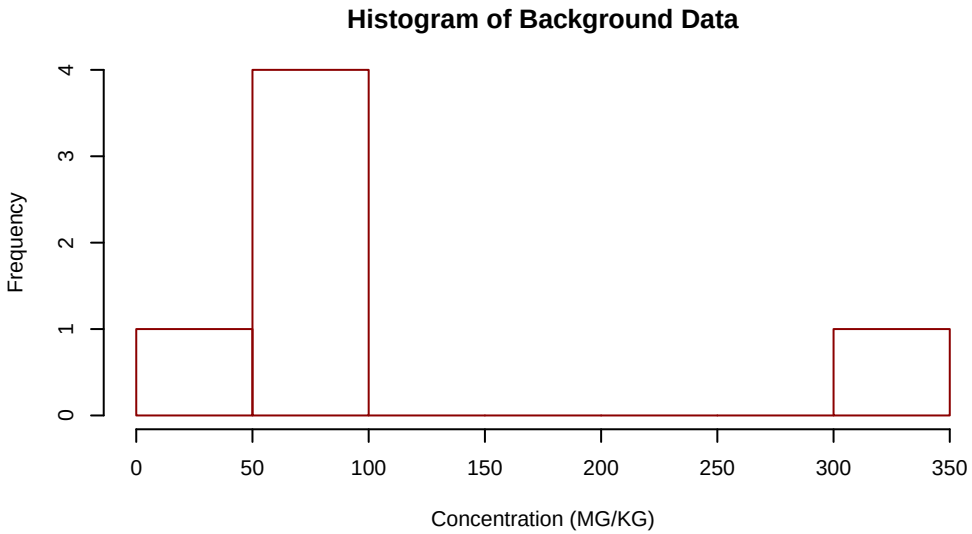


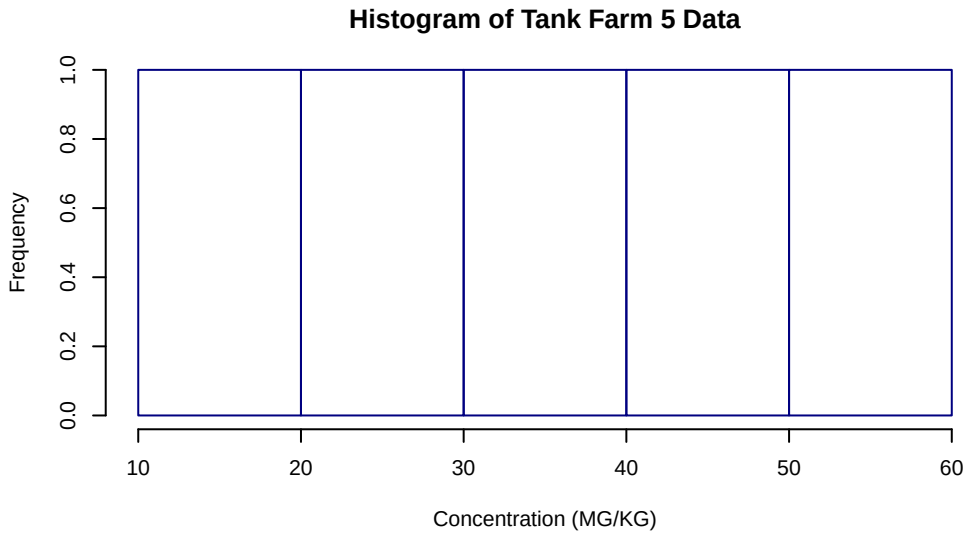


SODIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

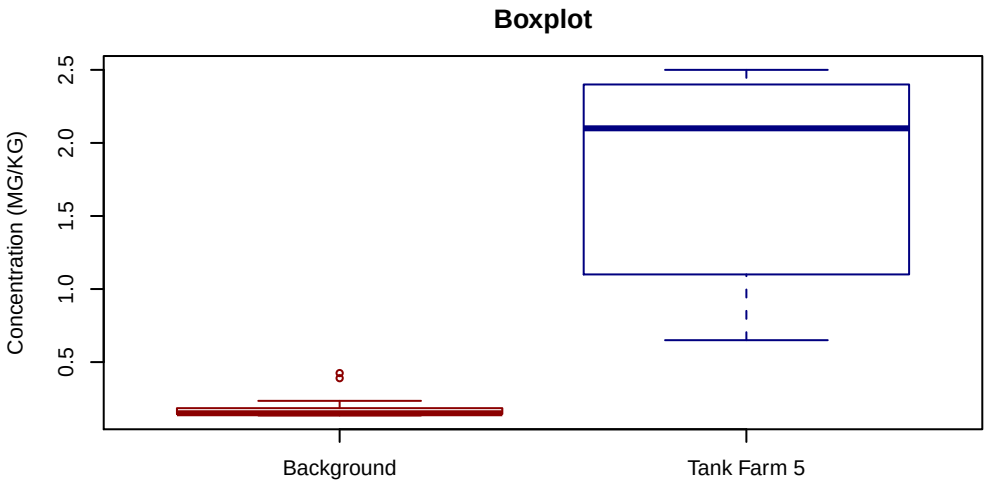


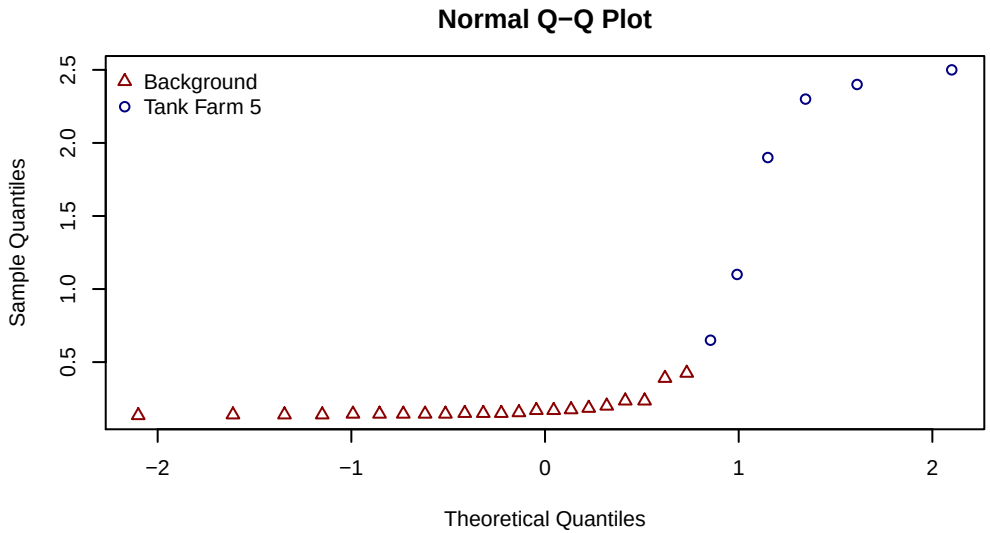


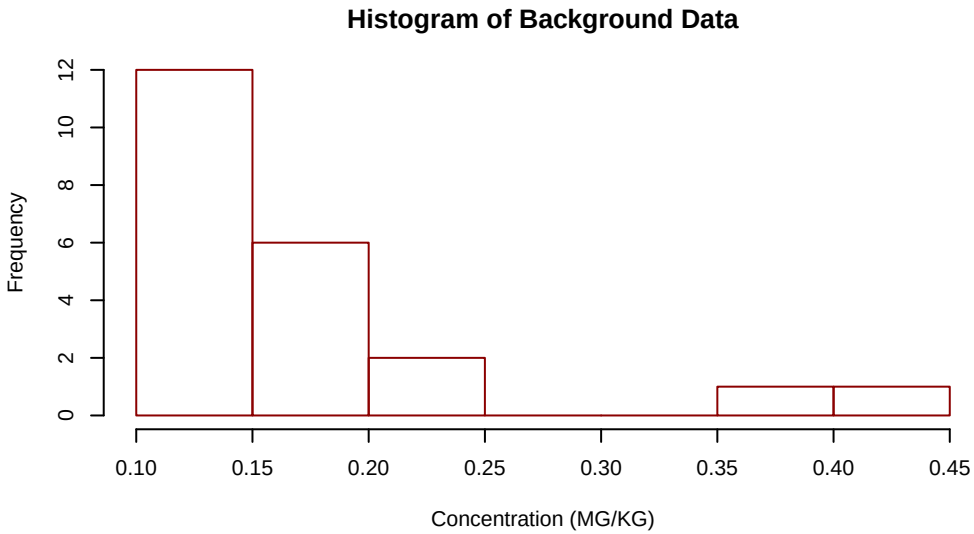


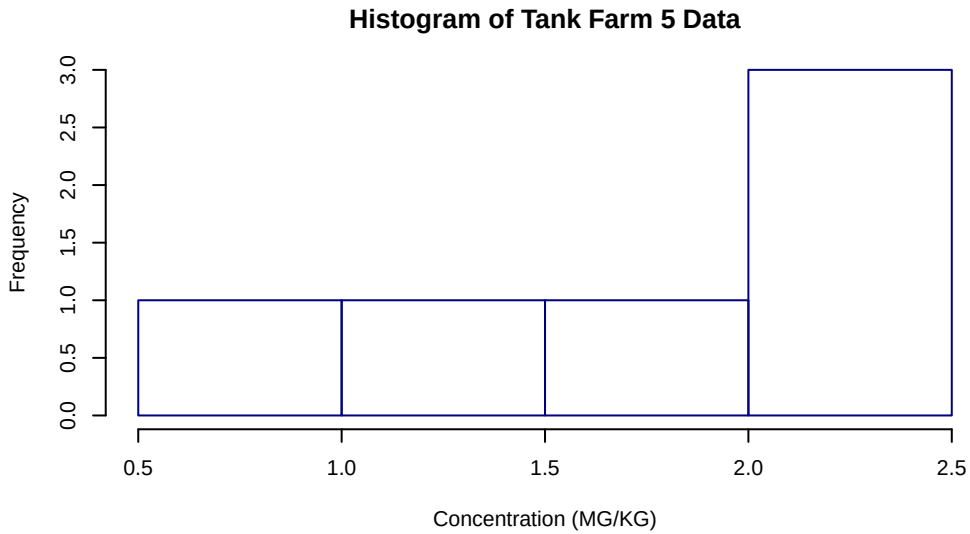


THALLIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

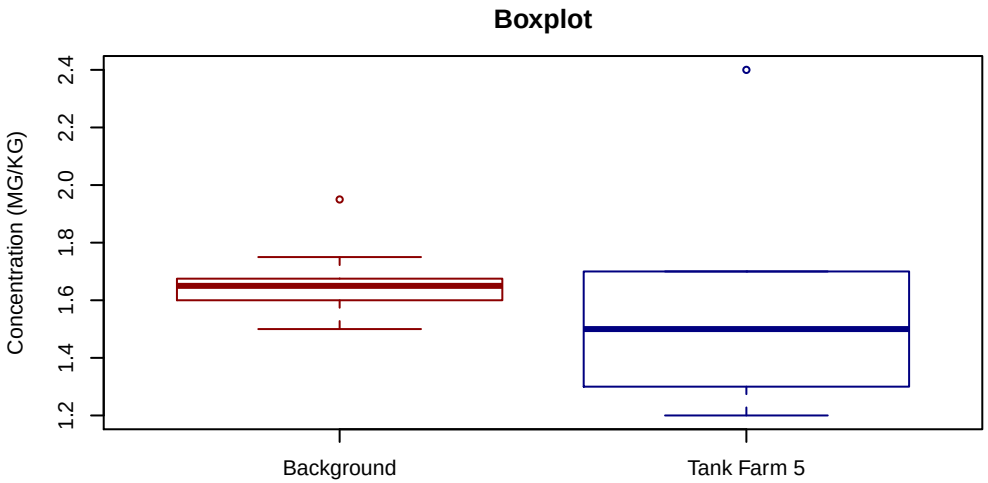


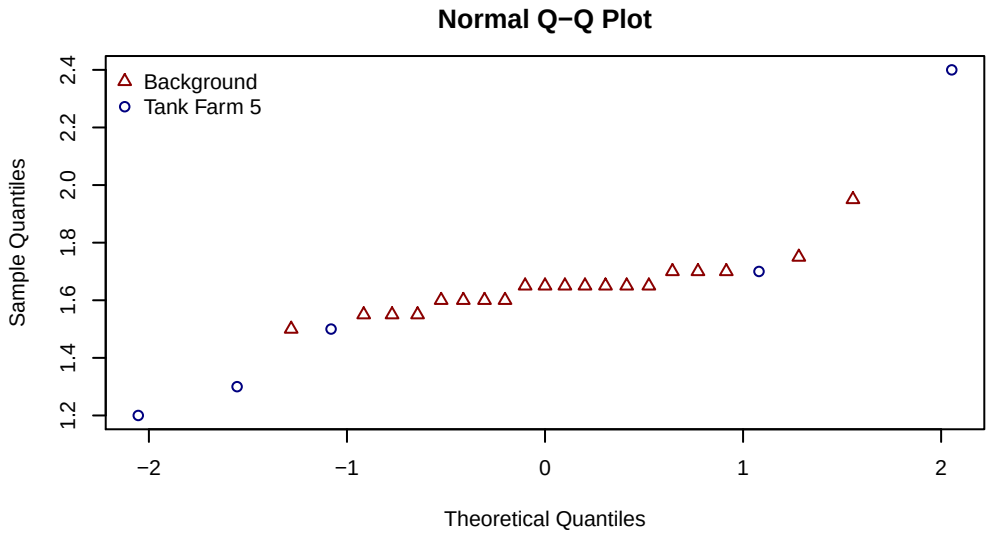


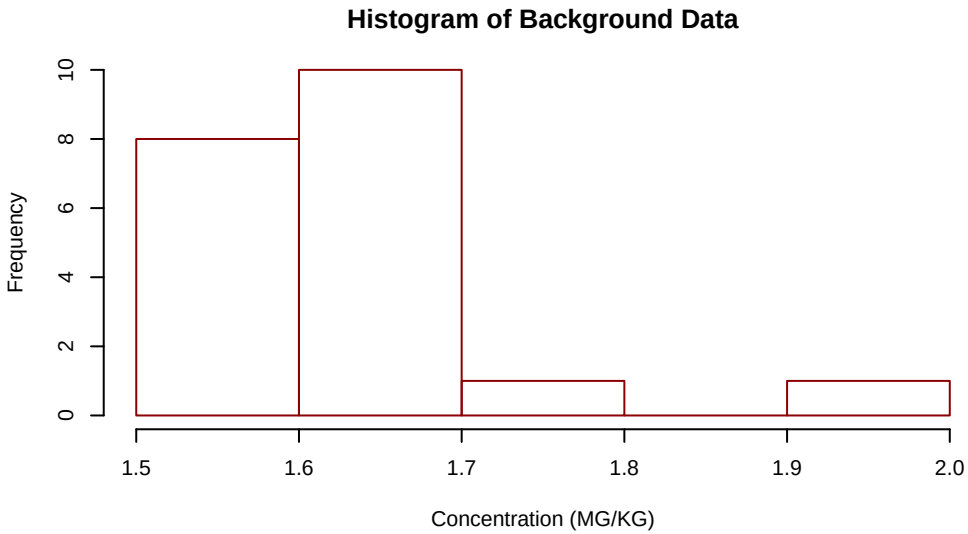


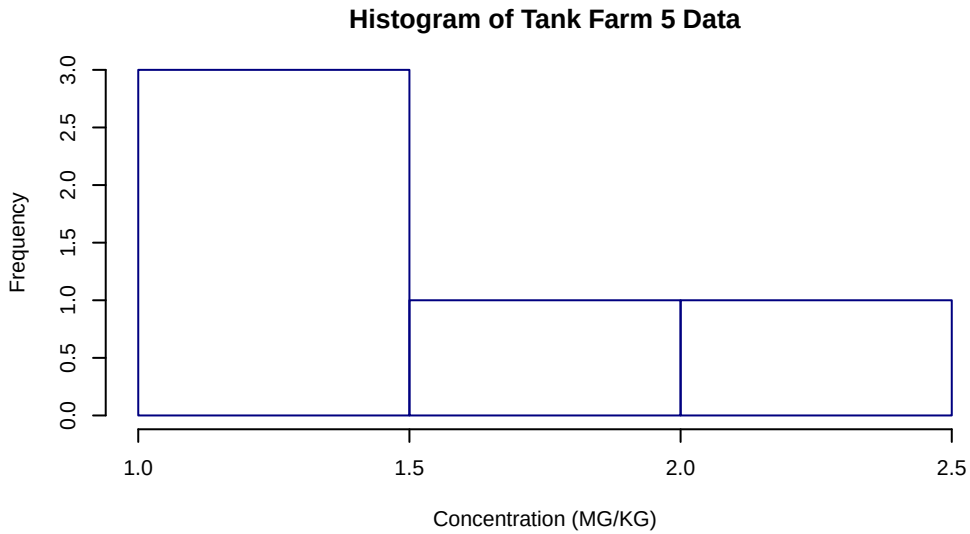


THALLIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

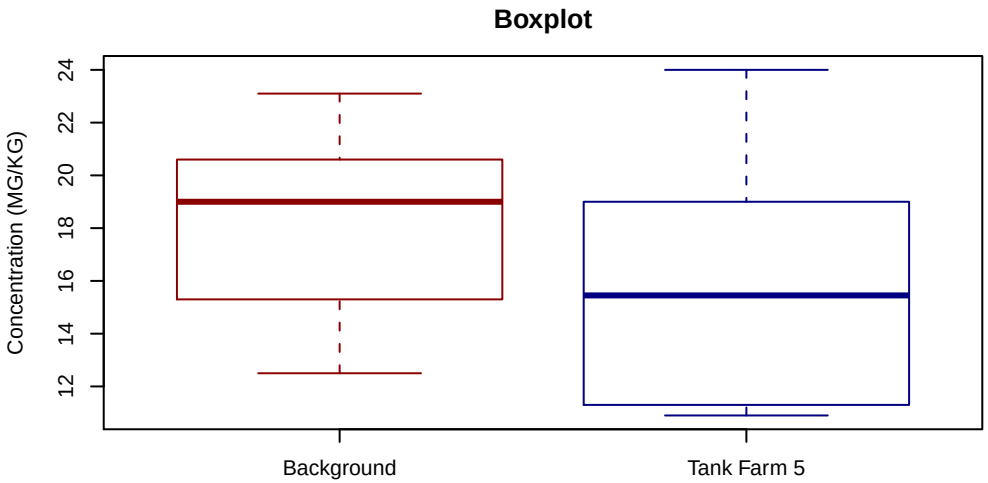


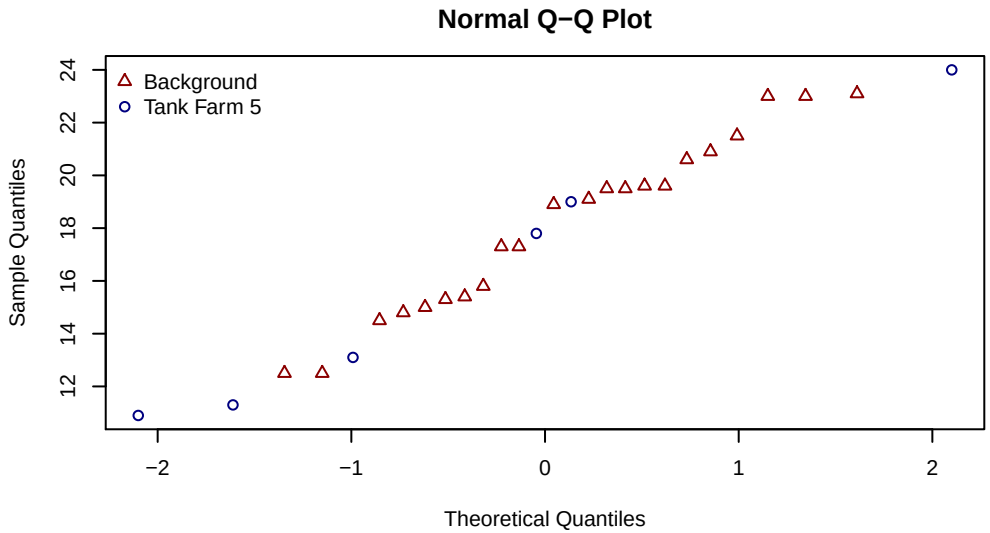


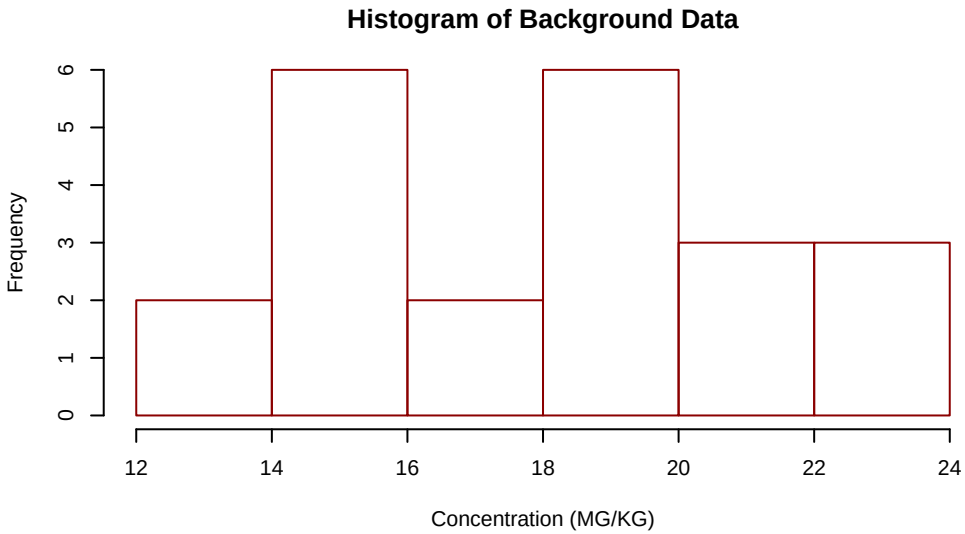


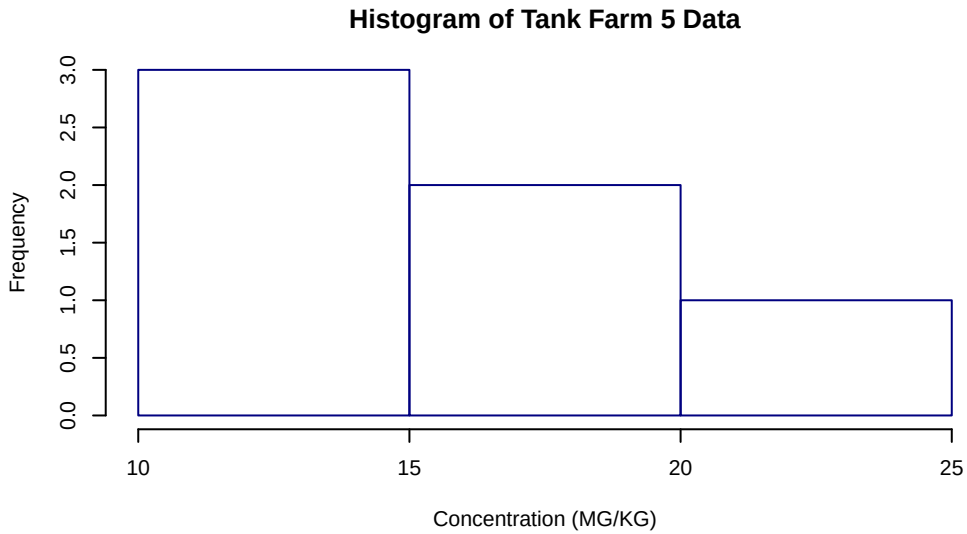


VANADIUM Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

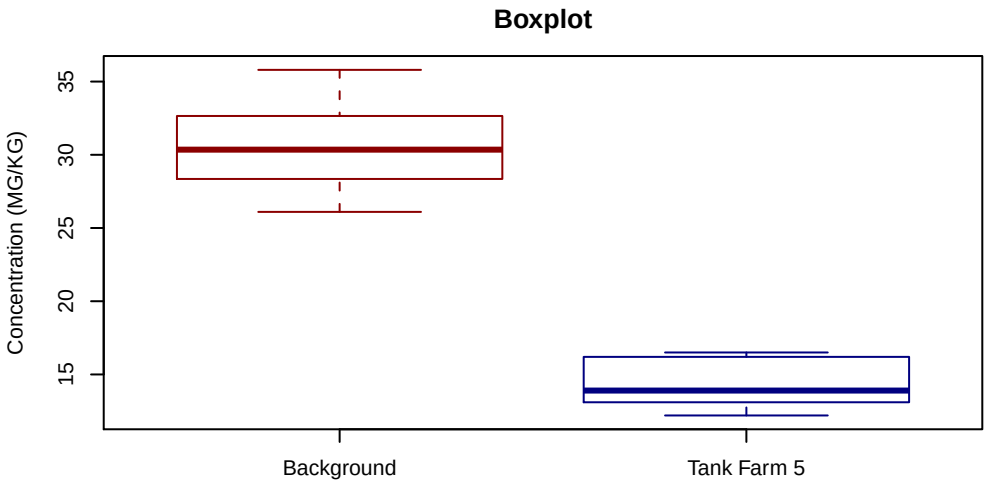


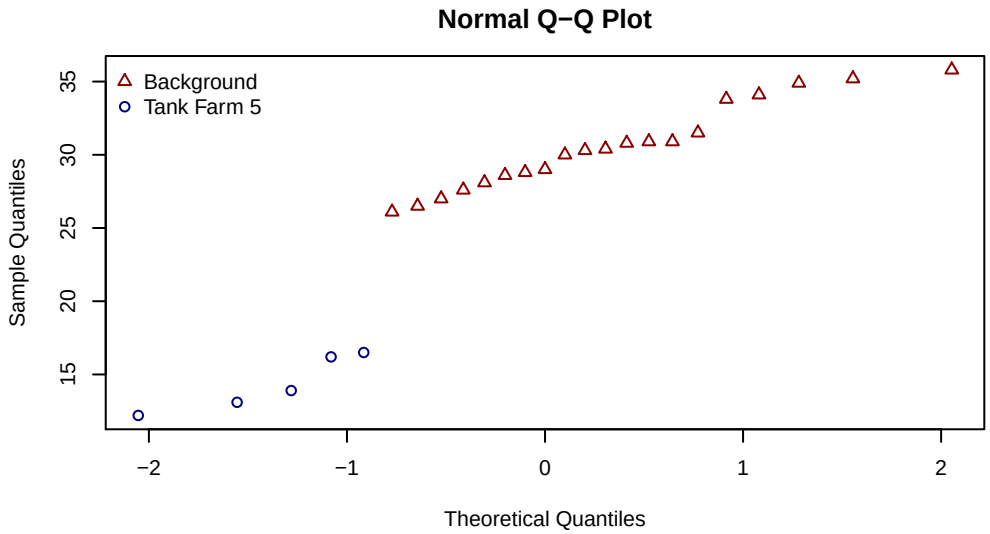


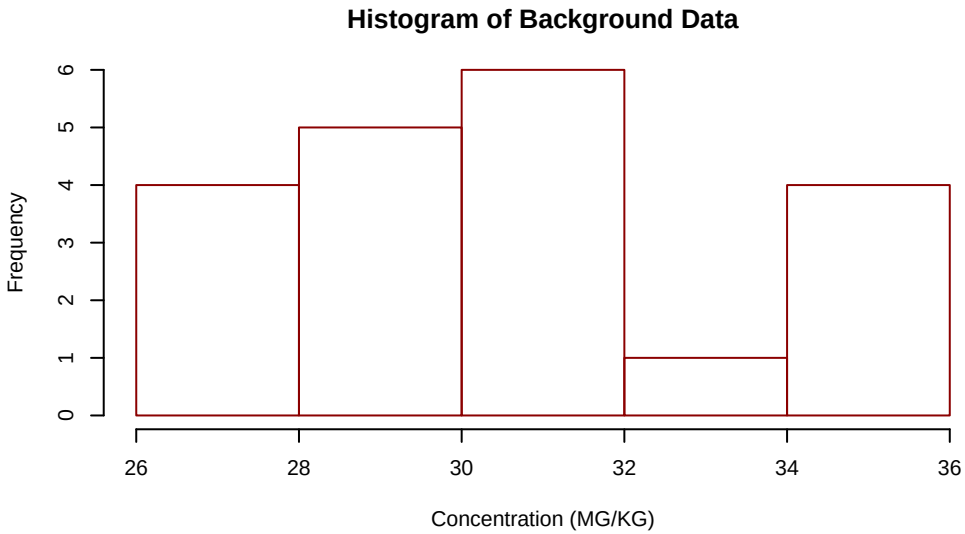


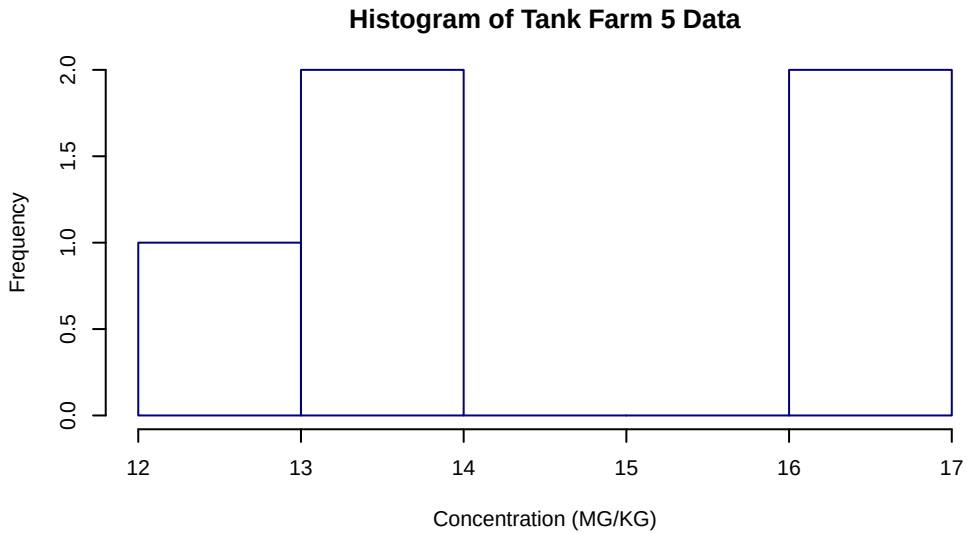


VANADIUM Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

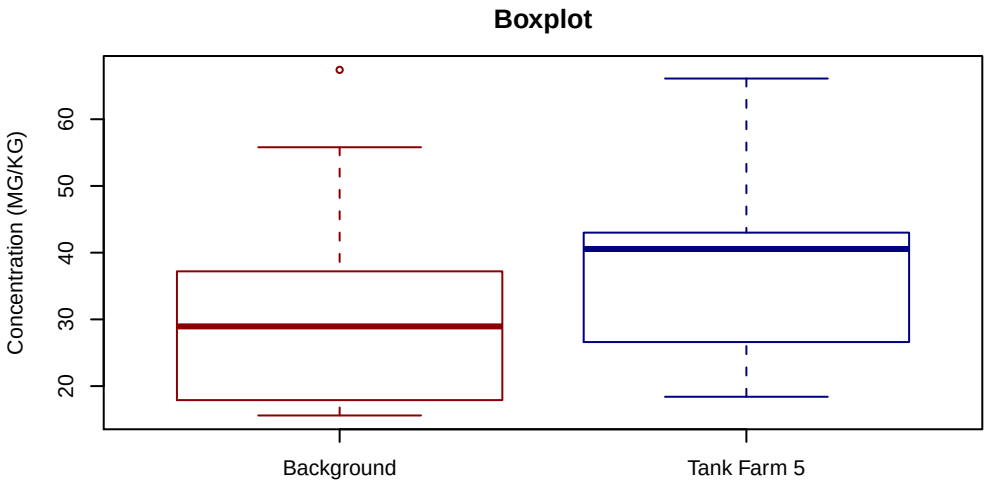


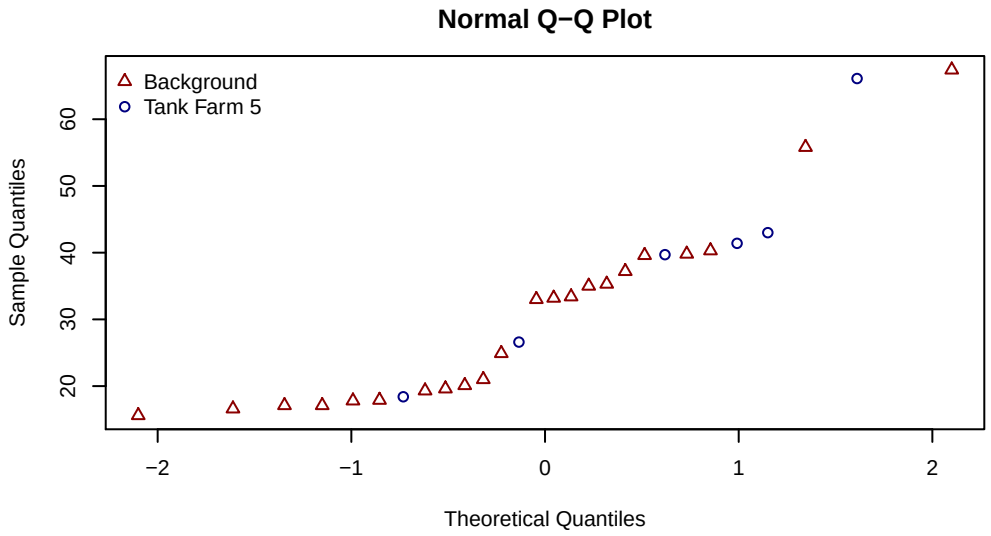


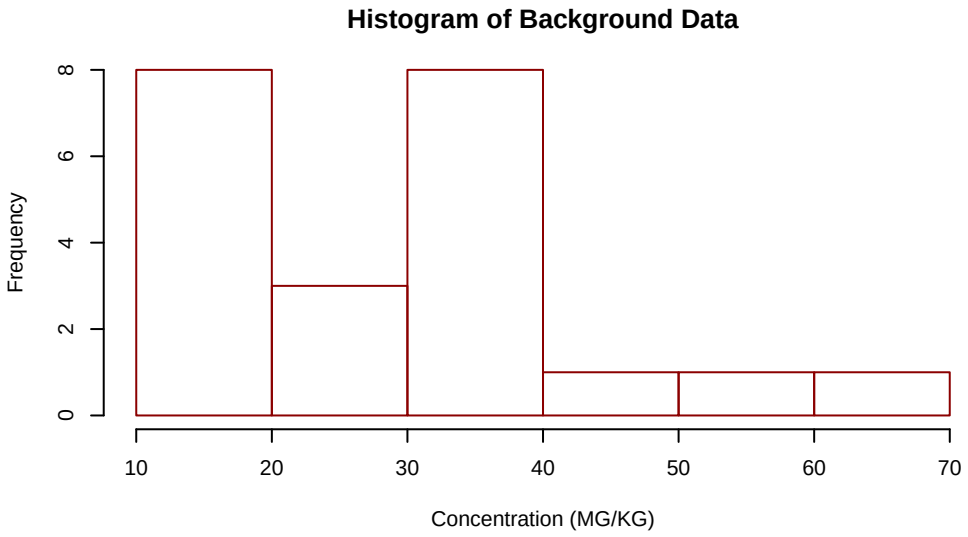


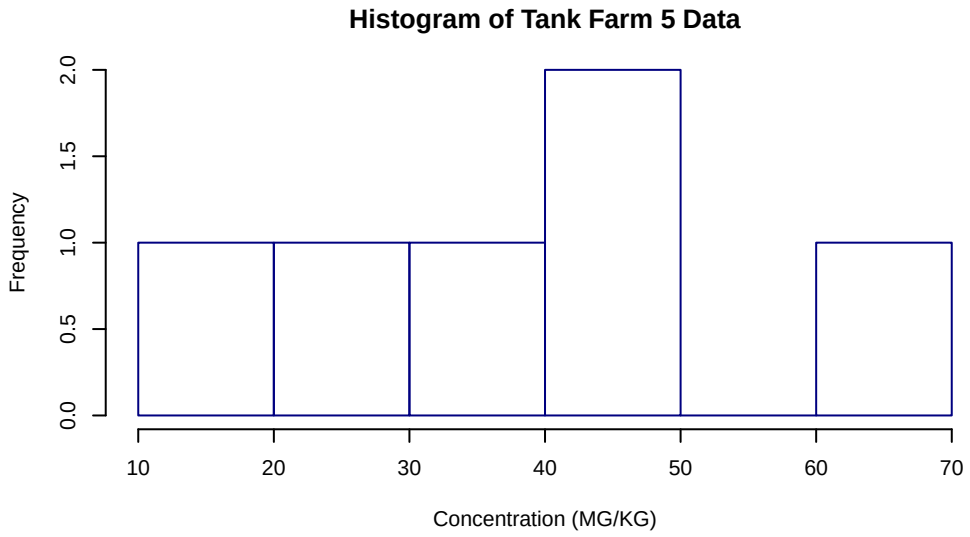


ZINC Ne SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

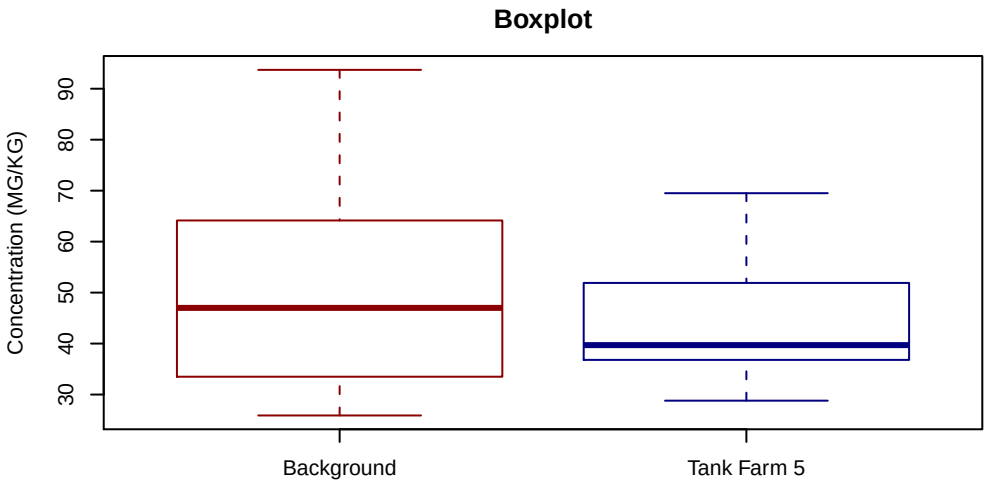


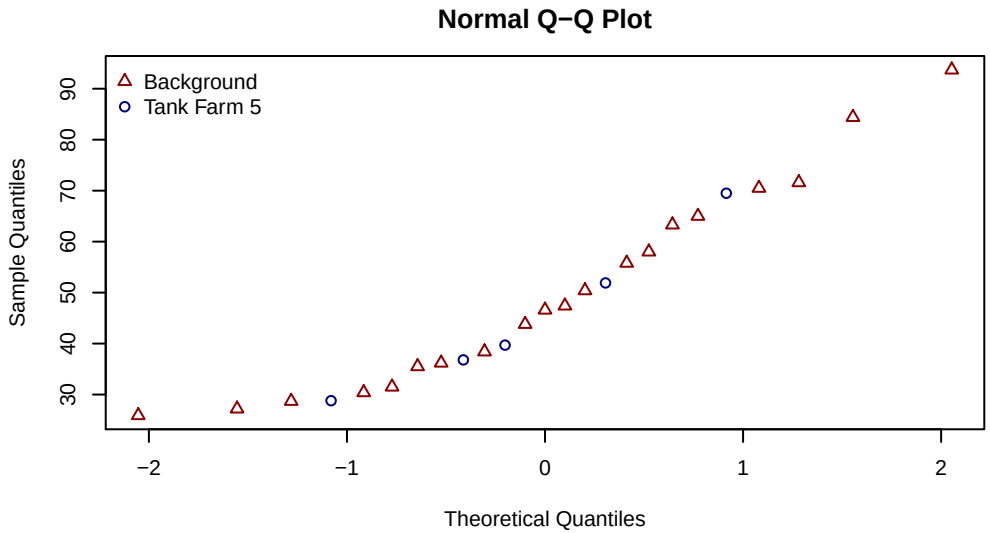


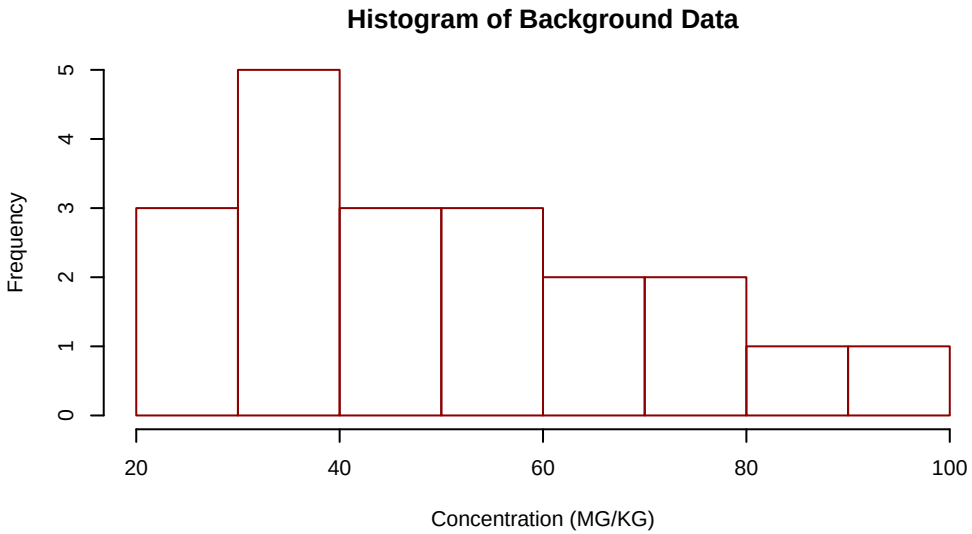


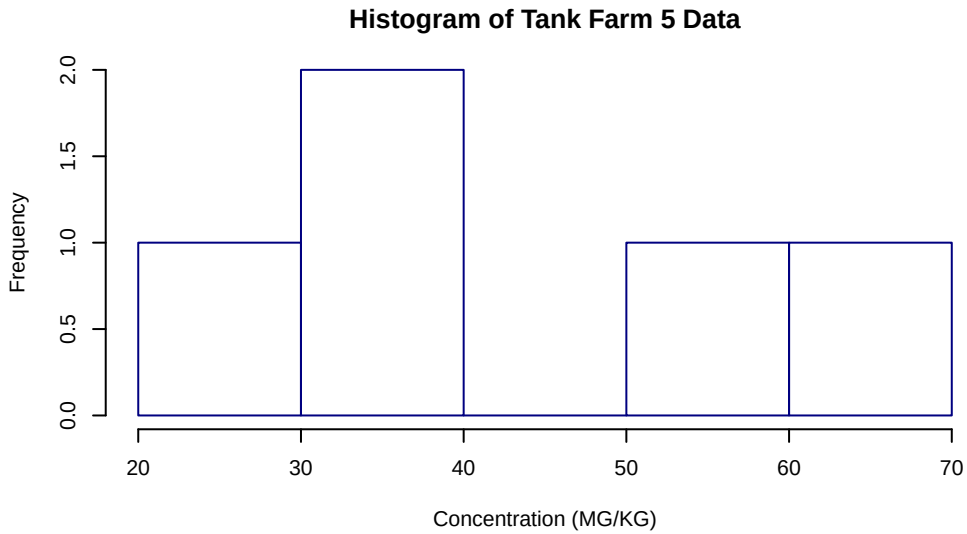


ZINC Pm SURFACESOIL
TANK FARM 5 BACKGROUND COMPARISON
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND









APPENDIX G

ANALYTICAL DATA RESULTS

G-1 SOIL SAMPLE ANALYTICAL DATA – DU 4-1 SURFACE SOIL

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,1,2,2-TETRACHLOROETHANE	560	2800	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,1,2-TRICHLOROETHANE	1100	5300	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,1-DICHLOROETHANE	3300	17000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,1-DICHLOROETHENE	240000	1100000	5 UJ	5.7 UJ	4.9 U	5.6 U	5.2 U	5.6 UJ	7.3 U	7.7 U	5.3 U	4.9 UJ	4.3 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,2,4-TRICHLOROBENZENE	22000	99000	5 UJ	5.7 UJ	4.9 UJ	5.6 UJ	5.2 UJ	5.6 UJ	7.3 UJ	7.7 UJ	5.3 UJ	4.9 UJ	4.3 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	5 UJ	5.7 U	4.9 U	5.6 U	5.2 U	5.6 UJ	7.3 U	7.7 U	5.3 U	4.9 UJ	4.3 UJ
1,2-DIBROMOETHANE	34	170	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,2-DICHLOROBENZENE	1900000	9800000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,2-DICHLOROETHANE	430	2200	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,2-DICHLOROPROPANE	890	4500	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,3-DICHLOROBENZENE			5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
1,4-DICHLOROBENZENE	2400	12000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
2-BUTANONE	28000000	200000000	5 U	5.7 UJ	4.9 U	5.6 U	3 J	5.6 U	9.6	150	5.3 U	4.9 U	4.3 U
2-HEXANONE	210000	1400000	5 UJ	5.7 UJ	4.9 UJ	5.6 UJ	5.2 UJ	5.6 UJ	7.3 UJ	7.7 UJ	5.3 UJ	4.9 UJ	4.3 UJ
4-METHYL-2-PENTANONE	5300000	53000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	8.4 J	5.7 UJ	4.9 UJ	6.2 J	20 J	5.6 UJ	31 J	56 J	160 J	5.9 J	4 J
BENZENE	1100	5400	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
BROMOCHLOROMETHANE			5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
BROMODICHLOROMETHANE	270	1400	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
BROMOFORM	61000	220000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
BROMOMETHANE	7300	32000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
BTEX			2 J	5.7 U	1.2 J	2 J	5.2 U	5.6 U	2 J	7.7 U	5.3 U	4.9 U	4.3 U
CARBON DISULFIDE	820000	3700000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CARBON TETRACHLORIDE	610	3000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CHLOROBENZENE	290000	1400000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CHLORODIBROMOMETHANE	680	3300	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CHLOROETHANE	15000000	61000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CHLOROFORM	290	1500	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CHLOROMETHANE	120000	500000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CIS-1,2-DICHLOROETHENE	780000	10000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CIS-1,3-DICHLOROPROPENE	1700	8100	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
CYCLOHEXANE	7000000	29000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
DICHLORODIFLUOROMETHANE	180000	780000	5 UJ	5.7 UJ	4.9 U	5.6 U	5.2 U	5.6 UJ	7.3 U	7.7 U	5.3 U	4.9 UJ	4.3 UJ
ETHYLBENZENE	5400	27000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
ISOPROPYLBENZENE	2100000	11000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
M+P-XYLENES			2 J	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
METHYL ACETATE	78000000	1E+09	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
METHYL CYCLOHEXANE			5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
METHYL TERT-BUTYL ETHER	43000	220000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
METHYLENE CHLORIDE	11000	53000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
O-XYLENE	3800000	19000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
STYRENE	6300000	36000000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TETRACHLOROETHENE	550	2600	5 U	5.7 UJ	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TOLUENE	5000000	45000000	5 U	5.7 U	1.2 J	2 J	5.2 U	5.6 U	2 J	7.7 U	5.3 U	4.9 U	4.3 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TOTAL CHLORINATED ETHENES			5 UJ	5.7 UJ	4.9 U	5.6 U	5.2 U	5.6 UJ	7.3 U	7.7 U	5.3 U	4.9 UJ	4.3 UJ
TOTAL CHLORINATED VOCS			5 UJ	5.7 UJ	4.9 UJ	5.6 UJ	5.2 UJ	5.6 UJ	7.3 UJ	7.7 UJ	5.3 UJ	4.9 UJ	4.3 UJ
TOTAL XYLENES	630000	2700000	2 J	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TRANS-1,2-DICHLOROETHENE	150000	690000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TRICHLOROETHENE	2800	14000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
TRICHLOROFLUOROMETHANE	790000	3400000	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VINYL CHLORIDE	60	1700	5 U	5.7 U	4.9 U	5.6 U	5.2 U	5.6 U	7.3 U	7.7 U	5.3 U	4.9 U	4.3 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	330 U	330 U	420 UJ	500 UJ	470 U	480 U	500 UJ	490 UJ	450 U	430 U	430 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	3.3 UJ	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.5 U	4.3 U	4.3 UJ
1,4-DIOXANE	44000	160000	3.3 U	3.3 U	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.5 U	4.3 U	4.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	330 UJ	420 UJ	500 UJ	470 U	480 U	500 UJ	490 UJ	450 U	430 U	430 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.3 U	4.3 UJ	5.1 UJ	4.7 UJ	4.8 UJ	5.1 UJ	5 UJ	4.5 U	4.3 UJ	4.3 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	670 U	860 U	1000 U	950 U	980 U	1000 U	1000 U	920 U	880 U	880 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.3 U	4.3 UJ	5.1 UJ	4.7 UJ	4.8 UJ	5.1 UJ	5 UJ	4.5 U	4.3 UJ	4.3 U
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	330 UJ	420 UJ	500 UJ	4.7 UJ	4.8 UJ	500 UJ	490 UJ	450 UJ	4.3 UJ	4.3 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	670 UJ	860 UJ	1000 UJ	950 UJ	980 UJ	1000 UJ	1000 UJ	920 UJ	880 UJ	880 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
2,6-DINITROTOLUENE	61000	620000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
2-CHLOROPHENOL	390000	5100000	5.4	3.3 U	4.3 U	5.1 U	4.7 U	6.6	5.1 U	5 U	4.5 U	4.3 U	4.3 U
2-METHYLNAPHTHALENE	310000	4100000	5.4 J	3.3 UJ	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.7 J	4.3 U	4.3 UJ
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.3 UJ	420 U	500 U	4.7 U	4.8 U	500 U	490 U	450 U	4.3 U	4.3 UJ
2-NITROANILINE	610000	6000000	670 U	670 U	860 U	1000 U	950 U	980 U	1000 U	1000 U	920 U	880 U	880 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-NITROPHENOL			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	330 U	420 U	500 U	470 U	480 UJ	500 U	490 U	450 U	430 UJ	430 UJ
3-NITROANILINE			670 U	670 U	860 U	1000 U	950 U	980 U	1000 U	1000 U	920 U	880 U	880 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	670 UJ	860 U	1000 U	950 UJ	980 U	1000 U	1000 U	920 UJ	880 U	880 U
4-BROMOPHENYL PHENYL ETHER			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.3 U	4.3 UJ	5.1 UJ	4.7 UJ	4.8 UJ	5.1 UJ	5 UJ	4.5 U	4.3 UJ	4.3 U
4-CHLOROANILINE	2400	8600	330 UJ	330 UJ	420 UJ	500 UJ	470 UJ	480 UJ	500 UJ	490 UJ	450 UJ	430 UJ	430 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.3 UJ	4.3 UJ	5.1 UJ	4.7 U	4.8 U	5.1 UJ	5 UJ	4.5 UJ	4.3 U	4.3 U
4-NITROANILINE	24000	86000	670 U	670 U	860 U	1000 U	950 U	980 U	1000 U	1000 U	920 U	880 U	880 U
4-NITROPHENOL			670 UJ	670 UJ	860 U	1000 U	950 UJ	980 U	1000 U	1000 U	920 UJ	880 U	880 U
ACENAPHTHENE	3400000	33000000	6.2	6.8	4.3 U	5.1 U	6.4	4.8 U	5.1 U	5 U	4.5 U	4.3 U	4.3 U
ACENAPHTHYLENE	3400000	33000000	24	35	6.5	34	19	4.8 U	31	14	31	9.1	4.3 U
ACETOPHENONE	7800000	100000000	330 U	330 U	420 UJ	500 UJ	470 U	480 U	500 UJ	490 UJ	450 U	430 U	430 U
ANTHRACENE	17000000	170000000	48	37	6.1	25	38	4.8 U	28	21	69	12	4.3 U
ATRAZINE	2100	7500	3.3 U	3.3 U	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.5 U	4.3 U	4.3 U
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	420 UJ	500 UJ	470 UJ	480 UJ	500 UJ	490 UJ	450 UJ	430 UJ	430 UJ
BENZO(A)ANTHRACENE	150	2100	160	150	29	94	130	17	110	48	160	28	13
BENZO(A)PYRENE	15	210	130	130	34 J	130 J	120 J	15 J	150 J	40 J	130	31 J	13 J
BENZO(B)FLUORANTHENE	150	2100	210	170	60 J	170 J	190 J	27 J	220 J	67 J	230 J	79 J	19 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(G,H,I)PERYLENE	1700000	17000000	72	98	28	110	84	13	120	47	86	17	11
BENZO(K)FLUORANTHENE	1500	21000	210	180	21	130	83	17	130	30	170 J	48	18
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	330 UJ	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	330 UJ	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	330 U	420 U	130 J	470 U	480 U	77 J	490 U	450 U	430 U	430 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
CAPROLACTAM	31000000	310000000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
CARBAZOLE			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
CHRYSENE	15000	210000	160	140	32	150	130	19	150	53	180	57	16
DIBENZO(A,H)ANTHRACENE	15	210	34	47	7.1 J	25 J	24 J	4.8 U	29 J	16 J	24 J		4.3 U
DIBENZOFURAN	78000	1000000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
DIETHYL PHTHALATE	49000000	490000000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
DIMETHYL PHTHALATE			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	420 U	500 U	470 U	78 J	500 U	490 U	450 U	430 U	430 U
DI-N-OCTYL PHTHALATE			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
FLUORANTHENE	2300000	22000000	160	210	57	220	230	33	240	68	290	52	26
FLUORENE	2300000	22000000	11	11	4.3 U	8.4	12	4.8 U	10	5 U	12	4.3 U	4.3 U
HEXACHLOROBENZENE	300	1100	3.3 U	3.3 U	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.5 U	4.3 U	4.3 U

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TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
HEXACHLOROBUTADIENE	6200	22000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	330 UJ	420 UJ	500 UJ	470 UJ	480 UJ	500 UJ	490 UJ	450 UJ	430 UJ	430 UJ
HEXACHLOROETHANE	35000	120000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
HIGH MOLECULAR WEIGHT PAHS			1360	1420	341 J	1310 J	1260 J	181 J	1460 J	461 J	1580 J	383 J	148 J
INDENO(1,2,3-CD)PYRENE	150	2100	72	87	25 J	90 J	74 J	11 J	110 J	33 J	75 J	18 J	10 J
ISOPHORONE	510000	1800000	330 UJ	330 UJ	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
LOW MOLECULAR WEIGHT PAHS			195 J	194 J	34.6	149	195	14	169	65	222 J	35.1	12 J
NAPHTHALENE	3600	18000	6.2	4.5	4.3 U	5.8 U	4.7 U	4.8 U	5.1 U	5 U	5	4.3 U	4.3 UJ
NITROBENZENE	4800	24000	330 UJ	330 UJ	420 UJ	500 UJ	470 U	480 U	500 UJ	490 UJ	450 U	430 U	430 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	330 UJ	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
PENTACHLOROPHENOL	3000	9000	670 UJ	670 UJ	43 U	51 U	47 U	48 U	51 U	50 U	45 UJ	43 U	43 U
PHENANTHRENE	1700000	17000000	94	100	22	82	120	14	100	30	100	14	12
PHENOL	18000000	180000000	31	26	4.3 U	5.1 U	4.7 U	4.8 U	5.1 U	5 U	4.5 U	4.3 U	4.3 U
PYRENE	1700000	17000000	150	210	48	190	200	29	200	59	240	47	22
TOTAL CARCINOGENIC PAHS-HALFND	15	210	976	904	208 J	789 J	751 J	108 J	899 J	287 J	969 J	267 J	91.2 J
TOTAL CARCINOGENIC PAHS-POS	15	210	976	904	208 J	789 J	751 J	106 J	899 J	287 J	969 J	267 J	89 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CHLORINATED VOCS			330 U	330 U	420 U	500 U	470 U	480 U	500 U	490 U	450 U	430 U	430 U
TOTAL PAHS			1550 J	1620 J	376 J	1460 J	1460 J	195 J	1630 J	526 J	1810 J	418 J	160 J
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.3 U	6.4 J	4.3 U	5.1 U	6	4.8 U	5 U	5 U	35	4.3 U	4.3 U
4,4'-DDE	1400	5100	3.3 U	10 J	4.3 U	9.9	4.8 U	4.8 U	5.1 J	5 U	4.6 U	4.3 U	4.3 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 UJ	4.3 U	4.3 U
ALDRIN	29	100	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
ALPHA-BHC	77	270	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
ALPHA-CHLORDANE	1600	6500	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
AROCLOR-1016	3900	21000	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1221	140	540	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1232	140	540	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1242	220	740	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1248	220	740	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1254	220	740	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1260	220	740	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1262			33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
AROCLOR-1268			33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
BETA-BHC	270	960	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
DELTA-BHC	77	270	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DIELDRIN	30	110	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U	4.3 U	4.3 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
ENDOSULFAN II	370000	3700000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U	4.3 U	4.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U	4.3 U	4.3 U
ENDRIN	18000	180000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U	4.3 U	4.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U	4.3 U	4.3 U
ENDRIN KETONE	18000	180000	3.3 U	3.7 J	4.3 U	5.1 U	4.8 U	4.8 U	5 U	5 U	4.6 U	4.3 U	4.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
GAMMA-CHLORDANE	1600	6500	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
HEPTACHLOR	110	380	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
METHOXYCHLOR	310000	3100000	17 U	17 U	22 U	26 U	24 U	25 U	26 U	26 U	24 UJ	22 U	22 U
TOTAL AROCLOR	220	740	33 U	33 U	43 U	51 U	48 U	48 U	50 U	50 U	46 U	43 U	43 U
TOTAL CHLORDANE			1.7 U	1.7 U	2.2 U	2.6 U	2.4 U	2.5 U	2.6 U	2.6 U	2.4 U	2.2 U	2.2 U
TOTAL DDD/DDE/DDT			3.3 U	16.4 J	4.3 U	9.9	6	4.8 U	5.1 J	5 U	35 J	4.3 U	4.3 U
TOXAPHENE	440	1600	170 U	170 U	220 U	260 U	240 U	250 U	260 U	260 U	240 J	220 U	220 U
METALS (MG/KG)													
ALUMINUM	77000	990000	9860	13200	8920	13000	11700	11800 J	11800	15200	8870	8940 J	9740 J
ANTIMONY	31	410	0.16 UJ	0.19 UJ	0.15 UJ	0.25 UJ	0.23 UJ	0.21 UJ	0.27 UJ	0.18 UJ	0.16 UJ	0.12 UJ	0.16 UJ
ARSENIC	0.39	1.6	8.4 J	10.2 J	6.7 J	13.7 J	8.2 J	6.7 J	15.4	13.3 J	9.2 J	8.5 J	8.6 J
BARIUM	15000	190000	33	42.6	24.1	43.6	40.1	30.1	37.4	56.7	27.1	24.1 J	24.3
BERYLLIUM	160	2000	0.47	0.41	0.14 J	0.21 J	0.21 J	0.3	0.096 J	0.48 J	0.67 J	0.37	0.3

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SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CADMIUM	70	800	0.29	0.4	0.048 J	0.26 J	0.027 J	0.12 J	0.058 J	0.013 U	0.23 J	0.27	0.17 J
CALCIUM			608 J	606 J	5.6 UJ	459 J	294 J	171 J	393 J	168 J	845 J	286 J	101 J
CHROMIUM	0.29	5.6	12.1 J	13.7 J	9.3	14.8	13.7	11	12	20.8	13.8	11.9	10
COBALT	23	300	15.1 J	16.1 J	10.2	14.4	13.4	4.9 J	8.4	13.1	13.7 J	9.4	6.8
COPPER	3100	41000	19.2 J	21.4 J	15	25.2	20.3	8.6	14.5	8	18.1 J	18.6	11.3
IRON	55000	720000	37800	37900	22800	33600	34400	21100	20600	33300	35100	28900	24400
LEAD	400	800	25.8 J	24.5 J	24.8 J	63.5 J	21.8 J	26.2 J	33.4 J	19.3 J	24.4	19 J	20.1 J
MAGNESIUM			1720	2660	2040	2810	2620	1830	2120	3040	1790 J	1550	1470
MANGANESE	1800	23000	558 J	293 J	439	583	501	144	255	209	368	354	237
MERCURY	5.6	34	0.07	0.084	0.039 J	0.14	0.041 J	0.07	0.1	0.086	0.034 UJ	0.05	0.066
NICKEL	1500	20000	27.3	32.3	13.5 J	24.4 J	27.3 J	13.6 J	18.5 J	36.7 J	27.9	21.2 J	14.6 J
POTASSIUM			325 J	418 J	433 J	454 J	440 J	240	293 J	364 J	235 J	230	233
SELENIUM	390	5100	1.1 J	1.4 J	0.82 J	1.1 U	0.98 U	1.8	1.2 U	0.77 U	4.4 UJ	0.97 J	1.1 J
SILVER	390	5100	0.072 U	0.082 U	0.067 U	0.11 U	0.1 U	0.093 UJ	0.12 U	0.078 U	0.093 UJ	0.054 UJ	0.071 UJ
SODIUM			49.1	61.6	46.6 J	137 J	68 J	43 J	45.5 J	77.2 J	45 J	50.2	23.5 J
THALLIUM			0.22 U	0.25 U	0.21 U	0.33 U	0.3 U	0.28 U	0.36 U	0.24 U	2.6	0.16 U	0.21 U
VANADIUM	390	5200	20.4	23.6	19.4	28.7	23.7	26.2	21.3	37.6	21.8	21.6	21.4
ZINC	23000	310000	90.5	98.7	41 J	99.6 J	78.2 J	36.7 J	64.7 J	58.9 J	115	69.6 J	37.1 J
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE
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TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	3600 J	3920 J	3870 J	3190 J	5880 J	3840 J	4250 J	5270 J	5710 J	2890 J	8550 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	3.47 J	1.75 J	2.72 J	16.1	3.63 J	2.09 J	14.1	3.19 J	4.91 J	1.88 J	4.13 J
1,2,3,4,6,7,8-HPCDD	450	1800	41	38.5	27	65.1	45.4	39.9	79.7	64.3	53.5	29.2	79.3
1,2,3,4,6,7,8-HPCDF	450	1800	1.23 J	1.77 J	1.25 J	7.2	2.72 J	1.23 J	6.55	1.79 J	2.38 U	1.3 J	2.36 J
1,2,3,4,7,8,9-HPCDF	450	1800	0.103 J	0.0875 U	0.0992 J	0.689 J	0.0687 U	0.182 J	0.419 J	0.151 J	0.249 J	0.0454 U	0.167 J
1,2,3,4,7,8-HXCDD	45	180	0.395 J	0.364 J	0.129 J	0.89 J	0.34 J	0.358 J	1.15 J	0.602 J	0.597 J	0.274 J	0.765 J
1,2,3,4,7,8-HXCDF	45	180	0.283 J	0.386 J	0.266 J	1.09 J	0.327 J	0.432 J	0.759 J	0.554 J	0.671 J	0.508 J	0.688 J
1,2,3,6,7,8-HXCDD	45	180	0.569 J	0.59 J	0.305 J	1.8 J	0.721 J	0.577 J	2.24 J	1.02 J	0.864 J	0.506 J	1.19 J
1,2,3,6,7,8-HXCDF	45	180	0.15 J	0.23 J	0.151 J	0.727 J	0.19 J	0.198 J	0.565 J	0.28 J	0.333 J	0.251 J	0.318 J
1,2,3,7,8,9-HXCDD	45	180	0.592 J	0.844 J	0.247 J	2.09 J	0.817 J	0.644 J	2.34 J	1.36 J	1.07 J	0.485 J	1.45 J
1,2,3,7,8,9-HXCDF	45	180	0.0375 U	0.122 U	0.0640 U	0.170 U	0.0303 U	0.0810 U	0.183 U	0.155 U	0.0665 U	0.0547 U	0.0240 U
1,2,3,7,8-PECDD	4.5	18	0.22 J	0.0822 U	0.0960 U	0.537 J	0.167 J	0.136 J	0.562 J	0.251 J	0.336 J	0.0934 U	0.324 J
1,2,3,7,8-PECDF	150	600	0.163 J	0.0894 U	0.103 U	0.391 J	0.0553 U	0.0385 U	0.191 J	0.134 J	0.213 J	0.162 J	0.256 J

TABLE
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TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,3,4,6,7,8-HXCDF	45	180	0.169 J	0.221 J	0.142 J	0.832 J	0.168 J	0.157 J	0.845 J	0.431 J	0.303 J	0.243 J	0.44 J
2,3,4,7,8-PECDF	15	60	0.142 J	0.205 J	0.102 U	0.435 J	0.0546 U	0.0799 J	0.396 J	0.261 J	0.28 J	0.187 J	0.274 J
2,3,7,8-TCDD	4.5	18	0.0547 U	0.0939 U	0.0863 U	0.128 U	0.0621 U	0.0635 U	0.0543 U	0.0569 U	0.0517 U	0.0551 U	0.0452 U
2,3,7,8-TCDF	45	180	0.258 J	0.158 U	0.140 U	0.617 J	0.331 J	0.377 J	0.676 J	0.561 J	0.606 J	0.376 J	0.446 J
TEQ BIRD	4.5	18	1.2 J	0.846 J	0.518 J	2.63 J	1.33 J	1.2 J	2.76 J	2 J	2.15 J	1.08 J	2.37 J
TEQ BIRD HALFND	4.5	18	1.23 J	1.02 J	0.738 J	2.7 J	1.4 J	1.24 J	2.8 J	2.04 J	2.19 J	1.16 J	2.39 J
TEQ FISH	4.5	18	0.996 J	0.831 J	0.554 J	2.02 J	1.1 J	0.903 J	2.22 J	1.48 J	1.59 J	0.699 J	2.01 J
TEQ FISH HALFND	4.5	18	1.03 J	0.932 J	0.68 J	2.09 J	1.15 J	0.94 J	2.25 J	1.51 J	1.63 J	0.776 J	2.03 J
TEQ MAMMAL	4.5	18	2.01 J	1.9 J	1.57 J	3.18 J	2.7 J	2 J	3.69 J	3.06 J	3.12 J	1.5 J	4.33 J
TEQ MAMMAL HALFND	4.5	18	2.04 J	2.01 J	1.69 J	3.25 J	2.74 J	2.04 J	3.73 J	3.09 J	3.16 J	1.58 J	4.35 J
TOTAL HPCDD			128	38.5	56.7	133	112	105	177	150	134	68.1	201
TOTAL HPCDF			2.62 J	1.54 J	2.9	18.6	5.09	2.43 J	15.7	3.57	5.29	2.22 J	4.27
TOTAL HXCDD			9.49	4.39	1.87 J	16.6	11	8.21	22.3	15	11.7 U	5.56	18.2
TOTAL HXCDF			1.95 J	3.55 J	2.52 J	16.2	3.29 J	1.7 J	14.8	4.19	4.42	2.08 J	4.13
TOTAL PECDD			0.142 J	0.0822 U	0.960 U	2.31 J	1.73 J	0.799 J	2.92 J	0.493 J	2.04 J	0.934 J	2.85 J
TOTAL PECDF			1.71 J	3.06 J	1.91 J	17.5		2.45 J	19.9	7.71	5.3	3.21 J	2.33 J
TOTAL TCDD			0.161 J	0.0939 U	0.0863 U	0.774 J	0.139 J	0.233 J	0.446 J	0.33 J	0.676 J	0.388 J	0.654 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-921-0001	TF4-SB-922-0001	TF4-SB-923-0001	TF4-SB-924-0001	TF4-SB-925-0001	TF4-SB-926-0001	TF4-SB-927-0001	TF4-SB-928-0001	TF4-SB-929-0001	TF4-SB-930-0001
LOCATION ID			TF4-SB920	TF4-SB921	TF4-SB922	TF4-SB923	TF4-SB924	TF4-SB925	TF4-SB926	TF4-SB927	TF4-SB928	TF4-SB929	TF4-SB930
SAMPLE DATE			04/22/10	04/22/10	04/19/10	04/19/10	04/20/10	04/23/10	04/19/10	04/19/10	04/15/10	04/23/10	04/23/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL TCDF			0.98 J	2.57	0.224 J	7.92	0.742 J	2.73	11.9	6.57	6.58 J	2.59	2.59
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			49 J	540	15 U	18 U	140	39 J	41	240	280	43 J	47 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,1,2,2-TETRACHLOROETHANE	560	2800	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,1,2-TRICHLOROETHANE	1100	5300	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 UJ	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,1-DICHLOROETHANE	3300	17000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,1-DICHLOROETHENE	240000	1100000	5 UJ	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 UJ	4.3 U	4.7 U	4.6 U
1,2,3-TRICHLOROBENZENE	49000	490000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 UJ	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,2,4-TRICHLOROBENZENE	22000	99000	5 UJ	8.3 UJ	3.5 UJ	3.8 UJ	5.4 UJ	3.6 UJ	5.5 UJ	5.9 UJ	4.3 UJ	4.7 UJ	4.6 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	5 UJ	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,2-DIBROMOETHANE	34	170	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,2-DICHLOROBENZENE	1900000	9800000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,2-DICHLOROETHANE	430	2200	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,2-DICHLOROPROPANE	890	4500	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,3-DICHLOROBENZENE			5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
1,4-DICHLOROBENZENE	2400	12000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
2-BUTANONE	28000000	200000000	5 U	13 J	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	22 J	4.3 U	4.7 U	4.6 U
2-HEXANONE	210000	1400000	5 UJ	8.3 UJ	3.5 UJ	3.8 UJ	5.4 UJ	3.6 U	5.5 UJ	5.9 UJ	4.3 UJ	4.7 UJ	4.6 UJ
4-METHYL-2-PENTANONE	5300000	53000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 UJ	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	8.4 J	67 J	3.5 UJ	18 J	7.7 J	3.6 UJ	5.5 UJ	65 J	3.5 J	4.7 UJ	4.6 UJ
BENZENE	1100	5400	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
BROMOCHLOROMETHANE			5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
BROMODICHLOROMETHANE	270	1400	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
BROMOFORM	61000	220000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
BROMOMETHANE	7300	32000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
BTEX			2 J	2.6 J	1.3 J	0.87 J	5.4 U	3.6 U	5.5 U	5.9 U	1.8 J	2.5 J	4.6 U
CARBON DISULFIDE	820000	3700000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CARBON TETRACHLORIDE	610	3000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CHLOROBENZENE	290000	1400000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CHLORODIBROMOMETHANE	680	3300	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CHLOROETHANE	15000000	61000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CHLOROFORM	290	1500	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CHLOROMETHANE	120000	500000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CIS-1,2-DICHLOROETHENE	780000	10000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CIS-1,3-DICHLOROPROPENE	1700	8100	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
CYCLOHEXANE	7000000	29000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
DICHLORODIFLUOROMETHANE	180000	780000	5 UJ	8.3 UJ	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 UJ	4.3 U	4.7 U	4.6 U
ETHYLBENZENE	5400	27000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
ISOPROPYLBENZENE	2100000	11000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
M+P-XYLENES			2 J	8.3 U	1.3 J	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	1.8 J	2.5 J	4.6 U
METHYL ACETATE	78000000	1E+09	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
METHYL CYCLOHEXANE			5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
METHYL TERT-BUTYL ETHER	43000	220000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
METHYLENE CHLORIDE	11000	53000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
O-XYLENE	3800000	19000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
STYRENE	6300000	36000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
TETRACHLOROETHENE	550	2600	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 UJ	4.3 U	4.7 U	4.6 U
TOLUENE	5000000	45000000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
TOTAL CHLORINATED ETHENES			5 UJ	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 UJ	4.3 U	4.7 U	4.6 U
TOTAL CHLORINATED VOCS			5 UJ	8.3 UJ	3.5 UJ	3.8 UJ	5.4 UJ	3.6 UJ	5.5 UJ	5.9 UJ	4.3 UJ	4.7 UJ	4.6 UJ
TOTAL XYLENES	630000	2700000	2 J	2.6 J	1.3 J	0.87 J	5.4 U	3.6 U	5.5 U	5.9 U	1.8 J	2.5 J	4.6 U
TRANS-1,2-DICHLOROETHENE	150000	690000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
TRICHLOROETHENE	2800	14000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
TRICHLOROFLUOROMETHANE	790000	3400000	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U

TABLE
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TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VINYL CHLORIDE	60	1700	5 U	8.3 U	3.5 U	3.8 U	5.4 U	3.6 U	5.5 U	5.9 U	4.3 U	4.7 U	4.6 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	330 U	600 U	390 U	420 U	2300 UJ	370 U	410 UJ	640 U	330 U	330 U	330 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	6 U	3.9 U	4.2 U	23 U	3.7 UJ	4.1 U	6.4 U	3.3 UJ	3.3 UJ	3.3 UJ
1,4-DIOXANE	44000	160000	3.3 U	6 U	3.9 U	4.2 U	23 U	3.7 U	4.1 U	6.4 U	3.3 U	3.3 U	3.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	600 U	390 U	420 U	2300 UJ	370 U	410 UJ	640 U	330 UJ	330 UJ	330 UJ
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	6 U	3.9 UJ	4.2 UJ	23 U	3.7 UJ	4.1 U	6.4 UJ	3.3 U	3.3 U	3.3 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	1200 U	790 U	850 U	4700 U	750 U	840 U	1300 U	670 U	670 U	670 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	6 U	3.9 UJ	4.2 UJ	23 U	3.7 U	4.1 U	6.4 UJ	3.3 U	3.3 U	3.3 U
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	6 UJ	3.9 UJ	4.2 UJ	39 J	3.7 UJ	4.1 UJ	6.4 UJ	330 UJ	330 UJ	330 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	1200 UJ	790 UJ	850 UJ	4700 UJ	750 UJ	840 UJ	1300 UJ	670 UJ	670 UJ	670 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
2,6-DINITROTOLUENE	61000	620000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
2-CHLOROPHENOL	390000	5100000	5.4	6 U	3.9 U	4.2 U	23 U	3.7 U	4.1 U	6.4 U	6.5	8	6.4
2-METHYLNAPHTHALENE	310000	4100000	5.4 J	16 J	3.9 U	4.2 U	47	3.7 U	4.1 UJ	6.4 U	3.3 UJ	3.3 UJ	3.3 UJ
2-METHYLPHENOL	3100000	31000000	3.3 UJ	6 U	3.9 U	4.2 U	30	3.7 UJ	4.5	6.4 U	3.3 UJ	3.3 UJ	3.3 UJ
2-NITROANILINE	610000	6000000	670 U	1200 U	790 U	850 U	4700 U	750 U	840 U	1300 U	670 U	670 U	670 U

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TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-NITROPHENOL			330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
3-NITROANILINE			670 U	1200 U	790 U	850 U	4700 U	750 U	840 U	1300 U	670 U	670 U	670 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	1200 UJ	790 UJ	850 UJ	4700 UJ	750 UJ	840 U	1300 U	670 UJ	670 UJ	670 UJ
4-BROMOPHENYL PHENYL ETHER			330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	6 U	3.9 UJ	4.2 UJ	23 U	3.7 U	4.1 U	6.4 UJ	3.3 U	3.3 U	3.3 U
4-CHLOROANILINE	2400	8600	330 UJ	600 UJ	390 UJ	420 UJ	2300 UJ	370 UJ	410 UJ	640 UJ	330 UJ	330 UJ	330 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	6 U	3.9 U	4.2 U	81	3.7 UJ	5	56	3.3 UJ	3.3 UJ	3.3 UJ
4-NITROANILINE	24000	86000	670 U	1200 U	790 U	850 U	4700 U	750 U	840 U	1300 U	670 U	670 U	670 U
4-NITROPHENOL			670 UJ	1200 UJ	790 UJ	850 UJ	4700 U	750 U	840 U	1300 U	670 UJ	670 UJ	670 UJ
ACENAPHTHENE	3400000	33000000	6.2	7.6	3.9 U	4.2 U	100	3.7 U	4.1 U	6.4 U	3.3 U	3.3 U	3.3 U
ACENAPHTHYLENE	3400000	33000000	24	38	3.9 U	4.2 U	2500	4	7.6	6.6	3.3 U	3.3 U	3.3 U
ACETOPHENONE	7800000	100000000	330 U	600 U	390 U	420 U	2300 UJ	370 U	410 UJ	640 U	330 U	330 U	330 U
ANTHRACENE	17000000	170000000	48	36	3.9 U	4.2 U	8800	4.5	8	6.4 U	4.5	3.3 U	3.3 U
ATRAZINE	2100	7500	3.3 U	6 U	3.9 U	4.2 U	23 U	3.7 U	4.1 U	6.4 U	3.3 U	3.3 U	3.3 U
BENZALDEHYDE	7800000	100000000	330 UJ	600 UJ	390 UJ	420 UJ	2300 UJ	370 UJ	410 UJ	640 UJ	330 UJ	330 UJ	330 UJ
BENZO(A)ANTHRACENE	150	2100	160	180	3.9 U	4.2 U	54000	14	29	19	8.2	3.3 U	17
BENZO(A)PYRENE	15	210	130	230 J	3.9 U	4.2 U	24000	13	31	25 J	8.5	3.3 U	15
BENZO(B)FLUORANTHENE	150	2100	210	320 J	4.3 J	4.2 U	49000	24 J	53 J	41 J	14	3.3 U	23

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(G,H,I)PERYLENE	1700000	17000000	72	190	3.9 U	4.2 U	8500	8.2	24	22	7.5	3.3 U	10
BENZO(K)FLUORANTHENE	1500	21000	210	260	3.9 U	4.2 U	19000	11	20 J	19	10	3.3 U	15
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 UJ	330 UJ	330 UJ
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 UJ	330 UJ	330 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	320 J	390 U	420 U	2300 U	370 U	410 U	74 J	330 U	36 J	330 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
CAPROLACTAM	31000000	310000000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
CARBAZOLE			330 U	600 U	390 U	420 U	740 J	370 U	410 U	640 U	330 U	330 U	330 U
CHRYSENE	15000	210000	160	270	3.9 U	4.2 U	59000	21	33	29	12	3.3 U	21
DIBENZO(A,H)ANTHRACENE	15	210	34	48 J	3.9 UJ	4.2 UJ	3900 J	3.7 U	6.4 J	6.4 U	3.3 U	3.3 U	3.8
DIBENZOFURAN	78000	1000000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
DIETHYL PHTHALATE	49000000	490000000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
DIMETHYL PHTHALATE			330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
DI-N-OCTYL PHTHALATE			330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 UJ	330 U	330 U	330 U
FLUORANTHENE	2300000	22000000	160	470	5.1	4.2 U	83000	31	57	33	14	3.3 U	31
FLUORENE	2300000	22000000	11	15	3.9 U	4.2 U	470	3.7 U	4.1 U	6.4 U	3.3 U	3.3 U	3.3 U
HEXACHLOROBENZENE	300	1100	3.3 U	6 U	3.9 U	4.2 U	23 U	3.7 U	4.1 U	6.4 U	3.3 U	3.3 U	3.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
HEXACHLOROBUTADIENE	6200	22000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	600 UJ	390 UJ	420 UJ	2300 UJ	370 UJ	410 UJ	640 UJ	330 UJ	330 UJ	330 UJ
HEXACHLOROETHANE	35000	120000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
HIGH MOLECULAR WEIGHT PAHS			1360	2500 J	13.8 J	4.2 UJ	395000 J	157 J	322 J	240 J	93.6	3.3 U	169
INDENO(1,2,3-CD)PYRENE	150	2100	72	180 J	3.9 UJ	4.2 UJ	8500	7.4	21 J	20 J	6.4	3.3 U	9.3
ISOPHORONE	510000	1800000	330 UJ	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 UJ	330 UJ	330 UJ
LOW MOLECULAR WEIGHT PAHS			195 J	294 J	3.9 U	4.2 U	12400	16	43.4 J	18.6	10.1 J	3.3 UJ	12 J
NAPHTHALENE	3600	18000	6.2	21	3.9 U	4.2 U	23 U	3.7 U	6.8	6.4 U	3.3 U	3.3 U	3.3 U
NITROBENZENE	4800	24000	330 UJ	600 U	390 U	420 U	2300 UJ	370 UJ	410 U	640 U	330 UJ	330 UJ	330 UJ
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 UJ	330 UJ	330 UJ
N-NITROSODIPHENYLAMINE	99000	350000	330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
PENTACHLOROPHENOL	3000	9000	670 UJ	60 U	39 U	42 U	230 U	37 UJ	840 UJ	64 U	670 UJ	670 UJ	670 UJ
PHENANTHRENE	1700000	17000000	94	160	3.9 U	4.2 U	440	7.5	21	12	5.6	3.3 U	12
PHENOL	18000000	180000000	31	6 U	3.9 U	4.2 U	68	3.7 U	7.1	65	28	23	25
PYRENE	1700000	17000000	150	350	4.4	4.2 U	86000	27	48	32	13	3.3 U	24
TOTAL CARCINOGENIC PAHS-HALFND	15	210	976	1490 J	16 J	4.2 UJ	217000 J	92.2 J	193 J	156 J	60.8	3.3 U	104
TOTAL CARCINOGENIC PAHS-POS	15	210	976	1490 J	4.3 J	4.2 UJ	217000 J	90.4 J	193 J	153 J	59.1	3.3 U	104

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CHLORINATED VOCS			330 U	600 U	390 U	420 U	2300 U	370 U	410 U	640 U	330 U	330 U	330 U
TOTAL PAHS			1550 J	2790 J	13.8 J	4.2 UJ	407000 J	173 J	366 J	259 J	104 J	3.3 UJ	181 J
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.3 U	6 U	3.9 U	4.1 U	49	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
4,4'-DDE	1400	5100	3.3 U	6 U	3.9 U	4.1 U	4.5 U	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
4,4'-DDT	1700	7000	3.3 U	6 U	3.9 U	4.1 U	10 J	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
ALDRIN	29	100	1.7 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
ALPHA-BHC	77	270	1.7 U	3.1 U	2 U	2.1 U	2.3 UJ	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
ALPHA-CHLORDANE	1600	6500	1.7 U	3.1 U	2 U	2.1 U	340 UJ	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
AROCLOR-1016	3900	21000	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1221	140	540	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1232	140	540	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1242	220	740	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1248	220	740	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1254	220	740	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1260	220	740	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1262			33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
AROCLOR-1268			33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
BETA-BHC	270	960	1.7 U	14	2 U	2.1 U	2.3 UJ	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
DELTA-BHC	77	270	1.7 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U

TABLE
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TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DIELDRIN	30	110	3.3 U	6 U	3.9 U	4.1 U	80 UJ	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
ENDOSULFAN I	370000	3700000	1.7 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
ENDOSULFAN II	370000	3700000	3.3 U	6 U	3.9 U	4.1 U	41 UJ	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	6 U	3.9 U	4.1 U	22 J	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
ENDRIN	18000	180000	3.3 U	6 U	3.9 U	4.1 U	7.9 J	3.6 U	4.2 UJ	6.4 U	3.3 U	4.2 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	6 U	3.9 U	4.1 U	35 J	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	6 U	3.9 U	4.1 U	69	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	3.4 J	2 U	2.1 U	2.3 UJ	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
GAMMA-CHLORDANE	1600	6500	1.7 U	3.1 U	2 U	2.1 U	2.3 UJ	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
HEPTACHLOR	110	380	1.7 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	3.1 U	2 U	2.1 U	2.3 U	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
METHOXYCHLOR	310000	3100000	17 U	31 U	20 U	21 U	320 UJ	19 U	21 U	33 U	17 U	22 U	17 U
TOTAL AROCLOR	220	740	33 U	60 U	39 U	41 U	45 U	36 U	42 U	64 U	33 U	33 U	33 U
TOTAL CHLORDANE			1.7 U	3.1 U	2 U	2.1 U	171 UJ	1.9 U	2.1 U	3.3 U	1.7 U	2.2 U	1.7 U
TOTAL DDD/DDE/DDT			3.3 U	6 U	3.9 U	4.1 U	59 J	3.6 U	4.2 U	6.4 U	3.3 U	4.2 U	3.3 U
TOXAPHENE	440	1600	170 U	310 U	200 U	210 U	230 U	190 U	210 U	330 U	170 U	220 U	170 U
METALS (MG/KG)													
ALUMINUM	77000	990000	9860	10400	10000	10800	7570	5770 J	4850	8500 J	8870	9800	11200
ANTIMONY	31	410	0.16 UJ	0.19 UJ	0.18 UJ	0.18 UJ	0.15 UJ	0.12 UJ	0.15 UJ	0.27 UJ	0.17 UJ	0.2 UJ	0.19 UJ
ARSENIC	0.39	1.6	8.4 J	14.6 J	4.2 J	11.3 J	9.3 J	6.9	9.3 J	8.2 J	14.7 J	7.2 J	6 J
BARIUM	15000	190000	33	31.1	26.1	21.9 J	22.8	24.3	13.1	27.2	34.5	28.6	24.7
BERYLLIUM	160	2000	0.47	0.38	0.12 J	0.27 J	0.61 J	0.49 J	0.43 J	0.28 J	0.28	0.33	0.47

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SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CADMIUM	70	800	0.29	0.48	0.013 U	0.013 U	0.15 J	0.32	0.29	0.2 J	0.16 J	0.07 J	0.1 J
CALCIUM			608 J	454 J	6.5 UJ	6.6 UJ	380 J	547 J	363 J	1830 J	832 J	314 J	105 J
CHROMIUM	0.29	5.6	12.1 J	16.3 J	9.4	14.9	10.8	9.9 J	13.8	11.5	10 J	10.3 J	8.4 J
COBALT	23	300	15.1 J	12.3 J	5.2	8.2 J	12 J	11.7	20.5 J	16.1	14.4 J	8.7 J	5.4 J
COPPER	3100	41000	19.2 J	22.4 J	5.4	7.5	14.9 J	14.3	22.1 J	14.5	11.2 J	8.8 J	8 J
IRON	55000	720000	37800	34000	18100	34100	41000	31000 J	53200	19200	25100	18000	19100
LEAD	400	800	25.8 J	31.4 J	10.3 J	9.4 J	19.1	7.8 J	14.8	17.6 J	10.5 J	6.9 J	15.9 J
MAGNESIUM			1720	2860	1470	1700	1110 J	1700 J	1400 J	2320	1750	1570	1140
MANGANESE	1800	23000	558 J	249 J	149	238	453	467	762	227	335 J	334 J	351 J
MERCURY	5.6	34	0.07	0.098	0.036 J	0.031 J	0.075 U	0.068	0.015 UJ	0.037 J	0.043	0.036 J	0.038 J
NICKEL	1500	20000	27.3	30	13.9 J	15.6 J	17.7	18.5	32.8	29.2 J	23.5	16	11.5
POTASSIUM			325 J	244 J	187 J	207 J	331 J	545 J	353 J	325	466 J	245 J	258 J
SELENIUM	390	5100	1.1 J	1 J	0.77 U	0.92 J	4.4 UJ	3.5	4.8 UJ	1.6 J	1.2 J	1.5 J	1.4 J
SILVER	390	5100	0.072 U	0.086 U	0.078 U	0.079 U	0.11 UJ	0.068 J	0.08 UJ	0.12 UJ	0.075 U	0.087 U	0.083 U
SODIUM			49.1	41.5 J	23.9 J	49.6 J	23.9 UJ	35.9 J	15.5 UJ	93.9	44.5 J	31 J	21 J
THALLIUM			0.22 U	0.26 U	0.24 U	0.24 U	3.2	2.7	4.7	0.36 U	0.23 U	0.26 U	0.25 U
VANADIUM	390	5200	20.4	22.2	17.4	26.3	17.9	13.2	17.4 J	18.6	17.7	18.8	18.3
ZINC	23000	310000	90.5	106	30.2 J	50.2 J	57.2	57.4	125	55.1 J	46.3	34.3	27.8
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	NA	NA	NA	5.1	NA	NA	NA	NA	NA	NA

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	NA	NA	NA	5000 U	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	3600 J	1890 J	9440 J	21100 J	4520 J	6170 J	721 J	1940	3360 J	5910 J	1980 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	3.47 J	26.6	0.519 J	0.0641 U	3.48 U	1.9 U	20.6 J	1.33 J	0.736 J	0.386 J	0.913 J
1,2,3,4,6,7,8-HPCDD	450	1800	41	55.2	46.6	78	37.2	52.7	39.5	15.1	25.4	37.4	24.4
1,2,3,4,6,7,8-HPCDF	450	1800	1.23 J	7.87	0.271 J	0.14 J	1.42 U	0.931 UJ	6.56	0.766 J	0.988 J	0.157 J	0.512 J
1,2,3,4,7,8,9-HPCDF	450	1800	0.103 J	0.491 J	0.0327 U	0.0605 U	0.456 U	0.115 U	0.562 J	0.118 U	0.0336 U	0.0328 U	0.0489 U
1,2,3,4,7,8-HXCDD	45	180	0.395 J	0.806 J	0.126 J	0.17 J	0.326 U	0.263 J	0.576 J	0.117 U	0.2 J	0.102 J	0.261 J
1,2,3,4,7,8-HXCDF	45	180	0.283 J	0.499 J	0.115 J	0.0380 U	0.257 U	0.232 J	0.438 J	0.283 J	0.136 J	0.035 J	0.18 J
1,2,3,6,7,8-HXCDD	45	180	0.569 J	1.81 J	0.226 J	0.23 J	0.596 J	0.455 J	1.63 J	0.187 J	0.26 J	0.147 J	0.347 J
1,2,3,6,7,8-HXCDF	45	180	0.15 J	0.457 J	0.0719 J	0.0361 U	0.244 U	0.171 J	0.389 J	0.204 J	0.0604 J	0.0273 U	0.0717 J
1,2,3,7,8,9-HXCDD	45	180	0.592 J	1.85 J	0.208 J	0.328 J	0.814 J	0.77 J	1.36 J	0.336 J	0.334 J	0.171 J	0.498 J
1,2,3,7,8,9-HXCDF	45	180	0.0375 U	0.265 U	0.0462 U	0.0471 U	0.327 U	0.0812 U	0.163 U	0.0646 U	0.0501 U	0.0385 U	0.0425 U
1,2,3,7,8-PECDD	4.5	18	0.22 J	0.329 J	0.0403 U	0.0443 U	0.486 U	0.173 J	0.29 J	0.0979 U	0.116 J	0.0290 U	0.0365 U
1,2,3,7,8-PECDF	150	600	0.163 J	0.105 J	0.0398 U	0.0344 U	0.377 U	0.0588 U	0.145 U	0.0981 U	0.0907 J	0.0240 U	0.0394 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,3,4,6,7,8-HXCDF	45	180	0.169 J	0.464 J	0.0736 J	0.0404 U	0.279 U	0.0693 U	0.413 J	0.0554 U	0.0876 J	0.320 U	0.104 J
2,3,4,7,8-PECDF	15	60	0.142 J	0.0723 U	0.0393 U	0.0339 U	0.374 U	0.0583 U	0.144 U	0.0968 U	0.0977 J	0.0231 U	0.0384 U
2,3,7,8-TCDD	4.5	18	0.0547 U	0.0880 U	0.0329 U	0.0579 U	1.25 U	0.111 U	0.175 U	0.0979 U	0.0603 J	0.0354 U	0.0391 U
2,3,7,8-TCDF	45	180	0.258 J	0.243 J	0.0651 U	0.0572 U	0.988 U	0.140 U	0.137 U	0.169 U	0.0718 U	0.0588 U	0.102 U
TEQ BIRD	4.5	18	1.2 J	1.3 J	1.05 J	2.23 J	0.577 J	0.978 J	0.78 J	0.301 J	0.729 J	0.657 J	0.33 J
TEQ BIRD HALFND	4.5	18	1.23 J	1.39 J	1.14 J	2.34 J	2.22 J	1.15 J	1.02 J	0.546 J	0.767 J	0.751 J	0.442 J
TEQ FISH	4.5	18	0.996 J	1.26 J	1.09 J	2.28 J	0.503 J	1.03 J	0.917 J	0.271 J	0.735 J	0.688 J	0.402 J
TEQ FISH HALFND	4.5	18	1.03 J	1.33 J	1.14 J	2.35 J	1.65 J	1.11 J	1.06 J	0.435 J	0.74 J	0.747 J	0.455 J
TEQ MAMMAL	4.5	18	2.01 J	2.16 J	3.38 J	7.18 J	1.87 J	2.74 J	1.46 J	0.842 J	1.59 J	2.19 J	0.99 J
TEQ MAMMAL HALFND	4.5	18	2.04 J	2.22 J	3.43 J	7.25 J	2.93 J	2.83 J	1.59 J	0.977 J	1.59 J	2.25 J	1.04 J
TOTAL HPCDD			128	101	185	172	94	108	73.6	15.1	59.5	72.3	64.8
TOTAL HPCDF			2.62 J	21.3	0.271 J	0.14 J	1.42 U	1.04 U	17.5	0.703 J	1.53 J	0.157 J	0.512 J
TOTAL HXCDD			9.49	12.7	3.18	1.56 J	6.27 U	5.58 U	11 U	1.47 J	3.88	0.42 J	5.42
TOTAL HXCDF			1.95 J	10.5	0.908 J	0.0361 U	0.953 J	0.778 J	7.66	1.01 J	0.698 J	0.0662 J	0.999 J
TOTAL PECDD			0.142 J	0.591 J	0.1 J	0.0443 U	0.486 U	1.25 J	0.29 J	0.0979 U	0.236 J	0.0290 U	0.324 J
TOTAL PECDF			1.71 J	5.78	1.89 J	0.0531 J	0.374 U	1.03 J	1.45 J	0.333 J	0.417 J	0.0231 U	0.748 J
TOTAL TCDD			0.161 J	0.0880 U	0.0329 U	0.0579 U	1.25 U	0.111 U	0.175 U	0.0979 U	0.0298 U	0.0354 U	0.0391 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-931-0001	TF4-SB-932-0001	TF4-SB-933-0001	TF4-SB-934-0001	TF4-SB-935-0001	TF4-SB-936-0001	TF4-SB-937-0001	TF4-SB-938-0001	TF4-SB-939-0001	TF4-SB-940-0001
LOCATION ID			TF4-SB920	TF4-SB931	TF4-SB932	TF4-SB933	TF4-SB934	TF4-SB935	TF4-SB936	TF4-SB937	TF4-SB938	TF4-SB939	TF4-SB940
SAMPLE DATE			04/22/10	04/20/10	04/20/10	04/20/10	04/15/10	04/14/10	04/14/10	04/22/10	04/22/10	04/22/10	04/22/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL TCDF			0.98 J	0.825 J	0.696 J	0.0572 U	0.988 U	0.140 U	0.137 U	0.169 U	0.551 J	0.182 J	0.391 J
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			49 J	140	14 U	15 U	NA	NA	NA	80 J	30 J	25 UJ	NA

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
VOLATILES (UG/KG)						
1,1,1-TRICHLOROETHANE	8700000	38000000	5 U	5.4 U	8.5 U	4.3 U
1,1,2,2-TETRACHLOROETHANE	560	2800	5 U	5.4 U	8.5 U	4.3 U
1,1,2-TRICHLOROETHANE	1100	5300	5 U	5.4 U	8.5 U	4.3 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	5 U	5.4 U	8.5 U	4.3 U
1,1-DICHLOROETHANE	3300	17000	5 U	5.4 U	8.5 U	4.3 U
1,1-DICHLOROETHENE	240000	1100000	5 UJ	5.4 U	8.5 U	4.3 U
1,2,3-TRICHLOROBENZENE	49000	490000	5 U	5.4 U	8.5 U	4.3 U
1,2,4-TRICHLOROBENZENE	22000	99000	5 UJ	5.4 UJ	8.5 UJ	4.3 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	5 UJ	5.4 U	8.5 U	4.3 U
1,2-DIBROMOETHANE	34	170	5 U	5.4 U	8.5 U	4.3 U
1,2-DICHLOROBENZENE	1900000	9800000	5 U	5.4 U	8.5 U	4.3 U
1,2-DICHLOROETHANE	430	2200	5 U	5.4 U	8.5 U	4.3 U
1,2-DICHLOROPROPANE	890	4500	5 U	5.4 U	8.5 U	4.3 U
1,3-DICHLOROBENZENE			5 U	5.4 U	8.5 U	4.3 U
1,4-DICHLOROBENZENE	2400	12000	5 U	5.4 U	8.5 U	4.3 U
2-BUTANONE	28000000	200000000	5 U	5.4 U	13	4.3 U
2-HEXANONE	210000	1400000	5 UJ	5.4 UJ	8.5 UJ	4.3 UJ
4-METHYL-2-PENTANONE	5300000	53000000	5 U	5.4 U	8.5 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
ACETONE	61000000	630000000	8.4 J	5.4 UJ	44 J	25 J
BENZENE	1100	5400	5 U	5.4 U	8.5 U	4.3 U
BROMOCHLOROMETHANE			5 U	5.4 U	8.5 U	4.3 U
BROMODICHLOROMETHANE	270	1400	5 U	5.4 U	8.5 U	4.3 U
BROMOFORM	61000	220000	5 U	5.4 U	8.5 U	4.3 U
BROMOMETHANE	7300	32000	5 U	5.4 U	8.5 U	4.3 U
BTEX			2 J	5.4 U	2 J	4.3 U
CARBON DISULFIDE	820000	3700000	5 U	5.4 U	8.5 U	4.3 U
CARBON TETRACHLORIDE	610	3000	5 U	5.4 U	8.5 U	4.3 U
CHLOROBENZENE	290000	1400000	5 U	5.4 U	8.5 U	4.3 U
CHLORODIBROMOMETHANE	680	3300	5 U	5.4 U	8.5 U	4.3 U
CHLOROETHANE	15000000	61000000	5 U	5.4 U	8.5 U	4.3 U
CHLOROFORM	290	1500	5 U	5.4 U	8.5 U	4.3 U
CHLOROMETHANE	120000	500000	5 U	5.4 U	8.5 U	4.3 U
CIS-1,2-DICHLOROETHENE	780000	10000000	5 U	5.4 U	8.5 U	4.3 U
CIS-1,3-DICHLOROPROPENE	1700	8100	5 U	5.4 U	8.5 U	4.3 U
CYCLOHEXANE	7000000	29000000	5 U	5.4 U	8.5 U	4.3 U
DICHLORODIFLUOROMETHANE	180000	780000	5 UJ	5.4 U	8.5 U	4.3 U
ETHYLBENZENE	5400	27000	5 U	5.4 U	8.5 U	4.3 U
ISOPROPYLBENZENE	2100000	11000000	5 U	5.4 U	8.5 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
M+P-XYLENES			2 J	5.4 U	8.5 U	4.3 U
METHYL ACETATE	78000000	1E+09	5 U	5.4 U	8.5 U	4.3 U
METHYL CYCLOHEXANE			5 U	5.4 U	8.5 U	4.3 U
METHYL TERT-BUTYL ETHER	43000	220000	5 U	5.4 U	8.5 U	4.3 U
METHYLENE CHLORIDE	11000	53000	5 U	5.4 U	8.5 U	4.3 U
O-XYLENE	3800000	19000000	5 U	5.4 U	8.5 U	4.3 U
STYRENE	6300000	36000000	5 U	5.4 U	8.5 U	4.3 U
TETRACHLOROETHENE	550	2600	5 U	5.4 U	8.5 U	4.3 U
TOLUENE	5000000	45000000	5 U	5.4 U	8.5 U	4.3 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	5 U	5.4 U	8.5 U	4.3 U
TOTAL CHLORINATED ETHENES			5 UJ	5.4 U	8.5 U	4.3 U
TOTAL CHLORINATED VOCS			5 UJ	5.4 UJ	8.5 UJ	4.3 UJ
TOTAL XYLENES	630000	2700000	2 J	5.4 U	2 J	4.3 U
TRANS-1,2-DICHLOROETHENE	150000	690000	5 U	5.4 U	8.5 U	4.3 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	5 U	5.4 U	8.5 U	4.3 U
TRICHLOROETHENE	2800	14000	5 U	5.4 U	8.5 U	4.3 U
TRICHLOROFLUOROMETHANE	790000	3400000	5 U	5.4 U	8.5 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM
VINYL CHLORIDE	60	1700	5 U	5.4 U	8.5 U	4.3 U
SEMIVOLATILES (UG/KG)						
1,1-BIPHENYL	3900000	51000000	330 U	440 U	480 U	360 UJ
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	4.4 U	4.8 U	3.6 U
1,4-DIOXANE	44000	160000	3.3 U	4.4 U	4.8 U	3.6 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	440 U	480 U	360 UJ
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	4.4 U	4.8 UJ	3.6 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	900 U	980 U	730 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	440 U	480 U	360 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	4.4 U	4.8 UJ	3.6 U
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	440 UJ	4.8 UJ	3.6 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	900 UJ	980 UJ	730 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	440 U	480 U	360 U
2,6-DINITROTOLUENE	61000	620000	330 U	440 U	480 U	360 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	440 U	480 U	360 U
2-CHLOROPHENOL	390000	5100000	5.4	4.4 U	4.8 U	3.6 U
2-METHYLNAPHTHALENE	310000	4100000	5.4 J	4.4 UJ	4.8 U	3.6 UJ
2-METHYLPHENOL	3100000	31000000	3.3 UJ	440 U	4.8 U	3.6 U
2-NITROANILINE	610000	6000000	670 U	900 U	980 U	730 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
2-NITROPHENOL			330 U	440 U	480 U	360 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	440 U	480 U	360 U
3-NITROANILINE			670 U	900 U	980 U	730 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	900 UJ	980 UJ	730 UJ
4-BROMOPHENYL PHENYL ETHER			330 U	440 U	480 U	360 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	4.4 U	4.8 UJ	3.6 U
4-CHLOROANILINE	2400	8600	330 UJ	440 UJ	480 UJ	360 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	440 U	480 U	360 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	4.4 UJ	4.8 U	3.6 U
4-NITROANILINE	24000	86000	670 U	900 U	980 U	730 U
4-NITROPHENOL			670 UJ	900 UJ	980 UJ	730 U
ACENAPHTHENE	3400000	33000000	6.2	4.4 U	4.8 U	3.6 U
ACENAPHTHYLENE	3400000	33000000	24	4.4 U	17	3.6 U
ACETOPHENONE	7800000	100000000	330 U	440 U	480 U	360 UJ
ANTHRACENE	17000000	170000000	48	4.4 U	27	4.3
ATRAZINE	2100	7500	3.3 U	4.4 U	4.8 U	3.6 U
BENZALDEHYDE	7800000	100000000	330 UJ	440 UJ	480 UJ	360 UJ
BENZO(A)ANTHRACENE	150	2100	160	16	120	14
BENZO(A)PYRENE	15	210	130	15	140 J	10
BENZO(B)FLUORANTHENE	150	2100	210	27 J	220 J	21 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
BENZO(G,H,I)PERYLENE	1700000	17000000	72	12	100	6
BENZO(K)FLUORANTHENE	1500	21000	210	11 J	71	7.4 J
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	440 U	480 U	360 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	440 U	480 U	360 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	440 U	120 J	360 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	440 U	480 U	360 U
CAPROLACTAM	31000000	310000000	330 U	440 U	480 U	360 U
CARBAZOLE			330 U	440 U	480 U	360 U
CHRYSENE	15000	210000	160	17	130	14
DIBENZO(A,H)ANTHRACENE	15	210	34	4.4 UJ	29 J	3.6 UJ
DIBENZOFURAN	78000	1000000	330 U	440 U	480 U	360 U
DIETHYL PHTHALATE	49000000	490000000	330 U	440 U	480 U	360 U
DIMETHYL PHTHALATE			330 U	440 U	480 U	360 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	440 U	480 U	360 U
DI-N-OCTYL PHTHALATE			330 U	440 U	480 U	360 U
FLUORANTHENE	2300000	22000000	160	28	240	29
FLUORENE	2300000	22000000	11	4.4 U	6.6	3.6 U
HEXACHLOROBENZENE	300	1100	3.3 U	4.4 U	4.8 U	3.6 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
HEXACHLOROBUTADIENE	6200	22000	330 U	440 U	480 U	360 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	440 UJ	480 UJ	360 UJ
HEXACHLOROETHANE	35000	120000	330 U	440 U	480 U	360 U
HIGH MOLECULAR WEIGHT PAHS			1360	160 J	1330 J	131 J
INDENO(1,2,3-CD)PYRENE	150	2100	72	11 J	93 J	5.7 J
ISOPHORONE	510000	1800000	330 UJ	440 U	480 U	360 U
LOW MOLECULAR WEIGHT PAHS			195 J	12 J	151	15.3 J
NAPHTHALENE	3600	18000	6.2	4.4 U	4.8 U	3.6 U
NITROBENZENE	4800	24000	330 UJ	440 U	480 U	360 UJ
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	440 U	480 U	360 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	440 U	480 U	360 U
PENTACHLOROPHENOL	3000	9000	670 UJ	44 UJ	48 U	730 UJ
PHENANTHRENE	1700000	17000000	94	12	100	11
PHENOL	18000000	180000000	31	4.4 U	4.8 U	3.6 U
PYRENE	1700000	17000000	150	23	190	24
TOTAL CARCINOGENIC PAHS-HALFND	15	210	976	99.2 J	803 J	73.9 J
TOTAL CARCINOGENIC PAHS-POS	15	210	976	97 J	803 J	72.1 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
TOTAL CHLORINATED			330 U	440 U	480 U	360 U
VOCS						
TOTAL PAHS			1550 J	172 J	1480 J	146 J
PESTICIDES/PCBS (UG/KG)						
4,4'-DDD	2000	7200	3.3 U	4.5 U	4.8 U	3.6 U
4,4'-DDE	1400	5100	3.3 U	4.5 U	4.8 U	3.6 U
4,4'-DDT	1700	7000	3.3 U	4.5 UJ	30 UJ	3.6 UJ
ALDRIN	29	100	1.7 U	2.3 U	2.5 U	1.8 UJ
ALPHA-BHC	77	270	1.7 U	2.3 U	2.5 U	1.8 U
ALPHA-CHLORDANE	1600	6500	1.7 U	2.3 U	2.5 U	1.8 U
AROCLOR-1016	3900	21000	33 U	45 U	48 U	36 U
AROCLOR-1221	140	540	33 U	45 U	48 U	36 U
AROCLOR-1232	140	540	33 U	45 U	48 U	36 U
AROCLOR-1242	220	740	33 U	45 U	48 U	36 U
AROCLOR-1248	220	740	33 U	45 U	48 U	36 U
AROCLOR-1254	220	740	33 U	45 U	48 U	36 U
AROCLOR-1260	220	740	33 U	45 U	48 U	36 U
AROCLOR-1262			33 U	45 U	48 U	36 U
AROCLOR-1268			33 U	45 U	48 U	36 U
BETA-BHC	270	960	1.7 U	2.3 U	6.1 J	1.8 UJ
DELTA-BHC	77	270	1.7 U	2.3 U	3.9	1.8 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM
DIELDRIN	30	110	3.3 U	4.5 U	4.8 U	3.6 U
ENDOSULFAN I	370000	3700000	1.7 U	2.3 U	2.5	1.8 U
ENDOSULFAN II	370000	3700000	3.3 U	4.5 U	4.8 U	3.6 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	4.5 U	4.8 J	3.6 U
ENDRIN	18000	180000	3.3 U	4.5 U	4.8 U	3.6 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	4.5 U	4.8 U	3.6 U
ENDRIN KETONE	18000	180000	3.3 U	4.5 U	4.8 U	3.6 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	2.3 U	2.5 U	1.8 UJ
GAMMA-CHLORDANE	1600	6500	1.7 U	2.3 U	2.5 U	1.8 U
HEPTACHLOR	110	380	1.7 U	2.3 U	2.5 U	1.8 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	2.3 U	2.5 U	1.8 U
METHOXYCHLOR	310000	3100000	17 U	23 UJ	25 U	18 UJ
TOTAL AROCLOR	220	740	33 U	45 U	48 U	36 U
TOTAL CHLORDANE			1.7 U	2.3 U	2.5 U	1.8 U
TOTAL DDD/DDE/DDT			3.3 U	4.5 UJ	13.2 UJ	3.6 UJ
TOXAPHENE	440	1600	170 U	230 U	250 U	180 U
METALS (MG/KG)						
ALUMINUM	77000	990000	9860	8450	7390	5300
ANTIMONY	31	410	0.16 UJ	0.17 UJ	0.21 UJ	0.15 UJ
ARSENIC	0.39	1.6	8.4 J	11.3	10.8 J	59.5
BARIUM	15000	190000	33	23.3	30.9	19.8
BERYLLIUM	160	2000	0.47	0.7 J	0.14 J	0.51 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM
CADMIUM	70	800	0.29	0.13 J	0.29 J	0.3
CALCIUM			608 J	478 J	1450 J	1900 J
CHROMIUM	0.29	5.6	12.1 J	10.7	10	11
COBALT	23	300	15.1 J	11.1 J	12	20.4 J
COPPER	3100	41000	19.2 J	13.9 J	17.9	16.1 J
IRON	55000	720000	37800	26800	25700	48400
LEAD	400	800	25.8 J	18.3	28.8 J	30.1
MAGNESIUM			1720	1240 J	2100	1870 J
MANGANESE	1800	23000	558 J	459	591	818
MERCURY	5.6	34	0.07	0.08 U	0.064	0.019 UJ
NICKEL	1500	20000	27.3	17.4	20.8 J	37.1
POTASSIUM			325 J	271 J	260 J	279 J
SELENIUM	390	5100	1.1 J	3.6 UJ	1.2 J	5.1 UJ
SILVER	390	5100	0.072 U	0.15 UJ	0.091 U	0.19 UJ
SODIUM			49.1	27.1 J	45.2 J	16.7 UJ
THALLIUM			0.22 U	3	0.28 U	5.3
VANADIUM	390	5200	20.4	16.8	15.8	12.6 J
ZINC	23000	310000	90.5	51.2	82 J	110
MISCELLANEOUS PARAMETERS (S.U.)						
PH			NA	NA	NA	NA

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON			NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)						
1,2,3,4,6,7,8,9-OCDD	15000	60000	3600 J	6140 J	2360 J	1370 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	3.47 J	1.8 U	26.9	7.7
1,2,3,4,6,7,8-HPCDD	450	1800	41	53.7	63.1	39.4
1,2,3,4,6,7,8-HPCDF	450	1800	1.23 J	0.797 UJ	8.41	3.19
1,2,3,4,7,8,9-HPCDF	450	1800	0.103 J	0.0841 U	0.682 J	0.258 J
1,2,3,4,7,8-HXCDD	45	180	0.395 J	0.32 J	0.855 J	0.452 J
1,2,3,4,7,8-HXCDF	45	180	0.283 J	0.118 J	0.577 J	0.41 J
1,2,3,6,7,8-HXCDD	45	180	0.569 J	0.522 J	2.09 J	1.05 J
1,2,3,6,7,8-HXCDF	45	180	0.15 J	0.0663 U	0.574 J	0.244 J
1,2,3,7,8,9-HXCDD	45	180	0.592 J	0.486 J	1.58 J	1.18 J
1,2,3,7,8,9-HXCDF	45	180	0.0375 U	0.0891 U	0.154 U	0.0984 U
1,2,3,7,8-PECDD	4.5	18	0.22 J	0.0776 U	0.442 J	0.267 J
1,2,3,7,8-PECDF	150	600	0.163 J	0.0566 U	0.0988 U	0.0531 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
2,3,4,6,7,8-HXCDF	45	180	0.169 J	0.0761 U	0.519 J	0.275 J
2,3,4,7,8-PECDF	15	60	0.142 J	0.0562 U	0.0976 U	0.0527 U
2,3,7,8-TCDD	4.5	18	0.0547 U	0.138 U	0.0760 U	0.0902 U
2,3,7,8-TCDF	45	180	0.258 J	0.103 U	0.298 J	0.0949 U
TEQ BIRD	4.5	18	1.2 J	0.749 J	1.52 J	0.723 J
TEQ BIRD HALFND	4.5	18	1.23 J	0.956 J	1.62 J	0.849 J
TEQ FISH	4.5	18	0.996 J	0.85 J	1.48 J	0.82 J
TEQ FISH HALFND	4.5	18	1.03 J	0.991 J	1.55 J	0.887 J
TEQ MAMMAL	4.5	18	2.01 J	2.52 J	2.53 J	1.47 J
TEQ MAMMAL HALFND	4.5	18	2.04 J	2.66 J	2.59 J	1.53 J
TOTAL HPCDD			128	118	117	80.2
TOTAL HPCDF			2.62 J	0.967 U	23.1	7.22
TOTAL HXCDD			9.49	5.56 U	12.4	9.12 U
TOTAL HXCDF			1.95 J	1.19 J	12.4	4.54
TOTAL PECDD			0.142 J	0.538 J	1.08 J	0.898 J
TOTAL PECDF			1.71 J	1.28 J	7.6	2.23 J
TOTAL TCDD			0.161 J	0.138 U	0.0760 U	0.0902 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0001	TF4-SB-941-0001	TF4-SB-942-0001	TF4-SB-943-0001
LOCATION ID			TF4-SB920	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM
TOTAL TCDF			0.98 J	0.103 U	2.25	0.835 J
PETROLEUM HYDROCARBONS (MG/KG)						
EXTRACTABLE PETROLEUM HYDROCARBONS			49 J	NA	79	NA

G-2 SOIL SAMPLE ANALYTICAL DATA – DU 4-1 SUBSURFACE SOIL

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,1,2,2-TETRACHLOROETHANE	560	2800	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,1,2-TRICHLOROETHANE	1100	5300	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,1-DICHLOROETHANE	3300	17000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,1-DICHLOROETHENE	240000	1100000	4.2 UJ	3.9 U	4.5 UJ	4.2 UJ	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,2,4-TRICHLOROBENZENE	22000	99000	4.2 UJ	3.9 UJ	4.5 UJ	4.2 UJ	5.7 UJ	13 UJ	7.2 UJ	6.7 UJ	4.3 UJ	3.7 UJ	4.3 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 UJ
1,2-DIBROMOETHANE	34	170	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,2-DICHLOROBENZENE	1900000	9800000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,2-DICHLOROETHANE	430	2200	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,2-DICHLOROPROPANE	890	4500	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,3-DICHLOROBENZENE			4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
1,4-DICHLOROBENZENE	2400	12000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
2-BUTANONE	28000000	200000000	4.2 UJ	3.9 U	6.8 J	4.2 UJ	7 J	30	16 J	11	6.4 J	3.7 UJ	4.3 U
2-HEXANONE	210000	1400000	4.2 UJ	3.9 UJ	4.5 UJ	4.2 UJ	5.7 UJ	13 UJ	7.2 UJ	6.7 UJ	4.3 UJ	3.7 UJ	4.3 UJ
4-METHYL-2-PENTANONE	5300000	53000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	4.2 UJ	3.9 J	37 J	3.5 J	19.5 J	72 J	50 J	36 J	19 J	10.5 J	4.3 UJ
BENZENE	1100	5400	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
BROMOCHLOROMETHANE			4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
BROMODICHLOROMETHANE	270	1400	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
BROMOFORM	61000	220000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
BROMOMETHANE	7300	32000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
BTEX			4.2 UJ	3.9 U	4.5 U	4.2 U	2.2 J	9.3 J	1.8 J	4.5 J	2.4 J	3.7 U	4.3 U
CARBON DISULFIDE	820000	3700000	4.2 UJ	3.9 U	0.96 J	4.2 U	5.7 U	12 J	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CARBON TETRACHLORIDE	610	3000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CHLOROBENZENE	290000	1400000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CHLORODIBROMOMETHANE	680	3300	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CHLOROETHANE	15000000	61000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CHLOROFORM	290	1500	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CHLOROMETHANE	120000	500000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CIS-1,2-DICHLOROETHENE	780000	10000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CIS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
CYCLOHEXANE	7000000	29000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
DICHLORODIFLUOROMETHANE	180000	780000	4.2 UJ	3.9 U	4.5 UJ	4.2 UJ	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 UJ	4.3 UJ
ETHYLBENZENE	5400	27000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
M+P-XYLENES			4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	2.4 J	3.7 U	4.3 U
METHYL ACETATE	78000000	1E+09	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
METHYL CYCLOHEXANE			4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
METHYL TERT-BUTYL ETHER	43000	220000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
METHYLENE CHLORIDE	11000	53000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
O-XYLENE	3800000	19000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
STYRENE	6300000	36000000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
TETRACHLOROETHENE	550	2600	4.2 UJ	3.9 U	4.5 UJ	4.2 UJ	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
TOLUENE	5000000	45000000	4.2 UJ	3.9 U	4.5 U	4.2 U	2.2 J	5.6 J	1.8 J	2.6 J	4.3 U	3.7 U	4.3 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
TOTAL CHLORINATED ETHENES			4.2 UJ	3.9 U	4.5 UJ	4.2 UJ	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 UJ
TOTAL CHLORINATED VOCS			4.2 UJ	3.9 UJ	4.5 UJ	4.2 UJ	5.7 UJ	13 UJ	7.2 UJ	6.7 UJ	4.3 UJ	3.7 UJ	4.3 UJ
TOTAL XYLENES	630000	2700000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	3.7 J	7.2 UJ	1.9 J	2.4 J	3.7 U	4.3 U
TRANS-1,2-DICHLOROETHENE	150000	690000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
TRICHLOROETHENE	2800	14000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
VINYL CHLORIDE	60	1700	4.2 UJ	3.9 U	4.5 U	4.2 U	5.7 U	13 U	7.2 UJ	6.7 U	4.3 U	3.7 U	4.3 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	330 U	330 U	330 U	390 U	430 UJ	610 UJ	520 UJ	470 UJ	410 U	390 U	410 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	3.3 UJ	3.3 UJ	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U	3.9 U	4.1 U
1,4-DIOXANE	44000	160000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U	3.9 U	4.1 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	330 UJ	330 UJ	390 U	430 UJ	610 UJ	520 UJ	470 UJ	410 U	390 U	410 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.3 U	3.3 U	3.9 UJ	4.25 UJ	6.1 UJ	5.2 UJ	4.7 UJ	4.1 U	3.9 U	4.1 UJ
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	670 U	670 U	785 U	875 UJ	1200 U	1100 UJ	950 UJ	830 U	785 U	830 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 UJ	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.3 U	3.3 U	3.9 UJ	4.25 UJ	6.1 UJ	5.2 UJ	4.7 UJ	4.1 U	3.9 U	4.1 UJ
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	330 UJ	330 UJ	3.9 UJ	430 UJ	610 UJ	520 UJ	470 UJ	4.1 UJ	3.9 UJ	4.1 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	670 UJ	670 UJ	785 UJ	875 UJ	1200 UJ	1100 UJ	950 UJ	830 UJ	785 UJ	830 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
2,6-DINITROTOLUENE	61000	620000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
2-CHLOROPHENOL	390000	5100000	4.8	3.9	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U	3.9 U	4.1 U
2-METHYLNAPHTHALENE	310000	4100000	13 J	3.3 UJ	3.3 UJ	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 UJ	5.75 J	4.1 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.3 UJ	3.3 UJ	3.9 U	430 UJ	610 U	520 UJ	470 UJ	4.1 U	3.9 U	4.1 U
2-NITROANILINE	610000	6000000	670 U	670 U	670 U	785 U	875 UJ	1200 U	1100 UJ	950 UJ	830 U	785 U	830 U
2-NITROPHENOL			330 UJ	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
3-NITROANILINE			670 U	670 U	670 U	785 U	875 UJ	1200 U	1100 UJ	950 UJ	830 U	785 U	830 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	670 UJ	670 UJ	785 U	875 UJ	1200 U	1100 UJ	950 UJ	830 UJ	785 UJ	830 U
4-BROMOPHENYL PHENYL ETHER			330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.3 U	3.3 U	3.9 UJ	4.25 UJ	6.1 UJ	5.2 UJ	4.7 UJ	4.1 U	3.9 U	4.1 UJ
4-CHLOROANILINE	2400	8600	330 UJ	330 UJ	330 UJ	390 UJ	430 UJ	610 UJ	520 UJ	470 UJ	410 UJ	390 UJ	410 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.3 UJ	3.3 UJ	3.9 U	4.25 UJ	6.1 UJ	5.2 UJ	4.7 UJ	4.1 U	3.9 U	4.1 U
4-NITROANILINE	24000	86000	670 U	670 U	670 U	785 U	875 UJ	1200 U	1100 UJ	950 UJ	830 U	785 U	830 U
4-NITROPHENOL			670 UJ	670 UJ	670 UJ	785 U	875 UJ	1200 U	1100 UJ	950 UJ	830 U	785 UJ	830 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.5	3.9 U	4.1 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.3 U	3.3 U	3.9 U	12	6.1 U	5.2 U	4.7 U	13	3.9 U	4.1 U
ACETOPHENONE	7800000	100000000	330 UJ	330 U	330 U	390 U	430 UJ	610 UJ	520 UJ	470 UJ	410 U	390 U	410 U
ANTHRACENE	17000000	170000000	3.3 U	3.3 U	3.3 U	3.9 U	7.8 J	6.1 U	5.2 U	4.7 U	24	3.9 U	4.1 U
ATRAZINE	2100	7500	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U	3.9 U	4.1 U
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	330 UJ	390 UJ	430 UJ	610 UJ	520 UJ	470 UJ	410 UJ	390 UJ	410 UJ

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)ANTHRACENE	150	2100	3.9	3.3 U	3.3 U	3.9 U	29	6.1 U	8	10	64 J	3.9 U	4.1 U
BENZO(A)PYRENE	15	210	3.3 U	3.3 U	3.3 U	3.9 U	36.5 J	6.1 U	5.9 J	9.3 J	65 J	3.9 UJ	4.1 U
BENZO(B)FLUORANTHENE	150	2100	3.3 U	3.3 U	3.3 U	3.9 UJ	64 J	6.1 U	9.2 J	13 J	120 J	3.9 UJ	4.1 UJ
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	3.3 U	3.3 U	3.9 U	30.5	6.1 U	5.2 U	8	44	3.9 U	4.1 U
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	3.3 U	3.3 U	3.9 U	21.5	6.1 U	7.2	10	27 J	3.9 U	4.1 U
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	330 UJ	330 UJ	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	330 UJ	330 UJ	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	41 J	330 U	80 J	430 UJ	100 J	87 J	59 J	410 U	390 U	75 J
BUTYL BENZYL PHTHALATE	260000	910000	330 U	69 J	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
CAPROLACTAM	31000000	310000000	330 UJ	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
CARBAZOLE			330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
CHRYSENE	15000	210000	4.3	3.3 U	3.3 U	3.9 U	36	6.1 U	8.1	11	79 J	3.9 U	4.1 U
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.3 U	3.3 U	3.9 U	8.45 J	6.1 UJ	5.2 UJ	4.7 UJ	12 J	3.9 UJ	4.1 U
DIBENZOFURAN	78000	1000000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
DIETHYL PHTHALATE	49000000	490000000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
DIMETHYL PHTHALATE			330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	52 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DI-N-OCTYL PHTHALATE			330 UJ	330 U	330 U	390 UJ	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 UJ
FLUORANTHENE	2300000	22000000	4.4	3.3 U	3.3 U	3.9 U	53.5	6.1 U	10	14	140 J	3.9 U	4.1 U
FLUORENE	2300000	22000000	3.3 U	3.3 U	3.3 U	3.9 U	3.35	6.1 U	5.2 U	4.7 U	9.3	3.9 U	4.1 U
HEXACHLOROBENZENE	300	1100	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U	3.9 U	4.1 U
HEXACHLOROBUTADIENE	6200	22000	330 UJ	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	330 UJ	330 UJ	390 UJ	430 UJ	610 UJ	520 UJ	470 UJ	410 UJ	390 UJ	410 UJ
HEXACHLOROETHANE	35000	120000	330 UJ	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
HIGH MOLECULAR WEIGHT PAHS			17.5 J	3.3 U	3.3 U	3.9 UJ	354 J	6.1 UJ	57.9 J	95.1 J	707 J	3.9 UJ	4.1 UJ
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	3.3 U	3.3 U	3.9 UJ	27.5 J	6.1 UJ	5.2 UJ	6.8 J	36 J	3.9 UJ	4.1 UJ
ISOPHORONE	510000	1800000	330 UJ	330 UJ	330 UJ	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
LOW MOLECULAR WEIGHT PAHS			26.4 J	3.3 UJ	3.3 UJ	3.9 U	42.6 J	6.1 U	5.2 U	5.7	126 J	11.8 J	4.1 U
NAPHTHALENE	3600	18000	6.5	3.3 U	3.3 U	3.9 U	4.25 U	6.1 U	5.2 U	4.7 U	4.3	6.95 J	4.1 U
NITROBENZENE	4800	24000	330 UJ	330 UJ	330 UJ	390 U	430 UJ	610 UJ	520 UJ	470 UJ	410 U	390 U	410 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	330 UJ	330 UJ	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
PENTACHLOROPHENOL	3000	9000	670 UJ	670 UJ	670 UJ	39 U	42.5 U	61 U	52 U	47 U	41 U	40 U	41 U
PHENANTHRENE	1700000	17000000	6.9 J	3.3 U	3.3 U	3.9 U	20.5 J	6.1 U	5.2 U	5.7	71 J	3.9 U	4.1 U
PHENOL	18000000	180000000	30	25	31	27.5	4.25 U	6.1 U	5.2 U	4.7 U	4.1 U	3.9 U	6.4

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
PYRENE	1700000	17000000	4.9 J	3.3 U	3.3 U	3.9 U	47	6.1 U	9.5	13	120 J	3.9 U	4.1 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	16.4	3.3 U	3.3 U	3.9 UJ	223 J	6.1 UJ	43.6 J	62.4 J	403 J	3.9 UJ	4.1 UJ
TOTAL CARCINOGENIC PAHS-POS	15	210	8.2	3.3 U	3.3 U	3.9 UJ	223 J	6.1 UJ	38.4 J	60.1 J	403 J	3.9 UJ	4.1 UJ
TOTAL CHLORINATED VOCS			330 UJ	330 U	330 U	390 U	430 UJ	610 U	520 UJ	470 UJ	410 U	390 U	410 U
TOTAL PAHS			43.9 J	3.3 UJ	3.3 UJ	3.9 UJ	397 J	6.1 UJ	57.9 J	101 J	833 J	11.8 J	4.1 UJ
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
4,4'-DDE	1400	5100	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
ALDRIN	29	100	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
ALPHA-BHC	77	270	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
ALPHA-CHLORDANE	1600	6500	1.7 UJ	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 UJ	2 U	2.1 U
AROCLOR-1016	3900	21000	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1221	140	540	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1232	140	540	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1242	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1248	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1254	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1260	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1262			33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
AROCLOR-1268			33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
BETA-BHC	270	960	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
DELTA-BHC	77	270	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
DIELDRIN	30	110	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 UJ	3.9 U	4.1 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
ENDOSULFAN II	370000	3700000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
ENDRIN	18000	180000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
ENDRIN KETONE	18000	180000	3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
GAMMA-CHLORDANE	1600	6500	1.7 UJ	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 UJ	2 U	2.1 U
HEPTACHLOR	110	380	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 U	2 U	2.1 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 UJ	2 U	2.1 U
METHOXYCHLOR	310000	3100000	17 UJ	17 U	17 U	20 U	22 U	32 U	27 UJ	24 U	21 U	20 U	21 U
TOTAL AROCLOR	220	740	33 U	33 U	33 U	39 U	42.5 U	62 U	52 U	47 U	41 U	39 U	41 U
TOTAL CHLORDANE			1.7 UJ	1.7 U	1.7 U	2 U	2.2 U	3.2 U	2.7 UJ	2.4 U	2.1 UJ	2 U	2.1 U
TOTAL DDD/DDE/DDT			3.3 U	3.3 U	3.3 U	3.9 U	4.25 U	6.2 U	5.2 UJ	4.7 U	4.1 U	3.9 U	4.1 U
TOXAPHENE	440	1600	170 U	170 U	170 U	200 U	220 U	320 U	270 UJ	240 U	210 U	200 U	210 U
METALS (MG/KG)													
ALUMINUM	77000	990000	10400	981	17200	5160 J	12200	13700	10700	12900	7770	3020	14700 J

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.11 UJ	0.16 UJ	0.21 UJ	0.15 UJ	0.205 UJ	0.25 UJ	0.19 UJ	0.22 UJ	0.15 UJ	0.14 UJ	0.17 UJ
ARSENIC	0.39	1.6	6.5 J	9 J	20.2 J	10.6 J	10.8 J	20 J	13.3 J	18.9 J	13.5 J	9.25 J	10.6 J
BARIUM	15000	190000	30	2.3 J	36.8 J	4.85 J	34.2	27.7 J	45.8	67.9	20.3 J	5.7 J	51.4
BERYLLIUM	160	2000	0.43	0.21 J	0.78	0.22 J	0.18 J	0.38 J	0.25 J	0.34 J	0.34	0.28	0.4
CADMIUM	70	800	0.16	0.45	0.38	0.41	0.092 J	0.018 U	0.014 U	0.075 J	0.49	0.56	0.34
CALCIUM			280 J	6 UJ	7.8 UJ	338 J	197 J	525 J	215 J	8.1 UJ	5.5 UJ	82.6 J	1750 J
CHROMIUM	0.29	5.6	11.9 J	4.3 J	17.3 J	11.4	12.5	16.5	12.2	12.6	13.2 J	7.5 J	10.9
COBALT	23	300	13.1 J	22.3 J	35.3 J	18.2	11.7	22.7	14.3	27.8	31.1 J	41 J	31.3
COPPER	3100	41000	6.1 J	19 J	8.9 J	20.6	17	14.3	10.4	21.4	25.1 J	23.7 J	3.3
IRON	55000	720000	25000	61600	59800	49300	29000	45000	38100	51500	50700	57300	38500
LEAD	400	800	8.1 J	8.8 J	9.2 J	8.25 J	20.5 J	13.5 J	10.9 J	20.9 J	14.1 J	10.4 J	18.4 J
MAGNESIUM			1750	836	2600	2260	2700	3610	2570	2620	2210	972	5120
MANGANESE	1800	23000	471 J	729 J	775 J	332	335	318	314	1020	914 J	2740 J	3420
MERCURY	5.6	34	0.028 J	0.0064 U	0.033 J	0.0062 U	0.0666 J	0.032 J	0.055 J	0.16	0.023 J	0.00595 U	0.017 J
NICKEL	1500	20000	26.4	58.4	77	54.1 J	21.4 J	26.2 J	21.2 J	28 J	50.3	73	56.4 J
POTASSIUM			259 J	120 J	313 J	198	500 J	616 J	438 J	376 J	333 J	142 J	934
SELENIUM	390	5100	0.72 J	0.71 U	0.93 U	0.64 U	0.725 J	1.1 U	1.1 J	2.1	0.65 U	0.62 J	3.4
SILVER	390	5100	0.048 U	0.072 U	0.094 U	0.0645 UJ	0.0885 U	0.11 U	0.082 U	0.096 U	0.066 U	0.0615 U	0.075 UJ
SODIUM			46.9	18 J	64.6	15.4 J	254 J	664 J	479 J	349 J	25.2 J	18.7 J	68.8

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.15 U	0.22 U	0.28 U	0.195 U	0.27 U	0.33 U	0.25 U	0.29 U	0.2 U	0.19 U	0.23 U
VANADIUM	390	5200	18.3	10.8	30.2	12	20.4	23.7	18.7	23	18.1	15.1	24.6
ZINC	23000	310000	47.6	130	112	142 J	64.8 J	70.3 J	46 J	76.6 J	106	138	78.3 J
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	5.8	NA	6	NA	6.7	NA	6	NA	6	NA
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	17000	NA	7300	NA	34000	NA	5800	NA	12200	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	4480 J	NA	2030 J	NA	5580 J	NA	3810 J	19100 J	3220 J	NA	368
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.136 U	NA	0.091 J	NA	1.03 J	NA	0.517 J	0.695 J	2.47 J	NA	0.267 J
1,2,3,4,6,7,8-HPCDD	450	1800	38.7	NA	16.4	NA	41.8 J	NA	59.7	292	31.5	NA	8.15
1,2,3,4,6,7,8-HPCDF	450	1800	0.175 J	NA	0.0298 U	NA	0.695 J	NA	0.342 J	0.385 J	1.02 J	NA	0.289 J
1,2,3,4,7,8,9-HPCDF	450	1800	0.122 U	NA	0.0405 U	NA	0.104 U	NA	0.0742 U	0.0933 U	0.0771 U	NA	0.0532 U
1,2,3,4,7,8-HXCDD	45	180	0.212 J	NA	0.0883 U	NA	0.244 J	NA	0.355 J	0.883 J	0.244 J	NA	0.197 J
1,2,3,4,7,8-HXCDF	45	180	0.0775 U	NA	0.0374 U	NA	0.195 J	NA	0.118 J	0.0696 U	0.217 J	NA	0.191 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,6,7,8-HXCDD	45	180	0.82 J	NA	0.107 J	NA	0.406 J	NA	0.857 J	2.1 J	0.394 J	NA	0.246 J
1,2,3,6,7,8-HXCDF	45	180	0.733 U	NA	0.0356 U	NA	0.14 J	NA	0.0483 U	0.0658 U	0.129 J	NA	0.148 J
1,2,3,7,8,9-HXCDD	45	180	0.84 J	NA	0.189 J	NA	0.556 J	NA	1.01 J	4.24	0.519 J	NA	0.275 J
1,2,3,7,8,9-HXCDF	45	180	0.0985 U	NA	0.0464 U	NA	0.132 U	NA	0.0629 U	0.0884 U	0.0789 J	NA	0.0994 J
1,2,3,7,8-PECDD	4.5	18	0.140 U	NA	0.0871 U	NA	0.114 U	NA	0.158 J	0.224 J	0.0351 U	NA	0.0483 U
1,2,3,7,8-PECDF	150	600	0.109 U	NA	0.0536 U	NA	0.0927 U	NA	0.0683 U	0.112 U	0.0234 U	NA	0.135 J
2,3,4,6,7,8-HXCDF	45	180	0.0841 U	NA	0.0399 U	NA	0.156 J	NA	0.0540 U	0.0755 U	0.099 J	NA	0.11 J
2,3,4,7,8-PECDF	15	60	0.108 U	NA	0.0529 U	NA	0.0908 J	NA	0.0675 U	0.111 U	0.0228 U	NA	0.0330 U
2,3,7,8-TCDD	4.5	18	0.266 U	NA	0.0578 U	NA	0.124 U	NA	0.105 U	0.136 U	0.0483 U	NA	0.0495 U
2,3,7,8-TCDF	45	180	0.248 U	NA	0.0715 U	NA	0.177 J	NA	0.150 U	0.143 U	0.0704 U	NA	0.0619 U
TEQ BIRD	4.5	18	0.591 J	NA	0.239 J	NA	0.916 J	NA	0.741 J	2.92 J	0.484 J	NA	0.156 J
TEQ BIRD HALFND	4.5	18	1.03 J	NA	0.387 J	NA	1.12 J	NA	0.915 J	3.14 J	0.574 J	NA	0.253 J
TEQ FISH	4.5	18	0.611 J	NA	0.222 J	NA	0.806 J	NA	0.81 J	2.93 J	0.547 J	NA	0.213 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	0.9 J	NA	0.342 J	NA	0.971 J	NA	0.894 J	3.05 J	0.598 J	NA	0.272 J
TEQ MAMMAL	4.5	18	1.92 J	NA	0.803 J	NA	2.28 J	NA	2.14 J	9.6 J	1.46 J	NA	0.326 J
TEQ MAMMAL HALFND	4.5	18	2.2 J	NA	0.9 J	NA	2.44 J	NA	2.22 J	9.71 J	1.51 J	NA	0.383 J
TOTAL HPCDD			81.5	NA	16.4	NA	98.2 J	NA	131	705	75.9	NA	17.4
TOTAL HPCDF			0.175 J	NA	0.0298 U	NA	0.582 J	NA	0.342 J	0.385 J	2.59 J	NA	0.289 J
TOTAL HXCDD			9.73	NA	0.189 J	NA	7.5 J	NA	14.6	199	6.97	NA	1.91 J
TOTAL HXCDF			0.0733 U	NA	0.0356 U	NA	1.66 J	NA	0.632 J	0.334 J	1.23 J	NA	0.339 J
TOTAL PECDD			0.140 U	NA	0.0871 U	NA	0.383 J	NA	1.35 J	60	0.689 J	NA	0.238 J
TOTAL PECDF			0.108 U	NA	0.0529 U	NA	2	NA	0.0675 U	0.946 J	1.11 J	NA	0.135 J
TOTAL TCDD			0.266 U	NA	0.0578 U	NA	0.124 U	NA	0.105 U	75.6	0.0483 U	NA	0.606 J
TOTAL TCDF			0.248 U	NA	0.0715 U	NA	0.941	NA	0.423 J	0.143 U	1.12 J	NA	0.701 J
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			66 J	22 UJ	24 UJ	28 UJ	30.5 J	23 U	19 U	18	93	18.5 U	19 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-920-0810	TF4-SB-921-0204	TF4-SB-921-0810-AVG	TF4-SB-922-0204-AVG	TF4-SB-922-0608	TF4-SB-923-0204	TF4-SB-923-0406	TF4-SB-924-0204	TF4-SB-924-0810-AVG	TF4-SB-925-0204
LOCATION ID			TF4-SB920	TF4-SB920	TF4-SB921	TF4-SB921	TF4-SB922	TF4-SB922	TF4-SB923	TF4-SB923	TF4-SB924	TF4-SB924	TF4-SB925
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/19/10	04/19/10	04/19/10	04/19/10	04/20/10	04/20/10	04/23/10
TOP DEPTH			2 FT	8 FT	2 FT	8 FT	2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	10 FT	4 FT	10 FT	4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	AVG	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,1,2,2-TETRACHLOROETHANE	560	2800	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,1,2-TRICHLOROETHANE	1100	5300	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,1-DICHLOROETHANE	3300	17000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,1-DICHLOROETHENE	240000	1100000	4.2 UJ	4.3 UJ	4.9 U	5.8 U	5.1 U	4.4 U	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,2,4-TRICHLOROBENZENE	22000	99000	4.2 UJ	4.3 UJ	4.9 UJ	5.8 UJ	5.1 UJ	4.4 UJ	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.2 UJ	4.3 UJ	4.9 U	5.8 U	5.1 U	4.4 U	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
1,2-DIBROMOETHANE	34	170	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,2-DICHLOROBENZENE	1900000	9800000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,2-DICHLOROETHANE	430	2200	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,2-DICHLOROPROPANE	890	4500	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,3-DICHLOROBENZENE			4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
1,4-DICHLOROBENZENE	2400	12000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
2-BUTANONE	28000000	200000000	4.2 UJ	4.3 U	23	7.5	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
2-HEXANONE	210000	1400000	4.2 UJ	4.3 UJ	4.9 UJ	5.8 UJ	5.1 UJ	4.4 UJ	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
4-METHYL-2-PENTANONE	5300000	53000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	4.2 UJ	3.7 J	59.5 J	23 J	140 J	96 J	4.35 UJ	4 UJ	5.1 UJ	5.1 J	4 UJ
BENZENE	1100	5400	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	0.97 J	4.35 U	4 U	5.1 U	4.8 U	4 U
BROMOCHLOROMETHANE			4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
BROMODICHLOROMETHANE	270	1400	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
BROMOFORM	61000	220000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
BROMOMETHANE	7300	32000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
BTEX			4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	0.97 J	4.35 U	4 U	5.1 U	4.8 U	4 U
CARBON DISULFIDE	820000	3700000	4.2 UJ	4.3 U	2.45 J	3.2 J	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CARBON TETRACHLORIDE	610	3000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CHLOROBENZENE	290000	1400000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CHLORODIBROMOMETHANE	680	3300	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CHLOROETHANE	15000000	61000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CHLOROFORM	290	1500	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CHLOROMETHANE	120000	500000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CIS-1,2-DICHLOROETHENE	780000	10000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CIS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
CYCLOHEXANE	7000000	29000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
DICHLORODIFLUOROMETHANE	180000	780000	4.2 UJ	4.3 UJ	4.9 U	5.8 U	5.1 U	4.4 U	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
ETHYLBENZENE	5400	27000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
M+P-XYLENES			4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
METHYL ACETATE	78000000	1E+09	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
METHYL CYCLOHEXANE			4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
METHYL TERT-BUTYL ETHER	43000	220000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	1.2 J	4.35 U	4 U	5.1 U	4.8 U	4 U
METHYLENE CHLORIDE	11000	53000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
O-XYLENE	3800000	19000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
STYRENE	6300000	36000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TETRACHLOROETHENE	550	2600	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TOLUENE	5000000	45000000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TOTAL CHLORINATED ETHENES			4.2 UJ	4.3 UJ	4.9 U	5.8 U	5.1 U	4.4 U	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
TOTAL CHLORINATED VOCS			4.2 UJ	4.3 UJ	4.9 UJ	5.8 UJ	5.1 UJ	4.4 UJ	4.35 UJ	4 UJ	5.1 UJ	4.8 UJ	4 UJ
TOTAL XYLENES	630000	2700000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TRANS-1,2-DICHLOROETHENE	150000	690000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
TRICHLOROETHENE	2800	14000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
VINYL CHLORIDE	60	1700	4.2 UJ	4.3 U	4.9 U	5.8 U	5.1 U	4.4 U	4.35 U	4 U	5.1 U	4.8 U	4 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	330 U	400 U	405 UJ	390 UJ	410 U	380 U	380 U	380 U	480 U	410 U	360 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	4 U	4.05 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
1,4-DIOXANE	44000	160000	3.3 U	4 U	4.05 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	400 U	405 UJ	390 UJ	410 U	380 U	380 U	380 U	480 U	410 U	360 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	4 UJ	4.05 UJ	3.9 UJ	4.1 U	3.8 U	3.8 UJ	3.8 UJ	4.8 UJ	4.1 UJ	3.6 UJ
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	800 U	820 U	800 U	820 U	770 U	770 U	780 U	980 U	830 U	730 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	4 UJ	4.05 UJ	3.9 UJ	4.1 U	3.8 U	3.8 UJ	3.8 UJ	4.8 UJ	4.1 UJ	3.6 UJ
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	4 UJ	405 UJ	390 UJ	410 UJ	380 UJ	3.8 UJ	3.8 UJ	4.8 UJ	4.1 UJ	3.6 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	800 UJ	820 UJ	800 UJ	820 UJ	770 UJ	770 UJ	780 UJ	980 UJ	830 UJ	730 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
2,6-DINITROTOLUENE	61000	620000	330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
2-CHLOROPHENOL	390000	5100000	4.8	4 U	4.05 U	3.9 U	4.1 U	3.8 U	4	3.8 U	4.8 U	4.1 U	3.6 U
2-METHYLNAPHTHALENE	310000	4100000	13 J	4 U	4.05 U	6.9	4.1 UJ	3.8 UJ	3.8 U	3.8 U	5.7	4.1 U	3.6 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-METHYLPHENOL	3100000	31000000	3.3 UJ	4 U	405 U	390 U	410 U	380 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
2-NITROANILINE	610000	6000000	670 U	800 U	820 U	800 U	820 U	770 U	770 U	780 U	980 U	830 U	730 U
2-NITROPHENOL			330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	400 U	405 U	390 U	410 U	380 U	380 UJ	380 UJ	480 U	410 UJ	360 UJ
3-NITROANILINE			670 U	800 U	820 U	800 U	820 U	770 U	770 U	780 U	980 U	830 U	730 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	800 U	820 U	800 U	820 UJ	770 UJ	770 U	780 U	980 U	830 U	730 U
4-BROMOPHENYL PHENYL ETHER			330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	4 UJ	4.05 UJ	3.9 UJ	4.1 U	3.8 U	3.8 UJ	3.8 UJ	4.8 UJ	4.1 UJ	3.6 UJ
4-CHLOROANILINE	2400	8600	330 UJ	400 UJ	405 UJ	390 UJ	410 UJ	380 U	380 UJ	380 UJ	480 UJ	410 UJ	360 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	4 U	4.05 UJ	3.9 UJ	4.1 UJ	3.8 UJ	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
4-NITROANILINE	24000	86000	670 U	800 U	820 U	800 U	820 U	770 U	770 U	780 U	980 U	830 U	730 U
4-NITROPHENOL			670 UJ	800 U	820 U	800 U	820 UJ	770 UJ	770 U	780 U	980 U	830 U	730 U
ACENAPHTHENE	3400000	33000000	3.3 U	4 U	4.05 U	4.5	4.1 U	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	4 U	4.05 U	3.9 U	12	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
ACETOPHENONE	7800000	100000000	330 UJ	400 U	405 UJ	390 UJ	410 U	380 U	380 U	380 U	480 U	410 U	360 U
ANTHRACENE	17000000	170000000	3.3 U	4 U	4.05 U	4.7	24	3.8 U	4.55	3.8 U	4.8 U	4.1 U	3.6 U
ATRAZINE	2100	7500	3.3 U	4 U	4.05 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
BENZALDEHYDE	7800000	100000000	330 UJ	400 UJ	405 UJ	390 UJ	410 UJ	380 UJ	380 UJ	380 UJ	480 UJ	410 UJ	360 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)ANTHRACENE	150	2100	3.9	4 U	3.95	8.6	57	3.8 U	10.4	3.8 U	6.5	4.1 U	3.6 U
BENZO(A)PYRENE	15	210	3.3 U	4 U	3.3 J	8.4 J	56	3.8 U	11.5 J	3.8 U	8.3 J	4.1 U	3.6 U
BENZO(B)FLUORANTHENE	150	2100	3.3 U	4 UJ	7.5 J	17 J	93 J	3.8 U	34 J	3.8 UJ	14 J	4.1 UJ	3.6 UJ
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	4 U	5.1	6.3	46	3.8 U	5.75	3.8 U	7.6	4.1 U	3.6 U
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	4 U	5.25	3.9 U	62 J	3.8 UJ	18.5	3.8 U	9.6	4.1 U	3.6 U
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	400 U	405 U	100 J	410 U	380 U	380 U	380 U	480 U	410 U	360 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	59 J	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
CAPROLACTAM	31000000	310000000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
CARBAZOLE			330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
CHRYSENE	15000	210000	4.3	4 U	4.7	9.9	62	3.8 U	21	3.8 U	13	4.1 U	3.6 U
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	4 U	4.05 UJ	3.9 UJ	13 J	3.8 UJ	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
DIBENZOFURAN	78000	1000000	330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
DIETHYL PHTHALATE	49000000	490000000	330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
DIMETHYL PHTHALATE			330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	400 U	405 U	390 U	410 U	380 U	120 J	380 U	480 U	410 U	50 J

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DI-N-OCTYL PHTHALATE			330 UJ	400 UJ	405 U	390 U	410 U	380 U	380 U	380 U	480 UJ	410 U	360 U
FLUORANTHENE	2300000	22000000	4.4	4 U	7.8	17	100	3.8 U	11.5	3.8 U	17	4.1 U	3.6 U
FLUORENE	2300000	22000000	3.3 U	4 U	4.05 U	4.3	8.4	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
HEXACHLOROBENZENE	300	1100	3.3 U	4 U	4.05 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.8 U	4.1 U	3.6 U
HEXACHLOROBUTADIENE	6200	22000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	400 UJ	405 UJ	390 UJ	410 UJ	380 UJ	380 UJ	380 UJ	480 UJ	410 UJ	360 UJ
HEXACHLOROETHANE	35000	120000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
HIGH MOLECULAR WEIGHT PAHS			17.5 J	4 UJ	44.2 J	90 J	613 J	3.8 UJ	130 J	3.8 UJ	97.7 J	4.1 UJ	3.6 UJ
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	4 UJ	3.3 J	5.8 J	38 J	3.8 UJ	7.1 J	3.8 UJ	6.7 J	4.1 UJ	3.6 UJ
ISOPHORONE	510000	1800000	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
LOW MOLECULAR WEIGHT PAHS			26.4 J	4 U	4.05 U	32.4	87.4 J	3.8 UJ	4.55	3.8 U	22.1	4.1 U	3.6 U
NAPHTHALENE	3600	18000	6.5	4 U	4.05 U	18 U	4.1 U	3.8 U	3.8 U	3.8 U	8.4	4.1 U	3.6 U
NITROBENZENE	4800	24000	330 UJ	400 U	405 UJ	390 UJ	410 U	380 U	380 U	380 U	480 U	410 U	360 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
PENTACHLOROPHENOL	3000	9000	670 UJ	40 U	40.5 U	39 U	41 UJ	38 UJ	38 U	38 U	48 U	41 U	36 U
PHENANTHRENE	1700000	17000000	6.9 J	4 U	4.05 U	12	43	3.8 U	3.8 U	3.8 U	8	4.1 U	3.6 U
PHENOL	18000000	180000000	30	4 U	4.05 U	3.9 U	7.3	3.8 U	3.8 U	3.8 U	5.8	4.1 U	3.6 U

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TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
PYRENE	1700000	17000000	4.9 J	4 U	6.35	17	86	3.8 U	11	3.8 U	15	4.1 U	3.6 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	16.4	4 UJ	30 J	53.6 J	381 J	3.8 UJ	105 J	3.8 UJ	60.5 J	4.1 UJ	3.6 UJ
TOTAL CARCINOGENIC PAHS-POS	15	210	8.2	4 UJ	25 J	49.7 J	381 J	3.8 UJ	103 J	3.8 UJ	58.1 J	4.1 UJ	3.6 UJ
TOTAL CHLORINATED VOCS			330 UJ	400 U	405 U	390 U	410 U	380 U	380 U	380 U	480 U	410 U	360 U
TOTAL PAHS			43.9 J	4 UJ	44.2 J	122 J	700 J	3.8 UJ	135 J	3.8 UJ	120 J	4.1 UJ	3.6 UJ
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.3 U	4 U	4 U	3.9 U	8.2	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
4,4'-DDE	1400	5100	3.3 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
4,4'-DDT	1700	7000	3.3 U	4 U	4 U	3.9 U	4.1 UJ	3.8 UJ	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
ALDRIN	29	100	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
ALPHA-BHC	77	270	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
ALPHA-CHLORDANE	1600	6500	1.7 UJ	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
AROCLOR-1016	3900	21000	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1221	140	540	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1232	140	540	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1242	220	740	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1248	220	740	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1254	220	740	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1260	220	740	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1262			33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
AROCLOR-1268			33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
BETA-BHC	270	960	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
DELTA-BHC	77	270	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
DIELDRIN	30	110	3.3 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
ENDOSULFAN I	370000	3700000	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
ENDOSULFAN II	370000	3700000	3.3 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
ENDRIN	18000	180000	3.3 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	5.7	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
ENDRIN KETONE	18000	180000	3.3 U	4 U	4 U	3.9 U	4.1 U	3.8 U	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
GAMMA-CHLORDANE	1600	6500	1.7 UJ	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
HEPTACHLOR	110	380	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
METHOXYCHLOR	310000	3100000	17 UJ	21 U	20.5 U	20 U	21 UJ	19 UJ	19.5 U	20 U	25 U	21 U	19 U
TOTAL AROCLOR	220	740	33 U	40 U	40 U	39 U	41 U	38 U	38 U	38 U	49 U	41 U	36 U
TOTAL CHLORDANE			1.7 UJ	2.1 U	2.05 U	2 U	2.1 U	1.9 U	1.95 U	2 U	2.5 U	2.1 U	1.9 U
TOTAL DDD/DDE/DDT			3.3 U	4 U	4 U	3.9 U	8.2 J	3.8 UJ	3.8 U	3.8 U	4.9 U	4.1 U	3.6 U
TOXAPHENE	440	1600	170 U	210 U	205 U	200 U	210 U	190 U	195 U	200 U	250 U	210 U	190 U
METALS (MG/KG)													
ALUMINUM	77000	990000	10400	4240 J	7040	8090	8740	697	4660 J	1500 J	12900 J	10600 J	6300 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.11 UJ	0.14 UJ	0.145 UJ	0.21 UJ	0.19 UJ	0.19 UJ	0.15 UJ	0.19 UJ	0.2 UJ	0.16 UJ	0.13 UJ
ARSENIC	0.39	1.6	6.5 J	16.5 J	11.1 J	13.4 J	5.3 J	10.9 J	27.8 J	31.5 J	8.3 J	9 J	24.1 J
BARIUM	15000	190000	30	15.2 J	10.1 J	9.1 J	24.6	1.8 J	8.65 J	13.3 J	103	16.2 J	9.8 J
BERYLLIUM	160	2000	0.43	0.3	0.21 J	0.24 J	0.66 J	0.22 J	0.295	0.34	0.69	0.28	0.35
CADMIUM	70	800	0.16	0.82	0.042 J	0.015 U	0.13 J	0.41	0.375 J	0.59	0.23 J	0.35	0.44
CALCIUM			280 J	5.2 UJ	5.25 UJ	7.6 UJ	704 J	6 UJ	75.8 J	6.9 UJ	583 J	924 J	74.3 J
CHROMIUM	0.29	5.6	11.9 J	9.1	11	13.2	12.8	10.2	8.2	7.6	7.2	23.6	14.3
COBALT	23	300	13.1 J	30.9	8.25	10.7	10.7 J	22.9 J	22	30	37.1	20.4	19.5
COPPER	3100	41000	6.1 J	28.1	10.7	10.7	12 J	20 J	16.5 J	31.1	3.3	21.2	23.5
IRON	55000	720000	25000	76900	27600	32700	35000	58400	44800 J	69600	30700	48300	42800
LEAD	400	800	8.1 J	10.3 J	8 J	8.4 J	14.2	9.2 J	4.6 J	5.6 J	11.8 J	20.3 J	8.7 J
MAGNESIUM			1750	2220	2190	2810	1840 J	136 J	1410 J	285	2260	4630	1910
MANGANESE	1800	23000	471 J	694	156	200	469	502	1440	1010	4480	441	303
MERCURY	5.6	34	0.028 J	0.0061 U	0.0475	0.036 J	0.02 UJ	0.0062 U	0.00692 J	0.0066 U	0.021 J	0.0064 U	0.006 U
NICKEL	1500	20000	26.4	87.9 J	17.9 J	21.9 J	25.3	44.6	48.4 J	60.2 J	43.6 J	51 J	33.3 J
POTASSIUM			259 J	422	128 J	137 J	296 J	89.6 J	226	177	597	359	268
SELENIUM	390	5100	0.72 J	0.61 U	0.625 U	0.9 U	2.8 UJ	2.7 UJ	0.902	0.81 U	4.1	0.68 U	0.58 U
SILVER	390	5100	0.048 U	0.062 UJ	0.063 U	0.091 U	0.13 UJ	0.15 UJ	0.0655 UJ	0.082 UJ	0.088 UJ	0.069 UJ	0.059 UJ
SODIUM			46.9	22.8 J	18.4 J	19 J	43.9 J	11.8 UJ	25.7 J	18.4 J	79.3	21.8 J	17.1 J

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.15 U	0.19 U	0.19 U	0.28 U	0.25 U	0.25 U	0.2 U	0.25 U	0.27 U	0.21 U	0.18 U
VANADIUM	390	5200	18.3	16.9	13.4	15.1	17.6	9.8 J	14.2	16.1	23.7	19.1	19.6
ZINC	23000	310000	47.6	187 J	57.4 J	67.2 J	66.2	130	75.2 J	107 J	49 J	99.6 J	90.3 J
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	5.9	NA	6	NA	6	NA	6	NA	6	NA
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	6800	NA	7700	NA	5000 U	NA	7300	NA	7400	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	4480 J	NA	773	NA	4490 J	NA	7780 J	NA	1070	NA	2160 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.136 U	NA	0.155 J	NA	3.95 U	NA	0.524 J	NA	0.491 J	NA	0.321 J
1,2,3,4,6,7,8-HPCDD	450	1800	38.7	NA	12.2	NA	42.6	NA	66.6 J	NA	14.8	NA	17.1
1,2,3,4,6,7,8-HPCDF	450	1800	0.175 J	NA	0.106 J	NA	1.36 U	NA	0.199 J	NA	0.401 J	NA	0.129 J
1,2,3,4,7,8,9-HPCDF	450	1800	0.122 U	NA	0.0732 U	NA	0.0328 U	NA	0.0521 U	NA	0.0468 U	NA	0.0736 U
1,2,3,4,7,8-HXCDD	45	180	0.212 J	NA	0.0692 J	NA	0.303 J	NA	0.253 J	NA	0.215 J	NA	0.0758 U
1,2,3,4,7,8-HXCDF	45	180	0.0775 U	NA	0.0361 U	NA	0.345 J	NA	0.079 J	NA	0.16 J	NA	0.0923 J

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TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,6,7,8-HXCDD	45	180	0.82 J	NA	0.214 J	NA	0.514 J	NA	0.309 J	NA	0.313 J	NA	0.141 J
1,2,3,6,7,8-HXCDF	45	180	0.733 U	NA	0.0342 U	NA	0.221 J	NA	0.0464 J	NA	0.12 J	NA	0.0949 J
1,2,3,7,8,9-HXCDD	45	180	0.84 J	NA	0.209 J	NA	0.514 J	NA	0.365 J	NA	0.477 J	NA	0.251 J
1,2,3,7,8,9-HXCDF	45	180	0.0985 U	NA	0.0456 U	NA	0.0491 J	NA	0.042 U	NA	0.0439 U	NA	0.0841 U
1,2,3,7,8-PECDD	4.5	18	0.140 U	NA	0.0564 U	NA	0.177 J	NA	0.0624 U	NA	0.0718 U	NA	0.0912 U
1,2,3,7,8-PECDF	150	600	0.109 U	NA	0.0583 U	NA	0.0356 U	NA	0.0454 U	NA	0.0502 U	NA	0.0777 U
2,3,4,6,7,8-HXCDF	45	180	0.0841 U	NA	0.039 U	NA	0.179 J	NA	0.036 U	NA	0.107 J	NA	0.0718 U
2,3,4,7,8-PECDF	15	60	0.108 U	NA	0.0578 U	NA	0.18 J	NA	0.0449 U	NA	0.0496 U	NA	0.0770 U
2,3,7,8-TCDD	4.5	18	0.266 U	NA	0.094 U	NA	0.0845 U	NA	0.0612 U	NA	0.0756 J	NA	0.122 U
2,3,7,8-TCDF	45	180	0.248 U	NA	0.0953 U	NA	0.343 J	NA	0.0944 U	NA	0.130 U	NA	0.154 U
TEQ BIRD	4.5	18	0.591 J	NA	0.116 J	NA	1.34 J	NA	0.91 J	NA	0.302 J	NA	0.28 J
TEQ BIRD HALFND	4.5	18	1.03 J	NA	0.28 J	NA	1.39 J	NA	1.05 J	NA	0.432 J	NA	0.516 J
TEQ FISH	4.5	18	0.611 J	NA	0.119 J	NA	1.02 J	NA	0.99 J	NA	0.356 J	NA	0.257 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	0.9 J	NA	0.231 J	NA	1.07 J	NA	1.07 J	NA	0.411 J	NA	0.416 J
TEQ MAMMAL	4.5	18	1.92 J	NA	0.402 J	NA	2.25 J	NA	3.1 J	NA	0.688 J	NA	0.878 J
TEQ MAMMAL HALFND	4.5	18	2.2 J	NA	0.502 J	NA	2.3 J	NA	3.18 J	NA	0.741 J	NA	1.02 J
TOTAL HPCDD			81.5	NA	21.9	NA	121	NA	112 J	NA	32	NA	35.7
TOTAL HPCDF			0.175 J	NA	0.053 U	NA	4.02	NA	0.0776 J	NA	0.708 J	NA	0.129 J
TOTAL HXCDD			9.73	NA	1.66 J	NA	11.2 U	NA	3.08 J	NA	4.1	NA	1.04 J
TOTAL HXCDF			0.0733 U	NA	0.0342 U	NA	2.59 J	NA	0.119 J	NA	0.622 J	NA	0.0949 J
TOTAL PECDD			0.140 U	NA	0.124 J	NA	1.16 J	NA	0.249 J	NA	0.0718 U	NA	1.71 J
TOTAL PECDF			0.108 U	NA	0.0578 U	NA	3.3	NA	0.203 J	NA	1.79 J	NA	0.0770 U
TOTAL TCDD			0.266 U	NA	0.094 U	NA	0.376 J	NA	0.0954 J	NA	0.0697 U	NA	1.08 J
TOTAL TCDF			0.248 U	NA	0.3 J	NA	3.6	NA	0.432 J	NA	0.998 J	NA	0.154 U
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			66 J	15 U	24.5	14 U	240	14 U	14 U	14 U	71 J	15 U	13 U

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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-925-0608	TF4-SB-926-0204-AVG	TF4-SB-926-0406	TF4-SB-928-0204	TF4-SB-928-0810	TF4-SB-929-0204-AVG	TF4-SB-929-0608	TF4-SB-930-0204	TF4-SB-930-0608	TF4-SB-932-0204
LOCATION ID			TF4-SB920	TF4-SB925	TF4-SB926	TF4-SB926	TF4-SB928	TF4-SB928	TF4-SB929	TF4-SB929	TF4-SB930	TF4-SB930	TF4-SB932
SAMPLE DATE			04/22/10	04/23/10	04/19/10	04/19/10	04/15/10	04/15/10	04/23/10	04/23/10	04/23/10	04/23/10	04/23/10
TOP DEPTH			2 FT	6 FT	2 FT	4 FT	2 FT	8 FT	2 FT	6 FT	2 FT	6 FT	2 FT
BOTTOM DEPTH			4 FT	8 FT	4 FT	6 FT	4 FT	10 FT	4 FT	8 FT	4 FT	8 FT	4 FT
SACODE			NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,1,2,2-TETRACHLOROETHANE	560	2800	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,1,2-TRICHLOROETHANE	1100	5300	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 UJ	4.1 UJ	4.5 U	4.1 UJ	3.6 U
1,1-DICHLOROETHANE	3300	17000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,1-DICHLOROETHENE	240000	1100000	4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 UR	4.3 U	4.1 UJ	4.1 UJ	4.5 U	4.1 UJ	3.6 U
1,2,4-TRICHLOROBENZENE	22000	99000	4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 UR	4.3 UJ	4.1 UJ	4.1 UJ	4.5 UJ	4.1 UJ	3.6 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,2-DIBROMOETHANE	34	170	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,2-DICHLOROBENZENE	1900000	9800000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
1,2-DICHLOROETHANE	430	2200	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,2-DICHLOROPROPANE	890	4500	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
1,3-DICHLOROBENZENE			4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
1,4-DICHLOROBENZENE	2400	12000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
2-BUTANONE	28000000	200000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 J
2-HEXANONE	210000	1400000	4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 UR	4.3 UJ	4.1 U	4.1 U	4.5 UJ	4.1 U	3.6 UJ
4-METHYL-2-PENTANONE	5300000	53000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 UJ	4.1 UJ	4.5 U	4.1 UJ	3.6 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	67 J	4.8 J	9.9 J	6.2 J	4.5 UJ	4.1 UJ	12 J
BENZENE	1100	5400	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
BROMOCHLOROMETHANE			4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
BROMODICHLOROMETHANE	270	1400	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
BROMOFORM	61000	220000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
BROMOMETHANE	7300	32000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
BTEX			4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
CARBON DISULFIDE	820000	3700000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CARBON TETRACHLORIDE	610	3000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CHLOROBENZENE	290000	1400000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CHLORODIBROMOMETHANE	680	3300	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CHLOROETHANE	15000000	61000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CHLOROFORM	290	1500	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CHLOROMETHANE	120000	500000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CIS-1,2-DICHLOROETHENE	780000	10000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
CIS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
CYCLOHEXANE	7000000	29000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
DICHLORODIFLUOROMETHANE	180000	780000	4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 UJ
ETHYLBENZENE	5400	27000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
M+P-XYLENES			4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
METHYL ACETATE	78000000	1E+09	4.2 UJ	4.9 U	4.7 U	4.3 U	5 UR	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
METHYL CYCLOHEXANE			4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
METHYL TERT-BUTYL ETHER	43000	220000	4.2 UJ	4.9 U	4.7 U	4.3 U	1 J	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
METHYLENE CHLORIDE	11000	53000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
O-XYLENE	3800000	19000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
STYRENE	6300000	36000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
TETRACHLOROETHENE	550	2600	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 UJ
TOLUENE	5000000	45000000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
TOTAL CHLORINATED ETHENES			4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 UJ
TOTAL CHLORINATED VOCS			4.2 UJ	4.9 UJ	4.7 UJ	4.3 UJ	5 U	4.3 UJ	4.1 UJ	4.1 UJ	4.5 UJ	4.1 UJ	3.6 UJ
TOTAL XYLENES	630000	2700000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
TRANS-1,2-DICHLOROETHENE	150000	690000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 UJ	3.6 U
TRICHLOROETHENE	2800	14000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
VINYL CHLORIDE	60	1700	4.2 UJ	4.9 U	4.7 U	4.3 U	5 U	4.3 U	4.1 U	4.1 U	4.5 U	4.1 U	3.6 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	330 U	390 U	380 U	390 U	400 UJ	360 UJ	360 U	370 U	370 UJ	390 UJ	440 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 UJ	3.7 UJ	3.7 U	3.9 UJ	4.4 U
1,4-DIOXANE	44000	160000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	390 U	380 U	390 U	400 UJ	360 UJ	360 U	370 U	370 UJ	390 UJ	440 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.9 UJ	3.8 UJ	3.9 UJ	4 U	3.6 U	3.6 UJ	3.7 UJ	3.7 U	3.9 UJ	4.4 UJ
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	790 U	780 U	790 U	810 U	730 U	730 U	750 U	750 U	800 UJ	890 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.9 UJ	3.8 UJ	3.9 UJ	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	5.1 J
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	3.9 UJ	3.8 UJ	3.9 UJ	400 U	3.6 UJ	3.6 UJ	3.7 UJ	3.7 UJ	3.9 UJ	4.4 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	790 UJ	780 UJ	790 UJ	810 UJ	730 UJ	730 UJ	750 UJ	750 UJ	800 UR	890 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
2,6-DINITROTOLUENE	61000	620000	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
2-CHLOROPHENOL	390000	5100000	4.8	4	3.8 U	3.9 U	4 U	3.6 U	3.8 U	6.5 U	3.7 U	3.9 U	7.9
2-METHYLNAPHTHALENE	310000	4100000	13 J	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 UJ	3.9 U	6.1

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-METHYLPHENOL	3100000	31000000	3.3 UJ	12	3.8 U	3.9 U	4 U	3.6 U	3.6 UJ	3.7 UJ	3.7 U	3.9 UJ	6.4
2-NITROANILINE	610000	6000000	670 U	790 U	780 U	790 U	810 U	730 U	730 U	750 U	750 U	800 U	890 U
2-NITROPHENOL			330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	390 UJ	380 UJ	390 UJ	400 U	360 U	360 U	370 U	370 U	390 U	440 U
3-NITROANILINE			670 U	790 U	780 U	790 U	810 U	730 U	730 U	750 U	750 U	800 U	890 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	790 U	780 U	790 U	810 UJ	730 UJ	730 UJ	750 UJ	750 U	800 UJ	890 U
4-BROMOPHENYL PHENYL ETHER			330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.9 UJ	3.8 UJ	3.9 UJ	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 UJ
4-CHLOROANILINE	2400	8600	330 UJ	390 UJ	380 UJ	390 UJ	400 UJ	360 UJ	360 UJ	370 UJ	370 UJ	390 UJ	440 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 UJ	3.7 UJ	3.7 U	3.9 UJ	6.1
4-NITROANILINE	24000	86000	670 U	790 U	780 U	790 U	810 U	730 U	730 U	750 U	750 U	800 U	890 U
4-NITROPHENOL			670 UJ	790 U	780 U	790 U	810 U	730 U	730 U	750 U	750 U	800 U	890 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.9 U	3.8 U	3.9 U	69	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
ACETOPHENONE	7800000	100000000	330 UJ	390 U	380 U	390 U	400 UJ	360 UJ	360 U	370 U	370 UJ	390 UJ	440 U
ANTHRACENE	17000000	170000000	3.3 U	3.9 U	3.8 U	3.9 U	99 J	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
ATRAZINE	2100	7500	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
BENZALDEHYDE	7800000	100000000	330 UJ	390 UJ	380 UJ	390 UJ	400 UJ	360 UJ	360 UJ	370 UJ	370 UJ	390 UJ	440 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)ANTHRACENE	150	2100	3.9	3.9 U	3.8 U	3.9 U	320 J	3.6 U	6.5	3.7 U	3.7 U	3.9 U	7
BENZO(A)PYRENE	15	210	3.3 U	3.9 U	3.8 U	3.9 U	250 J	3.6 U	5.7	3.7 U	3.7 U	3.9 U	5.7 J
BENZO(B)FLUORANTHENE	150	2100	3.3 U	3.9 UJ	3.8 UJ	3.9 UJ	610 J	4.2 J	9.7 J	3.7 UJ	3.7 U	3.9 UJ	9.2 J
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	3.9 U	3.8 U	3.9 U	100 J	3.6 U	4.2	3.7 U	3.7 U	3.9 UJ	4.4 U
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	3.9 U	3.8 U	3.9 U	490	3.6 U	5.8	3.7 U	3.7 UJ	3.9 U	4.8
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	390 U	380 U	390 U		360 U	360 U	370 U	370 U	390 U	440 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
CAPROLACTAM	31000000	310000000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
CARBAZOLE			330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
CHRYSENE	15000	210000	4.3	3.9 U	3.8 U	3.9 U	440	3.6 U	9.6	3.7 U	3.7 U	3.9 U	6.2
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.9 U	3.8 U	3.9 U	46	3.6 U	3.6 U	3.7 U	3.7 UJ	3.9 UJ	4.4 U
DIBENZOFURAN	78000	1000000	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
DIETHYL PHTHALATE	49000000	490000000	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
DIMETHYL PHTHALATE			330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	48 J	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DI-N-OCTYL PHTHALATE			330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 UJ
FLUORANTHENE	2300000	22000000	4.4	3.9 U	3.8 U	3.9 U	160 J	3.6 U	13	3.9	3.7 U	3.9 U	11
FLUORENE	2300000	22000000	3.3 U	3.9 U	3.8 U	3.9 U	12	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
HEXACHLOROBENZENE	300	1100	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.4 U
HEXACHLOROBUTADIENE	6200	22000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	390 UJ	380 UJ	390 UJ	400 UJ	360 UJ	360 UJ	370 UJ	370 UJ	390 UJ	440 UJ
HEXACHLOROETHANE	35000	120000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
HIGH MOLECULAR WEIGHT PAHS			17.5 J	3.9 UJ	3.8 UJ	3.9 UJ	2750 J	4.2 J	65.5 J	3.9 J	3.7 UJ	3.9 UJ	53.9 J
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	3.9 UJ	3.8 UJ	3.9 UJ	130 J	3.6 U	3.6 U	3.7 U	3.7 UJ	3.9 UJ	4.4 UJ
ISOPHORONE	510000	1800000	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
LOW MOLECULAR WEIGHT PAHS			26.4 J	5.2	3.8 U	3.9 U	200 J	3.6 U	4.5	3.7 U	5.3 J	3.9 U	13.4
NAPHTHALENE	3600	18000	6.5	5.2	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	5.3	3.9 U	7.3
NITROBENZENE	4800	24000	330 UJ	390 U	380 U	390 U	400 UJ	360 UJ	360 UJ	370 UJ	370 U	390 UJ	440 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 U	440 U
PENTACHLOROPHENOL	3000	9000	670 UJ	39 U	38 U	39 U	810 UJ	730 UJ	36 UJ	37 UJ	750 UJ	39 UJ	44 U
PHENANTHRENE	1700000	17000000	6.9 J	3.9 U	3.8 U	3.9 U	20	3.6 U	4.5	3.7 U	3.7 U	3.9 U	4.4 U
PHENOL	18000000	180000000	30	6.4	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	39

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
PYRENE	1700000	17000000	4.9 J	3.9 U	3.8 U	3.9 U	200 J	3.6 U	11	3.7 U	3.7 U	3.9 U	10
TOTAL CARCINOGENIC PAHS-HALFND	15	210	16.4	3.9 UJ	3.8 UJ	3.9 UJ	2290 J	15 J	40.9 J	3.7 UJ	3.7 UJ	3.9 UJ	37.3 J
TOTAL CARCINOGENIC PAHS-POS	15	210	8.2	3.9 UJ	3.8 UJ	3.9 UJ	2290 J	4.2 J	37.3 J	3.7 UJ	3.7 UJ	3.9 UJ	32.9 J
TOTAL CHLORINATED VOCS			330 UJ	390 U	380 U	390 U	400 U	360 U	360 U	370 U	370 U	390 UJ	440 U
TOTAL PAHS			43.9 J	5.2 J	3.8 UJ	3.9 UJ	2950 J	4.2 J	70 J	3.9 J	5.3 J	3.9 UJ	67.3 J
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
4,4'-DDE	1400	5100	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
4,4'-DDT	1700	7000	3.3 U	3.9 U	3.8 U	3.9 U	4 UJ	3.6 UJ	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
ALDRIN	29	100	1.7 U	2 U	2 U	2 U	2.1 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
ALPHA-BHC	77	270	1.7 U	2 U	2 U	2 U	2.1 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
ALPHA-CHLORDANE	1600	6500	1.7 UJ	2 U	2 U	2 U	2.1 U	1.9 UJ	1.9 U	1.9 U	1.9 U	2 U	2.2 U
AROCLOR-1016	3900	21000	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1221	140	540	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1232	140	540	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1242	220	740	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1248	220	740	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1254	220	740	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1260	220	740	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1262			33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
AROCLOR-1268			33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
BETA-BHC	270	960	1.7 U	2 U	2 U	2 U	2.1 UJ	1.9 UJ	1.9 U	1.9 U	1.9 U	2 U	2.2 U
DELTA-BHC	77	270	1.7 U	2 U	2 U	2 U	2.1 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
DIELDRIN	30	110	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
ENDOSULFAN I	370000	3700000	1.7 U	2 U	2 U	2 U	2.1 U	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
ENDOSULFAN II	370000	3700000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
ENDRIN	18000	180000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 UJ	3.9 U	4.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
ENDRIN KETONE	18000	180000	3.3 U	3.9 U	3.8 U	3.9 U	4 U	3.6 U	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	2 U	2 U	2 U	2.1 UJ	1.9 UJ	1.9 U	1.9 U	1.9 U	2 U	2.2 U
GAMMA-CHLORDANE	1600	6500	1.7 UJ	2 U	2 U	2 U	2.1 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
HEPTACHLOR	110	380	1.7 U	2 U	2 U	2 U	2.1 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	2 U	2 U	2 U	2.1 UJ	1.9 U	1.9 U	1.9 U	1.9 U	2 U	2.2 U
METHOXYCHLOR	310000	3100000	17 UJ	20 U	20 U	20 U	21 UJ	19 UJ	19 U	19 U	19 U	20 U	22 U
TOTAL AROCLOR	220	740	33 U	39 U	38 U	39 U	40 U	36 U	36 U	37 U	37 U	39 U	43 U
TOTAL CHLORDANE			1.7 UJ	2 U	2 U	2 U	2.1 UJ	1.9 UJ	1.9 U	1.9 U	1.9 U	2 U	2.2 U
TOTAL DDD/DDE/DDT			3.3 U	3.9 U	3.8 U	3.9 U	4 UJ	3.6 UJ	3.6 U	3.7 U	3.7 U	3.9 U	4.3 U
TOXAPHENE	440	1600	170 U	200 U	200 U	200 U	210 U	190 U	190 U	190 U	190 U	200 U	220 U
METALS (MG/KG)													
ALUMINUM	77000	990000	10400	3100 J	7420 J	4660 J	8410	9130	7470 J	7370 J	6340	4110 J	7270 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.11 UJ	0.15 UJ	0.14 UJ	0.18 UJ	0.17 UJ	0.19 UJ	0.18 UJ	0.16 UJ	0.13 UJ	0.19 UJ	0.15 UJ
ARSENIC	0.39	1.6	6.5 J	42.9 J	4.9 J	34.4 J	6.8 J	28.2	9.1	8	10.1 J	7.2	9.4 J
BARIUM	15000	190000	30	7.1 J	17.9	17.6 J	20	6.2 J	19.7	18	19.4	4.7 J	17.4 J
BERYLLIUM	160	2000	0.43	0.24	0.17 J	0.2 J	0.74 J	0.44 J	0.53 J	0.43 J	0.53 J	0.24 J	0.25
CADMIUM	70	800	0.16	0.34	0.16 J	0.5	0.16 J	0.27	0.38	0.33	0.17 J	0.51	0.15 J
CALCIUM			280 J	321 J	111 J	6.7 UJ	270 J	1260 J	247 J	166 J	137 J	39 J	635 J
CHROMIUM	0.29	5.6	11.9 J	21.7	9.6	11.4	10.7	24.1	13.5 J	11 J	11.1	15.4 J	9.4
COBALT	23	300	13.1 J	26.6	5.8	40.2	8.4 J	27.7 J	14.5	10.7	12.7 J	19.7	9.4
COPPER	3100	41000	6.1 J	31	9.4	17.4	11.6 J	26.7 J	21	15.7	18 J	24.4	10.4
IRON	55000	720000	25000	31300	20300	46300	28600	61400	39000 J	32300 J	39100	45700 J	22600
LEAD	400	800	8.1 J	12 J	8.2 J	6 J	6.3 J	3.1 J	6.8 J	5.7 J	6.4 J	4.6 J	11.5 J
MAGNESIUM			1750	759	1950	1780	1680 J	3790 J	1980 J	2470 J	1120 J	1430 J	1700
MANGANESE	1800	23000	471 J	734	120	1850	306	573	410	287	402	775	143
MERCURY	5.6	34	0.028 J	0.0062 U	0.0056 U	0.0058 U	0.028 UJ	0.028 UJ	0.011 J	0.0054 U	0.0062 U	0.0065 U	0.035 J
NICKEL	1500	20000	26.4	39.8 J	13.4 J	68.2 J	16.4	42.1	26.4	25	20.5	39.9	17.1 J
POTASSIUM			259 J	148	271	135	234 J	114 J	415 J	337 J	247 J	107 J	198
SELENIUM	390	5100	0.72 J	0.92 J	1.4	1.3 J	3.9 UJ	6 UJ	4.7	3.9	3.8 UJ	5.3	0.87 J
SILVER	390	5100	0.048 U	0.066 UJ	0.061 UJ	0.08 UJ	0.13 UJ	0.2 UJ	0.12 J	0.07 U	0.057 U	0.21 J	0.068 UJ
SODIUM			46.9	17.3 J	25.6 J	26.5 J	43.2 J	16.7 UJ	23.4 J	17.7 J	22.6 UJ	8.4 UJ	41.3 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.15 U	0.2 U	0.18 U	0.24 U	2.3	3.8	2.5	1.7	2.6	4.3	0.21 U
VANADIUM	390	5200	18.3	12	15.1	8.6	16.1	15.6 J	16	10.6 J	16.2	8.9 J	13.6
ZINC	23000	310000	47.6	83.2 J	37.1 J	78.4 J	42.3	85.5	83	57.1	58.6	156	40.3 J
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	5.5	NA	5.9	NA	6.1	NA	5.2	NA	6.4	NA
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	9500	NA	7900	NA	4900 U	NA	21000	NA	23000	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	4480 J	NA	2090 J	NA	4020 J	NA	6030 J	NA	6220 J	NA	2280 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.136 U	NA	0.123 J	NA	0.663 U	NA	3.33 U	NA	0.457 UJ	NA	0.232 J
1,2,3,4,6,7,8-HPCDD	450	1800	38.7	NA	9.15	NA	24.8	NA	56.1	NA	59.9	NA	15
1,2,3,4,6,7,8-HPCDF	450	1800	0.175 J	NA	0.068 J	NA	0.406 U	NA	0.818 UJ	NA	0.202 UJ	NA	0.196 J
1,2,3,4,7,8,9-HPCDF	450	1800	0.122 U	NA	0.0416 U	NA	0.148 U	NA	0.183 U	NA	0.101 U	NA	0.0542 U
1,2,3,4,7,8-HXCDD	45	180	0.212 J	NA	0.0428 U	NA	0.295 J	NA	0.226 J	NA	0.258 J	NA	0.146 J
1,2,3,4,7,8-HXCDF	45	180	0.0775 U	NA	0.0219 U	NA	0.160 U	NA	0.0683 U	NA	0.0504 U	NA	0.0592 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,6,7,8-HXCDD	45	180	0.82 J	NA	0.0376 U	NA	0.499 J	NA	0.474 J	NA	0.439 J	NA	0.165 J
1,2,3,6,7,8-HXCDF	45	180	0.733 U	NA	0.0208 U	NA	0.152 U	NA	0.102 J	NA	0.0907 J	NA	0.0372 U
1,2,3,7,8,9-HXCDD	45	180	0.84 J	NA	0.0410 U	NA	0.681 J	NA	0.446 J	NA	0.707 J	NA	0.191 J
1,2,3,7,8,9-HXCDF	45	180	0.0985 U	NA	0.0272 U	NA	0.204 U	NA	0.0868 U	NA	0.0641 U	NA	0.0485 U
1,2,3,7,8-PECDD	4.5	18	0.140 U	NA	0.0474 U	NA	0.203 U	NA	0.0598 U	NA	0.0857 U	NA	0.0734 U
1,2,3,7,8-PECDF	150	600	0.109 U	NA	0.0526 U	NA	0.151 U	NA	0.0516 U	NA	0.0961 U	NA	0.0604 U
2,3,4,6,7,8-HXCDF	45	180	0.0841 U	NA	0.0234 U	NA	0.174 U	NA	0.0741 U	NA	0.0547 U	NA	0.0417 U
2,3,4,7,8-PECDF	15	60	0.108 U	NA	0.0520 U	NA	0.149 U	NA	0.0512 U	NA	0.0954 U	NA	0.0597 U
2,3,7,8-TCDD	4.5	18	0.266 U	NA	0.0481 U	NA	0.312 U	NA	0.0895 U	NA	0.165 U	NA	0.0644 U
2,3,7,8-TCDF	45	180	0.248 U	NA	0.0765 U	NA	0.294 U	NA	0.0811 U	NA	0.158 U	NA	0.0998 U
TEQ BIRD	4.5	18	0.591 J	NA	0.219 J	NA	0.515 J	NA	0.73 J	NA	0.779 J	NA	0.279 J
TEQ BIRD HALFND	4.5	18	1.03 J	NA	0.342 J	NA	1.04 J	NA	0.89 J	NA	1.05 J	NA	0.437 J
TEQ FISH	4.5	18	0.611 J	NA	0.219 J	NA	0.586 J	NA	0.792 J	NA	0.831 J	NA	0.327 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	0.9 J	NA	0.299 J	NA	0.929 J	NA	0.899 J	NA	0.997 J	NA	0.422 J
TEQ MAMMAL	4.5	18	1.92 J	NA	0.719 J	NA	1.6 J	NA	2.49 J	NA	2.61 J	NA	0.892 J
TEQ MAMMAL HALFND	4.5	18	2.2 J	NA	0.79 J	NA	1.94 J	NA	2.6 J	NA	2.77 J	NA	0.983 J
TOTAL HPCDD			81.5	NA	17	NA	56.3	NA	119	NA	113	NA	15
TOTAL HPCDF			0.175 J	NA	0.0307 U	NA	0.406 U	NA	2.22 J	NA	0.0725 U	NA	0.125 J
TOTAL HXCDD			9.73	NA	0.0376 U	NA	2.49 U	NA	4.64 U	NA	3.38 U	NA	1.14 J
TOTAL HXCDF			0.0733 U	NA	0.0208 U	NA	0.152 U	NA	0.914 J	NA	0.0477 U	NA	0.0372 U
TOTAL PECDD			0.140 U	NA	0.0474 U	NA	0.203 U	NA	0.802 J	NA	0.569 J	NA	0.551 J
TOTAL PECDF			0.108 U	NA	0.0520 U	NA	0.149 U	NA	0.614 J	NA	0.0954 U	NA	0.15 J
TOTAL TCDD			0.266 U	NA	0.0481 U	NA	0.312 U	NA	0.0895 U	NA	0.165 U	NA	0.0644 U
TOTAL TCDF			0.248 U	NA	0.0765 U	NA	0.294 U	NA	0.246 J	NA	0.382 J	NA	0.0998 U
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			66 J	14 U	14 U	14 U	NA	NA	NA	NA	NA	NA	30 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-932-0607	TF4-SB-933-0204	TF4-SB-933-0608	TF4-SB-934-0204	TF4-SB-934-0810	TF4-SB-935-0204	TF4-SB-935-0810	TF4-SB-936-0204	TF4-SB-936-0810	TF4-SB-937-0204
LOCATION ID			TF4-SB920	TF4-SB932	TF4-SB933	TF4-SB933	TF4-SB934	TF4-SB934	TF4-SB935	TF4-SB935	TF4-SB936	TF4-SB936	TF4-SB937
SAMPLE DATE			04/22/10	04/23/10	04/23/10	04/23/10	04/15/10	04/15/10	04/14/10	04/14/10	04/14/10	04/14/10	04/22/10
TOP DEPTH			2 FT	6 FT	2 FT	6 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT
BOTTOM DEPTH			4 FT	7 FT	4 FT	8 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,1,2,2-TETRACHLOROETHANE	560	2800	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,1,2-TRICHLOROETHANE	1100	5300	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,1-DICHLOROETHANE	3300	17000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,1-DICHLOROETHENE	240000	1100000	4.2 UJ	4.1 UJ	3.9 UJ	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,2,3-TRICHLOROBENZENE	49000	490000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,2,4-TRICHLOROBENZENE	22000	99000	4.2 UJ	4.1 UJ	3.9 UJ	4.2 UJ	4.7 UJ	4 UJ	3.8 UJ	4.5 UJ	4.5 UJ	5.2 UJ	5 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.2 UJ	4.1 UJ	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,2-DIBROMOETHANE	34	170	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,2-DICHLOROBENZENE	1900000	9800000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,2-DICHLOROETHANE	430	2200	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,2-DICHLOROPROPANE	890	4500	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,3-DICHLOROBENZENE			4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
1,4-DICHLOROBENZENE	2400	12000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
2-BUTANONE	28000000	200000000	4.2 UJ	4.1 U	3.9 UJ	4.2 U	4.7 U	4 U	6.8	4.5 U	4.5 U	8.3	5 U
2-HEXANONE	210000	1400000	4.2 UJ	4.1 UJ	3.9 UJ	4.2 UJ	4.7 UJ	4 UJ	3.8 UJ	4.5 UJ	4.5 UJ	5.2 UJ	5 UJ
4-METHYL-2-PENTANONE	5300000	53000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	4.2 UJ	4.1 UJ	3.9 UJ	4.2 UJ	4.7 UJ	7.6 J	150 J	7.6 J	4.5 UJ	22 J	180 J
BENZENE	1100	5400	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
BROMOCHLOROMETHANE			4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
BROMODICHLOROMETHANE	270	1400	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
BROMOFORM	61000	220000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
BROMOMETHANE	7300	32000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
BTEX			4.2 UJ	4.1 U	3.9 U	4.2 U	2.7 J	4 U	3.8 U	4.5 U	4.5 U	1.1 J	5 U
CARBON DISULFIDE	820000	3700000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CARBON TETRACHLORIDE	610	3000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CHLOROBENZENE	290000	1400000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CHLORODIBROMOMETHANE	680	3300	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CHLOROETHANE	15000000	61000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CHLOROFORM	290	1500	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CHLOROMETHANE	120000	500000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CIS-1,2-DICHLOROETHENE	780000	10000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CIS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
CYCLOHEXANE	7000000	29000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
DICHLORODIFLUOROMETHANE	180000	780000	4.2 UJ	4.1 UJ	3.9 UJ	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
ETHYLBENZENE	5400	27000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
M+P-XYLENES			4.2 UJ	4.1 U	3.9 U	4.2 U	2.7 J	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
METHYL ACETATE	78000000	1E+09	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
METHYL CYCLOHEXANE			4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
METHYL TERT-BUTYL ETHER	43000	220000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	1.1 J
METHYLENE CHLORIDE	11000	53000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
O-XYLENE	3800000	19000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
STYRENE	6300000	36000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TETRACHLOROETHENE	550	2600	4.2 UJ	4.1 U	3.9 UJ	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TOLUENE	5000000	45000000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TOTAL CHLORINATED ETHENES			4.2 UJ	4.1 UJ	3.9 UJ	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TOTAL CHLORINATED VOCS			4.2 UJ	4.1 UJ	3.9 UJ	4.2 UJ	4.7 UJ	4 UJ	3.8 UJ	4.5 UJ	4.5 UJ	5.2 UJ	5 UJ
TOTAL XYLENES	630000	2700000	4.2 UJ	4.1 U	3.9 U	4.2 U	2.7 J	4 U	3.8 U	4.5 U	4.5 U	1.1 J	5 U
TRANS-1,2-DICHLOROETHENE	150000	690000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
TRICHLOROETHENE	2800	14000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
VINYL CHLORIDE	60	1700	4.2 UJ	4.1 U	3.9 U	4.2 U	4.7 U	4 U	3.8 U	4.5 U	4.5 U	5.2 U	5 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 UJ
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	3.5 UJ	3.3 UJ	3.7 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.8 UJ	3.85 UJ	4 U	4 U
1,4-DIOXANE	44000	160000	3.3 U	3.5 U	3.3 U	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 U	385 U	400 U	400 UJ
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.5 UJ	3.3 U	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 UJ	4 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	715 U	670 U	670 UJ	670 U	670 U	670 U	760 U	785 U	820 U	820 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.5 UJ	3.3 U	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 UJ	4 U
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	167 UJ	330 UJ	3.7 UJ	330 UJ	330 UJ	330 UJ	380 UJ	385 UJ	4 UJ	4 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	715 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	760 UJ	785 UJ	820 UJ	820 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
2,6-DINITROTOLUENE	61000	620000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
2-CHLOROPHENOL	390000	5100000	4.8	3.5 U	3.6	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
2-METHYLNAPHTHALENE	310000	4100000	13 J	3.5 UJ	3.3 UJ	15 J	3.3 UJ	3.3 UJ	3.3 UJ	3.8 UJ	3.85 UJ	4 U	4 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.5 UJ	3.3 UJ	3.7 UJ	3.3 UJ	3.3 UJ	3.3 UJ	380 U	99.8 J	4 U	4 U
2-NITROANILINE	610000	6000000	670 U	715 U	670 U	670 UJ	670 U	670 U	670 U	760 U	785 U	820 U	820 U
2-NITROPHENOL			330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
3-NITROANILINE			670 U	715 U	670 U	670 UJ	670 U	670 U	670 U	760 U	785 U	820 U	820 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	715 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	760 UJ	785 UJ	820 UJ	820 UJ
4-BROMOPHENYL PHENYL ETHER			330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.5 UJ	3.3 U	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 UJ	4 U
4-CHLOROANILINE	2400	8600	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 UJ	385 UJ	400 UJ	400 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.5 UJ	3.3 UJ	3.7 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.8 UJ	5.52 J	4 U	4 U
4-NITROANILINE	24000	86000	670 U	715 U	670 U	670 UJ	670 U	670 U	670 U	760 U	785 U	820 U	820 U
4-NITROPHENOL			670 UJ	715 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	760 UJ	785 UJ	820 UJ	820 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.5 U	3.3 U	47 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.5 U	3.3 U	76 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
ACETOPHENONE	7800000	100000000	330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 UJ
ANTHRACENE	17000000	170000000	3.3 U	3.5 U	3.3 U	86 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	12	4 U
ATRAZINE	2100	7500	3.3 U	3.5 U	3.3 U	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
BENZALDEHYDE	7800000	100000000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 UJ	385 UJ	400 UJ	400 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)ANTHRACENE	150	2100	3.9	3.5 U	3.3 U	150 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	28	4 U
BENZO(A)PYRENE	15	210	3.3 U	3.5 U	3.3 U	200 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	29 J	4 U
BENZO(B)FLUORANTHENE	150	2100	3.3 U	3.5 UJ	3.3 U	320 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	37 J	4 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	3.5 U	3.3 U	180 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	21	4 U
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	3.5 U	3.3 U	83 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	27	4 UJ
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 U	385 U	400 U	400 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 U	385 U	400 U	400 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	350 U	330 U	330 UJ	330 U	65 J	330 U	380 U	131 J	400 U	400 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	170 J	400 U	400 U
CAPROLACTAM	31000000	310000000	330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
CARBAZOLE			330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
CHRYSENE	15000	210000	4.3	3.5 U	3.3 U	190 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	36	4 U
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.5 U	3.3 U	43 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	5.6 J	4 UJ
DIBENZOFURAN	78000	1000000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
DIETHYL PHTHALATE	49000000	490000000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
DIMETHYL PHTHALATE			330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	103 J	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DI-N-OCTYL PHTHALATE			330 UJ	350 UJ	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
FLUORANTHENE	2300000	22000000	4.4	3.5 U	3.3 U	310 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	56	4 U
FLUORENE	2300000	22000000	3.3 U	3.5 U	3.3 U	84 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4.9	4 U
HEXACHLOROBENZENE	300	1100	3.3 U	3.5 U	3.3 U	3.7 UJ	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
HEXACHLOROBUTADIENE	6200	22000	330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 UJ	385 UJ	400 UJ	400 UJ
HEXACHLOROETHANE	35000	120000	330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
HIGH MOLECULAR WEIGHT PAHS			17.5 J	3.5 UJ	3.3 U	1930 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	308 J	4 UJ
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	3.5 UJ	3.3 U	140 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	19 J	4 UJ
ISOPHORONE	510000	1800000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 U	385 U	400 U	400 U
LOW MOLECULAR WEIGHT PAHS			26.4 J	3.5 UJ	3.3 UJ	601 J	3.3 UJ	3.3 UJ	3.3 UJ	3.8 UJ	3.85 UJ	53.9	4 UJ
NAPHTHALENE	3600	18000	6.5	3.5 U	3.3 U	13 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	4 U	4 U
NITROBENZENE	4800	24000	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 U	385 U	400 U	400 UJ
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	350 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	380 U	385 U	400 U	400 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
PENTACHLOROPHENOL	3000	9000	670 UJ	354 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	38 UJ	38.5 UJ	40 U	820 UJ
PHENANTHRENE	1700000	17000000	6.9 J	3.5 U	3.3 U	280 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	37	4 U
PHENOL	18000000	180000000	30	11.4 J	19	3.7 UJ	5.8	29	19	4.5 J	4.82 J	4 U	4 U

TABLE
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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
PYRENE	1700000	17000000	4.9 J	3.5 U	3.3 U	310 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	49	4 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	16.4	3.5 UJ	3.3 U	1130 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	182 J	4 UJ
TOTAL CARCINOGENIC PAHS-POS	15	210	8.2	3.5 UJ	3.3 U	1130 J	3.3 U	3.3 U	3.3 U	3.8 UJ	3.85 UJ	182 J	4 UJ
TOTAL CHLORINATED VOCS			330 UJ	350 U	330 U	330 UJ	330 U	330 U	330 U	380 U	385 U	400 U	400 U
TOTAL PAHS			43.9 J	3.5 UJ	3.3 UJ	2530 J	3.3 UJ	3.3 UJ	3.3 UJ	3.8 UJ	3.85 UJ	362 J	4 UJ
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.6	4 U
4,4'-DDE	1400	5100	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.1 U	4 U
4,4'-DDT	1700	7000	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 UJ	3.85 UJ	7.1 J	4 UJ
ALDRIN	29	100	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
ALPHA-BHC	77	270	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 UJ
ALPHA-CHLORDANE	1600	6500	1.7 UJ	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
AROCLOR-1016	3900	21000	33 U		33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
AROCLOR-1221	140	540	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
AROCLOR-1232	140	540	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
AROCLOR-1242	220	740	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
AROCLOR-1248	220	740	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
AROCLOR-1254	220	740	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	100 J	40 U
AROCLOR-1260	220	740	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1262			33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
AROCLOR-1268			33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	41 U	40 U
BETA-BHC	270	960	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 UJ
DELTA-BHC	77	270	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
DIELDRIN	30	110	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.1 U	4 U
ENDOSULFAN I	370000	3700000	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
ENDOSULFAN II	370000	3700000	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.1 U	4 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	7.1	4 U
ENDRIN	18000	180000	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.1 U	4 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.1 U	4 U
ENDRIN KETONE	18000	180000	3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 U	3.85 U	4.1 U	4 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 UJ
GAMMA-CHLORDANE	1600	6500	1.7 UJ	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
HEPTACHLOR	110	380	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
METHOXYCHLOR	310000	3100000	17 UJ	18 U	17 U	17 U	17 U	17 U	17 U	19 UJ	20 UJ	21 U	21 UJ
TOTAL AROCLOR	220	740	33 U	35 U	33 U	33 U	33 U	33 U	33 U	37 U	38.5 U	100 J	40 U
TOTAL CHLORDANE			1.7 UJ	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	2 U	2.1 U	2.1 U
TOTAL DDD/DDE/DDT			3.3 U	3.5 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.7 UJ	3.85 UJ	11.7 J	4 UJ
TOXAPHENE	440	1600	170 U	180 U	170 U	170 U	170 U	170 U	170 U	190 U	200 U	210 U	210 U
METALS (MG/KG)													
ALUMINUM	77000	990000	10400	6070 J	1780	3070	8270	6480	9640	4930	3460	9220	4920

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.11 UJ	0.115 UJ	0.14 UJ	0.11 UJ	0.14 UJ	0.18 UJ	0.12 UJ	0.15 UJ	0.15 UJ	0.2 UJ	0.19 UJ
ARSENIC	0.39	1.6	6.5 J	20.9 J	18 J	10 J	34.7 J	18.9 J	6.5 J	8.5 J	29.5	11.3 J	10.6 J
BARIUM	15000	190000	30	8.9 J	9.6 J	10.2 J	2.6 J	17.4 J	24.1 J	16.1	8.95 J	21.1 J	49.3
BERYLLIUM	160	2000	0.43	0.27	0.3	0.16	0.21	0.38	0.44	0.51 J	0.42 J	0.19 J	0.63 J
CADMIUM	70	800	0.16	0.285	0.22	0.15	0.29	0.25 J	0.19	0.13 J	1.15	0.081 J	0.48
CALCIUM			280 J	244 J	542 J	53.3 J	483 J	6.7 UJ	4.5 UJ	221 J	298 J	217 J	307 J
CHROMIUM	0.29	5.6	11.9 J	13.3 J	12.2 J	4.7 J	23.5 J	10.7 J	11.8 J	9.6	11.9	11.4	7
COBALT	23	300	13.1 J	13.4 J	7.2 J	13.3 J	18.4 J	17.3 J	12.2 J	10.8 J	29.2 J	11.1	29 J
COPPER	3100	41000	6.1 J	23.4 J	21.8 J	13.1 J	28.1 J	22.8 J	18.2 J	19.7 J	31.8 J	12.3	20 J
IRON	55000	720000	25000	31700	40800	18500	42100	39200	30200	39600	45400	29000	66500
LEAD	400	800	8.1 J	7.45 J	30.3 J	5.3 J	3.5 J	12.4 J	7.3 J	5.7 J	29.7	12.9 J	5.9 J
MAGNESIUM			1750	2030	175	849	3140	1240	2880	1020 J	949 J	2510	963 J
MANGANESE	1800	23000	471 J	240 J	58.3 J	342 J	186 J	396 J	364 J	282	382	391	2410
MERCURY	5.6	34	0.028 J	0.0154 J	0.028 J	0.006 U	0.0061 U	0.028 J	0.0057 U	0.0061 U	0.0056 U	0.024 J	0.011 UJ
NICKEL	1500	20000	26.4	31.4 J	31.8	17.6	38.8	25.8	20	18.7	46.9	19.3 J	39.4
POTASSIUM			259 J	208 J	147 J	242 J	92.6 J	301 J	624 J	321 J	299 J	201 J	206 J
SELENIUM	390	5100	0.72 J	0.495 U	0.63 U	0.48 U	0.62 U	0.8 U	0.7 J	4.1 UJ	3.45 UJ	0.86 U	7 UJ
SILVER	390	5100	0.048 U	0.0505 UJ	0.064 U	0.049 U	0.063 U	0.081 U	0.054 U	0.096 UJ	0.255 UJ	0.087 U	0.22 UJ
SODIUM			46.9	16 J	40.7	11 J	12.7 J	34.4 J	35.9	22 UJ	19.6 UJ	40.9 J	14.5 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
THALLIUM			0.15 U	0.155 U	0.19 U	0.15 U	0.19 U	0.24 U	0.16 U	2	1.2	0.27 U	11.8
VANADIUM	390	5200	18.3	14	12.9	8.5	18.4	16.7	16.6	13.6 J	13.9 J	16.8	10.5 J
ZINC	23000	310000	47.6	83.4 J	66.9	35.7	96.6	66.3	45.5	48.8	122	54.8 J	176
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	NA	6.1	NA	6	NA	6.2	NA	5.55	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	NA	22000	NA	9700	NA	16000	NA	4600	NA	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	4480 J	490	NA	1790 J	NA	6250 J	NA	4570 J	NA	1840 J	4320 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.136 U	0.136 U	NA	0.195 J	NA	0.358 J	NA	0.138 UJ	NA	2.11 J	0.132 UJ
1,2,3,4,6,7,8-HPCDD	450	1800	38.7	5.76	NA	13	NA	41.1	NA	30.3	NA	20.6	36.2
1,2,3,4,6,7,8-HPCDF	450	1800	0.175 J	0.0533 J	NA	0.0503 J	NA	0.08 J	NA	0.113 UJ	NA	0.892 J	0.12 U
1,2,3,4,7,8,9-HPCDF	450	1800	0.122 U	0.0808 U	NA	0.0224 U	NA	0.0325 U	NA	0.0331 U	NA	0.0927 U	0.0593 U
1,2,3,4,7,8-HXCDD	45	180	0.212 J	0.131 J	NA	0.0854 J	NA	0.168 J	NA	0.468 J	NA	0.149 J	0.151 J
1,2,3,4,7,8-HXCDF	45	180	0.0775 U	0.0574 U	NA	0.0141 U	NA	0.0386 J	NA	0.0152 U	NA	0.117 U	0.0979 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,6,7,8-HXCDD	45	180	0.82 J	0.0832 U	NA	0.0797 J	NA	0.088 J	NA	0.154 J	NA	0.486 J	0.241 J
1,2,3,6,7,8-HXCDF	45	180	0.733 U	0.054 J	NA	0.063 J	NA	0.0442 J	NA	0.168 J	NA	0.111 U	0.0786 J
1,2,3,7,8,9-HXCDD	45	180	0.84 J	0.0881 U	NA	0.0666 J	NA	0.0838 J	NA	0.0366 U	NA	0.392 J	0.214 J
1,2,3,7,8,9-HXCDF	45	180	0.0985 U	0.073 U	NA	0.0184 U	NA	0.0220 U	NA	0.0190 U	NA	0.145 U	0.0572 U
1,2,3,7,8-PECDD	4.5	18	0.140 U	0.0842 U	NA	0.0263 U	NA	0.0286 U	NA	0.0238 U	NA	0.0554 U	0.0619 U
1,2,3,7,8-PECDF	150	600	0.109 U	0.0843 U	NA	0.0202 U	NA	0.0236 U	NA	0.0217 U	NA	0.0467 U	0.0722 U
2,3,4,6,7,8-HXCDF	45	180	0.0841 U	0.0623 U	NA	0.0153 U	NA	0.0183 U	NA	0.0163 U	NA	0.124 U	0.0488 U
2,3,4,7,8-PECDF	15	60	0.108 U	0.0836 U	NA	0.0194 U	NA	0.0228 U	NA	0.0214 U	NA	0.0463 U	0.0716 U
2,3,7,8-TCDD	4.5	18	0.266 U	0.106 U	NA	0.0254 U	NA	0.0269 U	NA	0.0592 U	NA	0.0922 U	0.0986 U
2,3,7,8-TCDF	45	180	0.248 U	0.13 U	NA	0.0492 U	NA	0.0360 U	NA	0.0556 U	NA	0.0919 U	0.0855 U
TEQ BIRD	4.5	18	0.591 J	0.0644 J	NA	0.211 J	NA	0.693 J	NA	0.529 J	NA	0.265 J	0.517 J
TEQ BIRD HALFND	4.5	18	1.03 J	0.288 J	NA	0.274 J	NA	0.753 J	NA	0.615 J	NA	0.436 J	0.686 J
TEQ FISH	4.5	18	0.611 J	0.111 J	NA	0.243 J	NA	0.761 J	NA	0.74 J	NA	0.297 J	0.566 J

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	0.9 J	0.259 J	NA	0.278 J	NA	0.798 J	NA	0.792 J	NA	0.411 J	0.674 J
TEQ MAMMAL	4.5	18	1.92 J	0.22 J	NA	0.697 J	NA	2.33 J	NA	1.75 J	NA	0.87 J	1.74 J
TEQ MAMMAL HALFND	4.5	18	2.2 J	0.358 J	NA	0.731 J	NA	2.36 J	NA	1.81 J	NA	0.982 J	1.84 J
TOTAL HPCDD			81.5	11.4 J	NA	20.9	NA	70.2	NA	48.6	NA	39	73.4
TOTAL HPCDF			0.175 J	0.0533 J	NA	0.0169 U	NA	0.118 J	NA	0.119 U	NA	2.19 J	0.12 U
TOTAL HXCDD			9.73	1.31 J	NA	0.0797 J	NA	0.601 J	NA	1.14 U	NA	2.09 J	2.53 U
TOTAL HXCDF			0.0733 U	0.0543 U	NA	0.0131 U	NA	0.0442 J	NA	0.0145 U	NA	0.111 U	0.212 J
TOTAL PECDD			0.140 U	0.278 J	NA	0.183 J	NA	0.565 J	NA	0.896 J	NA	0.31 J	0.0619 U
TOTAL PECDF			0.108 U	0.0836 U	NA	0.0194 U	NA	0.0228 U	NA	0.0214 U	NA	0.773 J	0.0716 U
TOTAL TCDD			0.266 U	0.0815 J	NA	0.184 J	NA	0.0269 U	NA	0.0592 U	NA	0.0922 U	0.0986 U
TOTAL TCDF			0.248 U	0.13 U	NA	0.299 J	NA	0.134 J	NA	0.552 J	NA	0.0919 U	0.749 J
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			66 J	18 U	21 UJ	58 U	22 UJ	NA	NA	NA	NA	46	NA

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-938-0204-AVG	TF4-SB-938-0810	TF4-SB-939-0204	TF4-SB-939-0810	TF4-SB-940-0204	TF4-SB-940-0810	TF4-SB-941-0204	TF4-SB-941-0810-AVG	TF4-SB-942-0204	TF4-SB-943-0204
LOCATION ID			TF4-SB920	TF4-SB938	TF4-SB938	TF4-SB939	TF4-SB939	TF4-SB940	TF4-SB940	TF4-SB941	TF4-SB941	TF4-SB942	TF4-SB943
SAMPLE DATE			04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/22/10	04/15/10	04/15/10	04/20/10	04/15/10
TOP DEPTH			2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	2 FT
BOTTOM DEPTH			4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	4 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM
VOLATILES (UG/KG)				
1,1,1-TRICHLOROETHANE	8700000	38000000	4.2 UJ	4.5 U
1,1,2,2-TETRACHLOROETHANE	560	2800	4.2 UJ	4.5 U
1,1,2-TRICHLOROETHANE	1100	5300	4.2 UJ	4.5 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.2 UJ	4.5 U
1,1-DICHLOROETHANE	3300	17000	4.2 UJ	4.5 U
1,1-DICHLOROETHENE	240000	1100000	4.2 UJ	4.5 U
1,2,3-TRICHLOROBENZENE	49000	490000	4.2 UJ	4.5 U
1,2,4-TRICHLOROBENZENE	22000	99000	4.2 UJ	4.5 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.2 UJ	4.5 U
1,2-DIBROMOETHANE	34	170	4.2 UJ	4.5 U
1,2-DICHLOROBENZENE	1900000	9800000	4.2 UJ	4.5 U
1,2-DICHLOROETHANE	430	2200	4.2 UJ	4.5 U
1,2-DICHLOROPROPANE	890	4500	4.2 UJ	4.5 U
1,3-DICHLOROBENZENE			4.2 UJ	4.5 U
1,4-DICHLOROBENZENE	2400	12000	4.2 UJ	4.5 U
2-BUTANONE	28000000	200000000	4.2 UJ	4.5 U
2-HEXANONE	210000	1400000	4.2 UJ	4.5 UJ
4-METHYL-2-PENTANONE	5300000	53000000	4.2 UJ	4.5 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM
ACETONE	61000000	630000000	4.2 UJ	4.5 UJ
BENZENE	1100	5400	4.2 UJ	4.5 U
BROMOCHLOROMETHANE			4.2 UJ	4.5 U
BROMODICHLOROMETHANE	270	1400	4.2 UJ	4.5 U
BROMOFORM	61000	220000	4.2 UJ	4.5 U
BROMOMETHANE	7300	32000	4.2 UJ	4.5 U
BTEX			4.2 UJ	4.5 U
CARBON DISULFIDE	820000	3700000	4.2 UJ	4.5 U
CARBON TETRACHLORIDE	610	3000	4.2 UJ	4.5 U
CHLOROBENZENE	290000	1400000	4.2 UJ	4.5 U
CHLORODIBROMOMETHANE	680	3300	4.2 UJ	4.5 U
CHLOROETHANE	15000000	61000000	4.2 UJ	4.5 U
CHLOROFORM	290	1500	4.2 UJ	4.5 U
CHLOROMETHANE	120000	500000	4.2 UJ	4.5 U
CIS-1,2-DICHLOROETHENE	780000	10000000	4.2 UJ	4.5 U
CIS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.5 U
CYCLOHEXANE	7000000	29000000	4.2 UJ	4.5 U
DICHLORODIFLUOROMETHANE	180000	780000	4.2 UJ	4.5 U
ETHYLBENZENE	5400	27000	4.2 UJ	4.5 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.2 UJ	4.5 U
M+P-XYLENES			4.2 UJ	4.5 U
METHYL ACETATE	78000000	1E+09	4.2 UJ	4.5 U
METHYL CYCLOHEXANE			4.2 UJ	4.5 U
METHYL TERT-BUTYL ETHER	43000	220000	4.2 UJ	4.5 U
METHYLENE CHLORIDE	11000	53000	4.2 UJ	4.5 U
O-XYLENE	3800000	19000000	4.2 UJ	4.5 U
STYRENE	6300000	36000000	4.2 UJ	4.5 U
TETRACHLOROETHENE	550	2600	4.2 UJ	4.5 U
TOLUENE	5000000	45000000	4.2 UJ	4.5 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.2 UJ	4.5 U
TOTAL CHLORINATED ETHENES			4.2 UJ	4.5 U
TOTAL CHLORINATED VOCS			4.2 UJ	4.5 UJ
TOTAL XYLENES	630000	2700000	4.2 UJ	4.5 U
TRANS-1,2-DICHLOROETHENE	150000	690000	4.2 UJ	4.5 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.2 UJ	4.5 U
TRICHLOROETHENE	2800	14000	4.2 UJ	4.5 U

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ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.2 UJ	4.5 U
VINYL CHLORIDE	60	1700	4.2 UJ	4.5 U
SEMIVOLATILES (UG/KG)				
1,1-BIPHENYL	3900000	51000000	330 U	370 UJ
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 UJ	3.7 U
1,4-DIOXANE	44000	160000	3.3 U	3.7 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 UJ	370 UJ
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.7 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	740 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 UJ	370 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.7 U
2,4-DIMETHYLPHENOL	1200000	12000000	330 UJ	3.7 UJ
2,4-DINITROPHENOL	120000	1200000	670 UJ	740 UJ
2,4-DINITROTOLUENE	1600	5500	330 U	370 U
2,6-DINITROTOLUENE	61000	620000	330 U	370 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	370 U
2-CHLOROPHENOL	390000	5100000	4.8	3.7 U
2-METHYLNAPHTHALENE	310000	4100000	13 J	3.7 U

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ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
2-METHYLPHENOL	3100000	31000000	3.3 UJ	3.7 U
2-NITROANILINE	610000	6000000	670 U	740 U
2-NITROPHENOL			330 UJ	370 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	370 U
3-NITROANILINE			670 U	740 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 UJ	740 UJ
4-BROMOPHENYL PHENYL ETHER			330 U	370 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.7 U
4-CHLOROANILINE	2400	8600	330 UJ	370 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	370 U
4-METHYLPHENOL	310000	3100000	3.3 UJ	3.7 U
4-NITROANILINE	24000	86000	670 U	740 U
4-NITROPHENOL			670 UJ	740 U
ACENAPHTHENE	3400000	33000000	3.3 U	3.7 U
ACENAPHTHYLENE	3400000	33000000	3.3 U	3.7 U
ACETOPHENONE	7800000	100000000	330 UJ	370 UJ
ANTHRACENE	17000000	170000000	3.3 U	3.7 U
ATRAZINE	2100	7500	3.3 U	3.7 U
BENZALDEHYDE	7800000	100000000	330 UJ	370 UJ

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ANALYTICAL RESULTS - SUBSURFACE SOIL
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TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM
BENZO(A)ANTHRACENE	150	2100	3.9	3.7 U
BENZO(A)PYRENE	15	210	3.3 U	3.7 U
BENZO(B)FLUORANTHENE	150	2100	3.3 U	3.7 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.3 U	3.7 U
BENZO(K)FLUORANTHENE	1500	21000	3.3 U	3.7 U
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 UJ	370 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 UJ	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	370 U
BUTYL BENZYL PHTHALATE	260000	910000	330 U	370 U
CAPROLACTAM	31000000	310000000	330 UJ	370 U
CARBAZOLE			330 U	370 U
CHRYSENE	15000	210000	4.3	3.7 U
DIBENZO(A,H)ANTHRACENE	15	210	3.3 U	3.7 U
DIBENZOFURAN	78000	1000000	330 U	370 U
DIETHYL PHTHALATE	49000000	490000000	330 U	370 U
DIMETHYL PHTHALATE			330 U	370 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	370 U

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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM
DI-N-OCTYL PHTHALATE			330 UJ	370 U
FLUORANTHENE	2300000	22000000	4.4	3.7 U
FLUORENE	2300000	22000000	3.3 U	3.7 U
HEXACHLOROBENZENE	300	1100	3.3 U	3.7 U
HEXACHLOROBUTADIENE	6200	22000	330 UJ	370 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 UJ	370 UJ
HEXACHLOROETHANE	35000	120000	330 UJ	370 U
HIGH MOLECULAR WEIGHT PAHS			17.5 J	3.7 U
INDENO(1,2,3-CD)PYRENE	150	2100	3.3 U	3.7 U
ISOPHORONE	510000	1800000	330 UJ	370 U
LOW MOLECULAR WEIGHT PAHS			26.4 J	3.7 U
NAPHTHALENE	3600	18000	6.5	3.7 U
NITROBENZENE	4800	24000	330 UJ	370 UJ
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 UJ	370 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	370 U
PENTACHLOROPHENOL	3000	9000	670 UJ	740 UJ
PHENANTHRENE	1700000	17000000	6.9 J	3.7 U
PHENOL	18000000	180000000	30	3.7 U

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ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
PYRENE	1700000	17000000	4.9 J	3.7 U
TOTAL CARCINOGENIC PAHS-HALFND	15	210	16.4	3.7 U
TOTAL CARCINOGENIC PAHS-POS	15	210	8.2	3.7 U
TOTAL CHLORINATED VOCS			330 UJ	370 U
TOTAL PAHS			43.9 J	3.7 U
PESTICIDES/PCBS (UG/KG)				
4,4'-DDD	2000	7200	3.3 U	3.6 U
4,4'-DDE	1400	5100	3.3 U	3.6 U
4,4'-DDT	1700	7000	3.3 U	3.6 UJ
ALDRIN	29	100	1.7 U	1.9 U
ALPHA-BHC	77	270	1.7 U	1.9 UJ
ALPHA-CHLORDANE	1600	6500	1.7 UJ	1.9 U
AROCLOR-1016	3900	21000	33 U	36 U
AROCLOR-1221	140	540	33 U	36 U
AROCLOR-1232	140	540	33 U	36 U
AROCLOR-1242	220	740	33 U	36 U
AROCLOR-1248	220	740	33 U	36 U
AROCLOR-1254	220	740	33 U	36 U
AROCLOR-1260	220	740	33 U	36 U

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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
AROCLOR-1262			33 U	36 U
AROCLOR-1268			33 U	36 U
BETA-BHC	270	960	1.7 U	1.9 UJ
DELTA-BHC	77	270	1.7 U	1.9 U
DIELDRIN	30	110	3.3 U	3.6 U
ENDOSULFAN I	370000	3700000	1.7 U	1.9 U
ENDOSULFAN II	370000	3700000	3.3 U	3.6 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.6 U
ENDRIN	18000	180000	3.3 U	3.6 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.6 U
ENDRIN KETONE	18000	180000	3.3 U	3.6 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.9 UJ
GAMMA-CHLORDANE	1600	6500	1.7 UJ	1.9 U
HEPTACHLOR	110	380	1.7 U	1.9 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	1.9 U
METHOXYCHLOR	310000	3100000	17 UJ	19 UJ
TOTAL AROCLOR	220	740	33 U	36 U
TOTAL CHLORDANE			1.7 UJ	1.9 U
TOTAL DDD/DDE/DDT			3.3 U	3.6 UJ
TOXAPHENE	440	1600	170 U	190 U
METALS (MG/KG)				
ALUMINUM	77000	990000	10400	1000

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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
ANTIMONY	31	410	0.11 UJ	0.16 UJ
ARSENIC	0.39	1.6	6.5 J	6.4 J
BARIUM	15000	190000	30	6.1 J
BERYLLIUM	160	2000	0.43	0.32 J
CADMIUM	70	800	0.16	0.75
CALCIUM			280 J	6 J
CHROMIUM	0.29	5.6	11.9 J	5.2 J
COBALT	23	300	13.1 J	28.2 J
COPPER	3100	41000	6.1 J	20.2 J
IRON	55000	720000	25000	70700
LEAD	400	800	8.1 J	4.1 J
MAGNESIUM			1750	222 J
MANGANESE	1800	23000	471 J	1740
MERCURY	5.6	34	0.028 J	0.006 U
NICKEL	1500	20000	26.4	96.9
POTASSIUM			259 J	89.5 J
SELENIUM	390	5100	0.72 J	6.5 UJ
SILVER	390	5100	0.048 U	0.35 UJ
SODIUM			46.9	8.8 UJ

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ANALYTICAL RESULTS - SUBSURFACE SOIL
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TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
THALLIUM			0.15 U	9
VANADIUM	390	5200	18.3	8.7 J
ZINC	23000	310000	47.6	193
MISCELLANEOUS PARAMETERS (S.U.)				
PH			NA	5.8
MISCELLANEOUS PARAMETERS (MG/KG)				
TOTAL ORGANIC CARBON			NA	5000 U
DIOXINS/FURANS (NG/KG)				
1,2,3,4,6,7,8,9-OCDD	15000	60000	4480 J	NA
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.136 U	NA
1,2,3,4,6,7,8-HPCDD	450	1800	38.7	NA
1,2,3,4,6,7,8-HPCDF	450	1800	0.175 J	NA
1,2,3,4,7,8,9-HPCDF	450	1800	0.122 U	NA
1,2,3,4,7,8-HXCDD	45	180	0.212 J	NA
1,2,3,4,7,8-HXCDF	45	180	0.0775 U	NA

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TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM
1,2,3,6,7,8-HXCDD	45	180	0.82 J	NA
1,2,3,6,7,8-HXCDF	45	180	0.733 U	NA
1,2,3,7,8,9-HXCDD	45	180	0.84 J	NA
1,2,3,7,8,9-HXCDF	45	180	0.0985 U	NA
1,2,3,7,8-PECDD	4.5	18	0.140 U	NA
1,2,3,7,8-PECDF	150	600	0.109 U	NA
2,3,4,6,7,8-HXCDF	45	180	0.0841 U	NA
2,3,4,7,8-PECDF	15	60	0.108 U	NA
2,3,7,8-TCDD	4.5	18	0.266 U	NA
2,3,7,8-TCDF	45	180	0.248 U	NA
TEQ BIRD	4.5	18	0.591 J	NA
TEQ BIRD HALFND	4.5	18	1.03 J	NA
TEQ FISH	4.5	18	0.611 J	NA

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM
TEQ FISH HALFND	4.5	18	0.9 J	NA
TEQ MAMMAL	4.5	18	1.92 J	NA
TEQ MAMMAL HALFND	4.5	18	2.2 J	NA
TOTAL HPCDD			81.5	NA
TOTAL HPCDF			0.175 J	NA
TOTAL HXCDD			9.73	NA
TOTAL HXCDF			0.0733 U	NA
TOTAL PECDD			0.140 U	NA
TOTAL PECDF			0.108 U	NA
TOTAL TCDD			0.266 U	NA
TOTAL TCDF			0.248 U	NA
PETROLEUM HYDROCARBONS (MG/KG)				
EXTRACTABLE PETROLEUM HYDROCARBONS			66 J	NA

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SB-920-0204	TF4-SB-943-0810
LOCATION ID			TF4-SB920	TF4-SB943
SAMPLE DATE			04/22/10	04/15/10
TOP DEPTH			2 FT	8 FT
BOTTOM DEPTH			4 FT	10 FT
SACODE			NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM

G-3 SOIL SAMPLE ANALYTICAL DATA – DU 5-1 SURFACE SOIL

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,1,2,2-TETRACHLOROETHANE	560	2800	7.4 UJ	6.4 U	5.7 UJ	4.7 UJ	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,1,2-TRICHLOROETHANE	1100	5300	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	7.4 U	6.4 U	5.7 UJ	4.7 UJ	5 UJ	4.7 UJ	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 UJ
1,1-DICHLOROETHANE	3300	17000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,1-DICHLOROETHENE	240000	1100000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,2,3-TRICHLOROBENZENE	49000	490000	7.4 UJ	6.4 U	5.7 UJ	4.7 UJ	5 UJ	4.7 UJ	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	7.4 UJ	6.4 U	5.7 UJ	4.7 UJ	5 UJ	4.7 UJ	5 UJ	4.4 UJ	5 UJ	4.7 UJ	4.3 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	7.4 UJ	6.4 U	5.7 UJ	4.7 UJ	5 UJ	4.7 UJ	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 UJ
1,2-DIBROMOETHANE	34	170	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,2-DICHLOROBENZENE	1900000	9800000	7.4 UJ	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,2-DICHLOROETHANE	430	2200	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,2-DICHLOROPROPANE	890	4500	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,3-DICHLOROBENZENE			7.4 UJ	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
1,4-DICHLOROBENZENE	2400	12000	7.4 UJ	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
2-BUTANONE	28000000	200000000	7.4 UJ	6.4 UJ	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
2-HEXANONE	210000	1400000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 UJ	4.3 U
4-METHYL-2-PENTANONE	5300000	53000000	7.4 U	6.4 U	5.7 UJ	4.7 U	5 UJ	4.7 UJ	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 UJ

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	7.4 U	56	65 J	13	61 J	11 J	6 J	21 J	5 UJ	4.7 UJ	4.3 UJ
BENZENE	1100	5400	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
BROMOCHLOROMETHANE			7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
BROMODICHLOROMETHANE	270	1400	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
BROMOFORM	61000	220000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
BROMOMETHANE	7300	32000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
BTEX			7.4 U	6.4 U	1.8 J	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CARBON DISULFIDE	820000	3700000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CARBON TETRACHLORIDE	610	3000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CHLOROBENZENE	290000	1400000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CHLORODIBROMOMETHANE	680	3300	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CHLOROETHANE	15000000	61000000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CHLOROFORM	290	1500	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CHLOROMETHANE	120000	500000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CIS-1,2-DICHLOROETHENE	780000	10000000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CIS-1,3-DICHLOROPROPENE	1700	8100	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
CYCLOHEXANE	7000000	29000000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
DICHLORODIFLUOROMETHANE	180000	780000	7.4 U	6.4 U	5.7 UJ	4.7 UJ	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
ETHYLBENZENE	5400	27000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
ISOPROPYLBENZENE	2100000	11000000	7.4 U	6.4 U	5.7 U	6.2	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
M+P-XYLENES			7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
METHYL ACETATE	78000000	1E+09	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
METHYL CYCLOHEXANE			7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
METHYL TERT-BUTYL ETHER	43000	220000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
METHYLENE CHLORIDE	11000	53000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 UJ	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 UJ
O-XYLENE	3800000	19000000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
STYRENE	6300000	36000000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TETRACHLOROETHENE	550	2600	7.4 U	6.4 U	300 U	230 UJ	5 UJ	4.7 U	340 U	320 UJ	5 UJ	4.7 U	4.3 U
TOLUENE	5000000	45000000	7.4 U	6.4 U	1.8 J	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TOTAL CHLORINATED ETHENES			7.4 U	6.4 U	64.6 U	49.8 UJ	5 UJ	4.7 U	72 UJ	67.5 UJ	5 UJ	4.7 U	4.3 U
TOTAL CHLORINATED VOCS			7.4 UJ	6.4 U	16.6 UJ	13 UJ	5 UJ	4.7 UJ	17.4 UJ	16.1 UJ	5 UJ	4.7 UJ	4.3 UJ
TOTAL XYLENES	630000	2700000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TRANS-1,2-DICHLOROETHENE	150000	690000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TRICHLOROETHENE	2800	14000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
TRICHLOROFLUOROMETHANE	790000	3400000	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VINYL CHLORIDE	60	1700	7.4 U	6.4 U	5.7 U	4.7 U	5 UJ	4.7 U	5 UJ	4.4 UJ	5 UJ	4.7 U	4.3 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 UJ	370 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	4.9 U	4.7 U	3.9 UJ	3.9 UJ	4 UJ	3.9 UJ	4.2 UJ	3.7 UJ	4.1 UJ	4 U	3.7 UJ
1,4-DIOXANE	44000	160000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 UJ	370 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	4.9 U	4.7 U	3.9 UJ	3.9 UJ	4 UJ	3.9 U	4.2 UJ	3.7 UJ	4.1 UJ	4 U	3.7 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	990 U	940 U	780 UJ	790 UJ	800 UJ	780 U	860 UJ	750 UJ	840 U	820 U	760 U
2,4,6-TRICHLOROPHENOL	44000	160000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
2,4-DICHLOROPHENOL	180000	1800000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
2,4-DIMETHYLPHENOL	1200000	12000000	4.9 UJ	4.7 UJ	3.9 UJ	3.9 UJ	390 UJ	390 U	4.2 UJ	3.7 UJ	4.1 UJ	4 UJ	370 U
2,4-DINITROPHENOL	120000	1200000	990 UJ	940 UJ	780 UJ	790 UJ	800 UJ	780 UJ	860 UJ	750 UJ	840 UJ	820 UJ	760 UJ
2,4-DINITROTOLUENE	1600	5500	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
2,6-DINITROTOLUENE	61000	620000	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
2-CHLORONAPHTHALENE	6300000	82000000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
2-CHLOROPHENOL	390000	5100000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
2-METHYLNAPHTHALENE	310000	4100000	4.9 UJ	4.7 UJ	3.9 UJ	3.9 UJ	4 UJ	3.9 U	4.2 UJ	3.7 UJ	4.1 U	4 UJ	3.7 U
2-METHYLPHENOL	3100000	31000000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 UJ	4.2 U	3.7 U	4.1 UJ	4 U	3.7 UJ
2-NITROANILINE	610000	6000000	990 U	940 U	780 UJ	790 UJ	800 UJ	780 U	860 UJ	750 UJ	840 U	820 U	760 U
2-NITROPHENOL			490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
3,3'-DICHLOROBENZIDINE	1100	3800	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
3-NITROANILINE			990 U	940 U	780 UJ	790 UJ	800 UJ	780 U	860 UJ	750 UJ	840 U	820 U	760 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	990 UJ	940 UJ	780 UJ	790 UJ	800 UJ	780 UJ	860 UJ	750 UJ	840 UJ	820 UJ	760 UJ
4-BROMOPHENYL PHENYL ETHER			490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
4-CHLOROANILINE	2400	8600	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 UJ	420 UJ	370 UJ	410 UJ	400 UJ	370 UJ
4-CHLOROPHENYL PHENYL ETHER			490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
4-METHYLPHENOL	310000	3100000	4.9 U	4.7 U	3.9 UJ	3.9 UJ	4 UJ	3.9 UJ	4.2 UJ	3.7 UJ	4.1 UJ	4 U	3.7 UJ
4-NITROANILINE	24000	86000	990 U	940 U	780 UJ	790 UJ	800 UJ	780 U	860 UJ	750 UJ	840 U	820 U	760 U
4-NITROPHENOL			990 U	940 U	780 U	790 U	800 UJ	780 U	860 U	750 UJ	840 U	820 U	760 U
ACENAPHTHENE	3400000	33000000	4.9 U	7.7	3.9 U	3.9 U	5.2 J	4.2	4.2 U	3.7 U	4.1 U	4 U	3.7 U
ACENAPHTHYLENE	3400000	33000000	4.9 U	12	3.9 U	3.9 U	26 J	12	7.6	3.7 U	4.1 U	4 U	3.7 U
ACETOPHENONE	7800000	100000000	490 U	470 UJ	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 UJ	370 U
ANTHRACENE	17000000	170000000	5.8	27	3.9 U	3.9 U	25 J	15	6.9	3.7 U	6.2	4.5	3.7 U
ATRAZINE	2100	7500	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
BENZALDEHYDE	7800000	100000000	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 UJ	420 UJ	370 UJ	410 UJ	73 J	370 UJ
BENZO(A)ANTHRACENE	150	2100	35	230	5.9	8.1	89 J	69	29	6.4	12	17	13
BENZO(A)PYRENE	15	210	42	300	7	8.9	92 J	76	33	6.4	13	21	14
BENZO(B)FLUORANTHENE	150	2100	76 J	530 J	10	15	130 J	130	52	10	18 J	28 J	21
BENZO(G,H,I)PERYLENE	1700000	17000000	39	270	6	7.4	63 J	57	25	4.4	27	18	11

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	24 J	200 J	4.8 J	7.5 J	56 J	37	20 J	4.6 J	9.3	24 J	13
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
BIS(2-CHLOROETHYL)ETHER	210	1000	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	490 U	470 U	390 U	390 U	58 J	390 U	420 U	370 UJ	410 U	400 U	370 U
BUTYL BENZYL PHTHALATE	260000	910000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
CAPROLACTAM	31000000	310000000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
CARBAZOLE			490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
CHRYSENE	15000	210000	44	300	8.9	12	110 J	84	39	8.4	15	24	18
DIBENZO(A,H)ANTHRACENE	15	210	8.9 J	57 J	3.9 U	3.9 U	21 J	19	7.4	3.7 U	4.3	4.4 J	3.7 U
DIBENZOFURAN	78000	1000000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
DIETHYL PHTHALATE	49000000	490000000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
DIMETHYL PHTHALATE			490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
DI-N-BUTYL PHTHALATE	6100000	62000000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
DI-N-OCTYL PHTHALATE			490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
FLUORANTHENE	2300000	22000000	91	600	14	20	190 J	150	59	13	27	41	28
FLUORENE	2300000	22000000	4.9 U	11	3.9 U	3.9 U	9.7 J	5.5	4.2 U	3.7 U	4.1 U	4 U	3.7 U
HEXACHLOROBENZENE	300	1100	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
HEXACHLOROBUTADIENE	6200	22000	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
HEXACHLOROCYCLOPENT ADIENE	370000	3700000	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 UJ	420 UJ	370 UJ	410 UJ	400 UJ	370 UJ
HEXACHLOROETHANE	35000	120000	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
HIGH MOLECULAR WEIGHT PAHS			463 J	3160 J	73.5 J	102 J	968 J	802	337 J	68.2 J	161 J	227 J	151
INDENO(1,2,3-CD)PYRENE	150	2100	33 J	240 J	4.9	6.4	57 J	50	21	4	13	16 J	9.7
ISOPHORONE	510000	1800000	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
LOW MOLECULAR WEIGHT PAHS			42.8 J	258 J	7.7 J	9.5 J	166 J	98.7	40.5 J	4.4 J	22.2	22.5 J	13
NAPHTHALENE	3600	18000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
NITROBENZENE	4800	24000	490 UJ	470 UJ	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 UJ	400 UJ	370 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U
N-NITROSODIPHENYLAMINE	99000	350000	490 U	470 U	390 U	390 U	390 UJ	390 U	420 U	370 UJ	410 U	400 U	370 U
PENTACHLOROPHENOL	3000	9000	990 UJ	940 UJ	39 UJ	39 UJ	40 UJ	39 UJ	42 UJ	37 UJ	41 UJ	820 UJ	37 UJ
PHENANTHRENE	1700000	17000000	37	200	7.7	9.5	100 J	62	26	4.4	16	18	13
PHENOL	18000000	180000000	4.9 U	4.7 U	3.9 U	3.9 U	4 UJ	3.9 U	4.2 U	3.7 U	4.1 U	4 U	3.7 U
PYRENE	1700000	17000000	70	430	12	17	160 J	130	52	11	22	34	23
TOTAL CARCINOGENIC PAHS-HALFND	15	210	263 J	1860 J	43.4 J	59.8 J	555 J	465	201 J	41.6 J	84.6 J	134 J	90.6
TOTAL CARCINOGENIC PAHS-POS	15	210	263 J	1860 J	41.5 J	57.9 J	555 J	465	201 J	39.8 J	84.6 J	134 J	88.7
TOTAL CHLORINATED VOCS			490 U	470 U	390 UJ	390 UJ	390 UJ	390 U	420 UJ	370 UJ	410 U	400 U	370 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL PAHS			506 J	3410 J	81.2 J	112 J	1130 J	901	378 J	72.6 J	183 J	250 J	164
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	4.8 U	5.1	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U	4 U	3.8 U
4,4'-DDE	1400	5100	4.8 U	5.5	3.9 U	3.8 U	3.9 U	6.6	4.3 U	3.8 U	4.1 U	4 U	3.8 U
4,4'-DDT	1700	7000	4.8 U	4.6 U	3.9 UJ	3.8 UJ	3.9 UJ	5.6 J	4.3 UJ	3.8 UJ	4.1 U	4 U	3.8 UJ
ALDRIN	29	100	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
ALPHA-BHC	77	270	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
ALPHA-CHLORDANE	1600	6500	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
AROCLOR-1016	3900	21000	48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1221	140	540	48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1232	140	540	48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1242	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1248	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1254	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	39	41 U	40 U	38 U
AROCLOR-1260	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1262			48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
AROCLOR-1268			48 U	46 U	39 U	38 U	39 U	39 U	43 U	38 U	41 U	40 U	38 U
BETA-BHC	270	960	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
DELTA-BHC	77	270	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
DIELDRIN	30	110	4.8 U	4.6 U	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U	4 U	3.8 U
ENDOSULFAN I	370000	3700000	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
ENDOSULFAN II	370000	3700000	4.8 U	4.6 U	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U	4 U	3.8 U

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ENDOSULFAN SULFATE	370000	3700000	4.8 U	4.6 U	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U	4 U	3.8 U
ENDRIN	18000	180000	4.8 U	4.6 UJ	3.9 UJ	3.8 UJ	3.9 UJ	3.9 UJ	4.3 UJ	3.8 UJ	4.1 U	4 UJ	3.8 UJ
ENDRIN ALDEHYDE	18000	180000	4.8 U	4.6 U	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U	4 U	3.8 U
ENDRIN KETONE	18000	180000	4.8 U	4.6 U	3.9 U	3.8 U	3.9 U	3.9 U	4.3 U	3.8 U	4.1 U	4 U	3.8 U
GAMMA-BHC (LINDANE)	520	2100	2.5 U	2.4 U	2 UJ	2 UJ	2 UJ	2 UJ	2.2 UJ	1.9 UJ	2.1 U	2.1 U	1.9 UJ
GAMMA-CHLORDANE	1600	6500	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
HEPTACHLOR	110	380	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
HEPTACHLOR EPOXIDE	53	190	2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
METHOXYCHLOR	310000	3100000	25 U	24 U	20 UJ	20 UJ	20 UJ	20 UJ	22 UJ	19 UJ	21 U	21 U	19 UJ
TOTAL AROCLOR	220	740	48 U	46 U	39 U	38 U	39 U	39 U	43 U	39	41 U	40 U	38 U
TOTAL CHLORDANE			2.5 U	2.4 U	2 U	2 U	2 U	2 U	2.2 U	1.9 U	2.1 U	2.1 U	1.9 U
TOTAL DDD/DDE/DDT			4.8 U	10.6	3.9 UJ	3.8 UJ	3.9 UJ	12.2 J	4.3 UJ	3.8 UJ	4.1 U	4 U	3.8 UJ
TOXAPHENE	440	1600	250 U	240 U	200 U	200 U	200 U	200 U	220 U	190 U	210 U	210 U	190 U
METALS (MG/KG)													
ALUMINUM	77000	990000	5460	8860	6540	9740	6790	7590	7420	7940	7990 J	9530	7970
ANTIMONY	31	410	0.64 UJ	0.23 UJ	0.32 UJ	0.19 UJ	0.14 UJ	0.13 UJ	0.15 UJ	0.17 UJ	0.19 UJ	0.42 UJ	0.19 UJ
ARSENIC	0.39	1.6	5.6	13.7	7.1	13.8 J	34.6	5.6 J	43.7	27.8	17.5	7.2	4.3 J
BARIUM	15000	190000	18.6	23.7	9.5 J	11.2 J	10.2 J	19.3 J	19.8 J	16.9 J	14.5	11.4	18.6 J
BERYLLIUM	160	2000	0.35 J	0.53 J	0.35 J	0.33	0.52 J	0.48 J	0.47 J	0.49 J	0.39 J	0.55 J	0.50 J
CADMIUM	70	800	0.1 J	0.1 J	0.11 J	0.23 J	0.27	0.19	0.25	0.21 J	0.33	0.012 U	0.18 J
CALCIUM			1680 J	829 J	166 J	655 J	1710 J	489 J	1070 J	575 J	975 J	249 J	216 J
CHROMIUM	0.29	5.6	5.6	12.7	7.3	12.8	9.2	9.2	8.9	9.8	12 J	8.9	7.5

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
COBALT	23	300	5.2 J	9.2 J	2.2 J	13.2 J	10.9 J	5.8 J	12.3 J	11.1 J	11.6	4.1 J	4.0 J
COPPER	3100	41000	8.1	24.2	8.4	12.5	15.1	11.2	13.4	13.7	16.2	12.1	7.5
IRON	55000	720000	14100	23800	11500	33700	28400	17800	23700	25700	28900 J	17400	15000
LEAD	400	800	21	30.9	33.3 J	9.3 J	12.6 J	21.9 J	21.0 J	12.3 J	12.7 J	32.5	31.0 J
MAGNESIUM			1120 J	2290 J	824 J	2320 J	1710 J	1470 J	1450 J	1700 J	2250 J	1230 J	1200 J
MANGANESE	1800	23000	225	221	95.8 J	412 J	289 J	210 J	415 J	384 J	462	140	157 J
MERCURY	5.6	34	0.091 U	0.074 U	0.12	0.025 UJ	0.059 U	0.033 UJ	0.038 UJ	0.030 UJ	0.019 J	0.042 UJ	0.036 UJ
NICKEL	1500	20000	15.3	19.3	6.8 J	20.1 J	18.6 J	14.6 J	21.1 J	19.5 J	22.6	10.4	8.2 J
POTASSIUM			388 J	219 J	206 J	142 J	166 J	270 J	294 J	206 J	185 J	205 J	207 J
SELENIUM	390	5100	2.9 J	3.5 UJ	2.4 U	4.0	2.2 U	2.2 U	3.3	3.6	4.2	3.3 J	2.1 U
SILVER	390	5100	0.22 UJ	0.13 UJ	0.21 J	0.2 J	0.15 J	0.095 J	0.21 J	0.18 J	0.21 J	0.1 UJ	0.12 J
SODIUM			53.9 J	47.8 J	29.2 UJ	23.1 UJ	39.4 J	30.1 J	28.2 UJ	29.2 UJ	20.3 J	19.3 J	22.7 UJ
THALLIUM			1.5	1.7	0.65 J	2.4	1.9	1.3	2.3	2.5	2.4	1.2	1.1
VANADIUM	390	5200	12.2	16.5	24.0 J	19.0 J	10.9 J	13.1 J	17.8 J	13.1 J	13.9	16.2	11.3 J
ZINC	23000	310000	39.7	69.5	18.4 J	66.1 J	41.4 J	36.8 J	43.0 J	39.7 J	51.9	28.8	26.6 J
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	2380 J	2910 J	2060 J	6010 J	8000 J	5670 J	1930 J	7160 J	9650 J	6700 J	2660 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	1.27 J	6.64 J	2.16 J	3.53 J	32	24.1	5.94	2.39 J	3.63 J	13 J	8.95
1,2,3,4,6,7,8-HPCDD	450	1800	37.6	43.7	49.4	60.2	141	76.8	26.2	74.7	94	132	57.9
1,2,3,4,6,7,8-HPCDF	450	1800	0.734 UJ	4.37	1.28 U	1.41 U	12	7.78	1.64 U	1.21 U	1.8 U	9.12	5.5

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,4,7,8,9-HPCDF	450	1800	0.188 U	0.429 J	0.103 U	0.121 U	0.86 J	0.484 J	0.145 U	0.0736 U	0.111 J	0.509 J	0.317 J
1,2,3,4,7,8-HXCDD	45	180	0.194 U	0.437 J	0.634 J	0.434 J	1.22 J	0.694 J	0.2 J	0.397 J	0.674 J	1.62 J	0.679 J
1,2,3,4,7,8-HXCDF	45	180	0.159 J	1.59 J	0.425 J	0.312 J	1.05 J	0.606 J	0.243 J	0.256 J	0.464 J	3.09 J	0.638 J
1,2,3,6,7,8-HXCDD	45	180	0.676 J	0.962 J	1.05 J	0.805 J	3.63	1.69 J	0.478 J	0.724 J	0.865 J	2.68 J	1.38 J
1,2,3,6,7,8-HXCDF	45	180	0.137 U	0.685 J	0.223 J	0.141 J	0.732 J	0.405 J	0.0997 J	0.112 J	0.167 J	1.01 J	0.32 J
1,2,3,7,8,9-HXCDD	45	180	0.613 J	1.21 J	0.868 J	0.952 J	2.87 J	1.76 J	0.411 J	0.758 J	0.995 J	3.64	1.52 J
1,2,3,7,8,9-HXCDF	45	180	0.184 U	0.175 U	0.156 U	0.0925 U	0.154 U	0.0866 U	0.0923 U	0.0894 U	0.07 J	0.0856 U	0.144 U
1,2,3,7,8-PECDD	4.5	18	0.198 U	0.283 J	0.284 J	0.0881 U	0.388 J	0.245 J	0.0948 U	0.257 J	0.287 J	0.813 J	0.264 J
1,2,3,7,8-PECDF	150	600	0.155 U	0.621 J	0.124 U	0.0955 J	0.292 J	0.202 J	0.0865 U	0.109 U	0.175 J	0.717 J	0.292 J
2,3,4,6,7,8-HXCDF	45	180	0.157 U	0.779 J	0.188 J	0.0790 U	0.762 J	0.427 J	0.143 J	0.164 J	0.204 J	1.35 J	0.426 J
2,3,4,7,8-PECDF	15	60	0.154 U	0.519 J	0.123 U	0.0820 U	0.105 U	0.279 J	0.0859 U	0.108 U	0.233 J	0.978 J	0.3 J
2,3,7,8-TCDD	4.5	18	0.236 U	0.142 U	0.181 U	0.0963 U	0.159 U	0.120 U	0.196 U	0.119 U	0.107 J	0.104 U	0.172 U
2,3,7,8-TCDF	45	180	0.277 U	0.657 J	0.141 U	0.134 U	0.346 J	0.491 J	0.108 U	0.0942 U	0.517 J	0.842 J	0.551 J
TEQ BIRD	4.5	18	0.36 J	2.36 J	0.752 J	0.841 J	2.47 J	2.14 J	0.324 J	1.2 J	2.45 J	4.62 J	1.87 J
TEQ BIRD HALFND	4.5	18	0.833 J	2.44 J	0.996 J	1.06 J	2.61 J	2.2 J	0.584 J	1.38 J	2.46 J	4.68 J	1.96 J
TEQ FISH	4.5	18	0.305 J	1.54 J	0.959 J	0.946 J	2.42 J	1.67 J	0.377 J	1.31 J	2.05 J	3.7 J	1.35 J

TABLE
ANALYTICAL RESULTS - SURFACE SOIL
TfNe_SO_SS_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0001	TF5-SB-967-0001	TF5-SB-968-0001	TF5-SB-969-0001	TF5-SB-970-0001	TF5-SB-971-0001	TF5-SB-972-0001	TF5-SB-973-0001	TF5-SB-974-0001	TF5-SB-975-0001	TF5-SB-976-0001
LOCATION ID			TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB969	TF5-SB970	TF5-SB971	TF5-SB972	TF5-SB973	TF5-SB974	TF5-SB975	TF5-SB976
SAMPLE DATE			04/14/10	04/14/10	04/12/10	04/12/10	04/13/10	04/13/10	04/12/10	04/12/10	04/13/10	04/14/10	04/13/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT	1 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	0.648 J	1.62 J	1.1 J	1.08 J	2.54 J	1.74 J	0.563 J	1.42 J	2.06 J	3.75 J	1.44 J
TEQ MAMMAL	4.5	18	1.24 J	2.45 J	1.74 J	2.67 J	5.41 J	3.5 J	1 J	3.39 J	4.7 J	5.98 J	2.35 J
TEQ MAMMAL HALFND	4.5	18	1.53 J	2.53 J	1.87 J	2.8 J	5.51 J	3.57 J	1.18 J	3.49 J	4.71 J	6.04 J	2.45 J
TOTAL HPCDD			89	96.9	137	133	268	157	60.8	175	199	329	142
TOTAL HPCDF			1.62 U	8.4	2.16 U	3.64	35.2	21.1	4.91	2.46 J	1.99 U	15.9	11.3
TOTAL HXCDD			5.44	11.4	13.5	8.85	22.7	13.4	3.65	9.08	12.1	36.7	17.1
TOTAL HXCDF			0.583 J	9.05	1.71 J	1.16 J	16.9	7.96	0.926 J	0.803 J	2.95	13.4	5.91
TOTAL PECDD			0.198 U	2.49 J	1.35 J	0.476 J	1.34 J	2.5 J	0.459 J	0.94 J	2.76	7.49	2.13 J
TOTAL PECDF			0.439 J	8.28	2.17 J	0.94 J	6.5	5.22	1.2 J	0.834 J	3.55	12.2	4
TOTAL TCDD			0.236 U	0.463 J	0.181 U	0.0963 U	0.159 U	0.53 J	0.196 U	0.119 U	0.0307 U	2.05	0.317 J
TOTAL TCDF			0.277 U	7.79	0.937 J	0.134 U	2.91	1.42	0.479 J	0.926 J	2.63	8.63	2.74
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			23 J	22 J	NA	NA	16 J	NA	NA	NA	NA	NA	NA

G-4 SOIL SAMPLE ANALYTICAL DATA – DU 5-1 SUBSURFACE SOIL

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,1,2,2-TETRACHLOROETHANE	560	2800	4.4 U	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,1,2-TRICHLOROETHANE	1100	5300	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
1,1-DICHLOROETHANE	3300	17000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,1-DICHLOROETHENE	240000	1100000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	4.4 U	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UR	4.6 UJ	4.5 UJ	4.9 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	4.4 U	3.9 UJ	4.8 UJ	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UR	4.6 UJ	4.5 UJ	4.9 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.4 U	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
1,2-DIBROMOETHANE	34	170	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,2-DICHLOROBENZENE	1900000	9800000	4.4 U	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,2-DICHLOROETHANE	430	2200	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,2-DICHLOROPROPANE	890	4500	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,3-DICHLOROBENZENE			4.4 U	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
1,4-DICHLOROBENZENE	2400	12000	4.4 U	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
2-BUTANONE	28000000	200000000	4.4 UJ	3.9 UJ	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
2-HEXANONE	210000	1400000	4.4 U	3.9 U	4.8 UJ	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
4-METHYL-2-PENTANONE	5300000	53000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	7.8	8.7	19 J	5.4 J	3.4 UJ	32 J	4.3 UJ	44 J	5.7 J	4.5 UJ	3.5 J
BENZENE	1100	5400	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
BROMOCHLOROMETHANE			4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
BROMODICHLOROMETHANE	270	1400	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
BROMOFORM	61000	220000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
BROMOMETHANE	7300	32000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
BTEX			4.4 U	3.9 U	4.8 U	4.1 UJ	1 J	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CARBON DISULFIDE	820000	3700000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	1.9 J	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CARBON TETRACHLORIDE	610	3000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CHLOROBENZENE	290000	1400000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CHLORODIBROMOMETHANE	680	3300	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CHLOROETHANE	15000000	61000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CHLOROFORM	290	1500	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CHLOROMETHANE	120000	500000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
CIS-1,2-DICHLOROETHENE	780000	10000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CIS-1,3-DICHLOROPROPENE	1700	8100	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
CYCLOHEXANE	7000000	29000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
DICHLORODIFLUOROMETHANE	180000	780000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 UJ	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
ETHYLBENZENE	5400	27000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
M+P-XYLENES			4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
METHYL ACETATE	78000000	1E+09	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
METHYL CYCLOHEXANE			4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
METHYL TERT-BUTYL ETHER	43000	220000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
METHYLENE CHLORIDE	11000	53000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
O-XYLENE	3800000	19000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
STYRENE	6300000	36000000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UR	4.6 UJ	4.5 U	4.9 UJ
TETRACHLOROETHENE	550	2600	4.4 U	3.9 U	4.8 U	240 U	240 U	150 UJ	110 UJ	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TOLUENE	5000000	45000000	4.4 U	3.9 U	4.8 U	4.1 UJ	1 J	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TOTAL CHLORINATED ETHENES			4.4 U	3.9 U	4.8 U	51.3 UJ	50.7 UJ	33.8 UJ	25.4 UJ	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TOTAL CHLORINATED VOCS			4.4 U	3.9 UJ	4.8 UJ	12.8 UJ	12.2 UJ	10.2 UJ	8.21 UJ	4.9 UJ	4.6 UJ	4.5 UJ	4.9 UJ
TOTAL XYLENES	630000	2700000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TRANS-1,2-DICHLOROETHENE	150000	690000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
TRICHLOROETHENE	2800	14000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
VINYL CHLORIDE	60	1700	4.4 U	3.9 U	4.8 U	4.1 UJ	3.4 UJ	4.8 UJ	4.3 U	4.9 UJ	4.6 UJ	4.5 U	4.9 UJ
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	370 UJ	360 UJ	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.7 U	3.6 UJ	4 U	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 UJ	4 UJ	3.9 UJ
1,4-DIOXANE	44000	160000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	370 UJ	360 UJ	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.7 U	3.6 UJ	4 U	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 UJ	4 U	3.9 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	760 U	730 U	800 U	750 UJ	700 UJ	740 UJ	690 UJ	810 U	740 U	805 U	790 U
2,4,6-TRICHLOROPHENOL	44000	160000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
2,4-DICHLOROPHENOL	180000	1800000	3.7 UJ	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	4 U	3.9 U
2,4-DIMETHYLPHENOL	1200000	12000000	3.7 UJ	3.6 UJ	4 UJ	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	400 U	3.6 UJ	202 UJ	390 U
2,4-DINITROPHENOL	120000	1200000	760 UJ	730 UJ	800 UJ	750 UJ	700 UJ	740 UJ	690 UJ	810 UJ	740 UJ	805 UJ	790 UJ
2,4-DINITROTOLUENE	1600	5500	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
2,6-DINITROTOLUENE	61000	620000	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
2-CHLORONAPHTHALENE	6300000	82000000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
2-CHLOROPHENOL	390000	5100000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	5.15 U	3.9 U
2-METHYLNAPHTHALENE	310000	4100000	3.7 U	3.6 UJ	4 UJ	3.7 UJ	3.4 UJ	4.3 J	3.4 UJ	4 U	3.6 U	4 U	3.9 U
2-METHYLPHENOL	3100000	31000000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 UJ	4 UJ	3.9 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-NITROANILINE	610000	6000000	760 U	730 U	800 U	750 UJ	700 UJ	740 UJ	690 UJ	810 U	740 U	805 U	790 U
2-NITROPHENOL			370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
3,3'-DICHLOROBENZIDINE	1100	3800	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
3-NITROANILINE			760 U	730 U	800 U	750 UJ	700 UJ	740 UJ	690 UJ	810 U	740 U	805 U	790 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	760 UJ	730 UJ	800 UJ	750 UJ	700 UJ	740 UJ	690 UJ	810 UJ	740 UJ	805 UJ	790 UJ
4-BROMOPHENYL PHENYL ETHER			370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.7 UJ	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
4-CHLOROANILINE	2400	8600	370 UJ	360 UJ	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 UJ	360 UJ	400 UJ	390 UJ
4-CHLOROPHENYL PHENYL ETHER			370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
4-METHYLPHENOL	310000	3100000	3.7 U	3.6 UJ	4 U	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 UJ	4.9 J	3.9 UJ
4-NITROANILINE	24000	86000	760 U	730 U	800 U	750 UJ	700 UJ	740 UJ	690 UJ	810 U	740 U	805 U	790 U
4-NITROPHENOL			760 U	730 U	800 U	750 U	700 U	740 U	690 U	810 U	740 U	805 U	790 U
ACENAPHTHENE	3400000	33000000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
ACENAPHTHYLENE	3400000	33000000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
ACETOPHENONE	7800000	100000000	370 U	360 U	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
ANTHRACENE	17000000	170000000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
ATRAZINE	2100	7500	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
BENZALDEHYDE	7800000	100000000	370 UJ	360 UJ	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 UJ	360 UJ	400 UJ	390 UJ
BENZO(A)ANTHRACENE	150	2100	3.7 U	3.6 UJ	9.6	3.7 U	3.4 U	6.1	3.4 U	4 U	3.6 U	11.5	3.9 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)PYRENE	15	210	3.7 U	3.6 UJ	8.8	3.7 U	3.4 U	5.5	3.4 U	4 UJ	3.6 U	11	3.9 U
BENZO(B)FLUORANTHENE	150	2100	3.7 UJ	3.6 UJ	11 J	3.7 U	3.4 U	8	3.4 U	4 U	3.6 UJ	19	3.9 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.7 U	3.6 UJ	8.3	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	8	3.9 U
BENZO(K)FLUORANTHENE	1500	21000	3.7 U	3.6 UJ	9.9 J	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 U	3.6 U	7.5	3.9 U
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
BIS(2-CHLOROETHYL)ETHER	210	1000	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	52 J	130 J	390 U
BUTYL BENZYL PHTHALATE	260000	910000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
CAPROLACTAM	31000000	310000000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
CARBAZOLE			370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
CHRYSENE	15000	210000	3.7 U	3.6 UJ	15	3.7 U	3.8	6.4	3.4 U	4 U	3.6 U	15.5 J	3.9 U
DIBENZO(A,H)ANTHRACENE	15	210	3.7 UJ	3.6 UJ	4 UJ	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	4 U	3.9 U
DIBENZOFURAN	78000	1000000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
DIETHYL PHTHALATE	49000000	490000000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
DIMETHYL PHTHALATE			370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
DI-N-BUTYL PHTHALATE	6100000	62000000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	280 J	390 U
DI-N-OCTYL PHTHALATE			370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
FLUORANTHENE	2300000	22000000	3.7 U	3.6 UJ	16	3.7 U	3.4 U	11	3.4 U	5.1	3.6 U	21.5	3.9 U
FLUORENE	2300000	22000000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	4 U	3.9 U
HEXACHLOROBENZENE	300	1100	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	4 U	3.9 U
HEXACHLOROBUTADIENE	6200	22000	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	370 UJ	360 UJ	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 UJ	360 UJ	400 UJ	390 UJ
HEXACHLOROETHANE	35000	120000	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
HIGH MOLECULAR WEIGHT PAHS			3.7 UJ	3.6 UJ	98 J	3.7 UJ	7.4 J	48 J	4.3 J	9.8 J	3.6 UJ	120 J	3.9 U
INDENO(1,2,3-CD)PYRENE	150	2100	3.7 U	3.6 UJ	6.4 J	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	7.25	3.9 U
ISOPHORONE	510000	1800000	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
LOW MOLECULAR WEIGHT PAHS			3.7 U	3.6 UJ	4.9 J	3.7 UJ	3.4 UJ	17.9 J	8.9 J	4 U	3.6 U	12.5	3.9 U
NAPHTHALENE	3600	18000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	5.9	4.7	4 U	3.6 U	4 U	3.9 U
NITROBENZENE	4800	24000	370 UJ	360 UJ	400 UJ	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 UJ	400 UJ	390 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
N-NITROSODIPHENYLAMINE	99000	350000	370 U	360 U	400 U	370 U	340 U	360 U	340 U	400 U	360 U	400 U	390 U
PENTACHLOROPHENOL	3000	9000	760 UJ	730 UJ	800 UJ	37 UJ	34 UJ	36 UJ	34 UJ	810 U	36 UJ	40 UJ	39 UJ
PHENANTHRENE	1700000	17000000	3.7 U	3.6 UJ	4.9	3.7 U	3.4 U	7.7	4.2	4 U	3.6 U	12.5	3.9 U
PHENOL	18000000	180000000	3.7 U	3.6 UJ	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 UJ	3.6 U	4 U	3.9 U
PYRENE	1700000	17000000	3.7 U	3.6 UJ	13	3.7 U	3.6	11	4.3	4.7	3.6 U	18.5	3.9 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.7 UJ	3.6 UJ	62.7 J	3.7 UJ	14 J	31.4 J	3.4 UJ	4 UJ	3.6 UJ	73.8 J	3.9 U
TOTAL CARCINOGENIC PAHS-POS	15	210	3.7 UJ	3.6 UJ	60.7 J	3.7 UJ	3.8 J	26 J	3.4 UJ	4 UJ	3.6 UJ	71.8 J	3.9 U
TOTAL CHLORINATED VOCS			370 U	360 U	400 U	370 UJ	340 UJ	360 UJ	340 UJ	400 U	360 U	400 U	390 U
TOTAL PAHS			3.7 UJ	3.6 UJ	103 J	3.7 UJ	7.4 J	65.9 J	13.2 J	9.8 J	3.6 UJ	132 J	3.9 U
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
4,4'-DDE	1400	5100	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
4,4'-DDT	1700	7000	3.7 U	3.6 U	4 U	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 U	3.9 UJ	3.9 UJ
ALDRIN	29	100	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	2 U	2 U
ALPHA-BHC	77	270	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 UJ	1.8 U	2 U	1.9 U	2 U	2 U
ALPHA-CHLORDANE	1600	6500	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 UJ	1.8 U	2 U	1.9 U	2 U	2 U
AROCLOR-1016	3900	21000	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1221	140	540	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1232	140	540	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1242	220	740	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1248	220	740	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1254	220	740	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1260	220	740	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
AROCLOR-1262			37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1268			37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
BETA-BHC	270	960	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	2 U	2 U
DELTA-BHC	77	270	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	2 U	2 U
DIELDRIN	30	110	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
ENDOSULFAN I	370000	3700000	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	2 U	2 U
ENDOSULFAN II	370000	3700000	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
ENDOSULFAN SULFATE	370000	3700000	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
ENDRIN	18000	180000	3.7 U	3.6 UJ	4 UJ	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 U	3.9 UJ	3.9 UJ
ENDRIN ALDEHYDE	18000	180000	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
ENDRIN KETONE	18000	180000	3.7 U	3.6 U	4 U	3.7 U	3.4 U	3.6 U	3.4 U	4 U	3.6 U	3.9 U	3.9 U
GAMMA-BHC (LINDANE)	520	2100	1.9 U	1.8 U	2 U	1.9 UJ	1.8 UJ	1.9 UJ	1.8 UJ	2 UJ	1.9 U	2 UJ	2 UJ
GAMMA-CHLORDANE	1600	6500	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 UJ	1.8 U	2 U	1.9 U	2 U	2 U
HEPTACHLOR	110	380	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	2 U	2 U
HEPTACHLOR EPOXIDE	53	190	1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 U	1.8 U	2 U	1.9 U	2 U	2 U
METHOXYCHLOR	310000	3100000	19 U	18 U	20 U	19 UJ	18 UJ	19 UJ	18 UJ	20 UJ	19 U	20 UJ	20 UJ
TOTAL AROCLOR	220	740	37 U	36 U	40 U	37 U	34 U	36 U	34 U	40 U	36 U	39 U	39 U
TOTAL CHLORDANE			1.9 U	1.8 U	2 U	1.9 U	1.8 U	1.9 UJ	1.8 U	2 U	1.9 U	2 U	2 U
TOTAL DDD/DDE/DDT			3.7 U	3.6 U	4 U	3.7 UJ	3.4 UJ	3.6 UJ	3.4 UJ	4 UJ	3.6 U	3.9 UJ	3.9 UJ
TOXAPHENE	440	1600	190 U	180 U	200 U	190 U	180 U	190 U	180 U	200 U	190 U	200 U	200 U
METALS (MG/KG)													
ALUMINUM	77000	990000	9150	2250	6280	5130	876	7950	5020	7490	2490 J	7730 J	14000

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ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.13 UJ	0.15 UJ	0.33 UJ	0.11 UJ	0.11 UJ	0.14 UJ	0.12 UJ	0.14 UJ	0.13 UJ	0.275 UJ	0.11 UJ
ARSENIC	0.39	1.6	46.1	30.7	11.9	11.6	52.5	12.4 J	9.7 J	19.8	67.2	6.4 J	20.6 J
BARIUM	15000	190000	5.4 J	2.2 J	8.1 J	8.6 J	6.3 J	9.7 J	1.4 J	17.1	8	20 J	7.3 J
BERYLLIUM	160	2000	0.33 J	0.22 J	0.33 J	0.31 J	0.14 J	0.31	0.11 J	0.39	0.29 J	0.5 J	0.33 J
CADMIUM	70	800	0.42	0.3	0.13 J	0.15 J	0.53	0.34	0.35	0.14 J	0.86	0.215 J	0.75
CALCIUM			4.6 UJ	1040 J	543 J	163 J	4.2 UJ	316 J	675 J	593 J	1230 J	602 J	576 J
CHROMIUM	0.29	5.6	16.9	5.2 J	9.1	7.6	2.3	11.0	8.7	7.5	7.9 J	9.95 J	21.7
COBALT	23	300	24.4 J	19.3 J	8.9 J	8.3 J	18.2 J	15.1 J	15.5 J	6.3	32.8	7.55 J	12.4 J
COPPER	3100	41000	8.7 J	9.9 J	10.6 J	14	21.9	12.9	4.9	7.7	18.1	12	12.8
IRON	55000	720000	72100	65500	23000	19100	41600	30600	29100	20200	63200 J	22800 J	59800
LEAD	400	800	1.7 J	1.1 J	7.9	6.4 J	3.5 J	10.7 J	1.1 J	11.8 J	8.3 J	11.1 J	2.5 J
MAGNESIUM			3110 J	1170 J	1960 J	1290 J	271 J	1890 J	1410 J	1080	601 J	1570 J	4870 J
MANGANESE	1800	23000	262	239	114	274 J	613 J	435 J	593 J	121	4220	200 J	716 J
MERCURY	5.6	34	0.03 UJ	0.031 UJ	0.0065 U	0.021 UJ	0.0053 U	0.017 UJ	0.0057 U	0.0096 UJ	0.0058 U	0.0148 J	0.0056 U
NICKEL	1500	20000	58.4	37.2	18.6	13.2 J	33.4 J	21.2 J	29.1 J	18.7	72.5	17.2 J	33.7 J
POTASSIUM			175 J	107 J	120 J	147 J	96.8 J	128 J	43.5 J	165 J	137 J	289 J	107 J
SELENIUM	390	5100	5 UJ	4.6 UJ	2.5 UJ	2.3	3.9	3.6	3.1	2.2 U	7	3.55	3.2
SILVER	390	5100	0.18 UJ	0.22 UJ	0.13 UJ	0.081 J	0.26 J	0.19 J	0.20 J	0.14 J	0.65 J	0.11 J	0.2 J
SODIUM			18.4 UJ	17.2 UJ	23.7 J	17.6 UJ	23.4 J	18.5 UJ	15.1 UJ	61.4	28.4 J	28.8 J	30.9 J
THALLIUM			1.9	1.8	1.1	1.7	3.3	2.5	3.3	1.0	0.18 U	1.2	3.8

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TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-966-0608	TF5-SB-967-0204	TF5-SB-968-0204	TF5-SB-968-0810	TF5-SB-969-0204	TF5-SB-969-0810	TF5-SB-970-0204	TF5-SB-970-0810	TF5-SB-971-0204-AVG	TF5-SB-971-0810
LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VANADIUM	390	5200	9.7 J	3.8 J	10.1	7.4 J	0.45 J	14.4 J	14.0 J	10.3	6.7 J	12.5 J	25.0 J
ZINC	23000	310000	111	109	42.6	30.3 J	58.2 J	71.2 J	72.2 J	30.2	123	40.5 J	72.8 J
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	19000	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	5.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	24.9	NA	1170 J	16200 J	NA	7970 J	NA	1140 J	NA	4010 J	NA
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.183 U	NA	0.159 U	0.333 J	NA	2.7 J	NA	0.409 J	NA	0.746 J	NA
1,2,3,4,6,7,8-HPCDD	450	1800	0.82 U	NA	13.5	138	NA	82.3	NA	25.1	NA	30.6 J	NA
1,2,3,4,6,7,8-HPCDF	450	1800	0.0676 U	NA	0.256 U	0.324 U	NA	1.24 U	NA	0.237 UJ	NA	1.48 J	NA
1,2,3,4,7,8,9-HPCDF	450	1800	0.0939 U	NA	0.104 U	0.142 U	NA	0.136 U	NA	0.0961 U	NA	0.183 J	NA
1,2,3,4,7,8-HXCDD	45	180	0.0922 U	NA	0.0941 J	0.484 J	NA	0.395 J	NA	0.294 J	NA	0.184 J	NA
1,2,3,4,7,8-HXCDF	45	180	0.0668 U	NA	0.0665 U	0.0763 U	NA	0.254 J	NA	0.0706 U	NA	0.351 J	NA
1,2,3,6,7,8-HXCDD	45	180	0.0828 U	NA	0.203 J	0.63 J	NA	0.888 J	NA	0.374 J	NA	0.258 J	NA

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LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,6,7,8-HXCDF	45	180	0.0632 U	NA	0.0628 U	0.0721 U	NA	0.11 J	NA	0.0671 U	NA	0.15 J	NA
1,2,3,7,8,9-HXCDD	45	180	0.0877 U	NA	0.249 J	0.868 J	NA	0.709 J	NA	0.438 J	NA	0.329 J	NA
1,2,3,7,8,9-HXCDF	45	180	0.0850 U	NA	0.0844 U	0.0970 U	NA	0.111 U	NA	0.0941 U	NA	0.0497 U	NA
1,2,3,7,8-PECDD	4.5	18	0.102 U	NA	0.0917 U	0.139 U	NA	0.112 U	NA	0.0865 U	NA	0.0622 U	NA
1,2,3,7,8-PECDF	150	600	0.0985 U	NA	0.0758 U	0.111 U	NA	0.108 U	NA	0.0863 U	NA	0.0552 U	NA
2,3,4,6,7,8-HXCDF	45	180	0.0726 U	NA	0.0721 U	0.0828 U	NA	0.0963 J	NA	0.0978 U	NA	0.051 J	NA
2,3,4,7,8-PECDF	15	60	0.0976 U	NA	0.0752 U	0.110 U	NA	0.107 U	NA	0.0825 U	NA	0.0534 U	NA
2,3,7,8-TCDD	4.5	18	0.129 U	NA	0.103 U	0.186 U	NA	0.182 U	NA	0.122 U	NA	0.0942 U	NA
2,3,7,8-TCDF	45	180	0.158 U	NA	0.133 U	0.224 U	NA	0.222 U	NA	0.169 U	NA	0.0872 U	NA
TEQ BIRD	4.5	18	0.00249	NA	0.162 J	1.88 J	NA	1.03 J	NA	0.201 J	NA	0.544 J	NA
TEQ BIRD HALFND	4.5	18	0.273	NA	0.383 J	2.23 J	NA	1.35 J	NA	0.454 J	NA	0.702 J	NA
TEQ FISH	4.5	18	0.00249	NA	0.182 J	2.02 J	NA	1.14 J	NA	0.294 J	NA	0.598 J	NA
TEQ FISH HALFND	4.5	18	0.188	NA	0.32 J	2.23 J	NA	1.33 J	NA	0.444 J	NA	0.7 J	NA
TEQ MAMMAL	4.5	18	0.00747	NA	0.541 J	6.44 J	NA	3.46 J	NA	0.704 J	NA	1.66 J	NA
TEQ MAMMAL HALFND	4.5	18	0.179	NA	0.673 J	6.65 J	NA	3.65 J	NA	0.848 J	NA	1.75 J	NA

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TANK FARM 5, NEWPORT, RHODE ISLAND

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LOCATION ID			TF5-SB966	TF5-SB966	TF5-SB967	TF5-SB968	TF5-SB968	TF5-SB969	TF5-SB969	TF5-SB970	TF5-SB970	TF5-SB971	TF5-SB971
SAMPLE DATE			04/14/10	04/14/10	04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/13/10	04/13/10
TOP DEPTH			4 FT	6 FT	2 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	8 FT	4 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL HPCDD			0.82 J	NA	28.2	259	NA	173	NA	63.4	NA	67.4 J	NA
TOTAL HPCDF			0.0676 U	NA	0.256 U	0.324 U	NA	2.42 J	NA	0.0679 U	NA	1.72	NA
TOTAL HXCDD			0.0828 U	NA	1.67 J	5.33	NA	6.33	NA	5.59	NA	2.83	NA
TOTAL HXCDF			0.0632 U	NA	0.335 J	0.138 J	NA	0.972 J	NA	0.0671 U	NA	0.74 J	NA
TOTAL PECDD			0.102 U	NA	0.0917 U	1.87 J	NA	0.112 U	NA	0.25 J	NA	0.242 J	NA
TOTAL PECDF			0.0976 U	NA	0.0752 U	0.110 U	NA	0.994 J	NA	0.0825 U	NA	0.393 J	NA
TOTAL TCDD			0.158 U	NA	0.103 U	0.186 U	NA	0.182 U	NA	0.122 U	NA	0.11 J	NA
TOTAL TCDF			0.129 U	NA	0.285 J	0.224 U	NA	0.222 U	NA	0.169 U	NA	0.114 J	NA
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			14 U	13 UJ	35 J	NA	NA	NA	NA	15 UJ	13 UJ	NA	NA

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)													
1,1,1-TRICHLOROETHANE	8700000	38000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,1,2,2-TETRACHLOROETHANE	560	2800	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,1,2-TRICHLOROETHANE	1100	5300	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ	4.3 UJ	4.3 UJ	4.2 U	5.2 U	4.6 UJ	4.1 UJ
1,1-DICHLOROETHANE	3300	17000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,1-DICHLOROETHENE	240000	1100000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,2,3-TRICHLOROBENZENE	49000	490000	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ	4.3 UJ	4.3 UJ	4.2 U	5.2 U	4.6 UJ	4.1 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ	4.3 UJ	4.3 UJ	4.2 UJ	5.2 UJ	4.6 UJ	4.1 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ		4.3 UJ	4.2 U	5.2 U	4.6 UJ	4.1 UJ
1,2-DIBROMOETHANE	34	170	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,2-DICHLOROBENZENE	1900000	9800000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,2-DICHLOROETHANE	430	2200	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,2-DICHLOROPROPANE	890	4500	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,3-DICHLOROBENZENE			4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
1,4-DICHLOROBENZENE	2400	12000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
2-BUTANONE	28000000	200000000	4.4 UJ	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
2-HEXANONE	210000	1400000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 UJ	5.2 UJ	4.6 U	4.1 U
4-METHYL-2-PENTANONE	5300000	53000000	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ	4.3 UJ	4.3 UJ	4.2 U	5.2 U	4.6 UJ	4.1 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ACETONE	61000000	630000000	7.8	4.1 UJ	4.2 UJ	8.72 J	4.4 UJ	7.3 J	17.4 J	4.2 UJ	5.2 UJ	4.6 UJ	4.1 UJ
BENZENE	1100	5400	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
BROMOCHLOROMETHANE			4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
BROMODICHLOROMETHANE	270	1400	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
BROMOFORM	61000	220000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
BROMOMETHANE	7300	32000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
BTEX			4.4 U	4.1 U	4.2 UJ	1.78 J	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CARBON DISULFIDE	820000	3700000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4 J	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CARBON TETRACHLORIDE	610	3000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CHLOROBENZENE	290000	1400000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CHLORODIBROMOMETHANE	680	3300	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CHLOROETHANE	15000000	61000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CHLOROFORM	290	1500	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CHLOROMETHANE	120000	500000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CIS-1,2-DICHLOROETHENE	780000	10000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CIS-1,3-DICHLOROPROPENE	1700	8100	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
CYCLOHEXANE	7000000	29000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
DICHLORODIFLUOROMETHANE	180000	780000	4.4 U	4.1 UJ	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
ETHYLBENZENE	5400	27000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	2100000	11000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
M+P-XYLENES			4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
METHYL ACETATE	78000000	1E+09	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
METHYL CYCLOHEXANE			4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
METHYL TERT-BUTYL ETHER	43000	220000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
METHYLENE CHLORIDE	11000	53000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 UJ	4.1 UJ
O-XYLENE	3800000	19000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
STYRENE	6300000	36000000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TETRACHLOROETHENE	550	2600	4.4 U	240 U	310 UJ	270 UJ	9 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TOLUENE	5000000	45000000	4.4 U	4.1 U	4.2 UJ	1.78 J	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TOTAL 1,2-DICHLOROETHENE	700000	9200000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TOTAL CHLORINATED ETHENES			4.4 U	51.3 U	65.4 UJ	57.8 UJ	5.32 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TOTAL CHLORINATED VOCS			4.4 U	12.8 UJ	15.5 UJ	14.6 UJ	4.57 UJ	4.3 UJ	4.3 UJ	4.2 UJ	5.2 UJ	4.6 UJ	4.1 UJ
TOTAL XYLENES	630000	2700000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TRANS-1,2-DICHLOROETHENE	150000	690000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TRANS-1,3-DICHLOROPROPENE	1700	8100	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
TRICHLOROETHENE	2800	14000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	790000	3400000	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
VINYL CHLORIDE	60	1700	4.4 U	4.1 U	4.2 UJ	4.8 UJ	4.4 UJ	4.3 U	4.3 UJ	4.2 U	5.2 U	4.6 U	4.1 U
SEMIVOLATILES (UG/KG)													
1,1-BIPHENYL	3900000	51000000	370 UJ	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 UJ	350 UJ	370 U	370 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.7 U	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 UJ	3.7 UJ	3.6 U	3.5 U	3.7 UJ	3.7 UJ
1,4-DIOXANE	44000	160000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	370 UJ	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 UJ	350 UJ	370 U	370 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.7 U	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 UJ	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	760 U	750 UJ	730 UJ	780 UJ	760 UJ	860 UJ	745 U	730 U	710 U	750 U	750 U
2,4,6-TRICHLOROPHENOL	44000	160000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
2,4-DICHLOROPHENOL	180000	1800000	3.7 UJ	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
2,4-DIMETHYLPHENOL	1200000	12000000	3.7 UJ	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 UJ	3.7 UJ	3.6 UJ	3.5 UJ	370 U	370 U
2,4-DINITROPHENOL	120000	1200000	760 UJ	750 UJ	730 UJ	780 UJ	760 UJ	860 UJ	745 UJ	730 UJ	710 UJ	750 UJ	750 UJ
2,4-DINITROTOLUENE	1600	5500	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
2,6-DINITROTOLUENE	61000	620000	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
2-CHLORONAPHTHALENE	6300000	82000000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
2-CHLOROPHENOL	390000	5100000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
2-METHYLNAPHTHALENE	310000	4100000	3.7 U	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
2-METHYLPHENOL	3100000	31000000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 UJ	3.7 UJ	3.6 U	3.5 U	3.7 UJ	3.7 UJ

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-NITROANILINE	610000	6000000	760 U	750 UJ	730 UJ	780 UJ	760 UJ	860 UJ	745 U	730 U	710 U	750 U	750 U
2-NITROPHENOL			370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
3,3'-DICHLOROBENZIDINE	1100	3800	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
3-NITROANILINE			760 U	750 UJ	730 UJ	780 UJ	760 UJ	860 UJ	745 U	730 U	710 U	750 U	750 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	760 UJ	750 UJ	730 UJ	780 UJ	760 UJ	860 UJ	745 UJ	730 UJ	710 UJ	750 UJ	750 UJ
4-BROMOPHENYL PHENYL ETHER			370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.7 UJ	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
4-CHLOROANILINE	2400	8600	370 UJ	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 UJ	360 UJ	350 UJ	370 UJ	370 UJ
4-CHLOROPHENYL PHENYL ETHER			370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
4-METHYLPHENOL	310000	3100000	3.7 U	3.7 UJ	3.6 UJ	3.8 UJ	3.7 UJ	4.2 UJ	3.7 UJ	3.6 U	3.5 U	3.7 UJ	3.7 UJ
4-NITROANILINE	24000	86000	760 U	750 UJ	730 UJ	780 UJ	760 UJ	860 UJ	745 U	730 U	710 U	750 U	750 U
4-NITROPHENOL			760 U	750 U	730 U	780 U	760 U	860 UJ	745 U	730 U	710 U	750 U	750 U
ACENAPHTHENE	3400000	33000000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
ACENAPHTHYLENE	3400000	33000000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
ACETOPHENONE	7800000	100000000	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 UJ	350 UJ	370 U	370 U
ANTHRACENE	17000000	170000000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
ATRAZINE	2100	7500	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
BENZALDEHYDE	7800000	100000000	370 UJ	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 UJ	360 UJ	350 UJ	370 UJ	370 UJ
BENZO(A)ANTHRACENE	150	2100	3.7 U	3.7 U	3.6 U	6.55	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(A)PYRENE	15	210	3.7 U	3.7 U	3.6 U	6.5	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
BENZO(B)FLUORANTHENE	150	2100	3.7 UJ	3.7 U	3.6 U	10	3.7 UJ	5.2 J	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
BENZO(G,H,I)PERYLENE	1700000	17000000	3.7 U	3.7 U	3.6 U	4.5	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
BENZO(K)FLUORANTHENE	1500	21000	3.7 U	3.7 UJ	3.6 UJ	4.65 J	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
BIS(2-CHLOROETHYL)ETHER	210	1000	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
BUTYL BENZYL PHTHALATE	260000	910000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
CAPROLACTAM	31000000	310000000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
CARBAZOLE			370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
CHRYSENE	15000	210000	3.7 U	3.7 U	3.6 U	8.75	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
DIBENZO(A,H)ANTHRACENE	15	210	3.7 UJ	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
DIBENZOFURAN	78000	1000000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
DIETHYL PHTHALATE	49000000	490000000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
DIMETHYL PHTHALATE			370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
DI-N-BUTYL PHTHALATE	6100000	62000000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
DI-N-OCTYL PHTHALATE			370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
FLUORANTHENE	2300000	22000000	3.7 U	3.7 U	3.6 U	14.5	3.7 UJ	6.6	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
FLUORENE	2300000	22000000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
HEXACHLOROBENZENE	300	1100	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
HEXACHLOROBUTADIENE	6200	22000	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	370 UJ	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 UJ	360 UJ	350 UJ	370 UJ	370 UJ
HEXACHLOROETHANE	35000	120000	370 U	370 UJ	360 U	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
HIGH MOLECULAR WEIGHT PAHS			3.7 UJ	3.7 UJ	3.6 UJ	70.6 J	3.7 UJ	17.1 J	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
INDENO(1,2,3-CD)PYRENE	150	2100	3.7 U	3.7 U	3.6 U	3.1	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
ISOPHORONE	510000	1800000	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
LOW MOLECULAR WEIGHT PAHS			3.7 U	3.7 UJ	3.6 UJ	6.65 J	3.7 UJ	4.2 U	3.7 UJ	3.6 UJ	4.9 J	3.7 U	3.7 U
NAPHTHALENE	3600	18000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	4.9	3.7 U	3.7 U
NITROBENZENE	4800	24000	370 UJ	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 UJ	360 UJ	350 UJ	370 U	370 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
N-NITROSODIPHENYLAMINE	99000	350000	370 U	370 U	360 U	380 U	370 U	420 UJ	370 U	360 U	350 U	370 U	370 U
PENTACHLOROPHENOL	3000	9000	760 UJ	37 UJ	36 UJ	38 UJ	37 UJ	42 UJ	37 UJ	730 UJ	710 UJ	37 UJ	37 UJ
PHENANTHRENE	1700000	17000000	3.7 U	3.7 U	3.6 U	6.65	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
PHENOL	18000000	180000000	3.7 U	3.7 U	3.6 U	3.8 U	3.7 UJ	4.2 U	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U
PYRENE	1700000	17000000	3.7 U	3.7 U	3.6 U	13	3.7 UJ	5.3	3.7 UJ	3.6 U	3.5 U	3.7 U	3.7 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL CARCINOGENIC PAHS-HALFND	15	210	3.7 UJ	3.7 UJ	3.6 UJ	41.4 J	3.7 UJ	17.8 J	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
TOTAL CARCINOGENIC PAHS-POS	15	210	3.7 UJ	3.7 UJ	3.6 UJ	38.6 J	3.7 UJ	5.2 J	3.7 UJ	3.6 UJ	3.5 UJ	3.7 U	3.7 U
TOTAL CHLORINATED VOCS			370 U	370 UJ	360 UJ	380 UJ	370 UJ	420 UJ	370 U	360 U	350 U	370 U	370 U
TOTAL PAHS			3.7 UJ	3.7 UJ	3.6 UJ	77.2 J	3.7 UJ	17.1 J	3.7 UJ	3.6 UJ	4.9 J	3.7 U	3.7 U
PESTICIDES/PCBS (UG/KG)													
4,4'-DDD	2000	7200	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
4,4'-DDE	1400	5100	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
4,4'-DDT	1700	7000	3.7 U	3.7 UJ	3.6 UJ	3.85 UJ	3.7 UJ	4.2 U	3.7 U	3.6 U	3.5 U	3.7 UJ	3.7 UJ
ALDRIN	29	100	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
ALPHA-BHC	77	270	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
ALPHA-CHLORDANE	1600	6500	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
AROCLOR-1016	3900	21000	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1221	140	540	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1232	140	540	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1242	220	740	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1248	220	740	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1254	220	740	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1260	220	740	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
AROCLOR-1262			37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1268			37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
BETA-BHC	270	960	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
DELTA-BHC	77	270	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
DIELDRIN	30	110	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
ENDOSULFAN I	370000	3700000	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
ENDOSULFAN II	370000	3700000	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
ENDOSULFAN SULFATE	370000	3700000	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
ENDRIN	18000	180000	3.7 U	3.7 UJ	3.6 UJ	3.85 UJ	3.7 UJ	4.2 U	3.7 U	3.6 U	3.5 U	3.7 UJ	3.7 UJ
ENDRIN ALDEHYDE	18000	180000	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
ENDRIN KETONE	18000	180000	3.7 U	3.7 U	3.6 U	3.85 U	3.7 U	4.2 U	3.7 U	3.6 U	3.5 U	3.7 U	3.7 U
GAMMA-BHC (LINDANE)	520	2100	1.9 U	1.9 UJ	1.9 UJ	2 UJ	1.9 UJ	2.2 U	1.9 U	1.9 U	1.8 U	1.9 UJ	1.9 UJ
GAMMA-CHLORDANE	1600	6500	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
HEPTACHLOR	110	380	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
HEPTACHLOR EPOXIDE	53	190	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
METHOXYCHLOR	310000	3100000	19 U	19 UJ	19 UJ	20 UJ	19 UJ	22 U	19 U	19 U	18 U	19 UJ	19 UJ
TOTAL AROCLOR	220	740	37 U	37 U	36 U	38.5 U	37 U	42 U	37 U	36 U	35 U	37 U	37 U
TOTAL CHLORDANE			1.9 U	1.9 U	1.9 U	2 U	1.9 U	2.2 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
TOTAL DDD/DDE/DDT			3.7 U	3.7 UJ	3.6 UJ	3.85 UJ	3.7 UJ	4.2 U	3.7 U	3.6 U	3.5 U	3.7 UJ	3.7 UJ
TOXAPHENE	440	1600	190 U	190 U	190 U	200 U	190 U	220 U	190 U	190 U	180 U	190 U	190 U
METALS (MG/KG)													
ALUMINUM	77000	990000	9150	7340	1200	7320	4110	5970 J	9320 J	9090	2580	7470	5270

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.13 UJ	0.17 UJ	0.77 UJ	0.15 UJ	0.19 UJ	0.18 UJ	0.155 UJ	0.14 UJ	0.13 UJ	0.16 UJ	0.11 UJ
ARSENIC	0.39	1.6	46.1	29.6	50.7	42.3	31.9	20.6	26.2	23.7	46.7	3.5 J	8.1
BARIUM	15000	190000	5.4 J	13.5 J	10.3 J	17.6 J	3.4 J	12.9	4.2 J	8	6.3 J	17.1 J	13.3 J
BERYLLIUM	160	2000	0.33 J	0.38 J	0.35 J	0.525 J	0.31 J	0.42 J	0.28 J	0.45 J	0.28 J	0.48 J	0.48 J
CADMIUM	70	800	0.42	0.22 J	0.61	0.24 J	0.23	0.22 J	0.48	0.24	0.31	0.18 J	0.31
CALCIUM			4.6 UJ	257 J	5.7 UJ	858 J	183 J	518 J	2200 J	5.1 UJ	527 J	150 J	72.5 J
CHROMIUM	0.29	5.6	16.9	11.7	3.6	9.05	9.8	8.3 J	16.2 J	16	11.8	9.1	10.3
COBALT	23	300	24.4 J	14.6 J	19.5 J	13 J	19.5 J	9.2	30	15.7 J	23 J	9.0 J	10.7 J
COPPER	3100	41000	8.7 J	18.5	34.7	14.2	35.8	11.3	19.9	18 J	32.7	12.5	18.1
IRON	55000	720000	72100	31100	52000	26600	30900	20900 J	48200 J	55500	51200	18500	29400
LEAD	400	800	1.7 J	5.4 J	2.8 J	10.2 J	8.1 J	15.3 J	5.5 J	8 J	7.8 J	4.3 J	5.4 J
MAGNESIUM			3110 J	2030 J	172 J	1560 J	1220 J	1460 J	3280 J	2560 J	862 J	2240 J	1450 J
MANGANESE	1800	23000	262	407 J	1560 J	462 J	215 J	183	162	306	778	300 J	387 J
MERCURY	5.6	34	0.03 UJ	0.018 UJ	0.0053 U	0.0275 UJ	0.0066 UJ	0.012 J	0.00565 U	0.0089 UJ	0.0058 U	0.018 UJ	0.012 UJ
NICKEL	1500	20000	58.4	24.9 J	39.4 J	22.4 J	21.8 J	15.1	41.4	26.8	48	13.9 J	19.9 J
POTASSIUM			175 J	210 J	106 J	220	159 J	141 J	158 J	137 J	127 J	313 J	374 J
SELENIUM	390	5100	5 UJ	3.6	4.8	3.25	3.4	3.5	4.4	4.5 UJ	5.5 UJ	2.3 U	2.8
SILVER	390	5100	0.18 UJ	0.17 J	0.37 J	0.17 J	0.23 J	0.15 J	0.25 J	0.12 UJ	0.21 UJ	0.069 U	0.13 J
SODIUM			18.4 UJ	24.1 UJ	25.9 UJ	26 UJ	15.6 UJ	20.6 J	17.6 UJ	10.7 UJ	14.6 UJ	18.9 UJ	32.1 J
THALLIUM			1.9	2.5	7.4	2.55	1.7	1	1.25	2.2	4.7	1.9	2.3

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VANADIUM	390	5200	9.7 J	10.4 J	4.1 J	12.4 J	9.5 J	10.3	11.4 J	14.5 J	10.8 J	9.4 J	12.0 J
ZINC	23000	310000	111	52.7 J	87.5 J	39.9 J	41.1 J	35.7	74	58.8	75.3	32.8 J	41.7 J
MISCELLANEOUS PARAMETERS (MG/KG)													
TOTAL ORGANIC CARBON			NA	NA	NA	NA	NA	NA	NA	NA	5000 U	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)													
PH			NA	NA	NA	NA	NA	NA	NA	NA	5.5	NA	NA
DIOXINS/FURANS (NG/KG)													
1,2,3,4,6,7,8,9-OCDD	15000	60000	24.9	13700 J	NA	6540 J	NA	4560 J	NA	17000 J	NA	21200 J	NA
1,2,3,4,6,7,8,9-OCDF	15000	60000	0.183 U	0.344 J	NA	1.25 J	NA	0.796 J	NA	0.864 UJ	NA	0.708 J	NA
1,2,3,4,6,7,8-HPCDD	450	1800	0.82 U	126	NA	47 J	NA	58.9	NA	146 J	NA	106	NA
1,2,3,4,6,7,8-HPCDF	450	1800	0.0676 U	0.224 UJ	NA	0.838 U	NA	0.324 U	NA	0.491 U	NA	0.178 U	NA
1,2,3,4,7,8,9-HPCDF	450	1800	0.0939 U	0.0894 U	NA	0.0896 U	NA	0.0388 U	NA	0.126 U	NA	0.0454 U	NA
1,2,3,4,7,8-HXCDD	45	180	0.0922 U	0.391 J	NA	0.284 J	NA	0.369 J	NA	0.438 J	NA	0.252 J	NA
1,2,3,4,7,8-HXCDF	45	180	0.0668 U	0.0815 U	NA	0.21 J	NA	0.0983 J	NA	0.144 J	NA	0.0113 U	NA
1,2,3,6,7,8-HXCDD	45	180	0.0828 U	0.705 J	NA	0.44 J	NA	0.785 J	NA	0.604 J	NA	0.132 J	NA

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2,3,6,7,8-HXCDF	45	180	0.0632 U	0.0770 U	NA	0.104 J	NA	0.067 J	NA	0.114 J	NA	0.0108 U	NA
1,2,3,7,8,9-HXCDD	45	180	0.0877 U	0.678 J	NA	0.457 J	NA	0.981 J	NA	1.21 J	NA	0.213 J	NA
1,2,3,7,8,9-HXCDF	45	180	0.0850 U	0.104 U	NA	0.093 U	NA	0.0282 U	NA	0.110 U	NA	0.0141 U	NA
1,2,3,7,8-PECDD	4.5	18	0.102 U	0.118 U	NA	0.109 J	NA	0.176 J	NA	0.0790 U	NA	0.0598 J	NA
1,2,3,7,8-PECDF	150	600	0.0985 U	0.0899 U	NA	0.112 U	NA	0.0304 U	NA	0.0798 U	NA	0.0285 U	NA
2,3,4,6,7,8-HXCDF	45	180	0.0726 U	0.0884 U	NA	0.112 J	NA	0.0242 U	NA	0.0939 U	NA	0.0121 U	NA
2,3,4,7,8-PECDF	15	60	0.0976 U	0.0892 U	NA	0.111 U	NA	0.0300 U	NA	0.0761 U	NA	0.0282 U	NA
2,3,7,8-TCDD	4.5	18	0.129 U	0.134 U	NA	0.132 U	NA	0.0382 U	NA	0.0976 U	NA	0.0360 U	NA
2,3,7,8-TCDF	45	180	0.158 U	0.200 U	NA	0.175 J	NA	0.0594 U	NA	0.140 U	NA	0.0682 U	NA
TEQ BIRD	4.5	18	0.00249	1.59 J	NA	1 J	NA	0.832 J	NA	2.02 J	NA	2.32 J	NA
TEQ BIRD HALFND	4.5	18	0.273	1.88 J	NA	1.23 J	NA	0.902 J	NA	2.23 J	NA	2.39 J	NA
TEQ FISH	4.5	18	0.00249	1.71 J	NA	0.978 J	NA	0.91 J	NA	2.11 J	NA	2.42 J	NA
TEQ FISH HALFND	4.5	18	0.188	1.88 J	NA	1.12 J	NA	0.943 J	NA	2.24 J	NA	2.45 J	NA
TEQ MAMMAL	4.5	18	0.00747	5.55 J	NA	2.68 J	NA	2.36 J	NA	6.81 J	NA	7.54 J	NA
TEQ MAMMAL HALFND	4.5	18	0.179	5.72 J	NA	2.82 J	NA	2.39 J	NA	6.93 J	NA	7.57 J	NA

TABLE
ANALYTICAL RESULTS - SUBSURFACE SOIL
TfNe_SO_SB_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SB-966-0406	TF5-SB-972-0204	TF5-SB-972-0810	TF5-SB-973-0204-AVG	TF5-SB-973-0810	TF5-SB-974-0204	TF5-SB-974-0810-AVG	TF5-SB-975-0204	TF5-SB-975-0810	TF5-SB-976-0204	TF5-SB-976-0810
LOCATION ID			TF5-SB966	TF5-SB972	TF5-SB972	TF5-SB973	TF5-SB973	TF5-SB974	TF5-SB974	TF5-SB975	TF5-SB975	TF5-SB976	TF5-SB976
SAMPLE DATE			04/14/10	04/12/10	04/12/10	04/12/10	04/12/10	04/13/10	04/13/10	04/14/10	04/14/10	04/13/10	04/13/10
TOP DEPTH			4 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT	2 FT	8 FT
BOTTOM DEPTH			6 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT	4 FT	10 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL	NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL HPCDD			0.82 J	236	NA	103	NA	122	NA	271 J	NA	189	NA
TOTAL HPCDF			0.0676 U	0.246 U	NA	1.56 J	NA	0.501 U	NA	0.491 U	NA	0.178 U	NA
TOTAL HXCDD			0.0828 U	4.03	NA	3.13 J	NA	9.92	NA	8.5 U	NA	1.77 J	NA
TOTAL HXCDF			0.0632 U	0.13 J	NA	0.989 J	NA	0.389 J	NA	0.542 J	NA	0.0108 U	NA
TOTAL PECDD			0.102 U	0.118 U	NA	1.1 J	NA	1.34 J	NA	4.32	NA	2.74	NA
TOTAL PECDF			0.0976 U	0.0892 U	NA	0.586 J	NA	0.594 J	NA	0.0761 U	NA	0.0282 U	NA
TOTAL TCDD			0.158 U	0.134 U	NA	0.132 U	NA	0.0382 U	NA	0.0976 U	NA	0.142 J	NA
TOTAL TCDF			0.129 U	0.200 U	NA	0.297 J	NA	0.0594 U	NA	0.140 U	NA	0.0682 U	NA
PETROLEUM HYDROCARBONS (MG/KG)													
EXTRACTABLE PETROLEUM HYDROCARBONS			14 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

G-5 GROUNDWATER SAMPLE ANALYTICAL DATA (DU 4-1)

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)									
1,1,1-TRICHLOROETHANE	9100	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	0.067		1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	0.24	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	59000		1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	2.4		1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	340	7	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
1,2,3-TRICHLOROBENZENE	29		1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
1,2,4-TRICHLOROBENZENE	2.3	70	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
1,2-DIBROMO-3-CHLOROPROPANE	0.00032	0.2	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U
1,2-DIBROMOETHANE	0.0065	0.05	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	370	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	0.15	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.39	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE			1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	0.43	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-BUTANONE	7100		5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-HEXANONE	47		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 U
4-METHYL-2-PENTANONE	2000		5 U	5 U	5 U	5 U	5 U	5 U	5 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
ACETONE	22000		5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ
BENZENE	0.41	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE			1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMODICHLOROMETHANE	0.12	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	8.5	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	8.7		1 U	1 U	1 U	1 U	1 U	1 U	1 U
BTEX			1 U	1 U	1 U	1 U	1 U	1 U	1 U
CARBON DISULFIDE	1000		1 U	1 U	1 U	1 U	1 U	1 U	1 U
CARBON TETRACHLORIDE	0.44	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	91	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	0.15	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	21000		1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROFORM	0.19	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	190		1 U	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	0.43		1 U	1 U	1 U	1 U	1 U	1 U	1 U
CYCLOHEXANE	13000		1 U	1 U	1 U	1 U	1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	390		1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
ETHYLBENZENE	1.5	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
ISOPROPYLBENZENE	680		1 U	1 U	1 U	1 U	1 U	1 U	1 U
M+P-XYLENES		10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL ACETATE	37000		1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE			1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	12		1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	4.8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
O-XYLENE	1200	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
STYRENE	1600	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TETRACHLOROETHENE	0.11	5	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U
TOLUENE	2300	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORINATED ETHENES			1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
TOTAL CHLORINATED VOCS			1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
TOTAL XYLENES	200	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	110	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE			1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
TRICHLOROFLUOROMETHANE	1300		1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL CHLORIDE	0.016	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SEMIVOLATILES (UG/L)									
1,1-BIPHENYL	1800		10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
1,2,4,5-TETRACHLOROBENZENE	11		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ
1,4-DIOXANE	6.1		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.32		10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
2,3,4,6-TETRACHLOROPHENOL	1100		0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U
2,4,5-TRICHLOROPHENOL	3700		20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4,6-TRICHLOROPHENOL	6.1		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	110		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-DIMETHYLPHENOL	730		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
2,4-DINITROPHENOL	73		20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ
2,4-DINITROTOLUENE	0.22		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	37		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	2900		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-METHYLNAPHTHALENE	150		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
2-METHYLPHENOL	1800		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
2-NITROANILINE	370		20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-NITROPHENOL			10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	0.15		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
3-NITROANILINE			20 UJ	20 U	20 U	20 U	20 U	20 U	20 U
4,6-DINITRO-2-METHYLPHENOL	2.9		20 U	20 U	20 U	20 U	20 U	20 UJ	20 UJ
4-BROMOPHENYL PHENYL ETHER			10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	3700		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ
4-CHLOROANILINE	0.34		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-CHLOROPHENYL PHENYL ETHER			10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-NITROANILINE	3.4		20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-NITROPHENOL			20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ
ACENAPHTHENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ACETOPHENONE	3700		10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	11000		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ATRAZINE	0.29	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ
BENZALDEHYDE	3700		10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
BENZO(A)ANTHRACENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

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ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
BIS(2-CHLOROETHOXY)METHANE	110		10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	0.012		10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	6	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	35		10 U	10 U	10 U	10 U	10 U	10 U	10 U
CAPROLACTAM	18000		10 U	10.5	10 U	11	10 U	10 U	10 U
CARBAZOLE			10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	2.9		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	0.0029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZOFURAN	37		10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	29000		10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE			10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	3700		10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE			10 U	10 U	10 U	10 U	10 U	10 U	10 U

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TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
FLUORANTHENE	1500		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
FLUORENE	1500		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBENZENE	0.042	1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBUTADIENE	0.86		10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	220	50	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UR	10 UR
HEXACHLOROETHANE	4.8		10 U	10 U	10 U	10 U	10 U	10 U	10 U
HIGH MOLECULAR WEIGHT PAHS			0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ISOPHORONE	71		10 U	10 U	10 U	10 U	10 U	10 U	10 U
LOW MOLECULAR WEIGHT PAHS			0.1 UJ	0.19 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
NAPHTHALENE	0.14		0.1 U	0.19	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NITROBENZENE	0.12		10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	0.0096		10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	14		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
PENTACHLOROPHENOL	0.56	1	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
PHENANTHRENE	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PHENOL	11000		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
TOTAL CHLORINATED VOCS			10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL PAHS			0.1 UJ	0.19 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
PESTICIDES/PCBS (UG/L)									
4,4'-DDD	0.28		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALDRIN	0.004		0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-BHC	0.011		0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-CHLORDANE	0.19	2	0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1016	0.96	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	0.0068	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1232	0.0068	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1242	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	0.034	0.5	1 U	7.25 J	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	0.034	0.5	1 U	3.05 J	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1262		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U

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TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1268		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BETA-BHC	0.037		0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.011		0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.0042		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN I	220		0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN II	220		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	220		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	11	2	0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	11		0.1 U	6.52 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN KETONE	11		0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
GAMMA-BHC (LINDANE)	0.061	0.2	0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.19	2	0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.015	0.4	0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.0074	0.2	0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
METHOXYCHLOR	180	40	0.5 U	7.75 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL AROCLOR		0.5	1 U	10 J	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORDANE			0.05 U	0.775 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOTAL DDD/DDE/DDT			0.1 U	1.55 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TOXAPHENE	0.061	3	5 U	77.5 U	5 U	5 U	5 U	5 U	5 U
METALS (UG/L)									
ALUMINUM	37000		12 U	12 U	24.8 UJ	23.6 UJ	83.9 UJ	253	60.4 J

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LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	15	6	0.044 U	0.049 UJ	0.065 UJ	0.058 UJ	0.088 UJ	0.079 UJ	0.044 U
ARSENIC	0.045	10	1.6	4.45	6.3	4	0.236 U	0.236 U	0.236 U
BARIUM	7300	2000	27.4	40.8	29.5	14.9	7.9	13.9	13.1
BERYLLIUM	73	4	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.049 J	0.045 U
CADMIUM	18	5	0.054 U	0.054 U	0.054 U	0.054 U	0.234 J	0.19 UJ	0.054 U
CALCIUM			18500	20200	19700	16600	28800	11700	20000
CHROMIUM	0.043	100	0.824 UJ	0.848 UJ	0.679 UJ	0.852 UJ	1.6 UJ	1.2 UJ	1.2 UJ
COBALT	11		12.6	11.8	10.5	12.1	3.8	11.2	1.2
COPPER	1500	1300	0.428 J	1.01 J	0.284 U	0.478 J	1.1	1.1	0.723 J
IRON	26000		12300	11000	12200	17100	779	10300	252
LEAD		15	0.162 U	0.162 U	0.168 J	0.162 U	0.162 U	0.385 UJ	0.162 U
MAGNESIUM			16000	17000	11000	10400	11100	8580	9510
MANGANESE	880		1110	994	882	1130	5030	1120	321
MERCURY	0.57	2	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 UJ	0.056 UJ
NICKEL	730		36	26.3	20.4	30	64.4	67.6	9.2
POTASSIUM			1300	1120	662 J	539 J	3300	797 J	1600
SELENIUM	180	50	0.123 U	0.123 U	0.123 U	0.123 U	0.123 U	0.123 U	0.123 U
SILVER	180		0.008 U	0.011 UJ	0.008 U	0.009 UJ	0.013 UJ	0.008 U	0.008 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-MW-912-0510	TF4-MW-913-0510-AVG	TF4-MW-914-0510	TF4-MW-919-0510	TF4-MW-920-0510	TF4-MW-921-0510	TF4-MW-922-0510
LOCATION ID			TF4-MW-912	TF4-MW-913	TF4-MW-914	TF4-MW-919	TF4-MW-920	TF4-MW-921	TF4-MW-922
SAMPLE DATE			05/12/10	05/12/10	05/11/10	05/12/10	05/11/10	05/10/10	05/10/10
TOP DEPTH									
BOTTOM DEPTH									
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM
SODIUM			23300	24900	10300	15600	29400	17600	21400
THALLIUM		2	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U
VANADIUM	180		0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ
ZINC	11000		50.3 U	34.2 UJ	44.1 UJ	51.3 U	29.4 UJ	143	36.8 J

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

G-6 GROUNDWATER SAMPLE ANALYTICAL DATA (DU 5-1)

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)								
1,1,1-TRICHLOROETHANE	9100	200	1 U	1 U	NA	1 U	NA	1 U
1,1,2,2-TETRACHLOROETHANE	0.067		1 U	1 U	NA	1 U	NA	1 U
1,1,2-TRICHLOROETHANE	0.24	5	1 U	1 U	NA	1 U	NA	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	59000		1 UJ	1 U	NA	1 U	NA	1 UJ
1,1-DICHLOROETHANE	2.4		1 U	1 U	NA	1 U	NA	1 U
1,1-DICHLOROETHENE	340	7	1 U	1 U	NA	1 U	NA	1 U
1,2,3-TRICHLOROBENZENE	29		1.2 J	1 U	NA	1 U	NA	1 UJ
1,2,4-TRICHLOROBENZENE	2.3	70	1 UJ	1 U	NA	1 U	NA	1 UJ
1,2-DIBROMO-3-CHLOROPROPANE	0.00032	0.2	1 U	1 UJ	NA	1 UJ	NA	1 U
1,2-DIBROMOETHANE	0.0065	0.05	1 U	1 U	NA	1 U	NA	1 U
1,2-DICHLOROBENZENE	370	600	1 U	1 U	NA	1 U	NA	1 U
1,2-DICHLOROETHANE	0.15	5	1 U	1 U	NA	1 U	NA	1 U
1,2-DICHLOROPROPANE	0.39	5	1 U	1 U	NA	1 U	NA	1 U
1,3-DICHLOROBENZENE			1 U	1 U	NA	1 U	NA	1 U
1,4-DICHLOROBENZENE	0.43	75	1 U	1 U	NA	1 U	NA	1 U
2-BUTANONE	7100		5 U	5 U	NA	5 U	NA	5 U
2-HEXANONE	47		5 U	5 UJ	NA	5 UJ	NA	5 U
4-METHYL-2-PENTANONE	2000		5 U	5 U	NA	5 U	NA	5 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
ACETONE	22000		5 U	5 U	NA	5 U	NA	5 U
BENZENE	0.41	5	1 U	1 U	NA	1 U	NA	1.2
BROMOCHLOROMETHANE			1 U	1 U	NA	1 U	NA	1 U
BROMODICHLOROMETHANE	0.12	80	1 U	1 U	NA	1 U	NA	1 U
BROMOFORM	8.5	80	1 U	1 U	NA	1 U	NA	1 U
BROMOMETHANE	8.7		1 UJ	1 U	NA	1 U	NA	1 UJ
BTEX			1 U	1 U	NA	1 U	NA	1.2
CARBON DISULFIDE	1000		1 U	1 U	NA	1 U	NA	1 U
CARBON TETRACHLORIDE	0.44	5	1 U	1 U	NA	1 U	NA	1 U
CHLOROBENZENE	91	100	1 U	1 U	NA	1 U	NA	1 U
CHLORODIBROMOMETHANE	0.15	80	1 U	1 U	NA	1 U	NA	1 U
CHLOROETHANE	21000		1 U	1 U	NA	1 U	NA	1 U
CHLOROFORM	0.19	80	1 U	1 U	NA	1 U	NA	1 U
CHLOROMETHANE	190		1 U	1 U	NA	1 U	NA	1 U
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	NA	1 U	NA	2
CIS-1,3-DICHLOROPROPENE	0.43		1 U	1 U	NA	1 U	NA	1 U
CYCLOHEXANE	13000		1 U	1 U	NA	1 U	NA	1 U
DICHLORODIFLUOROMETHANE	390		1 UJ	1 U	NA	1 U	NA	1 UJ
ETHYLBENZENE	1.5	700	1 U	1 U	NA	1 U	NA	1 U
ISOPROPYLBENZENE	680		1 U	1 U	NA	1 U	NA	1 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
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TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
M+P-XYLENES		10000	1 U	1 U	NA	1 U	NA	1 U
METHYL ACETATE	37000		1 U	1 U	NA	1 U	NA	1 U
METHYL CYCLOHEXANE			1 U	1 U	NA	1 U	NA	1 U
METHYL TERT-BUTYL ETHER	12		1 U	1 U	NA	1 U	NA	1 U
METHYLENE CHLORIDE	4.8	5	1 U	1 U	NA	1 U	NA	1 U
O-XYLENE	1200	10000	1 U	1 U	NA	1 U	NA	1 U
STYRENE	1600	100	1 U	1 U	NA	1 U	NA	1 U
TETRACHLOROETHENE	0.11	5	1 U	1 UJ	NA	1 UJ	NA	1 U
TOLUENE	2300	1000	1 U	1 U	NA	1 U	NA	1 U
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	NA	1 U	NA	2
TOTAL CHLORINATED ETHENES			1 U	1 UJ	NA	1 UJ	NA	2
TOTAL CHLORINATED VOCS			1.2 J	1 UJ	NA	1 UJ	NA	2 J
TOTAL XYLENES	200	10000	1 U	1 U	NA	1 U	NA	1 U
TRANS-1,2-DICHLOROETHENE	110	100	1 U	1 U	NA	1 U	NA	1 U
TRANS-1,3-DICHLOROPROPENE			1 U	1 U	NA	1 U	NA	1 U
TRICHLOROETHENE	2	5	1 U	1 U	NA	1 U	NA	1 U
TRICHLOROFLUOROMETHANE	1300		1 U	1 U	NA	1 U	NA	1 U

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
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TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
VINYL CHLORIDE	0.016	2	1 U	1 U	NA	1 U	NA	1 U
SEMIVOLATILES (UG/L)								
1,1-BIPHENYL	1800		10 U	10 U	NA	10 U	10 U	NA
1,2,4,5-TETRACHLOROBENZENE	11		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
1,4-DIOXANE	6.1		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	0.32		10 U	10 U	NA	10 U	10 U	NA
2,3,4,6-TETRACHLOROPHENOL	1100		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
2,4,5-TRICHLOROPHENOL	3700		20 U	20 U	NA	20 U	20 U	NA
2,4,6-TRICHLOROPHENOL	6.1		10 U	10 U	NA	10 U	10 U	NA
2,4-DICHLOROPHENOL	110		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
2,4-DIMETHYLPHENOL	730		0.1 UJ	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
2,4-DINITROPHENOL	73		20 UJ	20 UJ	NA	20 UJ	20 UJ	NA
2,4-DINITROTOLUENE	0.22		10 U	10 U	NA	10 U	10 U	NA
2,6-DINITROTOLUENE	37		10 U	10 U	NA	10 U	10 U	NA
2-CHLORONAPHTHALENE	2900		10 U	10 U	NA	10 U	10 U	NA
2-CHLOROPHENOL	180		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
2-METHYLPHENOL	1800		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
2-NITROANILINE	370		20 U	20 U	NA	20 U	20 U	NA
2-NITROPHENOL			10 U	10 U	NA	10 U	10 U	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
3,3'-DICHLOROBENZIDINE	0.15		10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
3-NITROANILINE			20 U	20 U	NA	20 UJ	20 UJ	NA
4,6-DINITRO-2-METHYLPHENOL	2.9		20 UJ	20 UJ	NA	20 U	20 U	NA
4-BROMOPHENYL PHENYL ETHER			10 U	10 U	NA	10 U	10 U	NA
4-CHLORO-3-METHYLPHENOL	3700		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
4-CHLOROANILINE	0.34		10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
4-CHLOROPHENYL PHENYL ETHER			10 U	10 U	NA	10 U	10 U	NA
4-METHYLPHENOL	180		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
4-NITROANILINE	3.4		20 U	20 U	NA	20 U	20 U	NA
4-NITROPHENOL			20 U	20 U	NA	20 U	20 U	NA
ACENAPHTHENE	2200		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ACENAPHTHYLENE	2200		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ACETOPHENONE	3700		10 U	10 U	NA	10 U	10 U	NA
ANTHRACENE	11000		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ATRAZINE	0.29	3	0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
BENZALDEHYDE	3700		10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
BENZO(A)ANTHRACENE	0.029		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
BIS(2-CHLOROETHOXY)METHANE	110		10 U	10 U	NA	10 U	10 U	NA
BIS(2-CHLOROETHYL)ETHER	0.012		10 U	10 U	NA	10 U	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	6	10 U	10 U	NA	10 U	10 U	NA
BUTYL BENZYL PHTHALATE	35		10 U	10 U	NA	10 U	10 U	NA
CAPROLACTAM	18000		1.7 J	4.9 J	NA	160 J	25 J	NA
CARBAZOLE			10 U	10 U	NA	10 U	10 U	NA
CHRYSENE	2.9		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
DIBENZO(A,H)ANTHRACENE	0.0029		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
DIBENZOFURAN	37		10 U	10 U	NA	10 U	10 U	NA
DIETHYL PHTHALATE	29000		10 U	10 U	NA	10 U	10 U	NA
DIMETHYL PHTHALATE			10 U	10 U	NA	10 U	10 U	NA
DI-N-BUTYL PHTHALATE	3700		10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
DI-N-OCTYL PHTHALATE			10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
FLUORANTHENE	1500		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
FLUORENE	1500		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
HEXACHLOROBENZENE	0.042	1	0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
HEXACHLOROBUTADIENE	0.86		10 U	10 U	NA	10 U	10 U	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
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TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
HEXACHLOROCYCLOPENTADIENE	220	50	10 UR	10 UR	NA	10 UR	10 UR	NA
HEXACHLOROETHANE	4.8		10 U	10 U	NA	10 U	10 U	NA
HIGH MOLECULAR WEIGHT PAHS			0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ISOPHORONE	71		10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
LOW MOLECULAR WEIGHT PAHS			0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
NAPHTHALENE	0.14		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
NITROBENZENE	0.12		10 UJ	10 UJ	NA	10 UJ	10 UJ	NA
N-NITROSO-DI-N-PROPYLAMINE	0.0096		10 U	10 U	NA	10 U	10 U	NA
N-NITROSODIPHENYLAMINE	14		10 U	10 U	NA	10 U	10 U	NA
PENTACHLOROPHENOL	0.56	1	1 UJ	1 UJ	NA	1 UJ	1 UJ	NA
PHENANTHRENE	1100		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
PHENOL	11000		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
PYRENE	1100		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
TOTAL CHLORINATED VOCS			10 U	10 U	NA	10 U	10 U	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
TOTAL PAHS			0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
PESTICIDES/PCBS (UG/L)								
4,4'-DDD	0.28		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
4,4'-DDE	0.2		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
4,4'-DDT	0.2		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ALDRIN	0.004		0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
ALPHA-BHC	0.011		0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
ALPHA-CHLORDANE	0.19	2	0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
AROCLOR-1016	0.96	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1221	0.0068	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1232	0.0068	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1242	0.034	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1248	0.034	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1254	0.034	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1260	0.034	0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1262		0.5	1 U	1 U	NA	1 U	1 U	NA
AROCLOR-1268		0.5	1 U	1 U	NA	1 U	1 U	NA
BETA-BHC	0.037		0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
DELTA-BHC	0.011		0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
DIELDRIN	0.0042		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ENDOSULFAN I	220		0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
ENDOSULFAN II	220		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
ENDOSULFAN SULFATE	220		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ENDRIN	11	2	0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ENDRIN ALDEHYDE	11		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
ENDRIN KETONE	11		0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
GAMMA-BHC (LINDANE)	0.061	0.2	0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
GAMMA-CHLORDANE	0.19	2	0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
HEPTACHLOR	0.015	0.4	0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
HEPTACHLOR EPOXIDE	0.0074	0.2	0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
METHOXYCHLOR	180	40	0.5 U	0.5 U	NA	0.5 U	0.5 U	NA
TOTAL AROCLOR		0.5	1 U	1 U	NA	1 U	1 U	NA
TOTAL CHLORDANE			0.05 U	0.05 U	NA	0.05 U	0.05 U	NA
TOTAL DDD/DDE/DDT			0.1 U	0.1 U	NA	0.1 U	0.1 U	NA
TOXAPHENE	0.061	3	5 U	5 U	NA	5 U	5 U	NA
METALS (UG/L)								
ALUMINUM	37000		38.5 UJ	1480	53.5 UJ	NA	35.7 UJ	NA
ANTIMONY	15	6	0.049 UJ	0.336 UJ	0.062 UJ	NA	0.061 UJ	NA
ARSENIC	0.045	10	8.8	0.59 J	0.911 J	NA	1.1	NA
BARIUM	7300	2000	9.9	69.3	15.1	NA	6.8	NA
BERYLLIUM	73	4	0.045 U	0.188 J	0.166 J	NA	0.045 U	NA
CADMIUM	18	5	0.054 U	0.183 J	0.074 J	NA	0.054 U	NA
CALCIUM			20400	11800	12900	NA	28200	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
CHROMIUM	0.043	100	0.991 UJ	3.2 U	0.938 UJ	NA	1.3 UJ	NA
COBALT	11		10.6	14.3	19	NA	0.427 J	NA
COPPER	1500	1300	0.361 J	5.8	0.374 J	NA	1	NA
IRON	26000		17500	2260	24300	NA	225	NA
LEAD		15	0.162 U	1.7	0.162 U	NA	0.162 U	NA
MAGNESIUM			16500	7620	16700	NA	19600	NA
MANGANESE	880		1580	498	2510	NA	82.4	NA
MERCURY	0.57	2	0.056 U	0.056 U	0.056 U	NA	0.056 U	NA
NICKEL	730		27.4	43.4	57.8	NA	14.5	NA
POTASSIUM			520 J	2440	1130	NA	2150	NA
SELENIUM	180	50	0.123 U	0.667 J	0.123 U	NA	0.185 J	NA
SILVER	180		0.009 UJ	0.01 UJ	0.009 UJ	NA	0.008 U	NA
SODIUM			9520	29200	11200	NA	27600	NA
THALLIUM		2	0.204 U	0.204 U	0.204 U	NA	0.204 U	NA
VANADIUM	180		0.331 UJ	1.2 J	0.331 UJ	NA	0.331 UJ	NA
ZINC	11000		45 UJ	24.4 UJ	81.7 J	NA	16.6 UJ	NA
DISSOLVED METALS (UG/L)								
ALUMINUM	37000		NA	446	36.7 UJ	NA	NA	NA
ANTIMONY	15	6	NA	0.333 UJ	0.044 U	NA	NA	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM
ARSENIC	0.045	10	NA	0.236 U	0.794 J	NA	NA	NA
BARIUM	7300	2000	NA	53.8	15.1	NA	NA	NA
BERYLLIUM	73	4	NA	0.107 J	0.16 J	NA	NA	NA
CADMIUM	18	5	NA	0.084 J	0.054 U	NA	NA	NA
CALCIUM			NA	12700	12900	NA	NA	NA
CHROMIUM	0.043	100	NA	0.99 UJ	0.509 UJ	NA	NA	NA
COBALT	11		NA	9.3	18.3	NA	NA	NA
COPPER	1500	1300	NA	3.7	0.45 J	NA	NA	NA
IRON	26000		NA	128 J	23500	NA	NA	NA
LEAD		15	NA	0.162 U	0.162 U	NA	NA	NA
MAGNESIUM			NA	8720	16800	NA	NA	NA
MANGANESE	880		NA	333	2520	NA	NA	NA
MERCURY	0.57	2	NA	0.056 U	0.056 U	NA	NA	NA
NICKEL	730		NA	32.3	55.5	NA	NA	NA
POTASSIUM			NA	2250	1130	NA	NA	NA
SELENIUM	180	50	NA	0.573 J	0.123 U	NA	NA	NA
SILVER	180		NA	0.011 UJ	0.012 UJ	NA	NA	NA
SODIUM			NA	26700	11400	NA	NA	NA
THALLIUM		2	NA	0.204 U	0.204 U	NA	NA	NA
VANADIUM	180		NA	0.331 U	0.331 U	NA	NA	NA
ZINC	11000		NA	19.6 UJ	78.7	NA	NA	NA

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE
ANALYTICAL RESULTS - GROUNDWATER
TfNeGW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-MW-915-0510	TF5-MW-916-0510	TF5-MW-923-0510	TF5-MW-923-051810	TF5-MW-924-0510	TF5-MW-924-051810
LOCATION ID			TF5-MW-915	TF5-MW-916	TF5-MW-923	TF5-MW-923	TF5-MW-924	TF5-MW-924
SAMPLE DATE			05/17/10	05/17/10	05/13/10	05/18/10	05/14/10	05/18/10
TOP DEPTH								
BOTTOM DEPTH								
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM

BLACK SHADING-EXCEEDS AT LEAST ONE CRITERION; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

G-7 SURFACE WATER SAMPLE ANALYTICAL DATA (DU 4-1)

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)										
1,1,1-TRICHLOROETHANE	9100	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	0.067		1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
1,1,2-TRICHLOROETHANE	0.24	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	59000		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	2.4		1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	340	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE	29		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-TRICHLOROBENZENE	2.3	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMO-3-CHLOROPROPANE	0.0003	0.2	1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
1,2-DIBROMOETHANE	0.0065	0.05	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	370	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	0.15	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.39	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	0.43	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-BUTANONE	7100		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
2-HEXANONE	47		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	2000		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	22000		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
BENZENE	0.41	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMODICHLOROMETHANE	0.12	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
BROMOFORM	8.5	80	1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
BROMOMETHANE	8.7		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
BTEX			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CARBON DISULFIDE	1000		1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
CARBON TETRACHLORIDE	0.44	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	91	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	0.15	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	21000		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROFORM	0.19	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	190		1 U	1 U	4.8 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	0.43		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CYCLOHEXANE	13000		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	390		1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
ETHYLBENZENE	1.5	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	680		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
M+P-XYLENES		10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL ACETATE	37000		1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
METHYL CYCLOHEXANE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	12		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	4.8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
O-XYLENE	1200	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
STYRENE	1600	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TETRACHLOROETHENE	0.11	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
TOLUENE	2300	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORINATED ETHENES			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORINATED VOCS			1 UJ	1 UJ	1.14 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ
TOTAL XYLENES	200	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	110	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROFLUOROMETHANE	1300		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL CHLORIDE	0.016	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SEMIVOLATILES (UG/L)										
1,1-BIPHENYL	1800		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2,4,5-TETRACHLOROBENZENE	11		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-DIOXANE	6.1		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.32		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,6-TETRACHLOROPHENOL	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4,5-TRICHLOROPHENOL	3700		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4,6-TRICHLOROPHENOL	6.1		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	110		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-DIMETHYLPHENOL	730		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-DINITROPHENOL	73		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-DINITROTOLUENE	0.22		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	37		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	2900		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
2-CHLOROPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-METHYLPHENOL	1800		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-NITROANILINE	370		20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 U	20 U
2-NITROPHENOL			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	0.15		10 UR	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
3-NITROANILINE			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-DINITRO-2-METHYLPHENOL	2.9		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-BROMOPHENYL PHENYL ETHER			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	3700		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-CHLOROANILINE	0.34		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-CHLOROPHENYL PHENYL ETHER			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-NITROANILINE	3.4		20 U	20 U	20 U	20 U	20 U	20 U	20 UJ	20 UJ
4-NITROPHENOL			20 U	20 U	20 U	20 U	20 U	20 U	20 UJ	20 UJ
ACENAPHTHENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ACETOPHENONE	3700		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	11000		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ATRAZINE	0.29	3	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	0.1 UJ	0.1 UJ
BENZALDEHYDE	3700		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
BENZO(A)ANTHRACENE	0.029		0.1 J	0.1 UJ	0.17 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.15 UJ
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BIS(2-CHLOROETHOXY)METHANE	110		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	0.012		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	6	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
BUTYL BENZYL PHTHALATE	35		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
CAPROLACTAM	18000		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBAZOLE			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	2.9		0.1 U	0.1 U	0.11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	0.0029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZOFURAN	37		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	29000		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	3700		10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
DI-N-OCTYL PHTHALATE			10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
FLUORANTHENE	1500		0.1 U	0.1 U	0.16	0.1 U	0.1 U	0.1 U	0.1 U	0.14 U
FLUORENE	1500		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBENZENE	0.042	1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBUTADIENE	0.86		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
HEXACHLOROCYCLOPENTADIENE	220	50	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
HEXACHLOROETHANE	4.8		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HIGH MOLECULAR WEIGHT PAHS			0.1 J	0.1 UJ	0.67 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.112 UJ
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ISOPHORONE	71		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
LOW MOLECULAR WEIGHT PAHS			0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.111 U
NAPHTHALENE	0.14		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NITROBENZENE	0.12		10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	0.0096		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	14		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	0.56	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PHENANTHRENE	1100		0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.18 U
PHENOL	11000		0.1 U	0.1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	1100		0.1 U	0.1 U	0.23	0.1 U	0.1 U	0.1 U	0.1 U	0.13 U
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.4 J	0.1 UJ	0.53 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.107 UJ
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 J	0.1 UJ	0.28 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.107 UJ
TOTAL CHLORINATED VOCS			10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
TOTAL PAHS			0.1 J	0.1 UJ	0.79 J	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.112 UJ
PESTICIDES/PCBS (UG/L)										
4,4'-DDD	0.28		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALDRIN	0.004		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-BHC	0.011		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1016	0.96	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	0.0068	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1232	0.0068	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1242	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1262		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1268		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BETA-BHC	0.037		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.011		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.0042		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN I	220		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN II	220		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	220		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	11	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	11		0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN KETONE	11		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
GAMMA-BHC (LINDANE)	0.061	0.2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.015	0.4	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.0074	0.2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
METHOXYCHLOR	180	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL AROCLOR		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORDANE			0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOTAL DDD/DDE/DDT			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TOXAPHENE	0.061	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)										
ALUMINUM	37000		55.7 UJ	61 UJ	65 UJ	44 UJ	151 UJ	55.3 UJ	186 UJ	76.6 UJ
ANTIMONY	15	6	0.078 UJ	0.112 UJ	0.099 UJ	0.076 UJ	0.144 UJ	0.105 UJ	0.121 UJ	0.091 UJ
ARSENIC	0.045	10	0.473 J	0.46 J	0.236 U	0.236 U	0.236 U	0.236 U	0.465 J	0.236 U
BARIUM	7300	2000	10.3	10.2	5.2	9.8	9.6	10.4	10	10.2
BERYLLIUM	73	4	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U
CADMIUM	18	5	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U
CALCIUM			14500	14400	15800	14300	14800	14200	10400	14200
CHROMIUM	0.043	100	0.74 UJ	1.05 UJ	1 UJ	0.967 UJ	1 UJ	0.995 UJ	1.1 UJ	1 UJ
COBALT	11		0.398 J	0.418 J	0.297 J	0.404 J	0.393 J	0.413 J	0.931 J	0.469 J
COPPER	1500	1300	3.7	1.75	0.807 J	1.5	1.4	1.4	2.9	1.8
IRON	26000		284	328	270	414	545	374	513	351
LEAD		15	0.407 J	0.299 J	0.162 U	0.192 J	0.191 J	0.337 J	0.928 J	0.398 J
MAGNESIUM			4870	4830	16900	4860	4820	4810	3480	4720
MANGANESE	880		36.5 UJ	39.5 UJ	32.8 UJ	41.9 UJ	41.1 UJ	41.3 UJ	68.7 U	43.3 UJ
MERCURY	0.57	2	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U
NICKEL	730		2.3	2.45	1.4	2.1	2.2	2.3	3.5	2.4
POTASSIUM			2990	3020	1440	2970	2930	2890	2420	3070
SELENIUM	180	50	0.154 J	0.19 J	0.123 U	0.214 J	0.162 J	0.162 J	0.229 J	0.231 J
SILVER	180		0.012 UJ	0.009 UJ	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U
SODIUM			29500	29600	23400	29400	29100	28800	24400	30600
THALLIUM		2	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U
VANADIUM	180		0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ
ZINC	11000		25 UJ	26.5 UJ	23.1 UJ	26.2 UJ	36.8 UJ	29 UJ	38.1 UJ	32.5 UJ

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-902-0310-AVG	TF4-SW-903-0310	TF4-SW-904-0310	TF4-SW-905-0310	TF4-SW-906-0310	TF4-SW-907-0310	TF4-SW-908-0310
LOCATION ID			TF4-SW-901	TF4-SW-902	TF4-SW-903	TF4-SW-904	TF4-SW-905	TF4-SW-906	TF4-SW-907	TF4-SW-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM
VOLATILES (UG/L)					
1,1,1-TRICHLOROETHANE	9100	200	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	0.067		1 U	1 UJ	1 UJ
1,1,2-TRICHLOROETHANE	0.24	5	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	59000		1 U	1 U	1 U
1,1-DICHLOROETHANE	2.4		1 UJ	1 U	1 U
1,1-DICHLOROETHENE	340	7	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE	29		1 U	1 U	1 U
1,2,4-TRICHLOROBENZENE	2.3	70	1 U	1 U	1 U
1,2-DIBROMO-3-CHLOROPROPANE	0.0003	0.2	1 U	1 UJ	1 UJ
1,2-DIBROMOETHANE	0.0065	0.05	1 U	1 U	1 U
1,2-DICHLOROBENZENE	370	600	1 U	1 U	1 U
1,2-DICHLOROETHANE	0.15	5	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.39	5	1 U	1 U	1 U
1,3-DICHLOROBENZENE			1 U	1 U	1 U
1,4-DICHLOROBENZENE	0.43	75	1 U	1 U	1 U
2-BUTANONE	7100		5 UJ	5 UJ	5 UJ
2-HEXANONE	47		5 U	5 U	5 U
4-METHYL-2-PENTANONE	2000		5 U	5 U	5 U
ACETONE	22000		5 UJ	5 UJ	5 UJ
BENZENE	0.41	5	1 U	1 U	1 U
BROMOCHLOROMETHANE			1 U	1 U	1 U
BROMODICHLOROMETHANE	0.12	80	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM
BROMOFORM	8.5	80	1 U	1 UJ	1 UJ
BROMOMETHANE	8.7		1 UJ	1 UJ	1 UJ
BTEX			1 U	1 U	1 U
CARBON DISULFIDE	1000		1 U	1 UJ	1 UJ
CARBON TETRACHLORIDE	0.44	5	1 U	1 U	1 U
CHLOROBENZENE	91	100	1 U	1 U	1 U
CHLORODIBROMOMETHANE	0.15	80	1 U	1 U	1 U
CHLOROETHANE	21000		1 U	1 U	1 U
CHLOROFORM	0.19	80	1 U	1 U	1 U
CHLOROMETHANE	190		1 U	3.2 UJ	1 U
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	0.43		1 U	1 U	1 U
CYCLOHEXANE	13000		1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	390		1 U	1 UJ	1 UJ
ETHYLBENZENE	1.5	700	1 U	1 U	1 U
ISOPROPYLBENZENE	680		1 U	1 U	1 U
M+P-XYLENES		10000	1 U	1 U	1 U
METHYL ACETATE	37000		1 U	1 UJ	1 UJ
METHYL CYCLOHEXANE			1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	12		1 U	1 U	1 U
METHYLENE CHLORIDE	4.8	5	1 U	1 U	1 U
O-XYLENE	1200	10000	1 U	1 U	1 U
STYRENE	1600	100	1 U	1 U	1 U
TETRACHLOROETHENE	0.11	5	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM
TOLUENE	2300	1000	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	1 U
TOTAL CHLORINATED ETHENES			1 U	1 U	1 U
TOTAL CHLORINATED VOCS			1 UJ	1.08 UJ	1 UJ
TOTAL XYLENES	200	10000	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	110	100	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE			1 U	1 U	1 U
TRICHLOROETHENE	2	5	1 U	1 U	1 U
TRICHLOROFLUOROMETHANE	1300		1 U	1 U	1 U
VINYL CHLORIDE	0.016	2	1 U	1 U	1 U
SEMIVOLATILES (UG/L)					
1,1-BIPHENYL	1800		10 UJ	10 UJ	10 UJ
1,2,4,5-TETRACHLOROBENZENE	11		0.1 U	0.1 U	0.1 U
1,4-DIOXANE	6.1		0.1 U	0.1 U	0.1 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.32		10 U	10 U	10 U
2,3,4,6-TETRACHLOROPHENOL	1100		0.1 U	0.1 U	0.1 U
2,4,5-TRICHLOROPHENOL	3700		20 U	20 U	20 U
2,4,6-TRICHLOROPHENOL	6.1		10 U	10 U	10 U
2,4-DICHLOROPHENOL	110		0.1 U	0.1 U	0.1 U
2,4-DIMETHYLPHENOL	730		0.1 U	0.1 U	0.1 U
2,4-DINITROPHENOL	73		20 U	20 U	20 U
2,4-DINITROTOLUENE	0.22		10 U	10 U	10 U
2,6-DINITROTOLUENE	37		10 U	10 U	10 U
2-CHLORONAPHTHALENE	2900		10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM
2-CHLOROPHENOL	180		0.1 U	0.1 U	0.1 U
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U	0.1 U
2-METHYLPHENOL	1800		0.1 U	0.1 U	0.1 U
2-NITROANILINE	370		20 UJ	20 U	20 U
2-NITROPHENOL			10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	0.15		10 UR	10 U	10 U
3-NITROANILINE			20 U	20 U	20 U
4,6-DINITRO-2-METHYLPHENOL	2.9		20 U	20 U	20 U
4-BROMOPHENYL PHENYL ETHER			10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	3700		0.1 U	0.1 UJ	0.1 UJ
4-CHLOROANILINE	0.34		10 UJ	10 UJ	10 UJ
4-CHLOROPHENYL PHENYL ETHER			10 U	10 U	10 U
4-METHYLPHENOL	180		0.1 U	0.1 U	0.1 U
4-NITROANILINE	3.4		20 U	20 UJ	20 UJ
4-NITROPHENOL			20 U	20 UJ	20 UJ
ACENAPHTHENE	2200		0.1 U	0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U	0.1 U
ACETOPHENONE	3700		10 U	10 U	10 U
ANTHRACENE	11000		0.1 U	0.1 U	0.1 U
ATRAZINE	0.29	3	10 UJ	0.1 UJ	0.1 UJ
BENZALDEHYDE	3700		10 UJ	10 UJ	10 UJ
BENZO(A)ANTHRACENE	0.029		0.1 J	0.1 UJ	0.1 UJ
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.1 UJ	0.1 UJ

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 UJ	0.1 UJ
BIS(2-CHLOROETHOXY)METHANE	110		10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	0.012		10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	6	10 UJ	10 U	10 U
BUTYL BENZYL PHTHALATE	35		10 UJ	10 U	10 U
CAPROLACTAM	18000		10 U	10 U	10 U
CARBAZOLE			10 U	10 U	10 U
CHRYSENE	2.9		0.1 U	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	0.0029		0.1 U	0.1 U	0.1 U
DIBENZOFURAN	37		10 U	10 U	10 U
DIETHYL PHTHALATE	29000		10 U	10 U	10 U
DIMETHYL PHTHALATE			10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	3700		10 U	10 UJ	10 UJ
DI-N-OCTYL PHTHALATE			10 UJ	10 U	10 U
FLUORANTHENE	1500		0.1 U	0.1 U	0.1 U
FLUORENE	1500		0.1 U	0.1 U	0.1 U
HEXACHLOROBENZENE	0.042	1	0.1 U	0.1 U	0.1 U
HEXACHLOROBUTADIENE	0.86		10 UJ	10 UJ	10 UJ
HEXACHLOROCYCLOPENTADIENE	220	50	10 UJ	10 UJ	10 UJ
HEXACHLOROETHANE	4.8		10 U	10 U	10 U
HIGH MOLECULAR WEIGHT PAHS			0.1 J	0.1 UJ	0.1 UJ
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	0.1 U
ISOPHORONE	71		10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM
LOW MOLECULAR WEIGHT PAHS			0.1 U	0.1 U	0.1 U
NAPHTHALENE	0.14		0.1 U	0.1 U	0.1 U
NITROBENZENE	0.12		10 UJ	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	0.0096		10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	14		10 U	10 U	10 U
PENTACHLOROPHENOL	0.56	1	1 U	1 U	1 U
PHENANTHRENE	1100		0.1 U	0.1 U	0.1 U
PHENOL	11000		0.1 U	0.1 U	0.1 U
PYRENE	1100		0.1 U	0.1 U	0.1 U
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.4 J	0.1 UJ	0.1 UJ
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 J	0.1 UJ	0.1 UJ
TOTAL CHLORINATED VOCS			10 UJ	10 UJ	10 UJ
TOTAL PAHS			0.1 J	0.1 UJ	0.1 UJ
PESTICIDES/PCBS (UG/L)					
4,4'-DDD	0.28		0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2		0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2		0.1 U	0.1 U	0.1 U
ALDRIN	0.004		0.05 U	0.05 U	0.05 U
ALPHA-BHC	0.011		0.05 U	0.05 U	0.05 U
ALPHA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U
AROCLOR-1016	0.96	0.5	1 U	1 UJ	1 U
AROCLOR-1221	0.0068	0.5	1 U	1 UJ	1 U
AROCLOR-1232	0.0068	0.5	1 U	1 UJ	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM
AROCLOR-1242	0.034	0.5	1 U	1 UJ	1 U
AROCLOR-1248	0.034	0.5	1 U	1 UJ	1 U
AROCLOR-1254	0.034	0.5	1 U	1 UJ	1 U
AROCLOR-1260	0.034	0.5	1 U	1 UJ	1 U
AROCLOR-1262		0.5	1 U	1 UJ	1 U
AROCLOR-1268		0.5	1 U	1 UJ	1 U
BETA-BHC	0.037		0.05 U	0.05 U	0.05 U
DELTA-BHC	0.011		0.05 U	0.05 U	0.05 U
DIELDRIN	0.0042		0.1 U	0.1 U	0.1 U
ENDOSULFAN I	220		0.05 U	0.05 U	0.05 U
ENDOSULFAN II	220		0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	220		0.1 U	0.1 U	0.1 U
ENDRIN	11	2	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	11		0.1 UJ	0.1 U	0.1 U
ENDRIN KETONE	11		0.1 U	0.1 U	0.1 U
GAMMA-BHC (LINDANE)	0.061	0.2	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.015	0.4	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.0074	0.2	0.05 U	0.05 U	0.05 U
METHOXYCHLOR	180	40	0.5 U	0.5 U	0.5 U
TOTAL AROCLOR		0.5	1 U	1 UJ	1 U
TOTAL CHLORDANE			0.05 U	0.05 U	0.05 U
TOTAL DDD/DDE/DDT			0.1 U	0.1 U	0.1 U
TOXAPHENE	0.061	3	5 U	5 U	5 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM
METALS (UG/L)					
ALUMINUM	37000		55.7 UJ	68.2 UJ	48.4 UJ
ANTIMONY	15	6	0.078 UJ	0.0905 UJ	0.067 UJ
ARSENIC	0.045	10	0.473 J	0.19 J	0.236 U
BARIUM	7300	2000	10.3	9.85	7.2
BERYLLIUM	73	4	0.045 U	0.045 U	0.045 U
CADMIUM	18	5	0.054 U	0.054 U	0.054 U
CALCIUM			14500	14000	15200
CHROMIUM	0.043	100	0.74 UJ	1.1 UJ	1 UJ
COBALT	11		0.398 J	0.42 J	0.383 J
COPPER	1500	1300	3.7	2.25	1.1
IRON	26000		284	330	307
LEAD		15	0.407 J	0.308 J	0.162 U
MAGNESIUM			4870	4630	13700
MANGANESE	880		36.5 UJ	38.8 UJ	48.5 UJ
MERCURY	0.57	2	0.056 U	0.056 U	0.056 U
NICKEL	730		2.3	2.55	1.7
POTASSIUM			2990	3020	1860
SELENIUM	180	50	0.154 J	0.22 J	0.227 J
SILVER	180		0.012 UJ	0.008 U	0.008 U
SODIUM			29500	30500	25200
THALLIUM		2	0.204 U	0.204 U	0.204 U
VANADIUM	180		0.331 UJ	0.331 UJ	0.331 UJ
ZINC	11000		25 UJ	25.6 UJ	24.5 UJ

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SW-901-0310	TF4-SW-911-0310-AVG	TF4-SW-912-0310
LOCATION ID			TF4-SW-901	TF4-SW-911	TF4-SW-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10
TOP DEPTH					
BOTTOM DEPTH					
SACODE			NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM

G-8 SURFACE WATER SAMPLE ANALYTICAL DATA (DU 5-1)

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)										
1,1,1-TRICHLOROETHANE	9100	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	0.067		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	0.24	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	59000		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	2.4		1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	340	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE	29		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-TRICHLOROBENZENE	2.3	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMO-3-CHLOROPROPANE	0.0003	0.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	0.0065	0.05	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	370	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	0.15	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.39	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	0.43	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-BUTANONE	7100		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
2-HEXANONE	47		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	2000		5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	22000		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
BENZENE	0.41	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMODICHLOROMETHANE	0.12	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
BROMOFORM	8.5	80	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
BROMOMETHANE	8.7		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
BTEX			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CARBON DISULFIDE	1000		1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
CARBON TETRACHLORIDE	0.44	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	91	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	0.15	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	21000		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROFORM	0.19	80	1 U	1 U	1 U	1 U	1	1 U	1 U	1 U
CHLOROMETHANE	190		1 U	1 U	1 U	1 U	1 U	1 U	3.8 U	5.3 U
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	0.43		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CYCLOHEXANE	13000		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	390		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	1.5	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	680		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
M+P-XYLENES		10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL ACETATE	37000		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
METHYL CYCLOHEXANE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	12		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	4.8	5	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
O-XYLENE	1200	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
STYRENE	1600	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TETRACHLOROETHENE	0.11	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM	NM	NM	NM	NM
TOLUENE	2300	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORINATED ETHENES			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORINATED VOCS			1 U	1 U	1 U	1 UJ	1 U	1 U	1.1 U	1.16 U
TOTAL XYLENES	200	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	110	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROFLUOROMETHANE	1300		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL CHLORIDE	0.016	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SEMIVOLATILES (UG/L)										
1,1-BIPHENYL	1800		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2,4,5-TETRACHLOROBENZENE	11		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-DIOXANE	6.1		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.32		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,3,4,6-TETRACHLOROPHENOL	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4,5-TRICHLOROPHENOL	3700		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4,6-TRICHLOROPHENOL	6.1		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	110		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-DIMETHYLPHENOL	730		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
2,4-DINITROPHENOL	73		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-DINITROTOLUENE	0.22		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	37		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-CHLORONAPHTHALENE	2900		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
2-CHLOROPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U	0.1 U	0.25	0.1 U	3.3	0.1 U	0.1 U
2-METHYLPHENOL	1800		0.1 U	0.1 U	0.1 U	0.1 U		0.1 U	0.1 U	0.1 U
2-NITROANILINE	370		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-NITROPHENOL			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	0.15		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-DINITRO-2-METHYLPHENOL	2.9		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-BROMOPHENYL PHENYL ETHER			10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-CHLORO-3-METHYLPHENOL	3700		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-CHLOROANILINE	0.34		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-CHLOROPHENYL PHENYL ETHER			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-NITROANILINE	3.4		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-NITROPHENOL			20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
ACENAPHTHENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.36	0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.82	0.1 U	0.1 U
ACETOPHENONE	3700		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	11000		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11	0.1 U	0.1 U
ATRAZINE	0.29	3	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
BENZALDEHYDE	3700		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
BENZO(A)ANTHRACENE	0.029		0.1 UJ	0.13 J	0.1 UJ	0.2 J	0.18 J	0.16 J	0.1 UJ	0.1 UJ
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	0.1 U	0.13	0.16	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.11	0.1 U	0.13	0.25	0.1 U	0.1 U	0.1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	0.1 U	0.1 U	0.13	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 U	0.1 U	0.1 U	0.15	0.1 U	0.1 U	0.1 U
BIS(2-CHLOROETHOXY)METHANE	110		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	0.012		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	35		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CAPROLACTAM	18000		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBAZOLE			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	2.9		0.1 U	0.1 U	0.1 U	0.15	0.18	0.11	0.1 U	0.1 U
DIBENZO(A,H)ANTHRACENE	0.0029		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
DIBENZOFURAN	37		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	29000		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE			10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	3700		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE			10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
FLUORANTHENE	1500		0.1 U	0.17	0.1 U	0.29	0.36	0.26	0.1 U	0.1 U
FLUORENE	1500		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1.3	0.1 U	0.1 U
HEXACHLOROBENZENE	0.042	1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBUTADIENE	0.86		10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
HEXACHLOROCYCLOPENTADIENE	220	50	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
HEXACHLOROETHANE	4.8		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HIGH MOLECULAR WEIGHT PAHS			0.1 UJ	0.54 J	0.1 UJ	1.2 J	1.8 J	0.77 J	0.1 UJ	0.1 UJ
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U	0.11	0.1 U	0.1 U	0.1 U
ISOPHORONE	71		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
LOW MOLECULAR WEIGHT PAHS			0.11	0.12	0.14	1.27	0.15	8.49	0.1 U	0.11
NAPHTHALENE	0.14		0.1 U	0.1 U	0.1 U	0.59	0.1 U	1.5	0.1 U	0.1 U
NITROBENZENE	0.12		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	0.0096		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	14		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	0.56	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PHENANTHRENE	1100		0.11	0.12	0.14	0.43	0.15	1.1	0.1 U	0.11
PHENOL	11000		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	1100		0.1 U	0.13	0.1 U	0.3	0.28	0.24	0.1 U	0.1 U
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.1 UJ	0.49 J	0.1 UJ	0.76 J	1.08 J	0.52 J	0.1 UJ	0.1 UJ
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 UJ	0.24 J	0.1 UJ	0.61 J	1.03 J	0.27 J	0.1 UJ	0.1 UJ
TOTAL CHLORINATED VOCS			10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
TOTAL PAHS			0.11 J	0.66 J	0.14 J	2.47 J	1.95 J	9.26 J	0.1 UJ	0.11 J
PESTICIDES/PCBS (UG/L)										
4,4'-DDD	0.28		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALDRIN	0.004		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-BHC	0.011		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1016	0.96	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	0.0068	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1232	0.0068	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1242	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	0.034	0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1262		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1268		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BETA-BHC	0.037		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.011		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.0042		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN I	220		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN II	220		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	220		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	11	2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	11		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN KETONE	11		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
GAMMA-BHC (LINDANE)	0.061	0.2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.015	0.4	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.0074	0.2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
METHOXYCHLOR	180	40	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
TOTAL AROCLOR		0.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORDANE			0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOTAL DDD/DDE/DDT			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TOXAPHENE	0.061	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)										
ALUMINUM	37000		58.9 UJ	281 U	55.9 UJ	68.2 UJ	852	71.8 UJ	74.9 UJ	73.8 UJ
ANTIMONY	15	6	0.136 UJ	0.106 UJ	0.094 UJ	0.074 UJ	0.134 UJ	0.127 UJ	0.113 UJ	0.097 UJ
ARSENIC	0.045	10	0.297 J	0.236 U	0.297 J	0.236 U	0.236 U	0.299 J	0.262 J	0.244 J
BARIUM	7300	2000	9.4	7.9	8.9	10.2	11	8.1	9.1	9.1
BERYLLIUM	73	4	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U
CADMIUM	18	5	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U	0.054 U
CALCIUM			15200	17700	15200	14700	17300	11400	15100	14700
CHROMIUM	0.043	100	0.975 UJ	0.917 UJ	0.953 UJ	1.1 UJ	0.893 UJ	0.959 UJ	1 UJ	1.1 UJ
COBALT	11		0.3 J	0.405 J	0.309 J	0.274 J	0.517 J	0.564 J	0.303 J	0.31 J
COPPER	1500	1300	1.9	3.3	1.9	1.1	0.9 J	1.4	2	1.8
IRON	26000		222 U	504	174 UJ	197 UJ	2930	592	270	243
LEAD		15	0.233 J	0.533 J	0.248 J	0.391 J	0.247 J	0.352 J	0.285 J	0.196 J
MAGNESIUM			6280	8250	6510	5250	5690	7340	6320	6130
MANGANESE	880		28.2 UJ	12.6 UJ	22.8 UJ	18.2 UJ	48.3 UJ	76.7 U	30.7 UJ	33.3 UJ
MERCURY	0.57	2	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U	0.056 U
NICKEL	730		2.8	4.8	2.9	4.6	5.4	1.6	2.7	2.8
POTASSIUM			2230	1520	2170	2130	2760	1170	2170	2080
SELENIUM	180	50	0.243 J	0.224 J	0.178 J	0.256 J	0.221 J	0.168 J	0.206 J	0.206 J
SILVER	180		0.008 U	0.011 UJ	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U
SODIUM			30100	39600	29200	32900	35000	22500	29900	28900
THALLIUM		2	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U	0.204 U
VANADIUM	180		0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ
ZINC	11000		39.2 UJ	21.1 UJ	35.6 UJ	22.7 UJ	34.6 UJ	34 UJ	37.2 UJ	36.3 UJ

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-915-0310	TF5-SW-916-0310	TF5-SW-917-0310	TF5-SW-918-0310	TF5-SW-919-0310	TF5-SW-920-0310	TF5-SW-921-0006
LOCATION ID			TF5-SW-914	TF5-SW-915	TF5-SW-916	TF5-SW-917	TF5-SW-918	TF5-SW-919	TF5-SW-920	TF5-SW-921
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH										
BOTTOM DEPTH										
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM	NM	NM	NM	NM

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSLTAP	FEDMCL	NM	NM	NM	NM
VOLATILES (UG/L)						
1,1,1-TRICHLOROETHANE	9100	200	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	0.067		1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	0.24	5	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROTRIFLUOROETHANE	59000		1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	2.4		1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	340	7	1 U	1 U	1 U	1 U
1,2,3-TRICHLOROBENZENE	29		1 U	1 U	1 U	1 U
1,2,4-TRICHLOROBENZENE	2.3	70	1 U	1 U	1 U	1 U
1,2-DIBROMO-3-CHLOROPROPANE	0.0003	0.2	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	0.0065	0.05	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	370	600	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	0.15	5	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.39	5	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE			1 U	1 U	1 U	1 U
1,4-DICHLOROBENZENE	0.43	75	1 U	1 U	1 U	1 U
2-BUTANONE	7100		5 UJ	5 UJ	5 UJ	5 UJ
2-HEXANONE	47		5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	2000		5 U	5 U	5 U	5 U
ACETONE	22000		5 UJ	5 UJ	5 UJ	5 UJ
BENZENE	0.41	5	1 U	1 U	1 U	1 U
BROMOCHLOROMETHANE			1 U	1 U	1 U	1 U
BROMODICHLOROMETHANE	0.12	80	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
BROMOFORM	8.5	80	1 UJ	1 UJ	1 UJ	1 UJ
BROMOMETHANE	8.7		1 UJ	1 UJ	1 UJ	1 UJ
BTEX			1 U	1 U	1 U	1 U
CARBON DISULFIDE	1000		1 U	1 U	1 U	1 U
CARBON TETRACHLORIDE	0.44	5	1 U	1 U	1 U	1 U
CHLOROBENZENE	91	100	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	0.15	80	1 U	1 U	1 U	1 U
CHLOROETHANE	21000		1 U	1 U	1 U	1 U
CHLOROFORM	0.19	80	1 U	1 U	1 U	1 U
CHLOROMETHANE	190		1 U	4.7 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	370	70	1 U	1 U	1 U	1 U
CIS-1,3-DICHLOROPROPENE	0.43		1 U	1 U	1 U	1 U
CYCLOHEXANE	13000		1 U	1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	390		1 U	1 U	1 U	1 U
ETHYLBENZENE	1.5	700	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	680		1 U	1 U	1 U	1 U
M+P-XYLENES		10000	1 U	1 U	1 U	1 U
METHYL ACETATE	37000		1 UJ	1 UJ	1 UJ	1 UJ
METHYL CYCLOHEXANE			1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	12		1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	4.8	5	1 U	1 U	1 U	1 U
O-XYLENE	1200	10000	1 U	1 U	1 U	1 U
STYRENE	1600	100	1 U	1 U	1 U	1 U
TETRACHLOROETHENE	0.11	5	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
TOLUENE	2300	1000	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	330		1 U	1 U	1 U	1 U
TOTAL CHLORINATED ETHENES			1 U	1 U	1 U	1 U
TOTAL CHLORINATED VOCS			1 U	1.14 U	1 U	1 U
TOTAL XYLENES	200	10000	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	110	100	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE			1 U	1 U	1 U	1 U
TRICHLOROETHENE	2	5	1 U	1 U	1 U	1 U
TRICHLOROFLUOROMETHANE	1300		1 U	1 U	1 U	1 U
VINYL CHLORIDE	0.016	2	1 U	1 U	1 U	1 U
SEMIVOLATILES (UG/L)						
1,1-BIPHENYL	1800		10 UJ	10 UJ	10 UJ	10 UJ
1,2,4,5-TETRACHLOROBENZENE	11		0.1 U	0.1 U	0.1 U	0.1 U
1,4-DIOXANE	6.1		0.1 U	0.1 U	0.1 U	0.1 U
2,2'-OXYBIS(1-CHLOROPROPANE)	0.32		10 U	10 U	10 U	10 U
2,3,4,6-TETRACHLOROPHENOL	1100		0.1 U	0.1 U	0.1 U	0.1 U
2,4,5-TRICHLOROPHENOL	3700		20 U	20 U	20 U	20 U
2,4,6-TRICHLOROPHENOL	6.1		10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	110		0.1 U	0.1 U	0.1 U	0.1 U
2,4-DIMETHYLPHENOL	730		0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
2,4-DINITROPHENOL	73		20 U	20 U	20 U	20 U
2,4-DINITROTOLUENE	0.22		10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	37		10 UJ	10 UJ	10 UJ	10 UJ
2-CHLORONAPHTHALENE	2900		10 U	10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
2-CHLOROPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U
2-METHYLNAPHTHALENE	150		0.1 U	0.1 U	0.1 U	0.1 U
2-METHYLPHENOL	1800		0.1 U	0.1 U	0.1 U	0.1 U
2-NITROANILINE	370		20 U	20 U	20 U	20 U
2-NITROPHENOL			10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	0.15		10 U	10 U	10 U	10 U
3-NITROANILINE			20 U	20 U	20 U	20 U
4,6-DINITRO-2-METHYLPHENOL	2.9		20 U	20 U	20 U	20 U
4-BROMOPHENYL PHENYL ETHER			10 UJ	10 UJ	10 UJ	10 UJ
4-CHLORO-3-METHYLPHENOL	3700		0.1 U	0.1 U	0.1 U	0.1 U
4-CHLOROANILINE	0.34		10 UJ	10 UJ	10 UJ	10 UJ
4-CHLOROPHENYL PHENYL ETHER			10 U	10 U	10 U	10 U
4-METHYLPHENOL	180		0.1 U	0.1 U	0.1 U	0.1 U
4-NITROANILINE	3.4		20 U	20 U	20 U	20 U
4-NITROPHENOL			20 U	20 U	20 U	20 U
ACENAPHTHENE	2200		0.1 U	0.1 U	0.1 U	0.1 U
ACENAPHTHYLENE	2200		0.1 U	0.1 U	0.1 U	0.1 U
ACETOPHENONE	3700		10 U	10 U	10 U	10 U
ANTHRACENE	11000		0.1 U	0.1 U	0.1 U	0.1 U
ATRAZINE	0.29	3	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
BENZALDEHYDE	3700		10 UJ	10 UJ	10 UJ	10 UJ
BENZO(A)ANTHRACENE	0.029		0.1 UJ	0.1 UJ	0.11 J	0.13 J
BENZO(A)PYRENE	0.0029	0.2	0.1 U	0.1 U	0.1 U	0.1 U
BENZO(B)FLUORANTHENE	0.029		0.1 U	0.1 U	0.1 U	0.14

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
BENZO(G,H,I)PERYLENE	1100		0.1 U	0.1 U	0.1 U	0.1 U
BENZO(K)FLUORANTHENE	0.29		0.1 U	0.1 U	0.1 U	0.1 U
BIS(2-CHLOROETHOXY)METHANE	110		10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	0.012		10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	4.8	6	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	35		10 U	10 U	10 U	10 U
CAPROLACTAM	18000		10 U	10 U	10 U	10 U
CARBAZOLE			10 U	10 U	10 U	10 U
CHRYSENE	2.9		0.1 U	0.1 U	0.1 U	0.11
DIBENZO(A,H)ANTHRACENE	0.0029		0.1 U	0.1 U	0.1 U	0.1 U
DIBENZOFURAN	37		10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	29000		10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE			10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	3700		10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE			10 UJ	10 UJ	10 UJ	10 UJ
FLUORANTHENE	1500		0.1 U	0.1 U	0.12	0.24
FLUORENE	1500		0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBENZENE	0.042	1	0.1 U	0.1 U	0.1 U	0.1 U
HEXACHLOROBUTADIENE	0.86		10 UJ	10 UJ	10 UJ	10 UJ
HEXACHLOROCYCLOPENTADIENE	220	50	10 UJ	10 UJ	10 UJ	10 UJ
HEXACHLOROETHANE	4.8		10 U	10 U	10 U	10 U
HIGH MOLECULAR WEIGHT PAHS			0.1 UJ	0.1 UJ	0.23 J	0.79 J
INDENO(1,2,3-CD)PYRENE	0.029		0.1 U	0.1 U	0.1 U	0.1 U
ISOPHORONE	71		10 U	10 U	10 U	10 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
LOW MOLECULAR WEIGHT PAHS			0.11	0.13	0.075	0.13
NAPHTHALENE	0.14		0.1 U	0.1 U	0.1 U	0.1 U
NITROBENZENE	0.12		10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	0.0096		10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	14		10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	0.56	1	1 U	1 U	1 U	1 U
PHENANTHRENE	1100		0.11	0.13	0.075	0.13
PHENOL	11000		0.1 U	0.1 U	0.1 U	0.1 U
PYRENE	1100		0.1 U	0.1 U	0.1 U	0.17
TOTAL CARCINOGENIC PAHS-HALFND	0.0029		0.1 UJ	0.1 UJ	0.41 J	0.58 J
TOTAL CARCINOGENIC PAHS-POS	0.0029		0.1 UJ	0.1 UJ	0.11 J	0.38 J
TOTAL CHLORINATED VOCS			10 UJ	10 UJ	10 UJ	10 UJ
TOTAL PAHS			0.11 J	0.13 J	0.28 J	0.92 J
PESTICIDES/PCBS (UG/L)						
4,4'-DDD	0.28		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.2		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.2		0.1 U	0.1 U	0.1 U	0.1 U
ALDRIN	0.004		0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-BHC	0.011		0.05 U	0.05 U	0.05 U	0.05 U
ALPHA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U	0.05 U
AROCLOR-1016	0.96	0.5	1 U	1 U	1 U	1 U
AROCLOR-1221	0.0068	0.5	1 U	1 U	1 U	1 U
AROCLOR-1232	0.0068	0.5	1 U	1 U	1 U	1 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
AROCLOR-1242	0.034	0.5	1 U	1 U	1 U	1 U
AROCLOR-1248	0.034	0.5	1 U	1 U	1 U	1 U
AROCLOR-1254	0.034	0.5	1 U	1 U	1 U	1 U
AROCLOR-1260	0.034	0.5	1 U	1 U	1 U	1 U
AROCLOR-1262		0.5	1 U	1 U	1 U	1 U
AROCLOR-1268		0.5	1 U	1 U	1 U	1 U
BETA-BHC	0.037		0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.011		0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.0042		0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN I	220		0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN II	220		0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	220		0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	11	2	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	11		0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN KETONE	11		0.1 U	0.1 U	0.1 U	0.1 U
GAMMA-BHC (LINDANE)	0.061	0.2	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.19	2	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.015	0.4	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.0074	0.2	0.05 U	0.05 U	0.05 U	0.05 U
METHOXYCHLOR	180	40	0.5 UJ	0.5 U	0.5 U	0.5 U
TOTAL AROCLOR		0.5	1 U	1 U	1 U	1 U
TOTAL CHLORDANE			0.05 U	0.05 U	0.05 U	0.05 U
TOTAL DDD/DDE/DDT			0.1 U	0.1 U	0.1 U	0.1 U
TOXAPHENE	0.061	3	5 U	5 U	5 U	5 U

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM
METALS (UG/L)						
ALUMINUM	37000		58.9 UJ	65.4 UJ	65.4 UJ	67.3 UJ
ANTIMONY	15	6	0.136 UJ	0.09 UJ	0.094 UJ	0.156 UJ
ARSENIC	0.045	10	0.297 J	0.236 U	0.236 U	0.236 U
BARIUM	7300	2000	9.4	9	9	9.1
BERYLLIUM	73	4	0.045 U	0.045 U	0.045 U	0.045 U
CADMIUM	18	5	0.054 U	0.054 U	0.054 U	0.054 U
CALCIUM			15200	14900	14600	14500
CHROMIUM	0.043	100	0.975 UJ	1 UJ	0.992 UJ	1.1 UJ
COBALT	11		0.3 J	0.332 J	0.326 J	0.363 J
COPPER	1500	1300	1.9	1.9	1.8	1.8
IRON	26000		222 U	319	215	227 U
LEAD		15	0.233 J	0.23 J	0.193 J	0.268 J
MAGNESIUM			6280	6400	6140	6040
MANGANESE	880		28.2 UJ	41.6 UJ	27.9 UJ	30.5 UJ
MERCURY	0.57	2	0.056 U	0.056 U	0.056 U	0.056 U
NICKEL	730		2.8	2.6	2.65	2.7
POTASSIUM			2230	2080	2140	2100
SELENIUM	180	50	0.243 J	0.188 J	0.196 J	0.219 J
SILVER	180		0.008 U	0.008 U	0.008 U	0.008 U
SODIUM			30100	28900	29700	29500
THALLIUM		2	0.204 U	0.204 U	0.204 U	0.204 U
VANADIUM	180		0.331 UJ	0.331 UJ	0.331 UJ	0.331 UJ
ZINC	11000		39.2 UJ	38.5 UJ	37 UJ	38.1 UJ

TABLE
ANALYTICAL RESULTS - SURFACE WATER
TfNe_SW_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SW-914-0310	TF5-SW-922-0006	TF5-SW-923-0006-AVG	TF5-SW-924-0006
LOCATION ID			TF5-SW-914	TF5-SW-922	TF5-SW-923	TF5-SW-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH						
BOTTOM DEPTH						
SACODE			NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARS LTAP	FEDM CL	NM	NM	NM	NM

G-9 SEDIMENT SAMPLE ANALYTICAL DATA (DU 4-1)

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)										
1,1,1-TRICHLOROETHANE	8700000	38000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,1,2,2-TETRACHLOROETHANE	560	2800	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,1,2-TRICHLOROETHANE	1100	5300	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,1-DICHLOROETHANE	3300	17000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,1-DICHLOROETHENE	240000	1100000	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
1,2-DIBROMOETHANE	34	170	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,2-DICHLOROBENZENE	1900000	9800000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,2-DICHLOROETHANE	430	2200	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,2-DICHLOROPROPANE	890	4500	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
1,3-DICHLOROBENZENE			7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
1,4-DICHLOROBENZENE	2400	12000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
2-BUTANONE	28000000	200000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
2-HEXANONE	210000	1400000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
4-METHYL-2-PENTANONE	5300000	53000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
ACETONE	61000000	630000000	90 J	5.45 UJ	150	16	81	55 J	240 J	4.3 UJ
BENZENE	1100	5400	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
BROMOCHLOROMETHANE			7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
BROMODICHLOROMETHANE	270	1400	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
BROMOFORM	61000	220000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
BROMOMETHANE	7300	32000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
BTEX			7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
CARBON DISULFIDE	820000	3700000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	1.9 J	8 UJ	4.3 UJ
CARBON TETRACHLORIDE	610	3000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CHLOROBENZENE	290000	1400000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CHLORODIBROMOMETHANE	680	3300	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CHLOROETHANE	15000000	61000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CHLOROFORM	290	1500	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CHLOROMETHANE	120000	500000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CIS-1,2-DICHLOROETHENE	780000	10000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CIS-1,3-DICHLOROPROPENE	1700	8100	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
CYCLOHEXANE	7000000	29000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
DICHLORODIFLUOROMETHANE	180000	780000	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
ETHYLBENZENE	5400	27000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
ISOPROPYLBENZENE	2100000	11000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
M+P-XYLENES			7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
METHYL ACETATE	78000000	1E+09	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
METHYL CYCLOHEXANE			7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
METHYL TERT-BUTYL ETHER	43000	220000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
METHYLENE CHLORIDE	11000	53000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
O-XYLENE	3800000	19000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
STYRENE	6300000	36000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
TETRACHLOROETHENE	550	2600	7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
TOLUENE	5000000	45000000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL 1,2-DICHLOROETHENE	700000	9200000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
TOTAL CHLORINATED ETHENES			7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
TOTAL CHLORINATED VOCS			7.2 UJ	5.45 UJ	9.6 UJ	5.1 UJ	7.8 UJ	7.2 UJ	8 UJ	4.3 UJ
TOTAL XYLENES	630000	2700000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
TRANS-1,2-DICHLOROETHENE	150000	690000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
TRANS-1,3-DICHLOROPROPENE	1700	8100	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
TRICHLOROETHENE	2800	14000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
TRICHLOROFLUOROMETHANE	790000	3400000	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
VINYL CHLORIDE	60	1700	7.2 UJ	5.45 UJ	9.6 U	5.1 U	7.8 U	7.2 UJ	8 UJ	4.3 UJ
SEMIVOLATILES (UG/KG)										
1,1-BIPHENYL	3900000	51000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
1,4-DIOXANE	44000	160000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	670 U	670 U	670 U	670 U	2700 U	670 U	670 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
2,4-DIMETHYLPHENOL	1200000	12000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
2,4-DINITROPHENOL	120000	1200000	670 U	670 U	670 U	670 U	670 U	2700 U	670 U	670 U
2,4-DINITROTOLUENE	1600	5500	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
2,6-DINITROTOLUENE	61000	620000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
2-CHLOROPHENOL	390000	5100000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM
2-METHYLNAPHTHALENE	310000	4100000	3.3 U	4.62 J	10	3.3 U	4.2	13 U	3.3 U	3.3 U
2-METHYLPHENOL	3100000	31000000	10 J	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	13 UJ	3.3 UJ	3.3 UJ
2-NITROANILINE	610000	6000000	670 U	670 U	670 U	670 U	670 U	2700 U	670 U	670 U
2-NITROPHENOL			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
3-NITROANILINE			670 U	670 U	670 U	670 U	670 U	2700 U	670 U	670 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 U	670 U	670 U	670 U	670 U	2700 U	670 U	670 U
4-BROMOPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
4-CHLOROANILINE	2400	8600	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	1300 UJ	330 UJ	330 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
4-METHYLPHENOL	310000	3100000	3.3 U	3.3 U	5.9	16	10	13 U	5	3.3 U
4-NITROANILINE	24000	86000	670 U	670 U	670 U	670 U	670 U	2700 U	670 U	670 U
4-NITROPHENOL			670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	2700 UJ	670 UJ	670 UJ
ACENAPHTHENE	3400000	33000000	3.3 U	3.3 U	8.9	3.3 U	19	13 U	6.5	3.3 U
ACENAPHTHYLENE	3400000	33000000	4.7	3.3 U	28	3.3 U	4.9	13 U	10	3.3 U
ACETOPHENONE	7800000	100000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
ANTHRACENE	17000000	170000000	11	7.85	120	8.5	61	15	28	6.2
ATRAZINE	2100	7500	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	13 UJ	3.3 UJ	3.3 UJ
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	170 J	330 UJ	330 UJ	1300 UJ	64 J	330 UJ
BENZO(A)ANTHRACENE	150	2100	46 J	27 J	200 J	34 J	100 J	66 J	130 J	26 J
BENZO(A)PYRENE	15	210	61 J	23.5 J	210	49	120	73	140	34
BENZO(B)FLUORANTHENE	150	2100	67 J	25 J	240 J	61 J	130 J	76 J	170 J	41 J
BENZO(G,H,I)PERYLENE	1700000	17000000	49 J	19.5	150	39	92	55	130	27

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	68	33 J	200	51	130	71	200	43
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	120 J	330 U	210 J	41 J	57 J	1300 U	220 J	35 J
BUTYL BENZYL PHTHALATE	260000	910000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
CAPROLACTAM	31000000	310000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
CARBAZOLE			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
CHRYSENE	15000	210000	78 J	35.5 J	290 J	53 J	130 J	70 J	160 J	40 J
DIBENZO(A,H)ANTHRACENE	15	210	13 J	6.6 J	53	11	30	14	36	8.2
DIBENZOFURAN	78000	1000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
DIETHYL PHTHALATE	49000000	490000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
DIMETHYL PHTHALATE			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
DI-N-OCTYL PHTHALATE			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
FLUORANTHENE	2300000	22000000	110 J	49.5 J	330	86	230	130	260	69
FLUORENE	2300000	22000000	5.4	4.2	3.3 U	3.9	24	13 U	10	3.3 U
HEXACHLOROBENZENE	300	1100	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	13 U	3.3 U	3.3 U
HEXACHLOROBUTADIENE	6200	22000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
HEXACHLOROETHANE	35000	120000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
HIGH MOLECULAR WEIGHT PAHS			614 J	278 J	2050 J	484 J	1220 J	701 J	1550 J	366 J
INDENO(1,2,3-CD)PYRENE	150	2100	39 J	16.5 J	120	34	80	46	110	23
ISOPHORONE	510000	1800000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
LOW MOLECULAR WEIGHT PAHS			82.2	44.8 J	343	54.4	309	76	200	44.5

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
NAPHTHALENE	3600	18000	4.1	3.3 U	6	3.3 U	5.8	13 U	5	5.3
NITROBENZENE	4800	24000	330 U	330 U	330 U	330 U	330 U	1300 U	330 UJ	330 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
PENTACHLOROPHENOL	3000	9000	33 UJ	33 UJ	33 UJ	33 UJ	33 UJ	130 UJ	33 UJ	33 UJ
PHENANTHRENE	1700000	17000000	57	29 J	170	42	190	61	140	33
PHENOL	18000000	180000000	3.3 U	3.3 U	3.3 U	3.3 U	15	13 U	4.8	3.3 U
PYRENE	1700000	17000000	83	41.5	260	66	180	100	210	55
TOTAL CARCINOGENIC PAHS-HALFND	15	210	372 J	168 J	1310 J	293 J	720 J	416 J	946 J	215 J
TOTAL CARCINOGENIC PAHS-POS	15	210	372 J	168 J	1310 J	293 J	720 J	416 J	946 J	215 J
TOTAL CHLORINATED VOCS			330 U	330 U	330 U	330 U	330 U	1300 U	330 U	330 U
TOTAL PAHS			696 J	322 J	2400 J	538 J	1530 J	777 J	1750 J	411 J
PESTICIDES/PCBS (UG/KG)										
4,4'-DDD	2000	7200	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
4,4'-DDE	1400	5100	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ALDRIN	29	100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ALPHA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ALPHA-CHLORDANE	1600	6500	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
AROCLOR-1016	3900	21000	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1221	140	540	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1232	140	540	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1242	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1248	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1254	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1260	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1262			33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
AROCLOR-1268			33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
BETA-BHC	270	960	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
DELTA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
DIELDRIN	30	110	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ENDOSULFAN II	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN	18000	180000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	20.8 J	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
GAMMA-CHLORDANE	1600	6500	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
HEPTACHLOR	110	380	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
HEPTACHLOR EPOXIDE	53	190	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
METHOXYCHLOR	310000	3100000	17 U	17 U	17 U	17 U	17 U	17 U	17 U	17 U
TOTAL AROCLOR	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 UJ	33 U
TOTAL CHLORDANE			1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
TOTAL DDD/DDE/DDT			3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
TOXAPHENE	440	1600	170 U	170 U	170 U	170 U	170 U	170 U	170 U	170 U
METALS (MG/KG)										
ALUMINUM	77000	990000	6470	6650	10100	6280	7790	11700	8680	8930

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.19 UJ	0.155 UJ	0.28 UJ	0.21 UJ	0.25 UJ	0.5 UJ	0.32 UJ	0.77 UJ
ARSENIC	0.39	1.6	10.8	11.2	13.5 J	9.2	11.1 J	46.6 J	12.2	12.5
BARIUM	15000	190000	19 J	16.6 J	63.9 J	17 J	27.3 J	64.7 J	43.1 J	27.3 J
BERYLLIUM	160	2000	0.37 J	0.295 J	0.6 J	0.31 J	0.37 J	0.53 J	0.47 J	0.44 J
CADMIUM	70	800	0.24 J	0.285	0.68	0.34	0.27 J	1.2	0.37 J	0.25 J
CALCIUM			509 J	494 J	1080 J	614 J	1200 J	1120 J	830 J	758 J
CHROMIUM	0.29	5.6	11.2 J	29.2 J	12.6 J	11.5 J	12.3 J	23.6 J	19.3 J	12.1 J
COBALT	23	300	9.5	9.4	33.7	10.1	13.5	76.2	13.8	9.6
COPPER	3100	41000	11.9	9.8	19.4	12.3	13.5	19.1	21.3	12.9
IRON	55000	720000	25000	26400	55600	21700	29400	145000	26200	28900
LEAD	400	800	21.6 J	96.2 J	37.6 J	19.9 J	25.3 J	21.6 J	54.2 J	27.3 J
MAGNESIUM			1920	2060	1930	2280	2480	4160	2320	2090
MANGANESE	1800	23000	301	310	3440	171	736	2770	451	368
MERCURY	5.6	34	0.047 J	0.0325 J	0.07 J	0.055	0.051 J	0.046 J	0.093	0.058
NICKEL	1500	20000	16.3	17.6	50.4	20.8	22.7	132	25.7	18
POTASSIUM			216	166 J	372	187	241	351 J	208	271
SELENIUM	390	5100	2.7 UJ	2.7 UJ	6.2 UJ	2.2 UJ	3 UJ	12.1 UJ	2.5 UJ	3.3 UJ
SILVER	390	5100	0.083 U	0.068 U	0.12 J	0.094 U	0.094 U	0.22 U	0.14 U	0.1 U
SODIUM			23.9 J	40.8 J	145	33 J	50.6 J	114 J	32.7 J	54 J
THALLIUM			0.85 J	0.45 J	11.5	0.29 U	2.4	6.8	1.4 J	1 J
VANADIUM	390	5200	13.6	12.3	22.3	11.4	14.4	19.3	17.7	16.5
ZINC	23000	310000	65.5	71.4	161	69.3	79.3	199	101	67.8
MISCELLANEOUS PARAMETERS (S.U.)										
PH			5	5.8	6	5.9	5.9	6.1	5.7	5.9

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)										
TOTAL ORGANIC CARBON			22000	15000	46000	18000	22000	47000	31000	18000
DIOXINS/FURANS (NG/KG)										
1,2,3,4,6,7,8,9-OCDD	15000	60000	6190 J	852	2910 J	2290 J	507	502	2640 J	2080 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	169 J	3.63	8.03 J	31.2	7.42 J	4.52 U	35.4	6.8 J
1,2,3,4,6,7,8-HPCDD	450	1800	203 J	19.4	75.1	86.1	20.6	14.6	89.2	30.1
1,2,3,4,6,7,8-HPCDF	450	1800	24.7 J	1.62 J	2.74 J	12.6 U	3.6 J	2.22 J	12.4	2.87 J
1,2,3,4,7,8,9-HPCDF	450	1800	2.65 J	0.208 U	0.242 U	0.941 J	0.229 UJ	0.132 U	1.24 J	0.314 U
1,2,3,4,7,8-HXCDD	45	180	1.74 J	0.236 J	0.497 J	1.14 J	0.259 J	0.242 J	1.01 J	0.415 J
1,2,3,4,7,8-HXCDF	45	180	1.34 J	0.206 J	0.429 J	0.796 J	0.278 J	0.249 J	0.864 J	0.416 J
1,2,3,6,7,8-HXCDD	45	180	4.7	0.652 J	1.09 J	2.93 J	0.862 J	0.587 J	2.95 J	0.891 J
1,2,3,6,7,8-HXCDF	45	180	1.16 J	0.176 J	0.246 J	0.727 J	0.211 J	0.129 J	0.886 J	0.354 J
1,2,3,7,8,9-HXCDD	45	180	4.07 J	0.475 J	1.26 J	3.12 J	0.789 U	0.572 U	3.21 J	0.985 J
1,2,3,7,8,9-HXCDF	45	180	0.332 U	0.0336 U	0.0644 U	0.136 U	0.15 U	0.0631 U	0.125 J	0.0791 J
1,2,3,7,8-PECDD	4.5	18	0.83 J	0.154 J	0.225 J	0.665 J	0.201 J	0.0435 U	0.655 J	0.192 J
1,2,3,7,8-PECDF	150	600	0.272 J	0.0854 J	0.0309 U	0.238 J	0.0762 J	0.106 J	0.22 J	0.133 J
2,3,4,6,7,8-HXCDF	45	180	1.13 J	0.116 J	0.301 J	0.477 J	0.201 J	0.216 J	0.676 J	0.326 J
2,3,4,7,8-PECDF	15	60	0.261 J	0.0426 J	0.204 J	0.193 J	0.0608 J	0.164 J	0.162 J	0.187 J
2,3,7,8-TCDD	4.5	18	0.0398 U	0.0258 J	0.0234 U	0.0966 J	0.0278 U	0.0465 U	0.0287 U	0.0252 U
2,3,7,8-TCDF	45	180	0.536 J	0.202 J	0.424 J	0.108 UJ	0.0581 U	0.308 J	0.257 J	0.292 J
TEQ BIRD	4.5	18	3.67 J	0.646 J	1.51 J	1.9 J	0.468 J	0.647 J	2.25 J	1.2 J
TEQ BIRD HALFND	4.5	18	3.71 J	0.673 J	1.52 J	2.03 J	0.559 J	0.725 J	2.26 J	1.21 J
TEQ FISH	4.5	18	3.43 J	0.508 J	1.11 J	2.03 J	0.55 J	0.376 J	2.07 J	0.918 J

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-902-0006-AVG	TF4-SD-903-0006	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006	TF4-SD-907-0006	TF4-SD-908-0006
LOCATION ID			TF4-SD-901	TF4-SD-902	TF4-SD-903	TF4-SD-904	TF4-SD-905	TF4-SD-906	TF4-SD-907	TF4-SD-908
SAMPLE DATE			03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/18/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	AVG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	3.47 J	0.519 J	1.13 J	2.1 J	0.578 J	0.428 J	2.09 J	0.932 J
TEQ MAMMAL	4.5	18	6.6 J	0.85 J	2.36 J	3.31 J	0.799 J	0.544 J	3.54 J	1.58 J
TEQ MAMMAL HALFND	4.5	18	6.63 J	0.871 J	2.38 J	3.39 J	0.864 J	0.622 J	3.55 J	1.6 J
TOTAL HPCDD			363	37.2	155	165	39	30.1	177	63.5
TOTAL HPCDF			104	4.36	8.53	33.8	8.9	6.19 J	33.5	7.04
TOTAL HXCDD			32.3	4.49	11.4	23.4	5.66	4.86 J	19.6	7.8
TOTAL HXCDF			20	2.8 J	3.99 J	17.6	4.55	3.21 J	17.6	5.86
TOTAL PECDD			4.38	0.398 J	1.5 J	3.08 J	0.768 J	0.0435 U	2.57 J	0.762 J
TOTAL PECDF			12	2.26 J	4.01 J	9.59	1.9 J	1.69 J	6.99	5.11
TOTAL TCDD			0.421 J	0.0337 J	0.0234 U	0.623 J	0.0278 U	0.0465 U	0.0287 U	0.0252 U
TOTAL TCDF			5.59	2.07	4.12	3.84	1.67 U	2.79 U	2.53	1.32 J

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
VOLATILES (UG/KG)							
1,1,1-TRICHLOROETHANE	8700000	38000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,1,2,2-TETRACHLOROETHANE	560	2800	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,1,2-TRICHLOROETHANE	1100	5300	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,1-DICHLOROETHANE	3300	17000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,1-DICHLOROETHENE	240000	1100000	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
1,2-DIBROMOETHANE	34	170	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,2-DICHLOROBENZENE	1900000	9800000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,2-DICHLOROETHANE	430	2200	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,2-DICHLOROPROPANE	890	4500	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
1,3-DICHLOROBENZENE			7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
1,4-DICHLOROBENZENE	2400	12000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
2-BUTANONE	28000000	200000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
2-HEXANONE	210000	1400000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
4-METHYL-2-PENTANONE	5300000	53000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
ACETONE	61000000	630000000	90 J	16 J	11 U	120 J	73 J
BENZENE	1100	5400	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
BROMOCHLOROMETHANE			7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
BROMODICHLOROMETHANE	270	1400	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
BROMOFORM	61000	220000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
BROMOMETHANE	7300	32000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
BTEX			7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
CARBON DISULFIDE	820000	3700000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	15 J
CARBON TETRACHLORIDE	610	3000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CHLOROBENZENE	290000	1400000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CHLORODIBROMOMETHANE	680	3300	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CHLOROETHANE	15000000	61000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CHLOROFORM	290	1500	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CHLOROMETHANE	120000	500000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CIS-1,2-DICHLOROETHENE	780000	10000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CIS-1,3-DICHLOROPROPENE	1700	8100	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
CYCLOHEXANE	7000000	29000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
DICHLORODIFLUOROMETHANE	180000	780000	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
ETHYLBENZENE	5400	27000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
ISOPROPYLBENZENE	2100000	11000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
M+P-XYLENES			7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
METHYL ACETATE	78000000	1E+09	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
METHYL CYCLOHEXANE			7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
METHYL TERT-BUTYL ETHER	43000	220000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
METHYLENE CHLORIDE	11000	53000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
O-XYLENE	3800000	19000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
STYRENE	6300000	36000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
TETRACHLOROETHENE	550	2600	7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
TOLUENE	5000000	45000000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
TOTAL 1,2-DICHLOROETHENE	700000	9200000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
TOTAL CHLORINATED ETHENES			7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
TOTAL CHLORINATED VOCS			7.2 UJ	8.9 UJ	11 UJ	8.25 UJ	4.5 UJ
TOTAL XYLENES	630000	2700000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
TRANS-1,2-DICHLOROETHENE	150000	690000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
TRANS-1,3-DICHLOROPROPENE	1700	8100	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
TRICHLOROETHENE	2800	14000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
TRICHLOROFLUOROMETHANE	790000	3400000	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
VINYL CHLORIDE	60	1700	7.2 UJ	8.9 UJ	11 U	8.25 UJ	4.5 UJ
SEMIVOLATILES (UG/KG)							
1,1-BIPHENYL	3900000	51000000	330 U	330 U	330 U	330 U	330 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
1,4-DIOXANE	44000	160000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 U	330 U	330 U	330 U	330 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 UJ
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	670 U	670 U	670 U	670 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	330 U	330 U	330 U	330 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U
2,4-DIMETHYLPHENOL	1200000	12000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ
2,4-DINITROPHENOL	120000	1200000	670 U	670 U	670 U	670 U	670 U
2,4-DINITROTOLUENE	1600	5500	330 U	330 U	330 U	330 U	330 U
2,6-DINITROTOLUENE	61000	620000	330 U	330 U	330 U	330 U	330 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	330 U	330 U	330 U	330 U
2-CHLOROPHENOL	390000	5100000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
2-METHYLNAPHTHALENE	310000	4100000	3.3 U	3.3 U	3.3 U	2.68	3.3 U
2-METHYLPHENOL	3100000	31000000	10 J	3.3 UJ	3.3 UJ	3.3 UJ	12 J
2-NITROANILINE	610000	6000000	670 U	670 U	670 U	670 U	670 U
2-NITROPHENOL			330 U	330 U	330 U	330 U	330 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	330 U	330 U	330 U	330 U
3-NITROANILINE			670 U	670 U	670 U	670 U	670 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 U	670 U	670 U	670 U	670 U
4-BROMOPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
4-CHLOROANILINE	2400	8600	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U
4-METHYLPHENOL	310000	3100000	3.3 U	3.3 U	3.3 U	3.68	3.3 U
4-NITROANILINE	24000	86000	670 U	670 U	670 U	670 U	670 U
4-NITROPHENOL			670 UJ	670 UJ	670 UJ	670 UJ	670 UJ
ACENAPHTHENE	3400000	33000000	3.3 U	3.3 U	3.3 U	5.82 J	3.3 U
ACENAPHTHYLENE	3400000	33000000	4.7	5.3	5	5.9 J	4.5
ACETOPHENONE	7800000	100000000	330 U	330 U	330 U	330 U	330 U
ANTHRACENE	17000000	170000000	11	8.3	6.1	20.8 J	11
ATRAZINE	2100	7500	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	330 UJ	182 J	160 J
BENZO(A)ANTHRACENE	150	2100	46 J	32 J	27 J	72 J	50 J
BENZO(A)PYRENE	15	210	61 J	44	41	80 J	55
BENZO(B)FLUORANTHENE	150	2100	67 J	50 J	48 J	92.5 J	64 J
BENZO(G,H,I)PERYLENE	1700000	17000000	49 J	32	33	71 J	34

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	68	42	36	111 J	66 J
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 U	330 U	330 U	330 U	330 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 U	330 U	330 U	330 U	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	120 J	330 U	330 U	162 J	150 J
BUTYL BENZYL PHTHALATE	260000	910000	330 U	330 U	330 U	330 U	330 U
CAPROLACTAM	31000000	310000000	330 U	330 U	330 U	330 U	330 U
CARBAZOLE			330 U	330 U	330 U	330 U	330 U
CHRYSENE	15000	210000	78 J	48 J	40 J	91.5 J	81 J
DIBENZO(A,H)ANTHRACENE	15	210	13 J	13	12	25 J	11
DIBENZOFURAN	78000	1000000	330 U	330 U	330 U	330 U	330 U
DIETHYL PHTHALATE	49000000	490000000	330 U	330 U	330 U	330 U	330 U
DIMETHYL PHTHALATE			330 U	330 U	330 U	330 U	330 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	330 U	330 U
DI-N-OCTYL PHTHALATE			330 U	330 U	330 U	330 U	330 U
FLUORANTHENE	2300000	22000000	110 J	73	64	134 J	110
FLUORENE	2300000	22000000	5.4	4	3.3 U	9.7 J	5.6
HEXACHLOROBENZENE	300	1100	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
HEXACHLOROBUTADIENE	6200	22000	330 U	330 U	330 U	330 U	330 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 U	330 U	330 U	330 U	330 U
HEXACHLOROETHANE	35000	120000	330 U	330 U	330 U	330 U	330 U
HIGH MOLECULAR WEIGHT PAHS			614 J	422 J	384 J	848 J	594 J
INDENO(1,2,3-CD)PYRENE	150	2100	39 J	28	28	59.5 J	27
ISOPHORONE	510000	1800000	330 U	330 U	330 U	330 U	330 U
LOW MOLECULAR WEIGHT PAHS			82.2	59.1	38.1	135 J	85.3

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
NAPHTHALENE	3600	18000	4.1	5.5	3.3 U	4.42 J	4.2
NITROBENZENE	4800	24000	330 U	330 U	330 U	330 U	330 U
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 U	330 U	330 U	330 U	330 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	330 U	330 U	330 U	330 U
PENTACHLOROPHENOL	3000	9000	33 UJ	33 UJ	33 UJ	33 UJ	33 U
PHENANTHRENE	1700000	17000000	57	36	27	88.5 J	60
PHENOL	18000000	180000000	3.3 U	3.3 U	3.3 U	3.52	3.3 U
PYRENE	1700000	17000000	83	60	55	114 J	96
TOTAL CARCINOGENIC PAHS-HALFND	15	210	372 J	257 J	232 J	532 J	354 J
TOTAL CARCINOGENIC PAHS-POS	15	210	372 J	257 J	232 J	532 J	354 J
TOTAL CHLORINATED VOCS			330 U	330 U	330 U	330 U	330 U
TOTAL PAHS			696 J	481 J	422 J	984 J	679 J
PESTICIDES/PCBS (UG/KG)							
4,4'-DDD	2000	7200	3.3 UJ	3.3 U	3.4	3.3 U	3.3 U
4,4'-DDE	1400	5100	3.3 UJ	3.3 U	15 J	3.3 U	3.3 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	6.7	3.3 U	3.3 U
ALDRIN	29	100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ALPHA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ALPHA-CHLORDANE	1600	6500	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
AROCLOR-1016	3900	21000	33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1221	140	540	33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1232	140	540	33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1242	220	740	33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1248	220	740	33 U	33 U	33 UJ	33 UJ	33 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
AROCLOR-1254	220	740	33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1260	220	740	33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1262			33 U	33 U	33 UJ	33 UJ	33 UJ
AROCLOR-1268			33 U	33 U	33 UJ	33 UJ	33 UJ
BETA-BHC	270	960	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
DELTA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
DIELDRIN	30	110	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ENDOSULFAN II	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN	18000	180000	3.3 UJ	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	2.72	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
GAMMA-CHLORDANE	1600	6500	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
HEPTACHLOR	110	380	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
HEPTACHLOR EPOXIDE	53	190	1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
METHOXYCHLOR	310000	3100000	17 U	17 U	17 U	17 U	17 U
TOTAL AROCLOR	220	740	33 U	33 U	33 UJ	33 UJ	33 UJ
TOTAL CHLORDANE			1.7 UJ	1.7 U	1.7 U	1.7 U	1.7 U
TOTAL DDD/DDE/DDT			3.3 UJ	3.3 U	25.1 J	3.3 U	3.3 U
TOXAPHENE	440	1600	170 U	170 U	170 U	170 U	170 U
METALS (MG/KG)							
ALUMINUM	77000	990000	6470	12100	12900	9880	4730

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
ANTIMONY	31	410	0.19 UJ	0.18 UJ	0.28 UJ	0.29 UJ	0.28 UJ
ARSENIC	0.39	1.6	10.8	14.7 J	11.7 J	16	20.3
BARIUM	15000	190000	19 J	44.8 J	29.2 J	32.7 J	21.4 J
BERYLLIUM	160	2000	0.37 J	0.56 J	0.68 J	0.5 J	0.21 J
CADMIUM	70	800	0.24 J	0.42	0.25 J	0.545	0.13 J
CALCIUM			509 J	624 J	590 J	1220 J	691 J
CHROMIUM	0.29	5.6	11.2 J	14.9 J	15.2 J	16.2 J	7.3 J
COBALT	23	300	9.5	17.2	12	15.5	9.6
COPPER	3100	41000	11.9	20	24.9	22.4	13.7
IRON	55000	720000	25000	39500	41100	36200	32400
LEAD	400	800	21.6 J	65.5 J	59.2 J	41.8 J	6.3 J
MAGNESIUM			1920	2420	3040	3160	1370
MANGANESE	1800	23000	301	676	309	432	279
MERCURY	5.6	34	0.047 J	0.17	0.1	0.0935	0.019 J
NICKEL	1500	20000	16.3	22	22.5	24.9	18.4
POTASSIUM			216	272	583	456	155 J
SELENIUM	390	5100	2.7 UJ	4.1 UJ	4.1 UJ	4.3 UJ	4.2 UJ
SILVER	390	5100	0.083 U	0.077 U	0.12 U	0.125 U	0.13 U
SODIUM			23.9 J	55.7	518	558	75.8 J
THALLIUM			0.85 J	2	0.77 J	0.995 J	0.38 U
VANADIUM	390	5200	13.6	26.5	27.2	20.4	9.6
ZINC	23000	310000	65.5	76.6	88	124	59
MISCELLANEOUS PARAMETERS (S.U.)							
PH			5	6	5.9	6.6	4.9

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON			22000	26000	36000	39500	50000
DIOXINS/FURANS (NG/KG)							
1,2,3,4,6,7,8,9-OCDD	15000	60000	6190 J	2120 J	8750 J	3650 J	1120
1,2,3,4,6,7,8,9-OCDF	15000	60000	169 J	6.95	27.6	42.4 J	4.97 U
1,2,3,4,6,7,8-HPCDD	450	1800	203 J	33.2	129	127 J	27.7
1,2,3,4,6,7,8-HPCDF	450	1800	24.7 J	2.99 J	12.3	20.6 J	2.71 J
1,2,3,4,7,8,9-HPCDF	450	1800	2.65 J	0.383 U	1.33 J	1.48 J	0.292 UJ
1,2,3,4,7,8-HXCDD	45	180	1.74 J	0.37 J	1.73 J	1.81 J	0.358 J
1,2,3,4,7,8-HXCDF	45	180	1.34 J	0.585 J	2.15 J	1.35 J	0.317 J
1,2,3,6,7,8-HXCDD	45	180	4.7	0.943 J	3.58 J	3.83 J	0.824 J
1,2,3,6,7,8-HXCDF	45	180	1.16 J	0.426 J	1.69 J	1.27 J	0.293 J
1,2,3,7,8,9-HXCDD	45	180	4.07 J	0.985 J	4.02 J	4.8 J	0.926 U
1,2,3,7,8,9-HXCDF	45	180	0.332 U	0.0578 U	0.093 J	0.138 J	0.0984 U
1,2,3,7,8-PECDD	4.5	18	0.83 J	0.244 J	0.928 J	0.953 J	0.0694 U
1,2,3,7,8-PECDF	150	600	0.272 J	0.224 J	0.853 J	0.388 J	0.171 J
2,3,4,6,7,8-HXCDF	45	180	1.13 J	0.446 J	1.52 J	1.2 J	0.242 J
2,3,4,7,8-PECDF	15	60	0.261 J	0.243 J	0.883 J	0.428 J	0.107 J
2,3,7,8-TCDD	4.5	18	0.0398 U	0.0249 U	0.145 J	0.136 J	0.0455 U
2,3,7,8-TCDF	45	180	0.536 J	0.408 J	1.56 J	0.441 J	0.171 U
TEQ BIRD	4.5	18	3.67 J	1.47 J	5.81 J	3.7 J	0.402 J
TEQ BIRD HALFND	4.5	18	3.71 J	1.48 J	5.81 J	3.72 J	0.598 J
TEQ FISH	4.5	18	3.43 J	1.02 J	4.26 J	3.43 J	0.501 J

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU4-1_2010
TANK FARM 4, NEWPORT, RHODE ISLAND

SAMPLE ID			TF4-SD-901-0006	TF4-SD-909-0006	TF4-SD-910-0006	TF4-SD-911-0006-AVG	TF4-SD-912-0006
LOCATION ID			TF4-SD-901	TF4-SD-909	TF4-SD-910	TF4-SD-911	TF4-SD-912
SAMPLE DATE			03/18/10	03/17/10	03/17/10	03/17/10	03/17/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	3.47 J	1.04 J	4.26 J	3.45 J	0.574 J
TEQ MAMMAL	4.5	18	6.6 J	1.74 J	7.06 J	5.29 J	0.881 J
TEQ MAMMAL HALFND	4.5	18	6.63 J	1.76 J	7.06 J	5.31 J	1 J
TOTAL HPCDD			363	69.3	261	260 J	57.2
TOTAL HPCDF			104	7.63	31.4	51.6 J	6.82
TOTAL HXCDD			32.3	8.07	32.6	33.6 J	7.66
TOTAL HXCDF			20	7.13	26.8	21.3 J	1.92 J
TOTAL PECDD			4.38	1.43 J	8.09	4.6 J	0.0694 U
TOTAL PECDF			12	8.07	26.4	14.2 J	0.293 J
TOTAL TCDD			0.421 J	0.583 J	3.31	0.159 J	0.218 J
TOTAL TCDF			5.59	2.09	6.53	4.8 J	4.11

G-10 SEDIMENT SAMPLE ANALYTICAL DATA (DU 5-1)

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/KG)										
1,1,1-TRICHLOROETHANE	8700000	38000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,1,2,2-TETRACHLOROETHANE	560	2800	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,1,2-TRICHLOROETHANE	1100	5300	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,1-DICHLOROETHANE	3300	17000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,1-DICHLOROETHENE	240000	1100000	7.1 UJ	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	7.1 UJ	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	7.1 UJ	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2-DIBROMOETHANE	34	170	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2-DICHLOROBENZENE	1900000	9800000	1.6 J	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2-DICHLOROETHANE	430	2200	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,2-DICHLOROPROPANE	890	4500	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,3-DICHLOROBENZENE			7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
1,4-DICHLOROBENZENE	2400	12000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
2-BUTANONE	28000000	200000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
2-HEXANONE	210000	1400000	7.1 UJ	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
4-METHYL-2-PENTANONE	5300000	53000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
ACETONE	61000000	630000000	38 J	6.1 UJ	38 J	37 J	130 J	200 J	48 J	63 J
BENZENE	1100	5400	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
BROMOCHLOROMETHANE			7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
BROMODICHLOROMETHANE	270	1400	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
BROMOFORM	61000	220000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
BROMOMETHANE	7300	32000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
BTEX			7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CARBON DISULFIDE	820000	3700000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CARBON TETRACHLORIDE	610	3000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CHLOROBENZENE	290000	1400000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CHLORODIBROMOMETHANE	680	3300	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CHLOROETHANE	15000000	61000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CHLOROFORM	290	1500	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CHLOROMETHANE	120000	500000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CIS-1,2-DICHLOROETHENE	780000	10000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CIS-1,3-DICHLOROPROPENE	1700	8100	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
CYCLOHEXANE	7000000	29000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
DICHLORODIFLUOROMETHANE	180000	780000	7.1 UJ	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
ETHYLBENZENE	5400	27000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
ISOPROPYLBENZENE	2100000	11000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
M+P-XYLENES			7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
METHYL ACETATE	78000000	1E+09	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
METHYL CYCLOHEXANE			7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
METHYL TERT-BUTYL ETHER	43000	220000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
METHYLENE CHLORIDE	11000	53000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
O-XYLENE	3800000	19000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
STYRENE	6300000	36000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TETRACHLOROETHENE	550	2600	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TOLUENE	5000000	45000000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM
TOTAL 1,2-DICHLOROETHENE	700000	9200000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TOTAL CHLORINATED ETHENES			7.1 UJ	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
TOTAL CHLORINATED VOCS			1.6 J	6.1 UJ	5.5 UJ	4.3 UJ	11 UJ	19 UJ	12 UJ	8.4 UJ
TOTAL XYLENES	630000	2700000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TRANS-1,2-DICHLOROETHENE	150000	690000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TRANS-1,3-DICHLOROPROPENE	1700	8100	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TRICHLOROETHENE	2800	14000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
TRICHLOROFLUOROMETHANE	790000	3400000	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
VINYL CHLORIDE	60	1700	7.1 U	6.1 U	5.5 U	4.3 U	11 UJ	19 UJ	12 UJ	8.4 UJ
SEMIVOLATILES (UG/KG)										
1,1-BIPHENYL	3900000	51000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
1,4-DIOXANE	44000	160000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	670 U	670 U	670 U	670 U	670 U	670 U	670 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,4-DIMETHYLPHENOL	1200000	12000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.5	3.3 U
2,4-DINITROPHENOL	120000	1200000	670 U	670 U	670 U	670 U	670 U	670 U	670 U	670 U
2,4-DINITROTOLUENE	1600	5500	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2,6-DINITROTOLUENE	61000	620000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2-CHLOROPHENOL	390000	5100000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSLSORE	EPARSLSOIN	NM	NM	NM	NM	NM	NM	NM	NM
2-METHYLNAPHTHALENE	310000	4100000	210	24	31	4.7	7.3	7.4	15	3.3 U
2-METHYLPHENOL	3100000	31000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	12	3.5	3.3 U
2-NITROANILINE	610000	6000000	670 U	670 U	670 U	670 U	670 U	670 U	670 U	670 U
2-NITROPHENOL			330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	330 U	330 U	330 U	330 UJ	330 U	330 U	330 U
3-NITROANILINE			670 U	670 U	670 U	670 U	670 U	670 U	670 U	670 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 U	670 U	670 U	670 U	670 U	670 U	670 U	670 U
4-BROMOPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ
4-CHLOROANILINE	2400	8600	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
4-METHYLPHENOL	310000	3100000	3.3 U	3.3 U	3.3 U	11	5.3	8.8	6.3	9.4
4-NITROANILINE	24000	86000	670 U	670 U	670 U	670 U	670 U	670 U	670 U	670 U
4-NITROPHENOL			670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ	670 UJ
ACENAPHTHENE	3400000	33000000	48	24	14	10	8.9	12	36	7.2
ACENAPHTHYLENE	3400000	33000000	110	14	31	19	20	24	64	14
ACETOPHENONE	7800000	100000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
ANTHRACENE	17000000	170000000	120	29	54	51	35	59	130	29
ATRAZINE	2100	7500	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	4.6 J	3.3 UJ	3.3 UJ
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
BENZO(A)ANTHRACENE	150	2100	140 J	33 J	96 J	270 J	160 J	230 J	270 J	90 J
BENZO(A)PYRENE	15	210	190	42	130	260	230 J	300	390	130
BENZO(B)FLUORANTHENE	150	2100	290 J	72 J	170 J	420 J	230 J	430 J	470 J	250 J
BENZO(G,H,I)PERYLENE	1700000	17000000	150	32	81	250	200 J	320	350	100

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	140 J	29 J	91 J	160	290 J	200 J	460	69 J
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	45 J	41 J	130 J	250 J	140 J	130 J	310 J
BUTYL BENZYL PHTHALATE	260000	910000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
CAPROLACTAM	31000000	310000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
CARBAZOLE			330 U	330 U	330 U	39 J	330 U	36 J	49 J	330 U
CHRYSENE	15000	210000	220	51	130	330 J	230 J	350 J	440 J	170
DIBENZO(A,H)ANTHRACENE	15	210	40	8.7	26	130	57	110	110	38
DIBENZOFURAN	78000	1000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
DIETHYL PHTHALATE	49000000	490000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
DIMETHYL PHTHALATE			330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
DI-N-OCTYL PHTHALATE			330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
FLUORANTHENE	2300000	22000000	400	100	210	710	380	700	640	270
FLUORENE	2300000	22000000	120	34	35	20	16	22	62	14
HEXACHLOROBENZENE	300	1100	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
HEXACHLOROBUTADIENE	6200	22000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
HEXACHLOROETHANE	35000	120000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
HIGH MOLECULAR WEIGHT PAHS			2070 J	482 J	1210 J	3410 J	2270 J	3460 J	4020 J	1430 J
INDENO(1,2,3-CD)PYRENE	150	2100	130	29	72	320	180 J	280	310	92
ISOPHORONE	510000	1800000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
LOW MOLECULAR WEIGHT PAHS			1170	265	366	419	294 J	393	689	194

TABLE
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TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
NAPHTHALENE	3600	18000	130	9.6	21	4.2	7	8.6	22	3.3 U
NITROBENZENE	4800	24000	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
PENTACHLOROPHENOL	3000	9000	33 U	33 U	33 U	33 U	33 U	33 U	34	33 U
PHENANTHRENE	1700000	17000000	430	130	180	310	200 J	260	360	130
PHENOL	18000000	180000000	3.3 U	3.3 U	3.3 U	7.6	3.3 U	7.3	6.2	3.3 U
PYRENE	1700000	17000000	370	85	200	560	310	540	580	220
TOTAL CARCINOGENIC PAHS-HALFND	15	210	1150 J	265 J	715 J	1890 J	1380 J	1900 J	2450 J	839 J
TOTAL CARCINOGENIC PAHS-POS	15	210	1150 J	265 J	715 J	1890 J	1380 J	1900 J	2450 J	839 J
TOTAL CHLORINATED VOCS			330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
TOTAL PAHS			3240 J	746 J	1570 J	3830 J	2560 J	3850 J	4710 J	1620 J
PESTICIDES/PCBS (UG/KG)										
4,4'-DDD	2000	7200	3.3 U	3.3 U	3.3 U	3.3 U	3.4 J	3.3 U	3.3 U	3.3 U
4,4'-DDE	1400	5100	3.3 U	3.3 U	4.8	3.3 U	3.3 UJ	3.3 U	4.7	3.3 U
4,4'-DDT	1700	7000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.4	3.3 U
ALDRIN	29	100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
ALPHA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
ALPHA-CHLORDANE	1600	6500	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
AROCLOR-1016	3900	21000	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
AROCLOR-1221	140	540	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
AROCLOR-1232	140	540	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
AROCLOR-1242	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
AROCLOR-1248	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
AROCLOR-1254	220	740	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
AROCLOR-1260	220	740	33 U	33 U	33 U	33 U	33 U	33 U	45	40 J
AROCLOR-1262			33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
AROCLOR-1268			33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
BETA-BHC	270	960	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
DELTA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
DIELDRIN	30	110	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.3 U	3.3 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
ENDOSULFAN II	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.3 U	3.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.3 U	3.3 U
ENDRIN	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.3 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.3 U	3.3 U
ENDRIN KETONE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 UJ	3.3 U	3.4	3.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
GAMMA-CHLORDANE	1600	6500	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
HEPTACHLOR	110	380	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
METHOXYCHLOR	310000	3100000	17 U	17 U	17 U	17 U	17 UJ	17 U	17 U	17 U
TOTAL AROCLOR	220	740	33 U	33 U	33 U	33 U	33 U	33 U	45	40 J
TOTAL CHLORDANE			1.7 U	1.7 U	1.7 U	1.7 U	1.7 UJ	1.7 U	1.7 U	1.7 U
TOTAL DDD/DDE/DDT			3.3 U	3.3 U	4.8	3.3 U	3.4 J	3.3 U	8.1	3.3 U
TOXAPHENE	440	1600	170 U	170 U	170 U	170 U	170 UJ	170 U	170 U	170 U
METALS (MG/KG)										
ALUMINUM	77000	990000	9480	7350	9390	6360	12600	12000	11300	7110

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
ANTIMONY	31	410	1.4 UJ	0.68 UJ	0.18 UJ	0.24 UJ	0.34 UJ	0.96 UJ	0.38 UJ	0.18 UJ
ARSENIC	0.39	1.6	10.5	121	12.7	11.5	14.1	12.8	25.9	11.4
BARIUM	15000	190000	26.4 J	24.6 J	17.1 J	19.1 J	36.3 J	38.7 J	38 J	21.6 J
BERYLLIUM	160	2000	0.43 J	1.1 J	0.36 J	0.33 J	0.56 J	0.65 J	0.57 J	0.32 J
CADMIUM	70	800	0.25 J	2	0.37	0.26 J	0.43 J	0.49 J	0.62	0.49
CALCIUM			1510 J	6.6 UJ	1580 J	813 J	1780 J	2850 J	2710 J	1410 J
CHROMIUM	0.29	5.6	10.6 J	18.8 J	13.5 J	10 J	16.6 J	16.8 J	16.1 J	17.6 J
COBALT	23	300	6.5	95	8.8	8.5	14.6	6.6 J	9.5	8.1
COPPER	3100	41000	23.5	4.9	22.5	17.1	40.5	43	30.2	21.1
IRON	55000	720000	18900	166000	28600	15300	24600	24500	27400	22100
LEAD	400	800	47.8 J	11.5 J	39.5 J	27.1 J	71 J	95.8 J	52.5 J	61.6 J
MAGNESIUM			1860	784	2740	1560	2980	2350	2680	2120
MANGANESE	1800	23000	121	982	163	204	215	112	216	252
MERCURY	5.6	34	0.12	0.054 J	0.063	0.038 J	0.12	0.19 J	0.095 J	0.045 J
NICKEL	1500	20000	30.9	127	23.6	16.2	29	41	25.5	20.3
POTASSIUM			271	193 J	213	275	376	450	490	269
SELENIUM	390	5100	2.7 UJ	1.3 UJ	2.3 UJ	2.3 UJ	3.3 UJ	5.9 UJ	5 UJ	2.3 UJ
SILVER	390	5100	0.14 J	0.079 U	0.08 U	0.1 U	0.15 U	0.35 UJ	0.16 U	0.077 U
SODIUM			56.6 J	39.6 J	113	30.2 J	132	252	102	68.9
THALLIUM			0.38 U	0.24 U	0.24 U	0.33 J	0.45 U	1.1 UJ	0.5 U	0.67 J
VANADIUM	390	5200	23.9	6.6 J	19.4	12.5	23.5	27.3	22.8	13.7
ZINC	23000	310000	63.8	109	90.7	71	123	83.6	133	112
MISCELLANEOUS PARAMETERS (S.U.)										
PH			4.7	5.3	5.5	5.3	5.7	5.4	5.7	5.7

TABLE
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TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)										
TOTAL ORGANIC CARBON			44000	32000	37000	29000	37000	60000	44000	33000
DIOXINS/FURANS (NG/KG)										
1,2,3,4,6,7,8,9-OCDD	15000	60000	3990 J	1050	1700 J	2780 J	9160 J	2950	5500 J	1980 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	13.6	5.52 J	9.13	24	90.1	25.3	123	48.3
1,2,3,4,6,7,8-HPCDD	450	1800	75.7	25.3	35.4	70.3	237 J	85.7	327	103
1,2,3,4,6,7,8-HPCDF	450	1800	6.77	3.23 J	5.31	17.8	46.2	12.6	50.4	17.5
1,2,3,4,7,8,9-HPCDF	450	1800	0.826 U	0.233 UJ	0.504 U	1.04 J	4.32 J	1.19 U	3.65 J	1.42 J
1,2,3,4,7,8-HXCDD	45	180	0.987 J	0.332 J	0.501 J	1.08 J	3.71 J	1.3 J	4.3 J	1.32 J
1,2,3,4,7,8-HXCDF	45	180	2.13 J	0.368 J	1.45 J	1.61 J	8.63	1.89 J	3.87 J	1.95 J
1,2,3,6,7,8-HXCDD	45	180	1.83 J	0.739 J	0.997 J	2.37 J	8.2 J	3 J	12.1	3.6 J
1,2,3,6,7,8-HXCDF	45	180	0.941 J	0.268 J	0.619 J	1.29 J	4.08 J	0.959 J	2.9 J	1.25 J
1,2,3,7,8,9-HXCDD	45	180	1.94 J	1.09 J	1.42 J	3.03 J	9.36 J	3.31 J	10.4	3.29 J
1,2,3,7,8,9-HXCDF	45	180	0.174 U	0.11 U	0.0671 U	0.428 U	0.282 U	0.438 U	0.267 U	0.259 U
1,2,3,7,8-PECDD	4.5	18	0.477 J	0.0503 U	0.291 J	0.681 J	1.97 J	0.763 J	1.98 J	0.727 J
1,2,3,7,8-PECDF	150	600	0.561 J	0.0971 J	0.435 J	0.301 J	1.5 J	0.605 J	0.605 J	0.601 J
2,3,4,6,7,8-HXCDF	45	180	1.22 J	0.322 J	0.712 J	1.37 J	5.96	1.21 J	3.44 J	1.3 J
2,3,4,7,8-PECDF	15	60	0.694 J	0.139 J	0.517 J	0.266 J	2.1 J	0.75 J	0.934 J	0.526 J
2,3,7,8-TCDD	4.5	18	0.119 J	0.0444 U	0.0846 J	0.123 J	0.414 JK	0.117 U	0.317 J	0.114 J
2,3,7,8-TCDF	45	180	1.29 J	0.178 J	0.892 J	0.402 J	2.02 J	1.35 J	0.739 J	0.871 J
TEQ BIRD	4.5	18	3.87 J	0.719 J	2.54 J	2.85 J	11.4 J	4.26 J	7.86 J	3.67 J
TEQ BIRD HALFND	4.5	18	3.88 J	0.773 J	2.55 J	2.87 J	11.4 J	4.35 J	7.87 J	3.69 J
TEQ FISH	4.5	18	2.54 J	0.526 J	1.51 J	2.53 J	9.17 J	2.86 J	7.66 J	2.85 J

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TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-914-0006	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
LOCATION ID			TF5-SD-913	TF5-SD-914	TF5-SD-915	TF5-SD-916	TF5-SD-917	TF5-SD-918	TF5-SD-919	TF5-SD-920
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	2.55 J	0.581 J	1.52 J	2.55 J	9.19 J	2.95 J	7.67 J	2.86 J
TEQ MAMMAL	4.5	18	3.88 J	0.976 J	2.12 J	3.74 J	12.9 J	4.18 J	11.9 J	4.2 J
TEQ MAMMAL HALFND	4.5	18	3.89 J	1.03 J	2.13 J	3.76 J	12.9 J	4.27 J	11.9 J	4.22 J
TOTAL HPCDD			161	49.9	70.6	136	458	169	579	180
TOTAL HPCDF			15.7	6.98	11.5	35.2	107	30.6	143	51.1
TOTAL HXCDD			17.4	7.55	11.3	18.7	64.9	26.9	76.2	24.8
TOTAL HXCDF			11.7	3.52 J	7.36	16.7	60.1	13.5	51.4	21.2
TOTAL PECDD			4.77 J	0.0503 U	3.23 J	3.43 J	14.8	1.7 J	6.72	3.73 J
TOTAL PECDF			7.66	1.5 J	7.44	6.97	37.2	11.4	23.9	12.7
TOTAL TCDD			0.91 J	0.0444 U	1.69	0.244 J	3.41	0.117 U	0.652 J	0.475 J
TOTAL TCDF			10.5	0.778 J	2.78	3.53	33.7	10.8	0.437 J	3.97

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
VOLATILES (UG/KG)							
1,1,1-TRICHLOROETHANE	8700000	38000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,1,2,2-TETRACHLOROETHANE	560	2800	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,1,2-TRICHLOROETHANE	1100	5300	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,1,2-TRICHLOROTRIFLUOROETHANE	43000000	180000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,1-DICHLOROETHANE	3300	17000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,1-DICHLOROETHENE	240000	1100000	7.1 UJ	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2,3-TRICHLOROBENZENE	49000	490000	7.1 UJ	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2,4-TRICHLOROBENZENE	22000	99000	7.1 UJ	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2-DIBROMO-3-CHLOROPROPANE	5.4	69	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2-DIBROMOETHANE	34	170	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2-DICHLOROBENZENE	1900000	9800000	1.6 J	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2-DICHLOROETHANE	430	2200	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,2-DICHLOROPROPANE	890	4500	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,3-DICHLOROBENZENE			7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
1,4-DICHLOROBENZENE	2400	12000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
2-BUTANONE	28000000	200000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
2-HEXANONE	210000	1400000	7.1 UJ	14 UJ	7.1 UJ	5.95 UJ	13 UJ
4-METHYL-2-PENTANONE	5300000	53000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
ACETONE	61000000	630000000	38 J	170 J	91 J	13.4 J	140 J
BENZENE	1100	5400	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
BROMOCHLOROMETHANE			7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
BROMODICHLOROMETHANE	270	1400	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
BROMOFORM	61000	220000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
BROMOMETHANE	7300	32000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
BTEX			7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CARBON DISULFIDE	820000	3700000	7.1 U	3.9 J	7.1 UJ	5.95 UJ	13 UJ
CARBON TETRACHLORIDE	610	3000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CHLOROBENZENE	290000	1400000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CHLORODIBROMOMETHANE	680	3300	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CHLOROETHANE	15000000	61000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CHLOROFORM	290	1500	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CHLOROMETHANE	120000	500000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CIS-1,2-DICHLOROETHENE	780000	10000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CIS-1,3-DICHLOROPROPENE	1700	8100	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
CYCLOHEXANE	7000000	29000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
DICHLORODIFLUOROMETHANE	180000	780000	7.1 UJ	14 UJ	7.1 UJ	5.95 UJ	13 UJ
ETHYLBENZENE	5400	27000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
ISOPROPYLBENZENE	2100000	11000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
M+P-XYLENES			7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
METHYL ACETATE	78000000	1E+09	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
METHYL CYCLOHEXANE			7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
METHYL TERT-BUTYL ETHER	43000	220000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
METHYLENE CHLORIDE	11000	53000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
O-XYLENE	3800000	19000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
STYRENE	6300000	36000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TETRACHLOROETHENE	550	2600	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TOLUENE	5000000	45000000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
TOTAL 1,2-DICHLOROETHENE	700000	9200000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TOTAL CHLORINATED ETHENES			7.1 UJ	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TOTAL CHLORINATED VOCS			1.6 J	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TOTAL XYLENES	630000	2700000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TRANS-1,2-DICHLOROETHENE	150000	690000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TRANS-1,3-DICHLOROPROPENE	1700	8100	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TRICHLOROETHENE	2800	14000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
TRICHLOROFLUOROMETHANE	790000	3400000	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
VINYL CHLORIDE	60	1700	7.1 U	14 UJ	7.1 UJ	5.95 UJ	13 UJ
SEMIVOLATILES (UG/KG)							
1,1-BIPHENYL	3900000	51000000	330 U	330 U	330 U	330 U	330 U
1,2,4,5-TETRACHLOROBENZENE	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
1,4-DIOXANE	44000	160000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4600	22000	330 U	330 U	330 U	330 U	330 U
2,3,4,6-TETRACHLOROPHENOL	1800000	18000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,4,5-TRICHLOROPHENOL	6100000	62000000	670 U	670 U	670 U	670 U	670 U
2,4,6-TRICHLOROPHENOL	44000	160000	330 U	330 U	330 U	330 U	330 U
2,4-DICHLOROPHENOL	180000	1800000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,4-DIMETHYLPHENOL	1200000	12000000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
2,4-DINITROPHENOL	120000	1200000	670 U	670 U	670 U	670 U	670 U
2,4-DINITROTOLUENE	1600	5500	330 U	330 U	330 U	330 U	330 U
2,6-DINITROTOLUENE	61000	620000	330 U	330 U	330 U	330 U	330 U
2-CHLORONAPHTHALENE	6300000	82000000	330 U	330 U	330 U	330 U	330 U
2-CHLOROPHENOL	390000	5100000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
2-METHYLNAPHTHALENE	310000	4100000	210	5.8	11	3.3 U	3.6
2-METHYLPHENOL	3100000	31000000	3.3 U	3.3 U	3.3 UJ	3.3 UJ	3.3 UJ
2-NITROANILINE	610000	6000000	670 U	670 U	670 U	670 U	670 U
2-NITROPHENOL			330 U	330 U	330 U	330 U	330 U
3,3'-DICHLOROBENZIDINE	1100	3800	330 U	330 U	330 U	330 U	330 U
3-NITROANILINE			670 U	670 U	670 U	670 U	670 U
4,6-DINITRO-2-METHYLPHENOL	4900	49000	670 U	670 U	670 U	670 U	670 U
4-BROMOPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U
4-CHLORO-3-METHYLPHENOL	6100000	62000000	3.3 UJ	3.3 UJ	3.3 U	3.3 U	3.3 U
4-CHLOROANILINE	2400	8600	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
4-CHLOROPHENYL PHENYL ETHER			330 U	330 U	330 U	330 U	330 U
4-METHYLPHENOL	310000	3100000	3.3 U	21	3.8	3.88	5.3
4-NITROANILINE	24000	86000	670 U	670 U	670 U	670 U	670 U
4-NITROPHENOL			670 UJ	670 UJ	670 UJ	670 UJ	670 UJ
ACENAPHTHENE	3400000	33000000	48	25	41	11.8 J	14
ACENAPHTHYLENE	3400000	33000000	110	31	39	6.6	12
ACETOPHENONE	7800000	100000000	330 U	330 U	330 U	330 U	330 U
ANTHRACENE	17000000	170000000	120	120	150	40 J	55
ATRAZINE	2100	7500	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ
BENZALDEHYDE	7800000	100000000	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
BENZO(A)ANTHRACENE	150	2100	140 J	650	620	190 J	600
BENZO(A)PYRENE	15	210	190	780	690	280	760
BENZO(B)FLUORANTHENE	150	2100	290 J	750	710	385 J	1000
BENZO(G,H,I)PERYLENE	1700000	17000000	150	600	450	270	630

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
BENZO(K)FLUORANTHENE	1500	21000	140 J	860	630	360 J	720
BIS(2-CHLOROETHOXY)METHANE	180000	1800000	330 U	330 U	330 U	330 U	330 U
BIS(2-CHLOROETHYL)ETHER	210	1000	330 U	330 U	330 U	330 U	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	35000	120000	330 U	410	220 J	112 J	210 J
BUTYL BENZYL PHTHALATE	260000	910000	330 U	330 U	330 U	330 U	330 U
CAPROLACTAM	31000000	310000000	330 U	330 U	330 U	330 U	330 U
CARBAZOLE			330 U	100 J	81 J	50.5 J	100 J
CHRYSENE	15000	210000	220	860	860	400 J	890
DIBENZO(A,H)ANTHRACENE	15	210	40	180	150	87 J	160
DIBENZOFURAN	78000	1000000	330 U	330 U	330 U	330 U	330 U
DIETHYL PHTHALATE	49000000	490000000	330 U	330 U	330 U	330 U	330 U
DIMETHYL PHTHALATE			330 U	330 U	330 U	330 U	330 U
DI-N-BUTYL PHTHALATE	6100000	62000000	330 U	330 U	330 U	330 U	330 U
DI-N-OCTYL PHTHALATE			330 U	330 U	330 U	330 U	330 U
FLUORANTHENE	2300000	22000000	400	1800	1500	855	1800
FLUORENE	2300000	22000000	120	42	66	20 J	24
HEXACHLOROBENZENE	300	1100	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
HEXACHLOROBUTADIENE	6200	22000	330 U	330 U	330 U	330 U	330 U
HEXACHLOROCYCLOPENTADIENE	370000	3700000	330 U	330 U	330 U	330 U	330 U
HEXACHLOROETHANE	35000	120000	330 U	330 U	330 U	330 U	330 U
HIGH MOLECULAR WEIGHT PAHS			2070 J	8370	7140	3650 J	8520
INDENO(1,2,3-CD)PYRENE	150	2100	130	590	430	215	660
ISOPHORONE	510000	1800000	330 U	330 U	330 U	330 U	330 U
LOW MOLECULAR WEIGHT PAHS			1170	922	964	326 J	666

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
NAPHTHALENE	3600	18000	130	7.7	17	3.92	7.7
NITROBENZENE	4800	24000	330 UJ	330 UJ	330 UJ	330 UJ	330 UJ
N-NITROSO-DI-N-PROPYLAMINE	69	250	330 U	330 U	330 U	330 U	330 U
N-NITROSODIPHENYLAMINE	99000	350000	330 U	330 U	330 U	330 U	330 U
PENTACHLOROPHENOL	3000	9000	33 U	33 U	33 UJ	33 UJ	33 UJ
PHENANTHRENE	1700000	17000000	430	690	640	245	550
PHENOL	18000000	180000000	3.3 U	8.7	3.3 U	2.52	5.5
PYRENE	1700000	17000000	370	1300	1100	610	1300
TOTAL CARCINOGENIC PAHS-HALFND	15	210	1150 J	4670	4090	1920 J	4790
TOTAL CARCINOGENIC PAHS-POS	15	210	1150 J	4670	4090	1920 J	4790
TOTAL CHLORINATED VOCS			330 U	330 U	330 U	330 U	330 U
TOTAL PAHS			3240 J	9290	8100	3980 J	9190
PESTICIDES/PCBS (UG/KG)							
4,4'-DDD	2000	7200	3.3 U	3.3 U	51 UJ	3.62 J	3.3 U
4,4'-DDE	1400	5100	3.3 U	3.3 U	5.4	3.3 U	3.9
4,4'-DDT	1700	7000	3.3 U	3.3 U	15	3.3 U	4.3
ALDRIN	29	100	1.7 U	1.7 U	2.6	1.7 U	1.7 U
ALPHA-BHC	77	270	1.7 U	1.7 U	2.1	1.7 U	1.7 U
ALPHA-CHLORDANE	1600	6500	1.7 U	1.7 U	79 UJ	1.7 U	1.7 U
AROCLOR-1016	3900	21000	33 U	33 U	33 UJ	33 U	33 U
AROCLOR-1221	140	540	33 U	33 U	33 UJ	33 U	33 U
AROCLOR-1232	140	540	33 U	33 U	33 UJ	33 U	33 U
AROCLOR-1242	220	740	33 U	33 U	33 UJ	33 U	33 U
AROCLOR-1248	220	740	33 U	33 U	33 UJ	33 U	33 U

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
AROCLOR-1254	220	740	33 U	33 U	33 UJ	33 U	33 U
AROCLOR-1260	220	740	33 U	33 U	78 J	54.2 J	73 J
AROCLOR-1262			33 U	33 U	33 UJ	33 U	33 U
AROCLOR-1268			33 U	33 U	33 UJ	33 U	33 U
BETA-BHC	270	960	1.7 U	1.7 U	91 UJ	1.7 U	1.7 U
DELTA-BHC	77	270	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
DIELDRIN	30	110	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDOSULFAN I	370000	3700000	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
ENDOSULFAN II	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDOSULFAN SULFATE	370000	3700000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN	18000	180000	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ENDRIN ALDEHYDE	18000	180000	3.3 U	3.3 U	3.3 U	2.92 J	3.5
ENDRIN KETONE	18000	180000	3.3 U	3.3 U	11	2.82	3.3 U
GAMMA-BHC (LINDANE)	520	2100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
GAMMA-CHLORDANE	1600	6500	1.7 U	1.7 U	4.9 J	1.7 U	1.7 U
HEPTACHLOR	110	380	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
HEPTACHLOR EPOXIDE	53	190	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
METHOXYCHLOR	310000	3100000	17 U	17 U	325 UJ	17 U	17 U
TOTAL AROCLOR	220	740	33 U	33 U	78 J	54.2 J	73 J
TOTAL CHLORDANE			1.7 U	1.7 U	4.9 J	1.7 U	1.7 U
TOTAL DDD/DDE/DDT			3.3 U	3.3 U	20.4 J	3.62 J	8.2
TOXAPHENE	440	1600	170 U	170 U	170 U	170 U	170 U
METALS (MG/KG)							
ALUMINUM	77000	990000	9480	10800	10200	4500	11200

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
ANTIMONY	31	410	1.4 UJ	0.38 UJ	0.28 UJ	0.205 UJ	0.44 UJ
ARSENIC	0.39	1.6	10.5	17.1	16.6	11.5	16.7
BARIUM	15000	190000	26.4 J	35.4 J	30.6 J	12 J	47.2 J
BERYLLIUM	160	2000	0.43 J	0.53 J	0.4 J	0.24 J	0.62 J
CADMIUM	70	800	0.25 J	0.54	0.85	0.28 J	0.77
CALCIUM			1510 J	1630 J	2330 J	1000 J	3680 J
CHROMIUM	0.29	5.6	10.6 J	16.6 J	18.3 J	6.9 J	18.1 J
COBALT	23	300	6.5	10.1	10.4	5.55	13.3
COPPER	3100	41000	23.5	32.1	26.8	10.8	41.2
IRON	55000	720000	18900	25100	33200	17300	26800
LEAD	400	800	47.8 J	56.9 J	48.1 J	16.4 J	70.3 J
MAGNESIUM			1860	2780	3050	1580	2940
MANGANESE	1800	23000	121	171	350	187	525
MERCURY	5.6	34	0.12	0.14	0.063	0.0145 J	0.11 J
NICKEL	1500	20000	30.9	30.3	22.5	13.4	30.7
POTASSIUM			271	455	331	197	546
SELENIUM	390	5100	2.7 UJ	4.2 UJ	3.9 UJ	2 UJ	4.4 UJ
SILVER	390	5100	0.14 J	0.17 U	0.12 U	0.278 J	0.2 U
SODIUM			56.6 J	198	227	46.9 J	166
THALLIUM			0.38 U	0.51 U	0.48 J	0.27 U	1.7 J
VANADIUM	390	5200	23.9	21.8	19.1	8.3	24.2
ZINC	23000	310000	63.8	122	168	78.2	190
MISCELLANEOUS PARAMETERS (S.U.)							
PH			4.7	5.7	6.4	6	6

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
MISCELLANEOUS PARAMETERS (MG/KG)							
TOTAL ORGANIC CARBON			44000	55000	37000	20000	53000
DIOXINS/FURANS (NG/KG)							
1,2,3,4,6,7,8,9-OCDD	15000	60000	3990 J	4120 J	4040 J	951	6520 J
1,2,3,4,6,7,8,9-OCDF	15000	60000	13.6	47.6	102	17.6 J	147
1,2,3,4,6,7,8-HPCDD	450	1800	75.7	169	244	39.2	302
1,2,3,4,6,7,8-HPCDF	450	1800	6.77	28.4	56.6	8.88 J	69.6
1,2,3,4,7,8,9-HPCDF	450	1800	0.826 U	2.16 J	3.72 J	0.736 J	5.32 J
1,2,3,4,7,8-HXCDD	45	180	0.987 J	2.79 J	3.73 J	0.77 J	5.76 J
1,2,3,4,7,8-HXCDF	45	180	2.13 J	2.69 J	4.67	1.04 J	6.61 J
1,2,3,6,7,8-HXCDD	45	180	1.83 J	6.16	9.61	1.54 J	11
1,2,3,6,7,8-HXCDF	45	180	0.941 J	1.84 J	3.6 J	0.756 J	4.49 J
1,2,3,7,8,9-HXCDD	45	180	1.94 J	7.63	9.53	2.18 J	14.4
1,2,3,7,8,9-HXCDF	45	180	0.174 U	0.184 U	0.389 J	0.138 J	0.575 J
1,2,3,7,8-PECDD	4.5	18	0.477 J	1.5 J	1.85 J	0.428 J	3.06 J
1,2,3,7,8-PECDF	150	600	0.561 J	0.664 J	0.709 J	0.217 J	1.07 J
2,3,4,6,7,8-HXCDF	45	180	1.22 J	2.9 J	3.76 J	0.783 J	5.05 J
2,3,4,7,8-PECDF	15	60	0.694 J	0.612 J	0.968 J	0.216 J	1.48 J
2,3,7,8-TCDD	4.5	18	0.119 J	0.191 J	0.319 J	0.0183 U	0.48 J
2,3,7,8-TCDF	45	180	1.29 J	0.796 J	0.745 J	0.326 J	1.17 J
TEQ BIRD	4.5	18	3.87 J	5.76 J	7.69 J	1.76 J	11.5 J
TEQ BIRD HALFND	4.5	18	3.88 J	5.77 J	7.69 J	1.78 J	11.5 J
TEQ FISH	4.5	18	2.54 J	5.24 J	7.29 J	1.48 J	10.9 J

TABLE
ANALYTICAL RESULTS - SEDIMENT
TfNe_SD_DU5-1_2010
TANK FARM 5, NEWPORT, RHODE ISLAND

SAMPLE ID			TF5-SD-913-0006	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006-AVG	TF5-SD-924-0006
LOCATION ID			TF5-SD-913	TF5-SD-921	TF5-SD-922	TF5-SD-923	TF5-SD-924
SAMPLE DATE			03/16/10	03/16/10	03/16/10	03/16/10	03/16/10
TOP DEPTH			0 FT	0 FT	0 FT	0 FT	0 FT
BOTTOM DEPTH			0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT
SACODE			NORMAL	NORMAL	NORMAL	AVG	NORMAL
QC TYPE	EPARSL SORE	EPARSLSO IN	NM	NM	NM	NM	NM
TEQ FISH HALFND	4.5	18	2.55 J	5.25 J	7.29 J	1.5 J	10.9 J
TEQ MAMMAL	4.5	18	3.88 J	7.62 J	10.4 J	2.03 J	14.7 J
TEQ MAMMAL HALFND	4.5	18	3.89 J	7.63 J	10.4 J	2.04 J	14.7 J
TOTAL HPCDD			161	325	446	72.8	575
TOTAL HPCDF			15.7	66.3	125	20.7 J	167
TOTAL HXCDD			17.4	45.6	66.1	12.7 J	96.1
TOTAL HXCDF			11.7	15.9	62.1	11.5	77
TOTAL PECDD			4.77 J	6.18	9.32	1.99 J	16
TOTAL PECDF			7.66	23.1	33	5.42	40.5
TOTAL TCDD			0.91 J	0.272 J	0.0252 U	0.135 J	2.55 J
TOTAL TCDF			10.5	7.68	4.28	1.93 J	8.17

G-11 DATA VALIDATION MEMORANDUM

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-10-3763W

Date: July 20, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: PR for Paula DiMattei (no copy)

Subject: Tier II Inorganic Data Validation, SDG J0918
Mitkem Laboratories
CTO 464, Tank Farms 4 and 5, Data Gaps Investigation, Naval Station Newport, Newport, Rhode Island

Metals (total):

19/Groundwaters /	TF4-38-MW418-0510	TF4-38-MW903-0510
	TF4-38-MW905-0510	TF4-42-MW-801-0510
	TF4-42-MW906-0510	TF4-42-MW907-0510
	TF4-42-MW-908-0510	TF4-42-MW909-0510
	TF4-45-MW122-0510	TF4-45-MW330-0510
	TF4-45-MW802-0510	TF4-48-MW408-0510
	TF4-48-MW409-0510	TF4-48-MW422-0510
	TF4-48-MW805-0510	TF4-48-MW910-0510
	TF4-MW-921-0510	TF4-MW-922-0510
	TF4-MW-DUP01-050510	

(Field Duplicate pair: TF4-48-MW805-0510/TF4-MW-DUP01-050510)

1/Rinsate Blank/	TF4-W-RB01-051010

Metals (dissolved):

3/Groundwaters /	TF4-42-MW907-0510	TF4-45-MW122-0510
	TF4-45-MW802-0510	

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the metals analytical data for the groundwater samples collected from Tank Farms 4 and 5 as part of the Data Gaps Investigation at the Naval Station Newport, Newport, Rhode Island from May 3-10, 2010. Sample collection and analysis was performed according to the requirements of the Sampling and Analysis Plan for the Data Gaps Investigation at Naval Station Newport, Newport, Rhode Island, Revision 3, dated March 2010.

The metals analysis was performed according to USEPA SW-846 Methods 6010C/6020/7470A. The project specific criteria listed in the site SAP were applied for data validation of the metals data. The Tier II data validation was performed according to the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV, November 2008.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. Total metals results are presented in the table with Fraction labeled "M" (metals). Dissolved metals results are presented in the table with Fraction labeled "MF" (metals filtered). A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed.

The analytical data from this SDG were evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- * Calibration Verification
- Laboratory Blank Analyses
- * ICP Interference Check Sample Results
- Matrix Spike/Matrix Spike Duplicate Results
- * Laboratory Duplicate Results
- * Laboratory Control Sample Results
- * Field Duplicate Precision
- * ICP Serial Dilution Results
- * Percent Solids
- Reporting Limits

* All quality control criteria were met for this parameter.

Data Completeness

Per the project Sampling and Analysis Plan, there should have been a hyphen before the date suffix (0510) in the groundwater sample IDs. The hyphen was not included on the chain-of-custody form. The laboratory inserted the hyphen for some of the sample IDs and left a blank space for the others. The data validation reviewer added the hyphen for those samples where it was missing. The laboratory was not contacted.

Laboratory Blank Analysis

Metals (total)

The following table summarizes the level of blank contamination detected in the laboratory blanks associated with the groundwater samples in this SDG:

Analyte	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Antimony	0.124	0.62	TF4-38-MW903-0510, TF4-38-MW905-0510, TF4-42-MW906-0510, TF4-42-MW909-0510, TF4-45-MW122-0510, TF4-45-MW802-0510, TF4-48-MW408-0510, TF4-48-MW409-0510, TF4-48-MW422-0510, TF4-48-MW910-0510, TF4-MW-921-0510
Cadmium	0.231	1.16	TF4-38-MW903-0510, TF4-38-MW905-0510, TF4-42-MW909-0510, TF4-48-MW408-0510, TF4-MW-921-0510
Chromium	0.755	1.51	All groundwater samples except TF4-42-MW906-0510 and TF4-42-MW909-0510
Lead	0.262	1.31	TF4-42-MW906-0510, TF4-42-MW907-0510, TF4-42-MW908-0510, TF4-45-MW802-0510, TF4-48-MW408-0510, TF4-48-MW409-0510, TF4-MW-921-0510, TF4-MW-DUP01-050510

Analyte	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Mercury	0.084	0.42	TF4-48-MW409-0510, TF4-48-MW422-0510
Selenium	0.298	1.49	TF4-38-MW418-0510, TF4-38-MW903-0510, TF4-38-MW905-0510, TF4-42-MW-801-0510, TF4-48-MW422-0510, TF4-48-MW910-0510
Sodium	-90.0	450	TF4-W-RB01-05110
Vanadium	-0.741	3.70	All samples except TF4-42-MW909-0570

The non-detected sodium and vanadium results in the affected samples are estimated (UJ) due to negative instrument drift as evidenced by the negative blank results. The positive antimony, cadmium, chromium, lead, mercury, and selenium results below the blank action levels are changed to non-detected values (U) at elevated reporting limits due to laboratory blank contamination.

Although antimony, cadmium, chromium, lead, mercury, and selenium contamination was found in the laboratory blanks, the project sensitivity goals are not impacted since the elevated reporting limits did not exceed the project action limits for these analytes. The non-detected results in the affected samples are usable as nondetects with elevated reporting limits.

Although sodium and vanadium exhibited negative drift, the project sensitivity goals are not impacted because of the following: 1) the affected sample results are much lower than the project action limits, or 2) there are no project action limits established for the affected analyte.

Metals (dissolved)

The following table summarizes the level of blank contamination detected in the laboratory blanks associated with the groundwater samples in this SDG:

Analyte	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Antimony	0.341	1.70	TF4-42-MW907-0510, TF4-45-MW122-0510, TF4-45-MW802-0510
Chromium	0.544	2.72	
Silver	0.030	0.15	
Zinc	9.697	48.5	

The positive antimony, chromium, silver, and zinc results below the blank action levels are changed to non-detected values (U) at elevated reporting limits due to laboratory blank contamination.

Although antimony, chromium, silver, and zinc contamination was found in the laboratory blanks, the project sensitivity goals are not impacted since the elevated reporting limits did not exceed the project action limits for these analytes. The non-detected results in the affected samples are usable as nondetects with elevated reporting limits.

Matrix Spike/Matrix Spike Duplicate

Metals (total and dissolved)

The following table summarizes the analyte that recovered outside of the 75-125% recovery QC limits in the total metals matrix spike (MS) analysis of sample TF4-45-MW330-0510:

Analyte	%Recovery	Action	
		(+)	NDs
Mercury	70	J	UJ

No dissolved metals sample was designated for matrix spike analysis in this SDG. Professional judgement was used to apply the total metals actions to the dissolved metals results. The positive and non-detected total and dissolved mercury results are estimated (J, UJ) in all groundwater samples due to the low matrix spike recovery.

Although the percent recovery criterion was not met for mercury, the project accuracy goals are not impacted since the affected sample results are much lower than the project action limit. The positive and non-detected results for mercury in all groundwater samples are usable as estimated values and estimated reporting limits which may be biased low.

Reporting Limits

The laboratory reported non-detected metals results down to the method detection limit (MDLs). The positive results below than the laboratory's quantitation limit (QL) and above the MDL are estimated (J) due to uncertainty below the QL.

Metals (total and dissolved)

The project quantitation limit (PQL) goals and laboratory specific QLs listed in SAP worksheet 15c were met by the actual laboratory specific QLs reported for this data set with the exception of those for chromium, selenium, and vanadium. However, the project action limits were still met for these analytes. All project action limits were achieved by the laboratory QLs except those for arsenic and thallium as stipulated in the SAP. The actual laboratory MDLs met the project action limit for thallium but not for arsenic; therefore, the data usability may be impacted for arsenic.

As discussed above in the Laboratory Blank Analyses section, reporting limits were raised for several metals in select samples due to laboratory blank contamination. Data usability is not impacted.

There are no project action limits established for the aqueous rinsate blank sample.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Metals (total and dissolved)

The project goals with respect to accuracy were met for the metals (total and dissolved) data set. However, results for mercury were qualified in all groundwater samples due to the low MS recovery. Although specific method criteria were not met in this instance, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated reporting limits.

The project goals with respect to precision and completeness were met for the metals (total and dissolved) data set. Data usability was not impacted with regards to precision and completeness.

The project goals with respect to sensitivity were met for the metals (total and dissolved) data set with the following exceptions. The project quantitation limit (PQL) goals and laboratory specific QLs listed in SAP worksheet 15c were met by the actual laboratory specific QLs reported for this data set with the exception of those for chromium, selenium, and vanadium. However, the project action limits were still met for these analytes. All project action limits were achieved by the laboratory QLs except those for arsenic and thallium as stipulated in the SAP. The actual laboratory MDLs met the project action limit for thallium but not for arsenic; therefore, the data usability may be impacted for arsenic.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-38-MW418-0510			TF4-38-MW903-0510			TF4-38-MW905-0510			TF4-42-MW-801-0510		
SDG: J0918	LAB_ID	J0918-05B			J0918-07B			J0918-08B			J0918-17B		
FRACTION: M	SAMP_DATE	5/5/2010			5/5/2010			5/5/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS				0.0								
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		58.2	J	P	53.4	J	P	39.9	J	P	15.4	J	P
ANTIMONY		0.044	U		0.084	UJ	AP	0.048	UJ	AP	0.044	U	
ARSENIC		0.239	J	P	0.555	J	P	0.458	J	P	0.236	U	
BARIUM		3.3			4.2			11.9			1.2		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.045	U	
CADMIUM		0.054	U		0.131	UJ	AP	0.204	UJ	AP	0.054	U	
CALCIUM		16600			18200			23600			17400		
CHROMIUM		0.759	UJ	AP	0.821	UJ	AP	0.907	UJ	AP	0.944	UJ	AP
COBALT		0.158	J	P	5.6			9.6			0.081	J	P
COPPER		0.807	J	P	1.5			0.844	J	P	0.465	J	P
IRON		119	J	P	434			988			47	U	
LEAD		0.162	U		0.162	U		0.162	U		0.162	U	
MAGNESIUM		8320			13100			14300			15300		
MANGANESE		5.2	J	P	919			910			6.3	J	P
MERCURY		0.056	UJ	D	0.056	UJ	D	0.056	UJ	D	0.056	UJ	D
NICKEL		1.2			37.5			12.4			0.982	J	P
POTASSIUM		1550			4110			1040			1570		
SELENIUM		0.181	UJ	AP	0.15	UJ	AP	0.164	UJ	AP	0.217	UJ	AP
SILVER		0.008	U		0.008	U		0.008	U		0.008	U	
SODIUM		18900			21000			17100			21800		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		17.2	J	P	32.7	J	P	35.4	J	P	14.1	J	P

PROJ_NO: 00963	NSAMPLE	TF4-42-MW906-0510			TF4-42-MW907-0510			TF4-42-MW-908-0510			TF4-42-MW909-0510		
SDG: J0918	LAB_ID	J0918-13B			J0918-15B			J0918-18B			J0918-14B		
FRACTION: M	SAMP_DATE	5/7/2010			5/7/2010			5/10/2010			5/7/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		519			25	J	P	26.1	J	P	5840		
ANTIMONY		0.063	UJ	AP	0.044	U		0.044	U		0.104	UJ	AP
ARSENIC		0.65	J	P	7.3			0.236	U		14.7		
BARIUM		4.6			16.3			7.6			36.8		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.189	J	P
CADMIUM		0.054	U		0.054	U		0.054	U		0.055	UJ	AP
CALCIUM		15300			17200			18900			19400		
CHROMIUM		1.7	J	P	0.755	UJ	AP	0.965	UJ	AP	9.2		
COBALT		0.939	J	P	23.9			0.489	J	P	28		
COPPER		1.4			0.795	J	P	0.649	J	P	9		
IRON		1130			49.5	J	P	63.5	J	P	18600		
LEAD		0.79	UJ	AP	0.228	UJ	AP	0.278	UJ	AP	5.9		
MAGNESIUM		6760			12500			12800			10200		
MANGANESE		37.1	J	P	54.5			164			2260		
MERCURY		0.056	UJ	D	0.056	UJ	D	0.056	UJ	D	0.056	UJ	D
NICKEL		4.3			6.7			2.1			18.1		
POTASSIUM		1320			1590			1780			2190		
SELENIUM		0.123	U		0.123	U		0.123	U		0.123	U	
SILVER		0.012	J	P	0.008	U		0.008	U		0.02	J	P
SODIUM		33000			25000			25000			30400		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	4.9		
ZINC		23.4	J	P	18.2	J	P	14.7	J	P	43	J	P

PROJ_NO: 00963	NSAMPLE	TF4-45-MW122-0510			TF4-45-MW330-0510			TF4-45-MW802-0510			TF4-48-MW408-0510		
SDG: J0918	LAB_ID	J0918-12B			J0918-10B			J0918-11B			J0918-03B		
FRACTION: M	SAMP_DATE	5/6/2010			5/6/2010			5/6/2010			5/4/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		129	J	P	14	J	P	412			29.6	J	P
ANTIMONY		0.074	UJ	AP	0.044	U		0.152	UJ	AP	0.049	UJ	AP
ARSENIC		12.7			0.236	U		0.236	U		3.2		
BARIUM		15.1			6.8			10.5			14.6		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.045	U	
CADMIUM		0.054	U		0.054	U		0.054	U		0.085	UJ	AP
CALCIUM		34100			19600			21500			15500		
CHROMIUM		0.588	UJ	AP	0.762	UJ	AP	1.1	UJ	AP	0.65	UJ	AP
COBALT		5.7			1.1			1.6			4		
COPPER		0.358	J	P	0.826	J	P	1.6			1.2		
IRON		15900			47	U		898			1110		
LEAD		0.162	U		0.162	U		0.172	UJ	AP	0.21	UJ	AP
MAGNESIUM		5660			4460			4490			11500		
MANGANESE		1870			62.3			297			554		
MERCURY		0.056	UJ	D	0.056	UJ	D	0.056	UJ	D	0.056	UJ	D
NICKEL		3.2			5.1			5.6			7		
POTASSIUM		2980			1720			2330			2400		
SELENIUM		0.123	U		0.123	U		0.123	U		0.123	U	
SILVER		0.008	U		0.008	U		0.008	U		0.008	U	
SODIUM		19200			40400			33200			23400		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		20.5	J	P	16.4	J	P	23.9	J	P	40.1	J	P

PROJ_NO: 00963	NSAMPLE	TF4-48-MW409-0510			TF4-48-MW422-0510			TF4-48-MW805-0510			TF4-48-MW910-0510		
SDG: J0918	LAB_ID	J0918-01B			J0918-02B			J0918-06B			J0918-04B		
FRACTION: M	SAMP_DATE	5/3/2010			5/3/2010			5/5/2010			5/4/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		22	J	P	25.8	J	P	17.1	J	P	55.8	J	P
ANTIMONY		0.07	UJ	AP	0.1	UJ	AP	0.044	U		0.061	UJ	AP
ARSENIC		5.2			0.75	J	P	1.7			2.2		
BARIUM		22			8.6			14			16.5		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.058	J	P
CADMIUM		0.054	U		2.5			0.054	U		0.054	U	
CALCIUM		16400			13600			15700			21700		
CHROMIUM		0.738	UJ	AP	0.842	UJ	AP	0.604	UJ	AP	0.838	UJ	AP
COBALT		0.449	J	P	2.8			1.4			1.8		
COPPER		55.6			2.1			0.842	J	P	0.633	J	P
IRON		15300			703			5280			12200		
LEAD		0.297	UJ	AP	0.162	U		0.162	U		0.162	U	
MAGNESIUM		10000			9160			9170			16500		
MANGANESE		2230			149			610			2100		
MERCURY		0.078	UJ	ADP	0.073	UJ	ADP	0.056	UJ	D	0.056	UJ	D
NICKEL		92.9			19.9			3			2.3		
POTASSIUM		3400			2900			3180			1440		
SELENIUM		0.123	U		0.241	UJ	AP	0.123	U		0.226	UJ	AP
SILVER		0.008	U		0.008	U		0.008	U		0.008	U	
SODIUM		28900			29700			30600			19000		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		17.3	J	P	97.2			14.3	J	P	15.3	J	P

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510			TF4-MW-DUP01-050510			TF4-W-RB01-051010		
SDG: J0918	LAB_ID	J0918-20B			J0918-19B			J0918-09B			J0918-21B		
FRACTION: M	SAMP_DATE	5/10/2010			5/10/2010			5/5/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			FD			FB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							TF4-48-MW805-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		253			60.4	J	P	23.1	J	P	12	U	
ANTIMONY		0.079	UJ	AP	0.044	U		0.044	U		0.044	U	
ARSENIC		0.236	U		0.236	U		1.4			0.236	U	
BARIUM		13.9			13.1			13.9			0.191	J	P
BERYLLIUM		0.049	J	P	0.045	U		0.045	U		0.045	U	
CADMIUM		0.19	UJ	AP	0.054	U		0.054	U		0.054	U	
CALCIUM		11700			20000			15900			87	U	
CHROMIUM		1.2	UJ	AP	1.2	UJ	AP	0.647	UJ	AP	1.7	J	P
COBALT		11.2			1.2			1.4			0.02	U	
COPPER		1.1			0.723	J	P	0.715	J	P	0.465	J	P
IRON		10300			252			5140			47	U	
LEAD		0.385	UJ	AP	0.162	U		0.216	UJ	AP	0.162	U	
MAGNESIUM		8580			9510			9130			62	U	
MANGANESE		1120			321			586			3.5	U	
MERCURY		0.056	UJ	D	0.056	UJ	D	0.056	UJ	D	0.056	U	
NICKEL		67.6			9.2			3			0.645	J	P
POTASSIUM		797	J	P	1600			3170			59	U	
SELENIUM		0.123	U		0.123	U		0.123	U		0.123	U	
SILVER		0.008	U		0.008	U		0.008	U		0.008	U	
SODIUM		17600			21400			30600			29	UJ	O
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		143			36.8	J	P	24.6	J	P	13.8	J	P

PROJ_NO: 00963	NSAMPLE	TF4-42-MW907-0510			TF4-45-MW122-0510			TF4-45-MW802-0510		
SDG: J0918	LAB_ID	J0918-15D			J0918-12D			J0918-11D		
FRACTION: MF	SAMP_DATE	5/7/2010			5/6/2010			5/6/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS									
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		15	J	P	13.4	J	P	12	U	
ANTIMONY		0.077	UJ	AP	0.102	UJ	AP	0.182	UJ	AP
ARSENIC		0.236	U		17.6			0.236	U	
BARIUM		3.7			17.5			13.2		
BERYLLIUM		0.045	U		0.045	U		0.045	U	
CADMIUM		0.054	U		0.054	U		0.139	J	P
CALCIUM		17900			33900			22300		
CHROMIUM		1.1	UJ	AP	0.929	UJ	AP	1.5	UJ	AP
COBALT		0.398	J	P	6.4			1.8		
COPPER		0.607	J	P	1.2			1.4		
IRON		5500			12900			51.9	J	P
LEAD		0.162	U		0.451	J	P	0.451	J	P
MAGNESIUM		7900			5610			4460		
MANGANESE		2050			1820			267		
MERCURY		0.056	UJ	D	0.056	UJ	D	0.056	UJ	D
NICKEL		1.8			4			6.2		
POTASSIUM		1830			2950			2360		
SELENIUM		0.123	U		0.123	U		0.123	U	
SILVER		0.009	UJ	AP	0.017	UJ	AP	0.02	UJ	AP
SODIUM		30400			19500			35600		
THALLIUM		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	U		0.331	U		0.331	U	
ZINC		20.3	UJ	AP	19.6	UJ	AP	19.5	UJ	AP

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-08-10-3793W

Date: August 10, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: AF for Paula DiMattei (no copy)

Subject: Tier II Inorganic Data Validation, SDG J0987
Mitkem Laboratories
CTO 464, Tank Farms 4 and 5, Data Gaps Investigation, Naval Station Newport, Newport, Rhode Island

Metals (total):

24/Groundwaters/	TF4-38-MW-605-0510	TF4-38-MW-904-0510
	TF4-MW-05D-0510	TF4-MW-912-0510
	TF4-MW-913-0510	TF4-MW-914-0510
	TF4-MW-919-0510	TF4-MW-920-0510
	TF4-MW-DUP02-051210	TF4-MW-DUP03-051210
	TF5-50-MW-108-0510	TF5-50-MW-200-0510
	TF5-50-MW-207B-0510	TF5-MW-911-0510
	TF5-MW-915-0510	TF5-MW-916-0510
	TF5-MW-918-0510	TF5-MW-923-0510
	TF5-MW-924-0510	TF5-MW-977-0510
	TF5-MW-978-0510	TF5-MW-979-0510
	TF5-MW-DUP04-051710	TF5-W-DUP05-051810

(Field Duplicate pairs: TF4-MW-913-0510/TF4-MW-DUP02-051210;
TF4-38-MW-904-0510/TF4-MW-DUP03-051210;
TF5-MW-911-0510/TF5-MW-DUP04-051710; and
TF5-MW-979-0510/TF5-W-DUP05-051810)

1/Rinsate Blank/ TF5-MW-RB02-051710

1/Field Blank/ TF5-W-FB01-051910

Metals (dissolved):

4/Groundwaters /	TF4-38-MW-605-0510	TF5-50-MW-200-0510
	TF5-MW-916-0510	TF5-MW-923-0510

1/Rinsate Blank/ TF5-MW-RB02-051710

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the metals analytical data for the groundwater samples collected from Tank Farms 4 and 5 as part of the Data Gaps Investigation at the Naval Station Newport, Newport, Rhode Island from May 10-19, 2010. Sample collection and analysis was performed according to the requirements of the Sampling and Analysis Plan for the Data Gaps Investigation at Naval Station Newport, Newport, Rhode Island, Revision 3, dated March 2010.

The metals analysis was performed according to USEPA SW-846 Methods 6010C/6020/7470A. Mitkem Laboratories subcontracted the 6020 metals analysis to Columbia Analytical Services. The project

specific criteria listed in the site SAP were applied for data validation of the metals data. The Tier II data validation was performed according to the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV, November 2008.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. Total metals results are presented in the table with Fraction labeled as "M" (total metals), and dissolved metals results are presented in the table with Fraction labeled as "MF" (metals-filtered).

The analytical data from this SDG were evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- * Calibration Verification
- Laboratory Blank Analyses
- * ICP Interference Check Sample Results
- * Matrix Spike/Matrix Spike Duplicate Results
- * Laboratory Duplicate Results
- * Laboratory Control Sample Results
- Field Duplicate Precision
- * ICP Serial Dilution Results
- Reporting Limits

* All quality control criteria were met for this parameter.

Data Completeness

Several samples were identified incorrectly in the original submission for the subcontracted data. On August 9, 2010, the laboratory resubmitted the appropriate pages with the corrected sample IDs.

The chain-of-custody form incorrectly identified sample TF4-38-MW-904-0510 as TF4-**B**8-MW-904-0510. Consequently, the laboratory logged and reported this sample incorrectly as TF4-**B**8-MW-904-0510. The data validator corrected the sample ID in the data base, and the sample is correctly displayed in the data summary tables.

The laboratory contacted field sampler C. Meyer about the sampling times for two samples, which were reversed on the sample container labels compared with those on the COC form. Mr. Meyer said that the times on the labels were correct: TF4-MW-912-0510 was collected at 09:45, and TF4-MW-913-0510 was collected at 09:05. The laboratory logged in the samples with the correct times.

The laboratory was asked to check the dissolved metals results, since the dissolved metals results were higher than the total metals results in some cases. The laboratory responded on August 9, 2010, that no errors were found in the preparation or analytical data. The laboratory also noted that some metal results were higher and some were lower in a given sample, and that this is not uncommon due to different levels of potentially interfering metals in filtered and unfiltered samples.

Laboratory Blank Analysis

According to the field log book, the field blank was a sample of tap water. The rinsate blank and field blank are used for informational purposes only. They were not used to establish blank action levels.

Metals (total)

The following table summarizes the levels of total metals blank contamination detected in the laboratory blanks associated with the groundwater samples in this SDG:

Analyte	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Aluminum	25.1	126	TF4-38-MW-605-0510, TF4-B8-MW-904-0510, TF4-MW-05D-0510, TF4-MW-914-0510, TF4-MW-919-0510, TF4-MW-920-0510, TF4-MW-DUP03-051210, TF5-50-MW-108-0510, TF5-50-MW-200-0510, TF5-50-MW-207B-0510, TF5-MW-911-0510, TF5-MW-915-0510, TF5-MW-918-0510, TF5-MW-923-0510,TF5-MW-924-0510, TF5-MW-977-0510, TF5-MW-978-0510, TF5-MW-979-0510, TF5-MW-DUP04-051710, TF5-MW-RB02-051710, TF5-W-DUP05-051810
Antimony	0.341	1.71	All samples except TF4-MW-912-0510
Barium	0.074	0.370	TF5-MW-RB02-051710
Chromium	0.767	3.84	All samples
Cobalt	0.050	0.250	TF5-W-FB01-051910
Silver	0.030	0.150	TF4-38-MW-605-0510, TF4-MW-05D-0510, TF4-MW-913-0510, TF4-MW-919-0510, TF4-MW-920-0510, TF5-50-MW-108-0510, TF5-50-MW-200-0510, TF5-50-MW-207B-0510, TF5-MW-911-0510, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-923-0510, TF5-MW-977-0510, TF5-MW-978-0510, TF5-MW-979-0510, TF5-MW-DUP04-051710, TF5-DUP05-051810
Sodium	-95.0	475	TF5-MW-RB02-051710
Vanadium	-1.18	5.90	All samples
Zinc	13.8	68.9	TF4-38-MW-605-0510, TF4-B8-MW-904-0510, TF4-MW-05D-0510, TF4-MW-912-0510, TF4-MW-913-0510, TF4-MW-914-0510, TF4-MW-919-0510, TF4-MW-920-0510, TF4-MW-DUP02-051210, TF4-MW-DUP03-051210, TF5-50-MW-108-0510, TF5-50-MW-200-0510, TF5-50-MW-207B-0510, TF5-MW-911-0510, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-918-0510, TF5-MW-924-0510, TF5-MW-978-0510, TF5-MW-RB02-051710, TF5-W-FB01-051910

The positive and non-detected vanadium results in all samples are estimated (J and UJ, respectively), and the non-detected sodium result in the rinsate blank is estimated (UJ) due to negative instrument drift as evidenced by the negative blank results. The positive aluminum, antimony, barium, chromium, cobalt, silver, and zinc results below the blank action levels in affected samples are changed to non-detected values (U) at elevated reporting limits due to laboratory blank contamination.

Although vanadium and sodium exhibited negative drift, the project sensitivity goals are not impacted because the affected sample results for vanadium are much lower than the project action limit, and there is no project action limit established for sodium. The positive and non-detected vanadium and sodium results in the affected samples are usable as estimated values and estimated reporting limits which may be biased low.

Although aluminum, antimony, barium, chromium, cobalt, silver, and zinc contamination was found in the laboratory blanks, the project sensitivity goals are not impacted since the elevated reporting limits did not exceed the project action limits for these analytes. The results for these analytes in the affected samples are usable as non-detected values with elevated reporting limits.

Metals (dissolved)

The following table summarizes the levels of dissolved metals blank contamination detected in the laboratory blanks associated with the groundwater samples in this SDG:

Analyte	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Aluminum	25.1	126	TF4-38-MW-605-0510, TF5-50-MW-200-0510, TF5-MW-923-0510
Antimony	0.341	1.71	TF4-38-MW-605-0510, TF5-MW-916-0510, TF5-MW-RB02-051710
Barium	0.060	0.300	TF5-MW-RB02-051710
Chromium	0.544	2.72	All samples
Silver	0.03	0.15	TF4-38-MW-605-0510, TF5-MW-916-0510, TF5-MW-923-0510
Sodium	-95.0	475	TF5-MW-RB02-051710
Zinc	13.8	69.0	TF4-38-MW-605-0510, TF4-50-MW-200-0510, TF4-MW-916-0510

The non-detected sodium result in the rinsate blank is estimated (UJ) due to negative instrument drift as evidenced by the negative blank results. The positive aluminum, antimony, barium, chromium, silver, and zinc results below the blank action levels are changed to non-detected values (U) at elevated reporting limits due to laboratory blank contamination.

Although sodium exhibited negative drift, the project sensitivity goals are not impacted because there is no project action limit established for this analyte. The non-detected sodium result in the affected sample is usable as an estimated reporting limit which may be biased low.

Although aluminum, antimony, barium, chromium, silver, and zinc contamination was found in the laboratory blanks, the project sensitivity goals are not impacted since the elevated reporting limits did not

exceed the project action limits for these analytes. The results for these analytes in the affected samples are usable as non-detected values with elevated reporting limits.

Field Duplicate Precision

Metals (total)

The following table summarizes the analyte that recovered outside of the 30% relative percent difference (RPD) QC limit in the analysis of field duplicate pair TF5-MW-979-0510/TF5-W-DUP05-051810:

Analyte	TF5-MW-979-0510	TF5-W-DUP05-051810	RPD	Action	
				(+)	NDs
Zinc	401 µg/L	160 µg/L	86	J	

The positive zinc results are estimated (J) in all Tank Farm 5 soil samples (samples prefixed with "TF5-") due to poor field duplicate precision. The field duplicate samples associated with the Tank Farm 4 samples (samples prefixed with "TF4-") met field duplicate precision criteria; thus, no data validation actions were required for those samples.

Although the results of the field duplicate analyses did not meet QC criteria for zinc, the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The positive zinc results in affected soil samples are usable as estimated values for which the bias is indeterminate.

Reporting Limits

The laboratory reported non-detected metals results down to the method detection limit (MDLs). The positive results below than the laboratory's quantitation limit (QL) and above the MDL are estimated (J) due to uncertainty below the QL.

Metals (total and dissolved)

The project quantitation limit (PQL) goals and laboratory specific QLs listed in SAP worksheet 15c were met by the actual laboratory-specific QLs reported for this data set with the exception of those for chromium, selenium, and vanadium. However, the project action limits were still met for these analytes. All project action limits were achieved by the laboratory QLs except those for arsenic and thallium as stipulated in the SAP. The actual laboratory MDLs met the project action limit for thallium but not for arsenic; therefore, the data usability may be impacted for arsenic.

As discussed above in the Laboratory Blank Analyses section, the reporting limit was raised for aluminum, antimony, barium, chromium, cobalt, silver, and/or zinc in select samples due to laboratory blank contamination. Data usability is not impacted.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Metals (total)

The project goals with respect to accuracy were met for the metals (total) data set. Vanadium was qualified as estimated in all samples, and sodium was estimated in the rinsate blank, due to negative instrument drift. Although specific QC criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated reporting limits.

The project goals with respect to precision were met for the metals (total) data set. Results for zinc were qualified as estimated in all Tank Farm 5 soil samples due to poor field duplicate precision. Although specific QC criteria were not met in this instance, data usability is not impacted and the affected positive results are usable as estimated values.

The project goals with respect to sensitivity were met for the metals (total) data set with the following exceptions. The PQL goals and laboratory specific QLs listed in SAP worksheet 15c were met by the actual laboratory-specific QLs reported for this data set with the exception of those for chromium, selenium, and vanadium. However, the project action limits were met for these analytes. All project action limits were achieved by the laboratory QLs except those for arsenic and thallium as stipulated in the SAP. The actual laboratory MDLs met the project action limit for thallium but not for arsenic; therefore, the data usability may be impacted for arsenic.

The project goals with respect to completeness were met for the metals (total) data set. Data usability was not impacted with regards to completeness.

Metals (dissolved)

The project goals with respect to accuracy were met for the metals (dissolved) data set. Sodium was estimated in the rinsate blank due to negative instrument drift. Although specific QC criteria were not met in this instance, data usability is not impacted and the affected non-detected result is usable as an estimated reporting limit.

QC parameters monitoring precision (i.e., laboratory duplicates or field duplicates) were not analyzed for the dissolved metals samples; thus, precision could not be assessed.

The project goals with respect to sensitivity were met for the metals (dissolved) data set with the following exceptions. The PQL goals and laboratory specific QLs listed in SAP worksheet 15c were met by the actual laboratory specific QLs reported for this data set with the exception of those for chromium, selenium, and vanadium. However, the project action limits were met for these analytes. All project action limits were achieved by the laboratory QLs except those for arsenic and thallium as stipulated in the SAP. The actual laboratory MDLs met the project action limit for thallium but not for arsenic; therefore, the data usability may be impacted for arsenic.

The project goals with respect to completeness were met for the metals (dissolved) data set. Data usability was not impacted with regards to completeness.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

	=	No qualifier attached to value (positive hit)
J	=	Value is estimated
U	=	Value is not detected
UJ	=	Value is not detected and estimated
R	=	Value (positive hit) is not usable
UR	=	Value was reported as ND but is not usable

Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's $r < 0.995$
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near quantitation limit (< QL)
Q	=	Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-38-MW-605-0510			TF4-38-MW-904-0510			TF4-MW-05D-0510			TF4-MW-912-0510		
SDG: J0987	LAB_ID	J0987-01A			J0987-09A			J0987-05A			J0987-07A		
FRACTION: M	SAMP_DATE	5/10/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		48.8	UJ	AP	49.7	UJ	AP	14.7	UJ	AP	12	U	
ANTIMONY		0.227	UJ	AP	0.076	UJ	AP	0.102	UJ	AP	0.044	U	
ARSENIC		1.3			0.236	U		0.236	U		1.6		
BARIUM		8			16.3			7.4			27.4		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.045	U	
CADMIUM		0.474	J	P	0.054	U		0.054	U		0.054	U	
CALCIUM		22600			15200			18800			18500		
CHROMIUM		1	UJ	AP	1.1	UJ	AP	1.1	UJ	AP	0.824	UJ	AP
COBALT		3.4			3.1			6.2			12.6		
COPPER		2.1			0.553	J	P	1			0.428	J	P
IRON		4580			140	J	P	1680			12300		
LEAD		0.206	J	P	0.18	J	P	0.162	U		0.162	U	
MAGNESIUM		49700			8390			26900			16000		
MANGANESE		1010			141			1030			1110		
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		5.6			7.3			33.3			36		
POTASSIUM		1240			1700			1000			1300		
SELENIUM		0.173	J	P	0.123	U		0.123	U		0.123	U	
SILVER		0.022	UJ	AP	0.008	U		0.009	UJ	AP	0.008	U	
SODIUM		6350			17200			50700			23300		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		20.8	UJ	AP	16.6	UJ	AP	26.8	UJ	AP	50.3	U	A

PROJ_NO: 00963	NSAMPLE	TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510			TF4-MW-920-0510		
SDG: J0987	LAB_ID	J0987-06A			J0987-03A			J0987-08A			J0987-04A		
FRACTION: M	SAMP_DATE	5/12/2010			5/11/2010			5/12/2010			5/11/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		12	U		24.8	UJ	AP	23.6	UJ	AP	83.9	UJ	AP
ANTIMONY		0.053	UJ	AP	0.065	UJ	AP	0.058	UJ	AP	0.088	UJ	AP
ARSENIC		4.6			6.3			4			0.236	U	
BARIUM		41.2			29.5			14.9			7.9		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.045	U	
CADMIUM		0.054	U		0.054	U		0.054	U		0.234	J	
CALCIUM		21400			19700			16600			28800		
CHROMIUM		0.756	UJ	AP	0.679	UJ	AP	0.852	UJ	AP	1.6	UJ	AP
COBALT		11.6			10.5			12.1			3.8		
COPPER		0.519	J	P	0.284	U		0.478	J	P	1.1		
IRON		11700			12200			17100			779		
LEAD		0.162	U		0.168	J	P	0.162	U		0.162	U	
MAGNESIUM		18000			11000			10400			11100		
MANGANESE		1060			882			1130			5030		
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		25.9			20.4			30			64.4		
POTASSIUM		1160			662	J	P	539	J	P	3300		
SELENIUM		0.123	U		0.123	U		0.123	U		0.123	U	
SILVER		0.014	UJ	AP	0.008	U		0.009	UJ	AP	0.013	UJ	AP
SODIUM		25900			10300			15600			29400		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		35.4	UJ	AP	44.1	UJ	AP	51.3	U	AP	29.4	UJ	AP

PROJ_NO: 00963	NSAMPLE	TF4-MW-DUP02-051210			TF4-MW-DUP03-051210			TF5-50-MW-108-0510			TF5-50-MW-200-0510		
SDG: J0987	LAB_ID	J0987-10A			J0987-11A			J0987-13A			J0987-12A		
FRACTION: M	SAMP_DATE	5/12/2010			5/12/2010			5/13/2010			5/13/2010		
MEDIA: WATER	QC_TYPE	FD			FD			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF	TF4-MW-913-0510			TF4-38-MW-904-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		12	U		39.4	UJ	AP	95.3	UJ	AP	115	UJ	AP
ANTIMONY		0.045	UJ	AP	0.069	UJ	AP	0.143	UJ	AP	0.13	UJ	AP
ARSENIC		4.3			0.236	U		5.5			34.4		
BARIUM		40.3			16.1			22			24.5		
BERYLLIUM		0.045	U		0.045	U		0.045	U		0.055	J	P
CADMIUM		0.054	U		0.054	U		0.067	J	P	0.29	J	P
CALCIUM		19000			15500			32400			41000		
CHROMIUM		0.94	UJ	AP	1.1	UJ	AP	1.1	UJ	AP	0.972	UJ	AP
COBALT		11.9			3.1			5.4			2.6		
COPPER		1.5			0.539	J	P	2.7			0.73	J	P
IRON		10300			123	J	P	4480			9760		
LEAD		0.162	U		0.162	U		0.541	J	P	0.165	J	P
MAGNESIUM		15900			8440			11800			35300		
MANGANESE		927			138			1860			1020		
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		26.7			7.2			5.7			3.2		
POTASSIUM		1070			1750			2570			1490		
SELENIUM		0.123	U		0.123	U		0.161	J	P	0.123	U	
SILVER		0.008	U		0.008	U		0.019	UJ	AP	0.014	UJ	AP
SODIUM		23900			17900			9280			7490		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		32.9	UJ	AP	15.3	UJ	AP	15.9	UJ	AGP	14.9	UJ	AGP

PROJ_NO: 00963	NSAMPLE	TF5-50-MW-207B-0510			TF5-MW-911-0510			TF5-MW-915-0510			TF5-MW-916-0510		
SDG: J0987	LAB_ID	J0987-14A			J0987-22B			J0987-19C			J0987-20C		
FRACTION: M	SAMP_DATE	5/13/2010			5/17/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		25.2	UJ	AP	109	UJ	AP	38.5	UJ	AP	1480		
ANTIMONY		0.07	UJ	AP	0.167	UJ	AP	0.049	UJ	AP	0.336	UJ	AP
ARSENIC		92.1			3.2			8.8			0.59	J	P
BARIUM		20.6			6.3			9.9			69.3		
BERYLLIUM		0.057	J	P	0.045	U		0.045	U		0.188	J	P
CADMIUM		0.054	U		0.054	U		0.054	U		0.183	J	P
CALCIUM		31500			31700			20400			11800		
CHROMIUM		0.751	UJ	AP	1.3	UJ	AP	0.991	UJ	AP	3.2	U	A
COBALT		0.959	J	P	2.7			10.6			14.3		
COPPER		0.738	J	P	0.344	J	P	0.361	J	P	5.8		
IRON		12500			1070			17500			2260		
LEAD		0.162	U		0.162	U		0.162	U		1.7		
MAGNESIUM		32300			30300			16500			7620		
MANGANESE		393			303			1580			498		
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		4.8			8.8			27.4			43.4		
POTASSIUM		1050			866	J	P	520	J	P	2440		
SELENIUM		0.123	U		0.316	J	P	0.123	U		0.667	J	P
SILVER		0.008	UJ	AP	0.008	UJ	AP	0.009	UJ	AP	0.01	UJ	AP
SODIUM		7290			6670			9520			29200		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	1.2	J	O
ZINC		15.9	UJ	AGP	15.3	UJ	AGP	45	UJ	AGP	24.4	UJ	AGP

PROJ_NO: 00963	NSAMPLE	TF5-MW-918-0510			TF5-MW-923-0510			TF5-MW-924-0510			TF5-MW-977-0510		
SDG: J0987	LAB_ID	J0987-17A			J0987-15A			J0987-21B			J0987-26C		
FRACTION: M	SAMP_DATE	5/14/2010			5/13/2010			5/14/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		41.8	UJ	AP	53.5	UJ	AP	35.7	UJ	AP	66.9	UJ	AP
ANTIMONY		0.064	UJ	AP	0.062	UJ	AP	0.061	UJ	AP	0.046	UJ	AP
ARSENIC		1.8			0.911	J	P	1.1			7.3		
BARIUM		23.1			15.1			6.8			13.8		
BERYLLIUM		0.047	J	P	0.166	J	P	0.045	U		0.045	U	
CADMIUM		0.054	U		0.074	J	P	0.054	U		0.054	U	
CALCIUM		34600			12900			28200			12000		
CHROMIUM		1.1	UJ	AP	0.938	UJ	AP	1.3	UJ	AP	0.556	UJ	AP
COBALT		7.7			19			0.427	J	P	9		
COPPER		0.324	J	P	0.374	J	P	1			0.564	J	P
IRON		14100			24300			225			20100		
LEAD		0.162	U		0.162	U		0.162	U		0.162	U	
MAGNESIUM		19100			16700			19600			15100		
MANGANESE		1140			2510			82.4			1030		
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		22.8			57.8			14.5			25.9		
POTASSIUM		1050			1130			2150			611	J	P
SELENIUM		0.123	U		0.123	U		0.185	J	P	0.123	U	
SILVER		0.008	U		0.009	UJ	AP	0.008	U		0.012	UJ	AP
SODIUM		10200			11200			27600			21900		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		16	UJ	AGP	81.7	J	G	16.6	UJ	AGP	166	J	G

PROJ_NO: 00963	NSAMPLE	TF5-MW-978-0510			TF5-MW-979-0510			TF5-MW-DUP04-051710			TF5-MW-RB02-051710		
SDG: J0987	LAB_ID	J0987-30C			J0987-27C			J0987-24B			J0987-23C		
FRACTION: M	SAMP_DATE	5/19/2010			5/18/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			NM			FD			RB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							TF5-MW-911-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		47.3	UJ	AP	46.3	UJ	AP	59.3	UJ	AP	33	UJ	AP
ANTIMONY		0.048	UJ	AP	0.201	UJ	AP	0.083	UJ	AP	0.061	UJ	AP
ARSENIC		2.7			1.3			2.9			0.236	U	
BARIUM		26.5			18.9			5.9			0.178	UJ	AP
BERYLLIUM		0.045	U		0.062	J	P	0.045	U		0.045	U	
CADMIUM		0.054	U		0.054	U		0.189	J	P	0.054	U	
CALCIUM		12100			12400			32500			87	U	
CHROMIUM		0.474	UJ	AP	0.513	UJ	AP	1.1	UJ	AP	1.4	UJ	AP
COBALT		13.5			6.9			2.6			0.02	U	
COPPER		1			0.64	J	P	0.464	J	P	0.796	J	P
IRON		5770			17100			1110			51.6	J	P
LEAD		0.162	U		0.165	J	P	0.162	U		0.162	U	
MAGNESIUM		10900			14200			30400			62	U	
MANGANESE		1230			842			337			3.8	J	P
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		27.1			24.7			8.3			0.244	J	P
POTASSIUM		1010			694	J	P	929	J	P	59	U	
SELENIUM		0.123	U		0.123	U		0.205	J	P	0.123	U	
SILVER		0.031	UJ	AP	0.011	UJ	AP	0.009	UJ	AP	0.008	U	
SODIUM		67900			30300			6760			29	UJ	O
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O	0.331	UJ	O	0.331	UJ	O
ZINC		55.1	UJ	AG	401	J	G	69.6	J	G	20.9	UJ	AP

PROJ_NO: 00963	NSAMPLE	TF5-W-DUP05-051810			TF5-W-FB01-051910		
SDG: J0987	LAB_ID	J0987-28C			J0987-31C		
FRACTION: M	SAMP_DATE	5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	FD			FB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF	TF5-MW-979-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		57.2	UJ	AP	323		
ANTIMONY		0.092	UJ	AP	0.12	UJ	AP
ARSENIC		1.5			0.236	U	
BARIUM		18.4			5.8		
BERYLLIUM		0.054	J	P	0.045	U	
CADMIUM		0.054	U		0.054	U	
CALCIUM		12400			13300		
CHROMIUM		0.515	UJ	AP	1.1	UJ	AP
COBALT		7.1			0.076	UJ	AP
COPPER		0.792	J	P	13.9		
IRON		17100			60.5	J	P
LEAD		0.162	U		0.223	J	P
MAGNESIUM		14200			3580		
MANGANESE		845			11.3	J	P
MERCURY		0.056	U		0.056	U	
NICKEL		25.1			0.871	J	P
POTASSIUM		696	J	P	2260		
SELENIUM		0.123	U		0.123	U	
SILVER		0.01	UJ	AP	0.008	U	
SODIUM		29800			25000		
THALLIUM		0.204	U		0.204	U	
VANADIUM		0.331	UJ	O	0.331	UJ	O
ZINC		160	J	G	26.3	UJ	AP

PROJ_NO: 00963	NSAMPLE	TF4-38-MW-605-0510			TF5-50-MW-200-0510			TF5-MW-916-0510			TF5-MW-923-0510		
SDG: J0987	LAB_ID	J0987-01A			J0987-12A			J0987-20C			J0987-15A		
FRACTION: MF	SAMP_DATE	5/10/2010			5/13/2010			5/17/2010			5/13/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		29.6	UJ	AP	12.7	UJ	AP	446			36.7	UJ	AP
ANTIMONY		0.072	UJ	AP	0.044	U		0.333	UJ	AP	0.044	U	
ARSENIC		4.6			26.9			0.236	U		0.794	J	P
BARIUM		18			21.9			53.8			15.1		
BERYLLIUM		0.045	U		0.045	U		0.107	J	P	0.16	J	P
CADMIUM		0.054	U		0.054	U		0.084	J	P	0.054	U	
CALCIUM		54200			39300			12700			12900		
CHROMIUM		0.578	UJ	AP	0.519	UJ	AP	0.99	UJ	AP	0.509	UJ	AP
COBALT		2.4			2.2			9.3			18.3		
COPPER		0.365	J	P	0.471	J	P	3.7			0.45	J	P
IRON		37400			7310			128	J	P	23500		
LEAD		0.162	U		0.162	U		0.162	U		0.162	U	
MAGNESIUM		49600			34100			8720			16800		
MANGANESE		726			962			333			2520		
MERCURY		0.056	U		0.056	U		0.056	U		0.056	U	
NICKEL		3.9			2.4			32.3			55.5		
POTASSIUM		2430			1460			2250			1130		
SELENIUM		0.123	U		0.123	U		0.573	J	P	0.123	U	
SILVER		0.015	UJ	AP	0.008	U		0.011	UJ	AP	0.012	UJ	AP
SODIUM		6940			7170			26700			11400		
THALLIUM		0.204	U		0.204	U		0.204	U		0.204	U	
VANADIUM		0.331	U		0.331	U		0.331	U		0.331	U	
ZINC		15.9	UJ	AP	16.9	UJ	AP	19.6	UJ	AP	78.7		

PROJ_NO: 00963	NSAMPLE	TF5-MW-RB02-051710		
SDG: J0987	LAB_ID	J0987-23C		
FRACTION: MF	SAMP_DATE	5/17/2010		
MEDIA: WATER	QC_TYPE	RB		
	UNITS	UG/L		
	PCT_SOLIDS			
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ALUMINUM		12	U	
ANTIMONY		0.064	UJ	AP
ARSENIC		0.236	U	
BARIUM		0.285	UJ	AP
BERYLLIUM		0.045	U	
CADMIUM		0.054	U	
CALCIUM		87	U	
CHROMIUM		1.3	UJ	AP
COBALT		0.02	U	
COPPER		1.9		
IRON		47	U	
LEAD		0.162	U	
MAGNESIUM		62	U	
MANGANESE		5.9	J	P
MERCURY		0.056	U	
NICKEL		0.697	J	P
POTASSIUM		59	U	
SELENIUM		0.123	U	
SILVER		0.008	U	
SODIUM		29	UJ	O
THALLIUM		0.204	U	
VANADIUM		0.331	U	
ZINC		95.7		

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-10-3750W

Date: July 15, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: Paula DiMattei (no copy) (for)

Subject: Tier II Organic Data Validation, SDG J0918
Mitkem Laboratories
CTO 464, Tank Farms 4 and 5, Data Gaps Investigation, Naval Station Newport, Newport, Rhode Island

PAH/TPH:

19/Groundwaters /	TF4-38-MW418-0510	TF4-38-MW903-0510
	TF4-38-MW905-0510	TF4-42-MW-801-0510
	TF4-42-MW906-0510	TF4-42-MW907-0510
	TF4-42-MW908-0510	TF4-42-MW909-0510
	TF4-45-MW122-0510	TF4-45-MW330-0510
	TF4-45-MW802-0510	TF4-48-MW408-0510
	TF4-48-MW409-0510	TF4-48-MW422-0510
	TF4-48-MW805-0510	TF4-48-MW910 0510
	TF4-MW-921-0510	TF4-MW-922-0510
	TF4-MW-DUP01-050510	

(Field Duplicate pair: TF4-48-MW805-0510/TF4-MW-DUP01-050510)

1/Rinsate Blank/	TF4-W-RB01-051010	

VOC/SVOC/PEST/PCB:

2/Groundwaters/	TF4-MW-921-0510	TF4-MW-922-0510

VOC:

1/Trip Blank/	TF4-W-TB01-051010

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polynuclear aromatic hydrocarbons (PAH), pesticide, polychlorinated biphenyls (PCB), and total petroleum hydrocarbons (TPH; C_9-C_{36}) analytical data for the groundwater samples in this SDG. The samples were collected from Tank Farms 4 and 5 as part of the Data Gaps Investigation at the Naval Station Newport, Newport, Rhode Island on May 3-10, 2010. Sample collection and analysis was performed according to the requirements of the Sampling and Analysis Plan for the Data Gaps Investigation at Naval Station Newport, Newport, Rhode Island, Revision 3, dated March 2010.

The VOC and SVOC analyses were performed according to USEPA SW-846 Methods 8260B and 8270. The PAH analysis was performed according to USEPA SW-846 Method 8270 in the SIM mode. In

addition, select SVOCs were analyzed in the SIM mode to achieve lower detection limits. (All semivolatile and PAH compounds were analyzed by the Full Scan mode for the rinsate blank sample). The pesticides and PCB analyses were performed according to USEPA SW-846 Methods 8081 and 8082, respectively. The TPH analysis was performed according to USEPA SW-846 Method 8015.

The project specific criteria listed in the site SAP were applied for data validation. The VOC, SVOC, PAH, and TPH data validation was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996. The pesticides and PCB validation was performed in accordance with the Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part III, February 2004.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The data summary table with the header which identifies the fraction as "PAH" includes all analytes analyzed by USEPA SW-846 Method 8270 in the SIM mode.

The data were evaluated based on the following parameters:

- Data Completeness
- * Preservation and Technical Holding Times
- * GC/MS Instrument Performance Check (Tuning)
- * Pesticide Degradation
- Initial and Continuing Calibrations
- * Blanks
- Surrogate Compounds
- * Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample/Laboratory Control Sample Duplicate
- * Field Duplicates
- * Compound Identification/Quantitation
- Reporting Limits

* All criteria were met for this parameter.

Data Completeness

Samples TF4-42-MW801-0510 and TF4-42-MW-908-0510 were analyzed for the full suite of SIM compounds and not for PAHs only as requested on the COC. No actions were taken other than this notation.

On June 2, 2010 the laboratory explained that J flags (above the MDL but below the QL) are not reported for SVOC SIM because of the limited mass spectral data acquired using SIM can lead to false positives. The same applies to the reporting of pesticide and PCB results since many samples contain small peaks that are difficult to distinguish from the noise near the baseline. (However, on occasion, the laboratory will use professional judgment to report a J flag if they determine a peak is real). (See SDG J0477). In addition, on June 14, 2010 the laboratory explained that J flags are not reported for TPH since GC tests

where the retention time is the primary identification are not routinely reported below the QL. (See SDG J0798).

Semivolatiles – Full Scan

On June 3, 2010 the laboratory explained that there are two ICV results for benzaldehyde since the laboratory uses one ICV solution for every analyte except benzaldehyde and a separate solution for benzaldehyde alone. The ICV form combines the results of the two injections. (See SDG J0478)

Semivolatiles – SIM

On June 3, 2010 the laboratory explained that the rinsate and field blank samples were not analyzed by the SIM mode since it was the laboratory's understanding that the reporting limits for the aqueous QC were sufficient using Full Scan and that SIM analysis was not required for aqueous QC associated with the sediments. No further action was taken. (See SDG J0478)

TPH

On July 6, 2010 the laboratory provided the raw data and associated forms for the missing TPH initial calibration and initial calibration verification standards.

Initial and Continuing Calibrations

Volatiles

The following table summarizes the volatile compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Acetone	21.7		UJ	All samples
1,2,3-Trichlorobenzene	23.0, -49.0		UJ	
Dichlorodifluoromethane	-22.6		UJ	
1,2,4-Trichlorobenzene	-24.7		UJ	

The RSD and %D were above the QC limit for 1,2,4-trichlorobenzene; therefore, the project accuracy goals may be impacted. The non-detected results for 1,2,4-trichlorobenzene in the affected samples are usable as estimated quantitation limits.

Although the RSD and/or %D were above the QC limit for acetone, 1,2,3-trichlorobenzene, and dichlorofluoromethane; the project accuracy goals are not impacted because of the following: 1) the affected sample results are much lower than the project action limits, or 2) there are no project action limits established for the affected compounds. The non-detected results for acetone, 1,2,3-trichlorobenzene, and dichlorofluoromethane in the affected samples are usable as estimated quantitation limits.

The following table summarizes the volatile compound that failed to meet the initial calibration verification recovery criteria of 80-120%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
1,1-Dichloroethene	73.7		UJ	All samples

The ICV recovery for 1,1-dichloroethene was below the QC limits; therefore, the project accuracy goals may be impacted. The 1,1-dichloroethene results in the affected samples are usable as estimated quantitation limits which may be biased low.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan compounds that failed to meet the continuing calibration (CC) criterion of %D <20%:

Compound	%D	Action		Affected Samples
		(+)	NDs	
2,2'-Oxybis(1-chloropropane)	-20.6		UJ	All samples
2,4-Dinitrophenol	-21.3		UJ	
4-Nitrophenol	-37.0		UJ	
4,6-Dinitro-2-methylphenol	-21.3		UJ	
Benzaldehyde	-44.7		UJ	

Although the %D was above the QC limit for 2,2-oxybis(1-chloropropane), 2,4-dinitrophenol, 4-nitrophenol, 4,6-dinitro-2-methylphenol, and benzaldehyde; the project accuracy goals are not impacted since there are no project action limits established for these compounds. The results for 2,2-oxybis(1-chloropropane), 2,4-dinitrophenol, 4-nitrophenol, 4,6-dinitro-2-methylphenol, and benzaldehyde in the affected samples are usable as estimated quantitation limits.

The following table summarizes the semivolatile – full scan compounds that failed to meet the initial calibration verification (ICV) recovery criteria of 80-120%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
4-Chloroaniline	50.4		UJ	All samples
1,1'-Biphenyl	78.4		UJ	

Although ICV recoveries for 4-chloroaniline and 1,1'-biphenyl were below the QC limit, the project accuracy goals are not impacted since there are no project action limits established for these compounds. The non-detected results for 4-chloroaniline and 1,1'-biphenyl in the affected samples are usable as estimated quantitation limits which may be biased low.

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM compound that failed to meet the initial calibration verification recovery criteria of 75-125%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
2,4-Dimethylphenol	53.6		UJ	TF4-MW921-0510, TF4-MW922-0510

Although the ICV recovery for 2,4-dimethylphenol was below the QC limit, the project accuracy goals are not impacted since there is no project action limit established for this compound. The non-detected results for 2,4-dimethylphenol in the affected samples are usable as estimated quantitation limits which may be biased low.

The following table summarizes the semivolatile – SIM compounds that failed to meet the continuing calibration (CC) criterion of %D <20%:

Compound	%D	Action		Affected Samples
		(+)	NDs	
2-Methylnaphthalene	-33.5		UJ	TF4-42-MW801-0510, TF4-42-MW908-0510, TF4-W-RB01-051010, TF4-MW921-0510, TF4-MW922-0510
2,4-Dimethylphenol	-36.8		UJ	TF4-MW921-0510, TF4-MW922-0510
4-Chloro-3-methylphenol	-28.8		UJ	
Pentachlorophenol	-27.4		UJ	
1,2,4,5-Tetrachlorobenzene	-20.8		UJ	
Atrazine	-23.3		UJ	

Although the %D was above the QC limit for 2-methylnaphthalene, 2,4-dimethylphenol, 4-chloro-3-methylphenol, pentachlorophenol, 1,2,4,5-tetrachlorobenzene, and atrazine; the project accuracy goals are not impacted because of the following: 1) the affected sample results are much lower than the project action limits, or 2) there are no project action limits established for the affected compounds. The non-detected results for 2-methylnaphthalene, 2,4-dimethylphenol, 4-chloro-3-methylphenol, pentachlorophenol, 1,2,4,5-tetrachlorobenzene, and atrazine in the affected samples are usable as estimated quantitation limits.

<u>Surrogate Compounds</u>

TPH

The following samples had surrogate spike recovery outside of the recovery limits:

Sample	Surrogate	% Recovery	QC Limits	Action	
				(+)	NDs
TF4-42-MW909-0510	5a-Androstane	20.2	30-110	J	

Although the surrogate recovery QC criteria were not met for 5a-androstane; the project accuracy goals are not impacted since there is no established project action limit for TPH. The positive TPH result in the affected sample is usable as an estimated value which may be biased low.

Matrix Spike/Matrix Spike Duplicate

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM matrix spiking recovery that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

TF4-45-MW330-0510					
Compound	MS %REC	MSD %REC	QC Limits %REC	Action (+)	Action ND
Benzo(a)pyrene	0	-	66-114		UJ

-Criterion met

Profesional judgment was used to estimated benzo(a)pyrene in the unspiked sample instead of reject it based on the following technical reasons: 1) surrogate recovery (benzo(e)pyrene) is 98%; 2) the recovery for all the other PAHs in this MS sample are within limits; and 3) the percent recovery of benzo(a)pyrene in the MSD is 87%.

Since there was no recovery for benzo(a)pyrene in the MS analysis the project accuracy goals maybe impacted. The non-detected benzo(a)pyrene result in sample TF4-45-MW330-0510 usable as estimated quantitation limits.

Laboratory Control Sample/Laboratory Control Sample Duplicates

Volatiles

The following table summarizes the volatile compound that failed to meet the statistically derived laboratory control sample (LCS) recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action (+)	Action NDs	Affected Samples
1,2,3-Trichlorobenzene	48	55-140		UJ	All samples

Although the LCS recovery criteria were not met for 1,2,3-trichlorobenzene; the project accuracy goals are not impacted since there is no established project action limit for this compound. The non-detected results for 1,2,3-trichlorobenzene in the affected samples are usable as estimated quantitation limits which may be biased low.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan compounds that failed to meet the statistically derived laboratory control sample (LCS) recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
Hexachlorocyclopentadiene	3	27-147		R	TF4-MW921-0510, TF4-MW922-0510

The LCS recovery for hexachlorocyclopentadiene was very low (<10%); therefore, the non-detected hexachlorocyclopentdiene results in the affected samples are qualified as rejected (R). These results are not usable for project decisions. The data completeness goals may be impacted.

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM compounds that failed to meet the statistically derived laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) recovery QC limits:

Compound	LCS/LCSD % Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
2,4-Dimethylphenol	22/25	45-135		UJ	TF4-MW921-0510, TF4-MW922-0510
2-Methylnaphthalene	39/38	43-115		UJ	TF4-42-MW801-0510, TF4-42-MW908-0510, TF4-W-RB01-051010 TF4-MW921-0510, TF4-MW922-0510
Benzo(k)fluoranthene	53/53	62-131		UJ	

The LCS and LCSD recoveries for benzo(k)fluoranthene were below the QC limits; therefore, the project accuracy goals may be impacted. The benzo(k)fluoranthene results in the affected samples are usable as estimated quantitation limits which may be biased low.

Although the LCS and LCSD recovered below the QC limit for 2,4-dimethylphenol and 2-methylnaphthalene; the project accuracy goals are not impacted because of the following: 1) the affected sample results are much lower than the project action limits, or 2) there are no project action limits established for the affected compounds. The non-detected results for 2,4-dimethylphenol and 2-methylnaphthalene in the affected samples are usable as estimated quantitation limits that may be biased low.

Reporting Limits

The laboratory reported all non-detected results down to the quantitation limit (QL). The positive volatiles and semivolatiles – full scan results below the QL and above the method detection limit (MDL) are estimated (J) due to uncertainty below the QL. (J Flags were not utilized for the semivolatiles – SIM, pesticide, PCB, and TPH fractions. See note in Data Completeness section).

Volatiles

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs.

As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds: 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2-dibromomethane, 1,2-dibromo-3-chloropropane, 1,2-dichloroethane, 1,2-dichloropropane, 1,4-dichlorobenzene, benzene, bromodichloromethane, bromoform, bromomethane, carbon tetrachloride, chloroform, cis-1,3-dichloropropene, dibromochloromethane, tetrachloroethene, trans-1,3-dichloropropene, and vinyl chloride. Data usability may be impacted for these target compounds.

There are no project action limits established for the rinsate or trip blank samples.

Semivolatiles – Full Scan/Semivolatiles – SIM

Select semivolatile compounds were analyzed by both the Full Scan and SIM modes. The SIM results were selected for reporting since the SIM mode provides lower detection limits. The project quantitation limit goals, laboratory-specified QL, and project action limits are established for the SIM analyses only. See below for details.

Semivolatiles - SIM

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs.

As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds:benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Data usability may be impacted for these target compounds.

Pesticides, PCBs, and TPH

There are no project action limits established for these parameters.

<u>Data Usability Assessment</u>

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles

The project goals with respect to accuracy were met for the volatiles data set with the following exceptions. The results for 1,2,4-trichlorobenzene in all samples were qualified as estimated due to

calibration non-conformances. The results for 1,1-dichloroethene in all samples were qualified as estimated due to the low ICV recovery. Although specific method criteria were not met in these instances, the affected non-detected results are usable as estimated quantitation limits which may have a minor impact on data usability. Additionally, the results for acetone, 1,2,3-trichlorobenzene, and dichlorofluoromethane in all samples were qualified as estimated due to calibration non-conformances. The results for 1,2,3-trichlorobenzene in all samples were qualified as estimated due to the low LCS recovery. Although specific method criteria were not met in these instances, data usability is not impacted and the affected non-detected results are usable as estimated quantitation limits.

The project goals with respect to precision and completeness were met for the volatiles data set. Data usability was not impacted with regards to precision and completeness.

The project goals with respect to sensitivity were met for the volatiles data set with the following exceptions. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs. As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds: 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2-dibromomethane, 1,2-dibromo-3-chloropropane, 1,2-dichloroethane, 1,2-dichloropropane, 1,4-dichlorobenzene, benzene, bromodichloromethane, bromoform, bromomethane, carbon tetrachloride, chloroform, cis-1,3-dichloropropene, dibromochloromethane, tetrachloroethene, trans-1,3-dichloropropene, and vinyl chloride. Data usability may be impacted for these target compounds.

Semivolatiles – Full Scan

The project goals with respect to accuracy were met for the semivolatiles – full scan data set. The results for 2,2-oxybis(1-chloropropane, 4,6-dinitro-2-methylphenol, and benzaldehyde in all samples were qualified as estimated due to calibration nonconformances. The results for 4-chloroaniline and 1,1'-biphenyl in all samples were qualified as estimated due to the low ICV recoveries. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision and sensitivity were met for the semivolatiles – full scan data set. Data usability was not impacted with regards to precision and sensitivity.

The project goals with respect to completeness were met for the semivolatiles – full scan data set with the following exception. The non-detected hexachlorocyclopentadiene results in samples TF4-MW921-0510 and TF4-MW922-0510 were qualified as rejected due to the very low (<10%) LCS recovery. These results are not usable for project decisions. Data usability may be impacted for completeness.

Semivolatiles – SIM

The project goals with respect to accuracy were met for the semivolatiles – SIM data set with the following exceptions. The non-detected benzo(a)pyrene result in sample TF4-45-MW330-0510 was estimated due to matrix spike recovery-non-compliance. The results for benzo(k)fluoranthene in select samples were qualified as estimated due to the low LCS and LCSD recoveries. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, the result for 2,4-dimethylphenol in select samples were qualified as estimated due to the low ICV recovery. The

results for 2-methylnaphthalene, 2,4-dimethylphenol, 4-chloro-3-methylphenol, pentachlorophenol, 1,2,4,5-tetrachlorobenzene, and atrazine in select samples were qualified as estimated due to calibration nonconformances. The results for 2,4-dimethylphenol and 2-methylnaphthalene were qualified as estimated due to low LCS and LCSD recoveries. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision were met for the semivolatiles – SIM data set. Data usability was not impacted with regards to precision.

The project goals with respect to sensitivity were met for the semivolatiles – SIM data set with the following exceptions. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs. As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds:benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Data usability may be impacted for these target compounds.

The project goals with respect to completeness were met for the semivolatiles – SIM data. Data usability was not impacted for completeness.

Pesticides and PCBs

The project goals with respect to accuracy, precision, sensitivity, and completeness were met for the pesticides and PCB data sets. Data usability was not impacted with regards to accuracy, precision, sensitivity, and completeness

TPH

The project goals with respect to accuracy were met for the TPH data set. In addition, the TPH result for sample TF4-42-MW909-0510 was qualified as estimated due to low surrogate recoveries. Although specific method criteria were not met in this instance, data usability is not impacted the affected positive result is usable as an estimated value.

The project goals with respect to precision, sensitivity, and completeness were met for the TPH data set. Data usability was not impacted with regards to precision, sensitivity, and completeness

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510			TF4-W-TB01-051010		
SDG: J0918	LAB_ID	J0918-20D			J0918-19D			J0918-16A		
FRACTION: OV	SAMP_DATE	5/10/2010			5/10/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0					
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	UJ	C	1	UJ	C	1	UJ	C
1,2,3-TRICHLOROBENZENE		1	UJ	CE	1	UJ	CE	1	UJ	CE
1,2,4-TRICHLOROBENZENE		1	UJ	C	1	UJ	C	1	UJ	C
1,2-DIBROMO-3-CHLOROPROPANE		1	U		1	U		1	U	
1,2-DIBROMOETHANE		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U	
2-BUTANONE		5	U		5	U		5	U	
2-HEXANONE		5	U		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U		5	U	
ACETONE		5	UJ	C	5	UJ	C	5	UJ	C
BENZENE		1	U		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U	
BROMOMETHANE		1	U		1	U		1	U	
CARBON DISULFIDE		1	U		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U	
CHLOROMETHANE		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U	
CYCLOHEXANE		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	UJ	C	1	UJ	C	1	UJ	C

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510			TF4-W-TB01-051010		
SDG: J0918	LAB_ID	J0918-20D			J0918-19D			J0918-16A		
FRACTION: OV	SAMP_DATE	5/10/2010			5/10/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0					
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U	
M+P-XYLENES		1	U		1	U		1	U	
METHYL ACETATE		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U	
O-XYLENE		1	U		1	U		1	U	
STYRENE		1	U		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U		1	U	
TOLUENE		1	U		1	U		1	U	
TOTAL XYLENES		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U	
VINYL CHLORIDE		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510		
SDG: J0918	LAB_ID	J0918-20A			J0918-19A		
FRACTION: OS	SAMP_DATE	5/10/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		10	UJ	C	10	UJ	C
2,2'-OXYBIS(1-CHLOROPROPANE)		10	UJ	C	10	UJ	C
2,4,5-TRICHLOROPHENOL		20	U		20	U	
2,4,6-TRICHLOROPHENOL		10	U		10	U	
2,4-DINITROPHENOL		20	UJ	C	20	UJ	C
2,4-DINITROTOLUENE		10	U		10	U	
2,6-DINITROTOLUENE		10	U		10	U	
2-CHLORONAPHTHALENE		10	U		10	U	
2-NITROANILINE		20	U		20	U	
2-NITROPHENOL		10	U		10	U	
3,3'-DICHLOROBENZIDINE		10	U		10	U	
3-NITROANILINE		20	U		20	U	
4,6-DINITRO-2-METHYLPHENOL		20	UJ	C	20	UJ	C
4-BROMOPHENYL PHENYL ETHER		10	U		10	U	
4-CHLOROANILINE		10	UJ	C	10	UJ	C
4-CHLOROPHENYL PHENYL ETHER		10	U		10	U	
4-NITROANILINE		20	U		20	U	
4-NITROPHENOL		20	UJ	C	20	UJ	C
ACETOPHENONE		10	U		10	U	
BENZALDEHYDE		10	UJ	C	10	UJ	C
BIS(2-CHLOROETHOXY)METHANE		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE		10	U		10	U	
BUTYL BENZYL PHTHALATE		10	U		10	U	
CAPROLACTAM		10	U		10	U	
CARBAZOLE		10	U		10	U	
DIBENZOFURAN		10	U		10	U	
DIETHYL PHTHALATE		10	U		10	U	
DIMETHYL PHTHALATE		10	U		10	U	
DI-N-BUTYL PHTHALATE		10	U		10	U	
DI-N-OCTYL PHTHALATE		10	U		10	U	
HEXACHLOROBUTADIENE		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE		10	UR	E	10	UR	E
HEXACHLOROETHANE		10	U		10	U	
ISOPHORONE		10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510		
SDG: J0918	LAB_ID	J0918-20A			J0918-19A		
FRACTION: OS	SAMP_DATE	5/10/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
NITROBENZENE		10	U		10	U	
N-NITROSO-DI-N-PROPYLAMINE		10	U		10	U	
N-NITROSODIPHENYLAMINE		10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF4-38-MW418-0510			TF4-38-MW903-0510			TF4-38-MW905-0510			TF4-42-MW-801-0510		
SDG: J0918	LAB_ID	J0918-05A			J0918-07A			J0918-08A			J0918-17A		
FRACTION: PAH	SAMP_DATE	5/5/2010			5/5/2010			5/5/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE													
1,4-DIOXANE													
2,3,4,6-TETRACHLOROPHENOL													
2,4-DICHLOROPHENOL													
2,4-DIMETHYLPHENOL													
2-CHLOROPHENOL													
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	UJ	CE
2-METHYLPHENOL													
4-CHLORO-3-METHYLPHENOL													
4-METHYLPHENOL													
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE													
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.11			0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.21			0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U		0.11			0.1	UJ	E
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.16			0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE													
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL													
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL													
PYRENE		0.1	U		0.1	U		0.13			0.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-42-MW906-0510			TF4-42-MW907-0510			TF4-42-MW-908-0510			TF4-42-MW909-0510		
SDG: J0918	LAB_ID	J0918-13A			J0918-15A			J0918-18A			J0918-14A		
FRACTION: PAH	SAMP_DATE	5/7/2010			5/7/2010			5/10/2010			5/7/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE													
1,4-DIOXANE													
2,3,4,6-TETRACHLOROPHENOL													
2,4-DICHLOROPHENOL													
2,4-DIMETHYLPHENOL													
2-CHLOROPHENOL													
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	UJ	CE	0.1	U	
2-METHYLPHENOL													
4-CHLORO-3-METHYLPHENOL													
4-METHYLPHENOL													
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.17		
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE													
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U		0.1	UJ	E	0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE													
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL													
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL													
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-45-MW122-0510			TF4-45-MW330-0510			TF4-45-MW802-0510			TF4-48-MW408 0510		
SDG: J0918	LAB_ID	J0918-12A			J0918-10A			J0918-11A			J0918-03A		
FRACTION: PAH	SAMP_DATE	5/6/2010			5/6/2010			5/6/2010			5/4/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE													
1,4-DIOXANE													
2,3,4,6-TETRACHLOROPHENOL													
2,4-DICHLOROPHENOL													
2,4-DIMETHYLPHENOL													
2-CHLOROPHENOL													
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
2-METHYLPHENOL													
4-CHLORO-3-METHYLPHENOL													
4-METHYLPHENOL													
ACENAPHTHENE		0.1			0.1	U		0.1	U		0.52		
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.41		
ATRAZINE													
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.35			0.1	U		0.1	U		0.91		
HEXACHLOROBENZENE													
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.11		
PENTACHLOROPHENOL													
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL													
PYRENE		0.11			0.1	U		0.1	U		0.2		

PROJ_NO: 00963	NSAMPLE	TF4-48-MW409 0510			TF4-48-MW422 0510			TF4-48-MW805-0510			TF4-48-MW910 0510		
SDG: J0918	LAB_ID	J0918-01A			J0918-02A			J0918-06A			J0918-04A		
FRACTION: PAH	SAMP_DATE	5/3/2010			5/3/2010			5/5/2010			5/4/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE													
1,4-DIOXANE													
2,3,4,6-TETRACHLOROPHENOL													
2,4-DICHLOROPHENOL													
2,4-DIMETHYLPHENOL													
2-CHLOROPHENOL													
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
2-METHYLPHENOL													
4-CHLORO-3-METHYLPHENOL													
4-METHYLPHENOL													
ACENAPHTHENE		2			0.1	U		0.1	U		0.85		
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.52			0.1	U		0.23			0.35		
ATRAZINE													
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		3.3			0.1	U		0.13			1.6		
HEXACHLOROBENZENE													
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.38			0.1	U		0.1	U		0.18		
PENTACHLOROPHENOL													
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL													
PYRENE		0.21			0.1	U		0.21			0.17		

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510			TF4-MW-DUP01-050510			TF4-W-RB01-051010		
SDG: J0918	LAB_ID	J0918-20A			J0918-19A			J0918-09A			J0918-21A		
FRACTION: PAH	SAMP_DATE	5/10/2010			5/10/2010			5/5/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			FD			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							TF4-48-MW805-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		0.1	UJ	C	0.1	UJ	C						
1,4-DIOXANE		0.1	U		0.1	U							
2,3,4,6-TETRACHLOROPHENOL		0.1	U		0.1	U							
2,4-DICHLOROPHENOL		0.1	U		0.1	U							
2,4-DIMETHYLPHENOL		0.1	UJ	CE	0.1	UJ	CE						
2-CHLOROPHENOL		0.1	U		0.1	U							
2-METHYLNAPHTHALENE		0.1	UJ	E	0.1	UJ	E	0.1	U		0.1	UJ	CE
2-METHYLPHENOL		0.1	U		0.1	U							
4-CHLORO-3-METHYLPHENOL		0.1	UJ	C	0.1	UJ	C						
4-METHYLPHENOL		0.1	U		0.1	U							
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.2			0.1	U	
ATRAZINE		0.1	UJ	C	0.1	UJ	C						
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	UJ	E	0.1	UJ	E	0.1	U		0.1	UJ	E
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.11			0.1	U	
HEXACHLOROBENZENE		0.1	U		0.1	U							
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL		1	UJ	C	1	UJ	C						
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL		0.1	U		0.1	U							
PYRENE		0.1	U		0.1	U		0.2			0.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-921-0510			TF4-MW-922-0510		
SDG: J0918	LAB_ID	J0918-20A			J0918-19A		
FRACTION: PEST/PCB	SAMP_DATE	5/10/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		0.1	U		0.1	U	
4,4'-DDE		0.1	U		0.1	U	
4,4'-DDT		0.1	U		0.1	U	
ALDRIN		0.05	U		0.05	U	
ALPHA-BHC		0.05	U		0.05	U	
ALPHA-CHLORDANE		0.05	U		0.05	U	
AROCLOR-1016		1	U		1	U	
AROCLOR-1221		1	U		1	U	
AROCLOR-1232		1	U		1	U	
AROCLOR-1242		1	U		1	U	
AROCLOR-1248		1	U		1	U	
AROCLOR-1254		1	U		1	U	
AROCLOR-1260		1	U		1	U	
AROCLOR-1262		1	U		1	U	
AROCLOR-1268		1	U		1	U	
BETA-BHC		0.05	U		0.05	U	
DELTA-BHC		0.05	U		0.05	U	
DIELDRIN		0.1	U		0.1	U	
ENDOSULFAN I		0.05	U		0.05	U	
ENDOSULFAN II		0.1	U		0.1	U	
ENDOSULFAN SULFATE		0.1	U		0.1	U	
ENDRIN		0.1	U		0.1	U	
ENDRIN ALDEHYDE		0.1	U		0.1	U	
ENDRIN KETONE		0.1	U		0.1	U	
GAMMA-BHC (LINDANE)		0.05	U		0.05	U	
GAMMA-CHLORDANE		0.05	U		0.05	U	
HEPTACHLOR		0.05	U		0.05	U	
HEPTACHLOR EPOXIDE		0.05	U		0.05	U	
METHOXYCHLOR		0.5	U		0.5	U	
TOXAPHENE		5	U		5	U	

PROJ_NO: 00963	NSAMPLE	TF4-38-MW418-0510			TF4-38-MW903-0510			TF4-38-MW905-0510			TF4-42-MW-801-0510		
SDG: J0918	LAB_ID	J0918-05A			J0918-07A			J0918-08A			J0918-17A		
FRACTION: PET	SAMP_DATE	5/5/2010			5/5/2010			5/5/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.35	U		0.35	U		0.35	U		0.35	U	

PROJ_NO: 00963	NSAMPLE	TF4-42-MW906-0510			TF4-42-MW907-0510			TF4-42-MW-908-0510			TF4-42-MW909-0510		
SDG: J0918	LAB_ID	J0918-13A			J0918-15A			J0918-18A			J0918-14A		
FRACTION: PET	SAMP_DATE	5/7/2010			5/7/2010			5/10/2010			5/7/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.35	U		0.35	U		0.35	U		0.39	J	R

PROJ_NO: 00963	NSAMPLE	TF4-45-MW122-0510			TF4-45-MW330-0510			TF4-45-MW802-0510			TF4-48-MW408 0510		
SDG: J0918	LAB_ID	J0918-12A			J0918-10A			J0918-11A			J0918-03A		
FRACTION: PET	SAMP_DATE	5/6/2010			5/6/2010			5/6/2010			5/4/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		1.4			0.35	U		0.37			0.35	U	

PROJ_NO: 00963	NSAMPLE	TF4-48-MW409 0510			TF4-48-MW422 0510			TF4-48-MW805-0510			TF4-48-MW910 0510		
SDG: J0918	LAB_ID	J0918-01A			J0918-02A			J0918-06A			J0918-04A		
FRACTION: PET	SAMP_DATE	5/3/2010			5/3/2010			5/5/2010			5/4/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.35	U		0.35	U		0.35	U		0.35	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-DUP01-050510			TF4-W-RB01-051010		
SDG: J0918	LAB_ID	J0918-09A			J0918-21A		
FRACTION: PET	SAMP_DATE	5/5/2010			5/10/2010		
MEDIA: WATER	QC_TYPE	FD			NM		
	UNITS	MG/L			MG/L		
	PCT_SOLIDS				0.0		
	DUP_OF	TF4-48-MW805-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.35	U		0.35	U	

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-10-3777W

Date: July 27, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: Paula DiMattei (no copy) (for)

Subject: Tier II Organic Data Validation, SDG J0987
Mitkem Laboratories
CTO 464, Tank Farms 4 and 5, Data Gaps Investigation, Naval Station Newport, Newport, Rhode Island

VOC/ SVOC/PAH/Pesticide/PCB:

14/Groundwaters/	TF4-MW-912-0510	TF4-MW-913-0510
	TF4-MW-914-0510	TF4-MW-919-0510
	TF4-MW-920-0510	TF4-MW-DUP02-051210
	TF5-MW-915-0510	TF5-MW-916-0510
	TF5-MW-923-051810	TF5-MW-924-051810
	TF5-MW-977-0510	TF5-MW-978-0510
	TF5-MW-979-0510	TF5-W-DUP05-051810

(Field Duplicate pairs: TF4-MW-913-0510/TF4-MW-DUP02-051210, TF5-MW-979-0510/TF5-W-DUP05-051810)

1/Rinsate Blank/ TF5-RB02-051710

VOCs:

3/Trip Blanks/	TF4-W-TB02-051110	TF5-W-TB03-051710
	TF5-W-TB04-051910	

PAH:

9/Groundwaters/	TF4-38-MW-605-0510	TF4-B8-MW-904-0510
	TF4-MW-05D-0510	TF4-MW-DUP03-051210
	TF5-50-MW-108-0510	TF5-50-MW-200-0510
	TF5-50-MW-207B-0510	TF5-MW-911-0510
	TF5-MW-DUP04-051710	

(Field Duplicate pairs: TF4-B8-MW-904-0510/TF4-MW-DUP03-051210 and TF5-MW-911-0510/TF5-W-DUP04-051710

VOC/SVOC/PAH:
1/Field Blank/ TF5-W-FB01-051910

TPH:

10/Grounwaters/	TF4-38-MW-605-0510	TF4-B8-MW-904-0510
	TF4-MW-05D-0510	TF4-MW-DUP03-051210

TF5-50-MW-108-0510	TF5-50-MW-200-0510
TF5-50-MW-207B-0510	TF5-MW-911-0510
TF5-MW-918-0510	TF5-MW-DUP04-051710

(Field Duplicate pair: TF5-MW-911-0510/TF5-MW-DUP04-051710)

1/Rinsate Blank/ TF5-RB02-051710

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polynuclear aromatic hydrocarbons (PAH), pesticide, polychlorinated biphenyls (PCB), and total petroleum hydrocarbons (TPH; C_9-C_{36}) analytical data for the groundwater samples in this SDG. The samples were collected from Tank Farms 4 and 5 as part of the Data Gaps Investigation at the Naval Station Newport, Newport, Rhode Island on May 10-18, 2010. Sample collection and analysis was performed according to the requirements of the Sampling and Analysis Plan for the Data Gaps Investigation at Naval Station Newport, Newport, Rhode Island, Revision 3, dated March 2010.

The VOC and SVOC analyses were performed according to USEPA SW-846 Methods 8260B and 8270. The PAH analysis was performed according to USEPA SW-846 Method 8270 in the SIM mode. In addition, select SVOCs in some samples were analyzed in the SIM mode to achieve lower detection limits. (All semivolatile and PAH compounds were analyzed by the Full Scan mode for the rinsate blank sample). The pesticides and PCB analyses were performed according to USEPA SW-846 Methods 8081 and 8082, respectively. The TPH analysis was performed according to USEPA SW-846 Method 8015.

The project specific criteria listed in the site SAP were applied for data validation. The VOC, SVOC, PAH, and TPH data validation was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996. The pesticides and PCB validation was performed in accordance with the Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part III, February 2004.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The data summary table with the header which identifies the fraction as "PAH" includes all analytes analyzed by USEPA SW-846 Method 8270 in the SIM mode.

The data were evaluated based on the following parameters:

- Data Completeness
- Preservation and Technical Holding Times
- * GC/MS Instrument Performance Check (Tuning)
- * Pesticide Degradation
- Initial and Continuing Calibrations
- * Blanks
- Surrogate Compounds
- * Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample/Laboratory Control Sample Duplicate

- Field Duplicates
- * Compound Identification/Quantitation
- Reporting Limits

* All criteria were met for this parameter.

Data Completeness

On June 2, 2010 the laboratory explained that J flags (above the MDL but below the QL) are not reported for SVOC SIM because of the limited mass spectral data acquired using SIM can lead to false positives. The same applies to the reporting of pesticide and PCB results since many samples contain small peaks that are difficult to distinguish from the noise near the baseline. (However, on occasion, the laboratory will use professional judgment to report a J flag if they determine a peak is real). (See SDG J0477). In addition, on June 14, 2010 the laboratory explained that J flags are not reported for TPH since GC tests where the retention time is the primary identification are not routinely reported below the QL. (See SDG J0798).

On July 12, 2010 the laboratory verified the identification of two field samples.

Preservation and Technical Holding Times

Volatiles

Sample TF5-MW-977-0510 was reanalyzed beyond the 14-day analytical holding time criterion because of calibration nonconformances associated with the original sample analysis. Professional judgment was used to report the re-analysis of this sample since chloromethane was reported at a concentration that was greater than the reporting limit in the re-analysis while it was not detected in the original analysis. The positive and non-detected volatile organic compound results in sample TF5-MW-977-0510RE were qualified as estimated (J,UJ) due to the exceeded analytical holding time criterion.

The analytical holding time criterion was not met for sample TF5-MW-977-0510RE; therefore, the project accuracy goals may be impacted. The positive and non-detected results for all volatile organic compounds in the affected sample are usable as estimated values and estimated quantitation limits.

Initial and Continuing Calibrations

Volatiles

The following table summarizes the volatile compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
1,1,1-trichloroethane	-29.7		UJ	TF5-MW-977-0510RE
Carbon tetrachloride	-32.7		UJ	
Dibromochloromethane	21.1		UJ	

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Bromomethane	22.8, -24.4, -24.3		UJ	TF5-MW-924-051810, TF5-MW-915-0510, TF5-MW-977-0510RE
1,2,4-Trichlorobenzene	29.1, -43.2, -26.0		UJ	
1,2,3-Trichlorobenzene	65.1, -71.6, -26.8	J	UJ	
1,1,2-Trichloro-1,2,2-trifluoroethane	-21.5		UJ	TF5-MW-924-051810, TF5-MW-915-0510
Dichlorodifluoromethane	-20.8		UJ	
2-Hexanone	23.1, 24.0		UJ	TF4-W-TB02-051110, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210, TF5-MW-923-051810, TF5-TB03-051710, TF5-MW-916-0510, TF5-MW-RB02-051710, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-W-TB04-051910, TF5-MW-978-0510, TF5-W-FB01-051910, TF5-MW-977-0510RE
1,2-Dibromo-3-chloropropane	29.0		UJ	TF4-W-TB02-051110, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210, TF5-MW-923-051810, TF5-TB03-051710, TF5-MW-916-0510, TF5-MW-RB02-051710, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-W-TB04-051910, TF5-MW-978-0510, TF5-W-FB01-051910
Tetrachloroethene	-34.4, -25.7		UJ	

The RSD and/or %D was above the QC limit for carbon tetrachloride, bromomethane, 1,2,4-trichlorobenzene, 1,2-dibromo-3-chloropropane, tetrachloroethene, and dibromochloromethane; therefore, the project accuracy goals may be impacted. The non-detected results for carbon tetrachloride, bromomethane, 1,2,4-trichlorobenzene, 1,2-dibromo-3-chloropropane, tetrachloroethene, and dibromochloromethane in the affected samples are usable as estimated quantitation limits.

Although the RSD and/or %D was above the QC limit for 1,1,1-trichloroethane, dichlorodifluoromethane, 1,2,3-trichlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, and 2-hexanone; the project accuracy goals are not impacted because of the following: 1) the affected sample results are much lower than the project action limits, or 2) there are no project action limits established for the affected compounds. The positive and non-detected results for dichlorodifluoromethane, 1,2,3-trichlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, and 2-hexanone in the affected samples are usable as estimated values and estimated quantitation limits.

The following table summarizes the volatile compounds that failed to meet the initial calibration verification recovery criteria of 80-120%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
1,2,3-Trichlorobenzene	77	J	UJ	TF5-MW-924-051810, TF5-MW-915-0510

Although the initial calibration verification recovery for 1,2,3-trichlorobenzene was below the QC limits, the project accuracy goals are not impacted since there are no project action limits established for 1,2,3-trichlorobenzene. The positive and non-detected results in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Benzaldehyde	24.8		UJ	TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-MW-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810
Nitrobenzene	-23.8		UJ	
Isophorone	-23.4		UJ	
Hexachlorocyclopentadiene	-27.1		UJ	
3-Nitroaniline	26.2		UJ	
Di-n-butyl phthalate	23.3		UJ	
Di-n-octyl phthalate	42.1		UJ	
Caprolactam	-23.0	J		
2,4-Dinitrophenol	23.9, 31.7		UJ	TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-MW-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, TF5-W-FB01-051910, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210
4-Nitrophenol	-22.9		UJ	TF5-MW-978-0510, TF5-W-FB01-051910, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210

Although the RSD and/or %D was above the QC limit for benzaldehyde, nitrobenzene, isophorone, hexachlorocyclopentadiene, 3-nitroaniline, di-n-butyl phthalate, di-n-octyl phthalate, caprolactam, 2,4-dinitrophenol, and 4-nitrophenol; the project accuracy goals are not impacted because there are no project action limits established for these compounds. The results for benzaldehyde, nitrobenzene, isophorone, hexachlorocyclopentadiene, 3-nitroaniline, di-n-butyl phthalate, di-n-octyl phthalate,

caprolactam, 2,4-dinitrophenol, and 4-nitrophenol in the affected samples are usable as estimated values and estimated quantitation limits.

The following table summarizes the semivolatile – full scan compounds that failed to meet the initial calibration verification (ICV) recovery criteria of 80-120%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
4-Chloroaniline	60.7, 53.1		UJ	TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-MW-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, TF5-W-FB01-051910, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-05121

Although ICV recovery for 4-chloroaniline were below the QC limit, the project accuracy goals are not impacted since there is no project action limit established for this compound. The non-detected results for 4-chloroaniline in the affected samples are usable as estimated quantitation limits which may be biased low.

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Pentachlorophenol	38.4, -24.0		UJ	TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-MW-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, TF5-W-FB01-051910, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210
Benzo(k)fluoranthene	40.7		UJ	TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210, TF5-MW-918-0510, TF5-MW-911-0510, TF5-MW-DUP04-051710, TF4-38-MW-605-0510, TF4-MW-05D-0510, TF4-B8-MW-904-0510, TF4-MW-DUP03-051210, TF5-50-MW-200-0510, TF5-50-MW-108-0510, TF5-50-MW-207B-0510

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
2,3,4,6-Tetrachlorophenol	26.4		UJ	TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210

The %D was above the QC limit for benzo(k)fluoranthene; therefore, the project accuracy goals may be impacted. The non-detected results for benzo(k)fluoranthene in the affected samples are usable as estimated quantitation limits.

Although the RSD and/or %D was above the QC limit for pentachlorophenol and 2,3,4,6-tetrachlorophenol; the project accuracy goals are not impacted because there are no project action limits established for these compounds. The non-detected results for pentachlorophenol and 2,3,4,6-tetrachlorophenol in the affected samples are usable as estimated quantitation limits.

The following table summarizes the semivolatile – SIM compounds that failed to meet the initial calibration verification recovery criteria of 75-125%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
2,4-Dimethylphenol	68		UJ	TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-MW-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, TF5-W-FB01-051910, TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210

Although the initial calibration verification recovery for 2,4-dimethylphenol was below the QC limit, the project accuracy goals are not impacted there is no project action limit established for this compound. The non-detected results for 2,4-dimethylphenol in the affected samples are usable as estimated quantitation limits which may be biased low.

Surrogate Compounds

Semivolatiles – SIM

The following sample had a surrogate spike recovery outside of the recovery limits:

Sample	Surrogate	% Recovery	QC Limits	Action	
				(+)	NDs
TF4-38-MW-605-0510	Benzo(e)pyrene-d12	35	48-162		UJ

The surrogate recovery QC criteria were not met for benzo(e)pyrene-d12; therefore, the project accuracy goals may be impacted. The non-detected results in the affected samples are usable as estimated quantitation limits which may be biased low.

Matrix Spike/Matrix Spike Duplicate

Semivolatiles – full scan

The following table summarizes the semivolatile – full scan matrix spiking recoveries and relative percent differences (RPDs) that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to sample TF4-MW-912-0510:

Compound	MS/MSD %REC	MS/MSD RPD	QC Limits		Action	
			%REC	RPD	(+)	ND
Hexachlorocyclopentadiene	21/22	-	27-147	40		UJ
4-Chloroaniline	-/-	77	15-110	40		UJ
3-Nitroaniline	-/-	50	20-125	40		UJ
3,3'-Dichlorobenzidine	-/19	105	20-110	40		UJ

-Criterion met

Although the MS/MSD recovery criteria were not met for hexachlorocyclopentadiene and 3,3'-dichlorobenzidine, the project accuracy goals are not impacted since there are no project action limits established for these compounds. The non-detected results for hexachlorocyclopentadiene and 3,3'-dichlorobenzidine in sample TF4-MW-912-0510 are usable as estimated quantitation limits which may be biased low.

Although the MS/MSD RPD criterion was not met for 4-chloroaniline, 3-nitroaniline, and 3,3'-dichlorobenzidine, the project precision goals are not impacted since there are no project action limits established for these compounds.. The non-detected results for 4-chloroaniline, 3-nitroaniline, and 3,3'-dichlorobenzidine in sample TF4-MW-912-0510 are usable as estimated quantitation limits for which the bias is indeterminate.

Laboratory Control Sample/Laboratory Control Sample Duplicates

Volatiles

The following table summarizes the volatile compound that failed to meet the statistically derived laboratory control sample (LCS) and/or laboratory control sample duplicate (LCSD) recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
1,2,3-Trichlorobenzene	40/41	55-140	J	UJ	TF5-MW-924-051810, TF5-MW-915-0510

Although the LCS/LCSD recovery criteria were not met for 1,2,3-trichlorobenzene; the project accuracy goals are not impacted since there is are no project action limit established for this compound. The non-detected results for 1,2,3-trichlorobenzene in the affected samples are usable as estimated quantitation limits which may be biased low.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan compounds that failed to meet the statistically derived laboratory control sample (LCS) recovery QC limits:

Compound	% Rec.	RPD	QC Limits		Action		Affected Samples
			% Rec.	RPD	(+)	NDs	
Hexachlorocyclopentadiene	13 12/15	-	24-147	-		UJ	All samples
n-Nitrosodiphenylamine	49	-	50-110	-		UJ	TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210
3,3'-Dichlorobenzidine	12	-	20-110	-		UJ	
	16	8		40		UR	TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-MW-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, TF5-W-FB01-051910

-Criterion met

There was very low (<10%) recovery for 3,3'-dichlorobenzidine in the LCS associated with samples TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, and TF5-W-FB01-051910. Therefore, the non-detected 3,3'-dichlorobenzidine results in these samples are qualified as rejected (R). These results are not usable for project decisions. The data completeness goals may be impacted.

Although the LCS recovery criteria were not met for hexachlorocyclopentadiene, n-nitrosodiphenylamine, and 3,3'-dichlorobenzidine (for results not previously qualified as rejected); the project accuracy goals are not impacted since there are no project action limits established for these compounds. The non-detected results for hexachlorocyclopentadiene, n-nitrosodiphenylamine, and 3,3'-dichlorobenzidine (for results not previously qualified as rejected) in the affected samples are usable as estimated quantitation limits which may be biased low.

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM compounds that failed to meet the statistically derived LCS and LCSD recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
2,4-Dimethylphenol	22/25 41/44	45-134		UJ	All samples (excluding those analyzed for PAH only)
2-Methylnaphthalene	39/38	43-115	J	UJ	TF4-MW-914-0510, TF4-MW-920-0510, TF4-MW-913-0510, TF4-MW-912-0510, TF4-MW-919-0510, TF4-MW-DUP02-051210, TF4-38-MW-605-0510, TF4-MW-05D-0510, TF4-B8-MW-904-0510, TF4-MW-DUP03-051210, TF4-50-MW-200-0510, TF4-50-MW-108-0510, TF4-50-MW-207B-0510
Benzo(k)fluoranthene	53/53	62-131		UJ	

The LCS/LCSD recovery criteria were not met for benzo(k)fluoranthene; therefore, project accuracy goals may be impacted. The non-detected results for benzo(k)fluoranthene in affected samples are usable as estimated quantitation limits that may be biased low.

Although the LCS recovery criteria were not met for 2,4-dimethylphenol and 2-methylnaphthalene; the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits or a project action limit was not established for the compound. The positive and non-detected results for 2,4-dimethylphenol and 2-methylnaphthalene in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low.

TPH

The following table summarizes the TPH results that failed to meet the statistically derived LCS and LCSD recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
TPH	48/51	60-140		UJ	TF5-MW-911-0510, TF5-MW-918-0510, TF5-MW-DUP04-051710, TF5-MW-RB02-051710

Although the LCS/LCSD recovery criteria were not met for TPH; the project accuracy goals are not impacted since there is are no project action limit established for TPH. The non-detected results for TPH in the affected samples are usable as estimated quantitation limits which may be biased low.

Field Duplicates

Volatiles

The field duplicate pair TF5-MW-979-0510/TF5-W-DUP05-051810 did not meet the field duplicate QC criterion of RPD <30% for the following compound:

Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD*	Action	
				(+)	NDs
Acetone	18	5 U	NC	J	UJ

NC-Not calculable
* The duplicate result is not detected and the sample result is greater than 2x the QL.

Although the field duplicate QC criterion was not met for acetone, the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The positive and non-detected results for acetone in samples TF5-MW-979-0510 and TF5-W-DUP05-051810 are usable as an estimated value and an estimated quantitation limit for which the bias is indeterminate.

Pesticides

The field duplicate pair TF4-MW-913-0510/TF4-MW-DUP02-051210 did not meet the field duplicate QC criterion of RPD <30% for the following compound:

Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD*	Action	
				(+)	NDs
Endrin aldehyde	0.1 U	13	NC	J	UJ

NC-Not calculable
* The duplicate result is >2x the QL and the sample result is not detected.

Although the field duplicate QC criteria were not met for endrin aldehyde, the project precision goals are not impacted since there is no project action limit established for endrin aldehyde. The positive and non-detected results for endrin aldehyde in samples TF4-MW-913-0510 and TF4-W-DUP02-051210 are usable as an estimated value and an estimated quantitation limit for which the bias is indeterminate.

PCBs

The field duplicate pair TF4-MW-913-0510/TF4-MW-DUP02-051210 did not meet the field duplicate QC criterion of RPD <30% for the following compound:

Compound	Sample Result (µg/L)	Duplicate Result (µg/L)	RPD*	Action	
				(+)	NDs
Aroclor 1248	1 U	14	NC		
Aroclor 1254	1 U	5.6	NC	J	UJ

NC-Not calculable
* The duplicate result is >2x the QL and the sample result is not detected.

Although the field duplicate QC criteria were not met for Aroclor 1248 and Aroclor 1254, the project precision goals are not impacted since there is no project action limits established for these compounds. The positive and non-detected results for Aroclor 1248 and Aroclor 1254 in samples TF4-MW-913-0510 and TF4-W-DUP02-051210 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

Reporting Limits

The laboratory reported all non-detected results down to the quantitation limit (QL). The positive volatiles and semivolatiles – full scan results below the QL and above the method detection limit (MDL) are estimated (J) due to uncertainty below the QL. (J Flags were not utilized for the semivolatiles – SIM, pesticide, PCB, and TPH fractions. See note in Data Completeness section).

Volatiles

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs. As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds: 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, 1,2-dichloroethane, 1,4-dichlorobenzene, benzene, bromodichloromethane, bromoform, bromomethane, carbon tetrachloride, chloroform, cis-1,3-dichloropropene, dibromochloromethane, tetrachloroethene, and trans-1,3-dichloropropene. Data usability may be impacted for these target compounds.

Semivolatiles – Full Scan/Semivolatiles – SIM

Select semivolatile compounds were analyzed by both the Full Scan and SIM modes. The SIM results were selected for reporting since the SIM mode provides lower detection limits.

Semivolatiles - SIM

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs. As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Data usability may be impacted for these target compounds.

Semivolatiles-Full scan, Pesticides, PCBs, and TPH

There are no project action limits established for these parameters for groundwater samples.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles

The project goals with respect to accuracy were met for the volatiles data set with the following exceptions. The volatile results in sample TF5-MW-977-0510 were qualified as estimated due to the exceeded analytical holding time criterion. The results for carbon tetrachloride, bromomethane, 1,2,4-trichlorobenzene, 1,2-dibromo-3-chloropropane, tetrachloroethene, and dibromochloromethane in select samples were qualified as estimated due to instrument calibration variability. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. Additionally, the results for 1,1,1-trichloroethane, dichlorodifluoromethane, 1,2,3-trichlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, and 2-hexanone in select samples were qualified as estimated due to instrument calibration variability. The 1,2,3-trichlorobenzene results in select samples were qualified as estimated due to low ICV recoveries and low LCS/LCSD recoveries. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision were met for the volatiles data set. The acetone results in samples TF5-MW-979-0510 and TF5-W-DUP05-051810 were qualified as estimated due to poor field duplicate precision. Although specific QC criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to sensitivity were met for the volatiles data set with the following exceptions. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs. As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds: 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, 1,2-dichloroethane, 1,4-dichlorobenzene, benzene, bromodichloromethane, bromoform, bromomethane, carbon tetrachloride, chloroform, cis-1,3-dichloropropene, dibromochloromethane, tetrachloroethene, and trans-1,3-dichloropropene. Data usability may be impacted for these target compounds.

The project goals with respect to completeness were met for the volatiles data set. Data usability was not impacted with regards to completeness.

Semivolatiles – Full Scan

The project goals with respect to accuracy were met for the semivolatiles – full scan data set. The results for benzaldehyde, nitrobenzene, isophorone, hexachlorocyclopentadiene, 3-nitroaniline, di-n-butyl phthalate, di-n-octyl phthalate, caprolactam, 2,4-dinitrophenol, and 4-nitrophenol in select samples were qualified as estimated due to instrument calibration variability. The 4-chloroaniline results in select samples were qualified as estimated due to low ICV recoveries. The results for hexachlorocyclopentadiene and 3,3'-dichlorobenzidine in select samples were qualified as estimated due to low MS/MSD recoveries. The results for hexachlorocyclopentadiene, n-nitrosodiphenylamine, and 3,3'-dichlorobenzidine in select samples were qualified as estimated due to low LCS recoveries. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision were met for the semivolatiles – full scan data set. 4-Chloroaniline, 3-nitroaniline, and 3,3'-dichlorobenzidine in select samples were qualified as estimated due to poor MS/MSD precision. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to sensitivity were met for the semivolatiles – full scan data set. Data usability was not impacted with regards to sensitivity.

The project goals with respect to completeness were met for the semivolatiles – full scan data set with the following exception. The non-detected 3,3'-dichlorobenzidine results in samples TF5-MW-923-051810, TF5-MW-915-0510, TF5-MW-916-0510, TF5-MW-924-0510, TF5-MW-RB02-051710, TF5-977-0510, TF5-MW-979-0510, TF5-W-DUP05-051810, TF5-MW-978-0510, and TF5-W-FB01-051910 were qualified as rejected due to the very low (<10%) LCS recovery. These results are not usable for project decisions.

Semivolatiles – SIM

The project goals with respect to accuracy were met for the semivolatiles – SIM data set with the following exceptions. The benzo(k)fluoranthene results in select samples were qualified as estimated due to instrument calibration variability. The PAH results in sample TF4-38-MW-605-0510 were qualified as estimated due to the low surrogate recovery. The benzo(k)fluoranthene results in select samples were qualified as estimated due to low LCS/LCSD recoveries. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, the results for pentachlorophenol and 2,3,4,6-tetrachlorophenol in select samples were qualified as estimated due to instrument calibration variability. The 2,4-dimethylphenol results in select samples were qualified as estimated in select samples due to low ICV recoveries. The results for 2,4-dimethylphenol and 2-methylnaphthalene in select samples were qualified as estimated due to low LCS recoveries. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to sensitivity were met for the semivolatiles – SIM data set with the following exceptions. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15c of the SAP were met by the laboratory's actual QLs. As stipulated in worksheet 15c of the SAP, the laboratory's actual QLs did not meet the project action limits for the following compounds: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Data usability may be impacted for these target compounds.

The project goals with respect to precision and completeness were met for the semivolatiles – SIM data set. Data usability was not impacted with regards to precision and completeness.

Pesticides

The project goals with respect to precision were met for the pesticides data set. Endrin aldehyde in samples TF4-MW-913-0510 and TF4-MW-DUP02-051210 was qualified as estimated due to poor field duplicate precision. Although specific QC criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to accuracy, sensitivity, and completeness were met for the pesticides data set. Data usability was not impacted with regards to accuracy, sensitivity, and completeness

PCBs

The project goals with respect to precision were met for the PCBs data set. Aroclor 1248 and Aroclor 1254 in samples TF4-MW-913-0510 and TF4-MW-DUP02-051210 were qualified as estimated due to poor field duplicate precision. Although specific QC criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to accuracy, sensitivity, and completeness were met for the pesticides data set. Data usability was not impacted with regards to accuracy, sensitivity, and completeness

TPH

The project goals with respect to accuracy were met for the TPH data set. Several samples were qualified as estimated due to low LCS/LCSD recoveries. Although specific method criteria were not met in this instance, data usability is not impacted the affected non-detected results are usable as estimated quantitation limits.

The project goals with respect to precision, sensitivity, and completeness were met for the TPH data set. Data usability was not impacted with regards to precision, sensitivity, and completeness.

Tables:	Data Summary Tables Data Validation Qualifiers and Codes
Enclosures:	Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-MW-912-0510			TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510		
SDG: J0987	LAB_ID	J0987-07C			J0987-06C			J0987-03C			J0987-08C		
FRACTION: OV	SAMP_DATE	5/12/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U		1	U		1	U	
1,2,3-TRICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2,4-TRICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
2-BUTANONE		5	U		5	U		5	U		5	U	
2-HEXANONE		5	UJ	C	5	UJ	C	5	UJ	C	5	UJ	C
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	U	
ACETONE		5	U		5	U		5	U		5	U	
BENZENE		1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U		1	U	
BROMOMETHANE		1	U		1	U		1	U		1	U	
CARBON DISULFIDE		1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CHLOROMETHANE		1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
CYCLOHEXANE		1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-920-0510			TF4-MW-DUP02-051210			TF4-W-TB02-051110			TF5-MW-915-0510		
SDG: J0987	LAB_ID	J0987-04C			J0987-10C			J0987-02A			J0987-19A		
FRACTION: OV	SAMP_DATE	5/11/2010			5/12/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			FD			TB			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF	TF4-MW-913-0510			TF4-MW-913-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U		1	UJ	C
1,1-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U		1	U		1	U	
1,2,3-TRICHLOROBENZENE		1	U		1	U		1	U		1.2	J	CE
1,2,4-TRICHLOROBENZENE		1	U		1	U		1	U		1	UJ	C
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	UJ	C	1	UJ	C	1	U	
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
2-BUTANONE		5	U		5	U		5	U		5	U	
2-HEXANONE		5	UJ	C	5	UJ	C	5	UJ	C	5	U	
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	U	
ACETONE		5	U		5	U		5	U		5	U	
BENZENE		1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U		1	U	
BROMOMETHANE		1	U		1	U		1	U		1	UJ	C
CARBON DISULFIDE		1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CHLOROMETHANE		1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
CYCLOHEXANE		1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	UJ	C

PROJ_NO: 00963	NSAMPLE	TF5-MW-916-0510			TF5-MW-923-051810			TF5-MW-924-051810			TF5-MW-977-0510RE		
SDG: J0987	LAB_ID	J0987-20A			J0987-16A			J0987-25A			J0987-26ARE		
FRACTION: OV	SAMP_DATE	5/17/2010			5/18/2010			5/18/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	UJ	CH
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	UJ	H
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	UJ	H
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	UJ	C	1	UJ	H
1,1-DICHLOROETHANE		1	U		1	U		1	U		1	UJ	H
1,1-DICHLOROETHENE		1	U		1	U		1	U		1	UJ	H
1,2,3-TRICHLOROBENZENE		1	U		1	U		1	UJ	CE	1	UJ	H
1,2,4-TRICHLOROBENZENE		1	U		1	U		1	UJ	C	1	UJ	H
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	UJ	C	1	U		1	UJ	H
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	UJ	H
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	UJ	H
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	UJ	H
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	UJ	H
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	UJ	H
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	UJ	H
2-BUTANONE		5	U		5	U		5	U		5	UJ	H
2-HEXANONE		5	UJ	C	5	UJ	C	5	U		5	UJ	CH
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	UJ	H
ACETONE		5	U		5	U		5	U		5	UJ	H
BENZENE		1	U		1	U		1.2			1	UJ	H
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	UJ	H
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	UJ	H
BROMOFORM		1	U		1	U		1	U		1	UJ	CH
BROMOMETHANE		1	U		1	U		1	UJ	C	1	UJ	CH
CARBON DISULFIDE		1	U		1	U		1	U		1	UJ	H
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	UJ	CH
CHLOROBENZENE		1	U		1	U		1	U		1	UJ	H
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	UJ	CH
CHLOROETHANE		1	U		1	U		1	U		1	UJ	H
CHLOROFORM		1	U		1	U		1	U		1	UJ	H
CHLOROMETHANE		1	U		1	U		1	U		2.7	J	H
CIS-1,2-DICHLOROETHENE		1	U		1	U		2			1	UJ	H
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	UJ	H
CYCLOHEXANE		1	U		1	U		1	U		1	UJ	H
DICHLORODIFLUOROMETHANE		1	U		1	U		1	UJ	C	1	UJ	H

PROJ_NO: 00963	NSAMPLE	TF5-MW-978-0510			TF5-MW-979-0510			TF5-MW-RB02-051710			TF5-W-DUP05-051810		
SDG: J0987	LAB_ID	J0987-30A			J0987-27A			J0987-23A			J0987-28A		
FRACTION: OV	SAMP_DATE	5/19/2010			5/18/2010			5/17/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			RB			FB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF										TF5-MW-979-0510		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U		1	U		1	U	
1,2,3-TRICHLOROBENZENE		1	UJ	C	1	U		1	U		1	U	
1,2,4-TRICHLOROBENZENE		1	UJ	C	1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
1,2-DIBROMOETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U		1	U	
2-BUTANONE		5	U		5	U		5	U		5	U	
2-HEXANONE		5	UJ	C	5	UJ	C	5	UJ	C	5	UJ	C
4-METHYL-2-PENTANONE		5	U		5	U		5	U		5	U	
ACETONE		5	U		18	J	G	5	U		5	UJ	G
BENZENE		1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U		1	U	
BROMOMETHANE		1	U		1	U		1	U		1	U	
CARBON DISULFIDE		1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CHLOROMETHANE		1	U		2			1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
CYCLOHEXANE		1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF5-W-FB01-051910			TF5-W-TB03-051710			TF5-W-TB04-051910		
SDG: J0987	LAB_ID	J0987-31A			J0987-18A			J0987-29A		
FRACTION: OV	SAMP_DATE	5/19/2010			5/17/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	FB			TB			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS									
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U		1	U	
1,2,3-TRICHLOROBENZENE		1	U		1	U		1	U	
1,2,4-TRICHLOROBENZENE		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	UJ	C	1	UJ	C
1,2-DIBROMOETHANE		1	U		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U		1	U	
2-BUTANONE		5	U		5	U		5	U	
2-HEXANONE		5	UJ	C	5	UJ	C	5	UJ	C
4-METHYL-2-PENTANONE		5	U		5	U		5	U	
ACETONE		5	U		5	U		5	U	
BENZENE		1	U		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U		1	U	
BROMOFORM		1	U		1	U		1	U	
BROMOMETHANE		1	U		1	U		1	U	
CARBON DISULFIDE		1	U		1	U		1	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U	
CHLOROBENZENE		1	U		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U	
CHLOROETHANE		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U	
CHLOROMETHANE		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U		1	U	
CYCLOHEXANE		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-912-0510			TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510		
SDG: J0987	LAB_ID	J0987-07C			J0987-06C			J0987-03C			J0987-08C		
FRACTION: OV	SAMP_DATE	5/12/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U		1	U	
M+P-XYLENES		1	U		1	U		1	U		1	U	
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U		1	U	
O-XYLENE		1	U		1	U		1	U		1	U	
STYRENE		1	U		1	U		1	U		1	U	
TETRACHLOROETHENE		1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
TOLUENE		1	U		1	U		1	U		1	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		1	U		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-920-0510			TF4-MW-DUP02-051210			TF4-W-TB02-051110			TF5-MW-915-0510		
SDG: J0987	LAB_ID	J0987-04C			J0987-10C			J0987-02A			J0987-19A		
FRACTION: OV	SAMP_DATE	5/11/2010			5/12/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			FD			TB			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF	TF4-MW-913-0510			TF4-MW-913-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U		1	U	
M+P-XYLENES		1	U		1	U		1	U		1	U	
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U		1	U	
O-XYLENE		1	U		1	U		1	U		1	U	
STYRENE		1	U		1	U		1	U		1	U	
TETRACHLOROETHENE		1	UJ	C	1	UJ	C	1	UJ	C	1	U	
TOLUENE		1	U		1	U		1	U		1	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		1	U		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-916-0510			TF5-MW-923-051810			TF5-MW-924-051810			TF5-MW-977-0510RE		
SDG: J0987	LAB_ID	J0987-20A			J0987-16A			J0987-25A			J0987-26ARE		
FRACTION: OV	SAMP_DATE	5/17/2010			5/18/2010			5/18/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U		1	U		1	UJ	H
ISOPROPYLBENZENE		1	U		1	U		1	U		1	UJ	H
M+P-XYLENES		1	U		1	U		1	U		1	UJ	H
METHYL ACETATE		1	U		1	U		1	U		1	UJ	H
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	UJ	H
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U		1	UJ	H
METHYLENE CHLORIDE		1	U		1	U		1	U		1	UJ	H
O-XYLENE		1	U		1	U		1	U		1	UJ	H
STYRENE		1	U		1	U		1	U		1	UJ	H
TETRACHLOROETHENE		1	UJ	C	1	UJ	C	1	U		1	UJ	H
TOLUENE		1	U		1	U		1	U		1	UJ	H
TOTAL XYLENES		1	U		1	U		1	U		1	UJ	H
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	UJ	H
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	UJ	H
TRICHLOROETHENE		1	U		1	U		1	U		1	UJ	H
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	UJ	H
VINYL CHLORIDE		1	U		1	U		1	U		1	UJ	H

PROJ_NO: 00963	NSAMPLE	TF5-MW-978-0510			TF5-MW-979-0510			TF5-MW-RB02-051710			TF5-W-DUP05-051810		
SDG: J0987	LAB_ID	J0987-30A			J0987-27A			J0987-23A			J0987-28A		
FRACTION: OV	SAMP_DATE	5/19/2010			5/18/2010			5/17/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			RB			FB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF										TF5-MW-979-0510		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U		1	U	
M+P-XYLENES		1	U		1	U		1	U		1	U	
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U		1	U	
O-XYLENE		1	U		1	U		1	U		1	U	
STYRENE		1	U		1	U		1	U		1	U	
TETRACHLOROETHENE		1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
TOLUENE		1	U		1	U		1	U		1	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		1	U		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF5-W-FB01-051910			TF5-W-TB03-051710			TF5-W-TB04-051910		
SDG: J0987	LAB_ID	J0987-31A			J0987-18A			J0987-29A		
FRACTION: OV	SAMP_DATE	5/19/2010			5/17/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	FB			TB			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS									
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U		1	U	
M+P-XYLENES		1	U		1	U		1	U	
METHYL ACETATE		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U		1	U	
O-XYLENE		1	U		1	U		1	U	
STYRENE		1	U		1	U		1	U	
TETRACHLOROETHENE		1	UJ	C	1	UJ	C	1	UJ	C
TOLUENE		1	U		1	U		1	U	
TOTAL XYLENES		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U	
VINYL CHLORIDE		1	U		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-912-0510			TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510		
SDG: J0987	LAB_ID	J0987-07D			J0987-06D			J0987-03D			J0987-08D		
FRACTION: OS	SAMP_DATE	5/12/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		10	U		10	U		10	U		10	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		10	U		10	U		10	U		10	U	
2,4,5-TRICHLOROPHENOL		20	U		20	U		20	U		20	U	
2,4,6-TRICHLOROPHENOL		10	U		10	U		10	U		10	U	
2,4-DINITROPHENOL		20	UJ	C	20	UJ	C	20	UJ	C	20	UJ	C
2,4-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2,6-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2-CHLORONAPHTHALENE		10	U		10	U		10	U		10	U	
2-NITROANILINE		20	U		20	U		20	U		20	U	
2-NITROPHENOL		10	U		10	U		10	U		10	U	
3,3'-DICHLOROBENZIDINE		10	UJ	DE	10	UJ	E	10	UJ	E	10	UJ	E
3-NITROANILINE		20	UJ	D	20	U		20	U		20	U	
4,6-DINITRO-2-METHYLPHENOL		20	U		20	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-CHLOROANILINE		10	UJ	CD	10	UJ	C	10	UJ	C	10	UJ	C
4-CHLOROPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-NITROANILINE		20	U		20	U		20	U		20	U	
4-NITROPHENOL		20	UJ	C	20	UJ	C	20	UJ	C	20	UJ	C
ACETOPHENONE		10	U		10	U		10	U		10	U	
BENZALDEHYDE		10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHOXY)METHANE		10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER		10	U		10	U		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE		10	U		10	U		10	U		10	U	
BUTYL BENZYL PHTHALATE		10	U		10	U		10	U		10	U	
CAPROLACTAM		10	U		10			10	U		11		
CARBAZOLE		10	U		10	U		10	U		10	U	
DIBENZOFURAN		10	U		10	U		10	U		10	U	
DIETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DIMETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DI-N-BUTYL PHTHALATE		10	U		10	U		10	U		10	U	
DI-N-OCTYL PHTHALATE		10	U		10	U		10	U		10	U	
HEXACHLOROBUTADIENE		10	U		10	U		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE		10	UJ	DE	10	UJ	E	10	UJ	E	10	UJ	E
HEXACHLOROETHANE		10	U		10	U		10	U		10	U	
ISOPHORONE		10	U		10	U		10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-920-0510			TF4-MW-DUP02-051210			TF5-MW-915-0510			TF5-MW-916-0510		
SDG: J0987	LAB_ID	J0987-04D			J0987-10D			J0987-19B			J0987-20B		
FRACTION: OS	SAMP_DATE	5/11/2010			5/12/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			FD			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF				TF4-MW-913-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		10	U		10	U		10	U		10	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		10	U		10	U		10	U		10	U	
2,4,5-TRICHLOROPHENOL		20	U		20	U		20	U		20	U	
2,4,6-TRICHLOROPHENOL		10	U		10	U		10	U		10	U	
2,4-DINITROPHENOL		20	UJ	E	20	UJ	E	20	UJ	E	20	UJ	E
2,4-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2,6-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2-CHLORONAPHTHALENE		10	U		10	U		10	U		10	U	
2-NITROANILINE		20	U		20	U		20	U		20	U	
2-NITROPHENOL		10	U		10	U		10	U		10	U	
3,3'-DICHLOROBENZIDINE		10	UJ	E	10	UJ	E	10	UJ	E	10	UJ	E
3-NITROANILINE		20	U		20	U		20	U		20	U	
4,6-DINITRO-2-METHYLPHENOL		20	U		20	U		20	UJ	C	20	UJ	C
4-BROMOPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-CHLOROANILINE		10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
4-CHLOROPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-NITROANILINE		20	U		20	U		20	U		20	U	
4-NITROPHENOL		20	UJ	C	20	UJ	C	20	U		20	U	
ACETOPHENONE		10	U		10	U		10	U		10	U	
BENZALDEHYDE		10	U		10	U		10	UJ	C	10	UJ	C
BIS(2-CHLOROETHOXY)METHANE		10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER		10	U		10	U		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE		10	U		10	U		10	U		10	U	
BUTYL BENZYL PHTHALATE		10	U		10	U		10	U		10	U	
CAPROLACTAM		10	U		11			1.7	J	C	4.9	J	C
CARBAZOLE		10	U		10	U		10	U		10	U	
DIBENZOFURAN		10	U		10	U		10	U		10	U	
DIETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DIMETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DI-N-BUTYL PHTHALATE		10	U		10	U		10	UJ	C	10	UJ	C
DI-N-OCTYL PHTHALATE		10	U		10	U		10	UJ	C	10	UJ	C
HEXACHLOROBUTADIENE		10	U		10	U		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE		10	UJ	E	10	UJ	E	10	UR	E	10	UR	E
HEXACHLOROETHANE		10	U		10	U		10	U		10	U	
ISOPHORONE		10	U		10	U		10	UJ	C	10	UJ	C

PROJ_NO: 00963	NSAMPLE	TF5-MW-923-051810			TF5-MW-924-0510			TF5-MW-977-0510			TF5-MW-978-0510		
SDG: J0987	LAB_ID	J0987-16B			J0987-21A			J0987-26B			J0987-30B		
FRACTION: OS	SAMP_DATE	5/18/2010			5/14/2010			5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		10	U		10	U		10	U		10	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		10	U		10	U		10	U		10	U	
2,4,5-TRICHLOROPHENOL		20	U		20	U		20	U		20	U	
2,4,6-TRICHLOROPHENOL		10	U		10	U		10	U		10	U	
2,4-DINITROPHENOL		20	UJ	C	20	UJ	C	20	UJ	C	20	UJ	C
2,4-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2,6-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2-CHLORONAPHTHALENE		10	U		10	U		10	U		10	U	
2-NITROANILINE		20	U		20	U		20	U		20	U	
2-NITROPHENOL		10	U		10	U		10	U		10	U	
3,3'-DICHLOROBENZIDINE		10	UJ	E	10	UJ	E	10	UJ	E	10	UJ	E
3-NITROANILINE		20	UJ	C	20	UJ	C	20	UJ	C	20	U	
4,6-DINITRO-2-METHYLPHENOL		20	U		20	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-CHLOROANILINE		10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
4-CHLOROPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-NITROANILINE		20	U		20	U		20	U		20	U	
4-NITROPHENOL		20	U		20	U		20	U		20	U	
ACETOPHENONE		10	U		10	U		10	U		10	U	
BENZALDEHYDE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
BIS(2-CHLOROETHOXY)METHANE		10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER		10	U		10	U		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE		10	U		10	U		10	U		10	U	
BUTYL BENZYL PHTHALATE		10	U		10	U		10	U		10	U	
CAPROLACTAM		160	J	C	25	J	C	20	J	C	37		
CARBAZOLE		10	U		10	U		10	U		10	U	
DIBENZOFURAN		10	U		10	U		10	U		10	U	
DIETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DIMETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DI-N-BUTYL PHTHALATE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
DI-N-OCTYL PHTHALATE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
HEXACHLOROBUTADIENE		10	U		10	U		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE		10	UR	E	10	UR	E	10	UR	E	10	UR	E
HEXACHLOROETHANE		10	U		10	U		10	U		10	U	
ISOPHORONE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-979-0510			TF5-MW-RB02-051710			TF5-W-DUP05-051810			TF5-W-FB01-051910		
SDG: J0987	LAB_ID	J0987-27B			J0987-23B			J0987-28B			J0987-31B		
FRACTION: OS	SAMP_DATE	5/18/2010			5/17/2010			5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	NM			RB			FD			FB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							TF5-MW-979-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		10	U		10	U		10	U		10	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		10	U		10	U		10	U		10	U	
2,4,5-TRICHLOROPHENOL		20	U		20	U		20	U		20	U	
2,4,6-TRICHLOROPHENOL		10	U		10	U		10	U		10	U	
2,4-DINITROPHENOL		20	UJ	C	20	UJ	C	20	UJ	C	20	UJ	C
2,4-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2,6-DINITROTOLUENE		10	U		10	U		10	U		10	U	
2-CHLORONAPHTHALENE		10	U		10	U		10	U		10	U	
2-NITROANILINE		20	U		20	U		20	U		20	U	
2-NITROPHENOL		10	U		10	U		10	U		10	U	
3,3'-DICHLOROBENZIDINE		10	UJ	E	10	UJ	E	10	UJ	E	10	UJ	E
3-NITROANILINE		20	UJ	C	20	UJ	C	20	UJ	C	20	U	
4,6-DINITRO-2-METHYLPHENOL		20	U		20	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-CHLOROANILINE		10	UJ	C	10	UJ	C	10	UJ	C	10	UJ	C
4-CHLOROPHENYL PHENYL ETHER		10	U		10	U		10	U		10	U	
4-NITROANILINE		20	U		20	U		20	U		20	U	
4-NITROPHENOL		20	U		20	U		20	U		20	U	
ACETOPHENONE		10	U		10	U		10	U		10	U	
BENZALDEHYDE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
BIS(2-CHLOROETHOXY)METHANE		10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER		10	U		10	U		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE		10	U		10	U		10	U		10	U	
BUTYL BENZYL PHTHALATE		10	U		10	U		10	U		10	U	
CAPROLACTAM		45	J	C	10	UJ	C	74	J	C	10	U	
CARBAZOLE		10	U		10	U		10	U		10	U	
DIBENZOFURAN		10	U		10	U		10	U		10	U	
DIETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DIMETHYL PHTHALATE		10	U		10	U		10	U		10	U	
DI-N-BUTYL PHTHALATE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
DI-N-OCTYL PHTHALATE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
HEXACHLOROBUTADIENE		10	U		10	U		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE		10	UR	E	10	UR	E	10	UR	E	10	UR	E
HEXACHLOROETHANE		10	U		10	U		10	U		10	U	
ISOPHORONE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-912-0510			TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510		
SDG: J0987	LAB_ID	J0987-07D			J0987-06D			J0987-03D			J0987-08D		
FRACTION: OS	SAMP_DATE	5/12/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NITROBENZENE		10	U		10	U		10	U		10	U	
N-NITROSO-DI-N-PROPYLAMINE		10	U		10	U		10	U		10	U	
N-NITROSODIPHENYLAMINE		10	UJ	E	10	UJ	E	10	UJ	E	10	UJ	E

PROJ_NO: 00963	NSAMPLE	TF4-MW-920-0510			TF4-MW-DUP02-051210			TF5-MW-915-0510			TF5-MW-916-0510		
SDG: J0987	LAB_ID	J0987-04D			J0987-10D			J0987-19B			J0987-20B		
FRACTION: OS	SAMP_DATE	5/11/2010			5/12/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			FD			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF				TF4-MW-913-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NITROBENZENE		10	U		10	U		10	UJ	C	10	UJ	C
N-NITROSO-DI-N-PROPYLAMINE		10	U		10	U		10	U		10	U	
N-NITROSODIPHENYLAMINE		10	UJ	E	10	UJ	E	10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-923-051810			TF5-MW-924-0510			TF5-MW-977-0510			TF5-MW-978-0510		
SDG: J0987	LAB_ID	J0987-16B			J0987-21A			J0987-26B			J0987-30B		
FRACTION: OS	SAMP_DATE	5/18/2010			5/14/2010			5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NITROBENZENE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
N-NITROSO-DI-N-PROPYLAMINE		10	U		10	U		10	U		10	U	
N-NITROSODIPHENYLAMINE		10	U		10	U		10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-979-0510			TF5-MW-RB02-051710			TF5-W-DUP05-051810			TF5-W-FB01-051910		
SDG: J0987	LAB_ID	J0987-27B			J0987-23B			J0987-28B			J0987-31B		
FRACTION: OS	SAMP_DATE	5/18/2010			5/17/2010			5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	NM			RB			FD			FB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							TF5-MW-979-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NITROBENZENE		10	UJ	C	10	UJ	C	10	UJ	C	10	U	
N-NITROSO-DI-N-PROPYLAMINE		10	U		10	U		10	U		10	U	
N-NITROSODIPHENYLAMINE		10	U		10	U		10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF4-38-MW-605-0510			TF4-B8-MW-904-0510			TF4-MW-05D-0510			TF4-MW-912-0510		
SDG: J0987	LAB_ID	J0987-01E			J0987-09C			J0987-05C			J0987-07D		
FRACTION: PAH	SAMP_DATE	5/10/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE											0.1	U	
1,4-DIOXANE											0.1	U	
2,3,4,6-TETRACHLOROPHENOL											0.1	UJ	C
2,4-DICHLOROPHENOL											0.1	U	
2,4-DIMETHYLPHENOL											0.1	UJ	CE
2-CHLOROPHENOL											0.1	U	
2-METHYLNAPHTHALENE		0.1	UJ	ER	0.1	UJ	E	0.1	UJ	E	0.1	UJ	E
2-METHYLPHENOL											0.1	U	
4-CHLORO-3-METHYLPHENOL											0.1	U	
4-METHYLPHENOL											0.1	U	
ACENAPHTHENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
ATRAZINE											0.1	U	
BENZO(A)ANTHRACENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	UJ	CER	0.1	UJ	CE	0.1	UJ	CE	0.1	UJ	CE
CHRYSENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE											0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL											1	UJ	C
PHENANTHRENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	
PHENOL											0.1	U	
PYRENE		0.1	UJ	R	0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510			TF4-MW-920-0510		
SDG: J0987	LAB_ID	J0987-06D			J0987-03D			J0987-08D			J0987-04D		
FRACTION: PAH	SAMP_DATE	5/12/2010			5/11/2010			5/12/2010			5/11/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		0.1	U		0.1	U		0.1	U		0.1	U	
1,4-DIOXANE		0.1	U		0.1	U		0.1	U		0.1	U	
2,3,4,6-TETRACHLOROPHENOL		0.1	UJ	C	0.1	U		0.1	UJ	C	0.1	UJ	C
2,4-DICHLOROPHENOL		0.1	U		0.1	U		0.1	U		0.1	U	
2,4-DIMETHYLPHENOL		0.1	UJ	CE	0.1	UJ	CE	0.1	UJ	CE	0.1	UJ	CE
2-CHLOROPHENOL		0.1	U		0.1	U		0.1	U		0.1	U	
2-METHYLNAPHTHALENE		0.1	UJ	E	0.1	UJ	E	0.1	UJ	E	0.1	UJ	E
2-METHYLPHENOL		0.1	U		0.1	U		0.1	U		0.1	U	
4-CHLORO-3-METHYLPHENOL		0.1	U		0.1	U		0.1	U		0.1	U	
4-METHYLPHENOL		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	UJ	CE	0.1	UJ	E	0.1	UJ	CE	0.1	UJ	CE
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE		0.1	U		0.1	U		0.1	U		0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.18			0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL		1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL		0.1	U		0.1	U		0.1	U		0.1	U	
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-DUP02-051210			TF4-MW-DUP03-051210			TF5-50-MW-108-0510			TF5-50-MW-200-0510		
SDG: J0987	LAB_ID	J0987-10D			J0987-11C			J0987-13C			J0987-12E		
FRACTION: PAH	SAMP_DATE	5/12/2010			5/12/2010			5/13/2010			5/13/2010		
MEDIA: WATER	QC_TYPE	FD			FD			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF	TF4-MW-913-0510			TF4-B8-MW904-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		0.1	U										
1,4-DIOXANE		0.1	U										
2,3,4,6-TETRACHLOROPHENOL		0.1	UJ	C									
2,4-DICHLOROPHENOL		0.1	U										
2,4-DIMETHYLPHENOL		0.1	UJ	CE									
2-CHLOROPHENOL		0.1	U										
2-METHYLNAPHTHALENE		0.1	UJ	E	0.1	UJ	E	0.1	UJ	E	0.1	UJ	E
2-METHYLPHENOL		0.1	U										
4-CHLORO-3-METHYLPHENOL		0.1	U										
4-METHYLPHENOL		0.1	U										
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.33		
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE		0.1	U										
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	UJ	CE	0.1	UJ	CE	0.1	UJ	CE	0.1	UJ	CE
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.38		
HEXACHLOROBENZENE		0.1	U										
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.2			0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL		1	UJ	C									
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.11		
PHENOL		0.1	U										
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF5-50-MW-207B-0510			TF5-MW-911-0510			TF5-MW-915-0510			TF5-MW-916-0510		
SDG: J0987	LAB_ID	J0987-14C			J0987-22A			J0987-19B			J0987-20B		
FRACTION: PAH	SAMP_DATE	5/13/2010			5/17/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE								0.1	U		0.1	U	
1,4-DIOXANE								0.1	U		0.1	U	
2,3,4,6-TETRACHLOROPHENOL								0.1	U		0.1	U	
2,4-DICHLOROPHENOL								0.1	U		0.1	U	
2,4-DIMETHYLPHENOL								0.1	UJ	CE	0.1	UJ	CE
2-CHLOROPHENOL								0.1	U		0.1	U	
2-METHYLNAPHTHALENE		0.44	J	E	0.1	U		0.1	U		0.1	U	
2-METHYLPHENOL								0.1	U		0.1	U	
4-CHLORO-3-METHYLPHENOL								0.1	U		0.1	U	
4-METHYLPHENOL								0.1	U		0.1	U	
ACENAPHTHENE		0.51			0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE								0.1	U		0.1	U	
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	UJ	CE	0.1	UJ	C	0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.42			0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE								0.1	U		0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL								1	UJ	C	1	UJ	C
PHENANTHRENE		0.1			0.1	U		0.1	U		0.1	U	
PHENOL								0.1	U		0.1	U	
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-918-0510			TF5-MW-923-051810			TF5-MW-924-0510			TF5-MW-977-0510		
SDG: J0987	LAB_ID	J0987-17C			J0987-16B			J0987-21A			J0987-26B		
FRACTION: PAH	SAMP_DATE	5/14/2010			5/18/2010			5/14/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE					0.1	U		0.1	U		0.1	U	
1,4-DIOXANE					0.1	U		0.1	U		0.1	U	
2,3,4,6-TETRACHLOROPHENOL					0.1	U		0.1	U		0.1	U	
2,4-DICHLOROPHENOL					0.1	U		0.1	U		0.1	U	
2,4-DIMETHYLPHENOL					0.1	UJ	CE	0.1	UJ	CE	0.1	UJ	CE
2-CHLOROPHENOL					0.1	U		0.1	U		0.1	U	
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
2-METHYLPHENOL					0.1	U		0.1	U		0.1	U	
4-CHLORO-3-METHYLPHENOL					0.1	U		0.1	U		0.1	U	
4-METHYLPHENOL					0.1	U		0.1	U		0.1	U	
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE					0.1	U		0.1	U		0.1	U	
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	UJ	C	0.1	U		0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE					0.1	U		0.1	U		0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL					1	UJ	C	1	UJ	C	1	UJ	C
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL					0.1	U		0.1	U		0.1	U	
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-978-0510			TF5-MW-979-0510			TF5-MW-DUP04-051710			TF5-MW-RB02-051710		
SDG: J0987	LAB_ID	J0987-30B			J0987-27B			J0987-24A			J0987-23B		
FRACTION: PAH	SAMP_DATE	5/19/2010			5/18/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			NM			FD			RB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF							TF5-MW-911-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		0.1	U		0.1	U					0.1	U	
1,4-DIOXANE		0.1	U		0.1	U					0.1	U	
2,3,4,6-TETRACHLOROPHENOL		0.1	U		0.1	U					0.1	U	
2,4-DICHLOROPHENOL		0.1	U		0.1	U					0.1	U	
2,4-DIMETHYLPHENOL		0.1	UJ	CE	0.1	UJ	CE				0.1	UJ	CE
2-CHLOROPHENOL		0.1	U		0.1	U					0.1	U	
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
2-METHYLPHENOL		0.1	U		0.1	U					0.1	U	
4-CHLORO-3-METHYLPHENOL		0.1	U		0.1	U					0.1	U	
4-METHYLPHENOL		0.1	U		0.1	U					0.1	U	
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
ATRAZINE		0.1	U		0.1	U					0.1	U	
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U		0.1	UJ	C	0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.1	U	
HEXACHLOROBENZENE		0.1	U		0.1	U					0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PENTACHLOROPHENOL		1	UJ	C	1	UJ	C				1	UJ	C
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENOL		0.1	U		0.1	U					0.1	U	
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF5-W-DUP05-051810			TF5-W-FB01-051910		
SDG: J0987	LAB_ID	J0987-28B			J0987-31B		
FRACTION: PAH	SAMP_DATE	5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	FD			FB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF	TF5-MW-979-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		0.1	U		0.1	U	
1,4-DIOXANE		0.1	U		0.1	U	
2,3,4,6-TETRACHLOROPHENOL		0.1	U		0.1	U	
2,4-DICHLOROPHENOL		0.1	U		0.1	U	
2,4-DIMETHYLPHENOL		0.1	UJ	CE	0.1	UJ	CE
2-CHLOROPHENOL		0.1	U		0.1	U	
2-METHYLNAPHTHALENE		0.1	U		0.1	U	
2-METHYLPHENOL		0.1	U		0.1	U	
4-CHLORO-3-METHYLPHENOL		0.1	U		0.1	U	
4-METHYLPHENOL		0.1	U		0.1	U	
ACENAPHTHENE		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U	
ATRAZINE		0.1	U		0.1	U	
BENZO(A)ANTHRACENE		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U	
HEXACHLOROBENZENE		0.1	U		0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U	
PENTACHLOROPHENOL		1	UJ	C	1	UJ	C
PHENANTHRENE		0.1	U		0.1	U	
PHENOL		0.1	U		0.1	U	
PYRENE		0.1	U		0.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-912-0510			TF4-MW-913-0510			TF4-MW-914-0510			TF4-MW-919-0510		
SDG: J0987	LAB_ID	J0987-07D			J0987-06D			J0987-03D			J0987-08D		
FRACTION: PEST/PCB	SAMP_DATE	5/12/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		0.1	U		0.1	U		0.1	U		0.1	U	
4,4'-DDE		0.1	U		0.1	U		0.1	U		0.1	U	
4,4'-DDT		0.1	U		0.1	U		0.1	U		0.1	U	
ALDRIN		0.05	U		0.05	U		0.05	U		0.05	U	
ALPHA-BHC		0.05	U		0.05	U		0.05	U		0.05	U	
ALPHA-CHLORDANE		0.05	U		0.05	U		0.05	U		0.05	U	
AROCLOR-1016		1	U		1	U		1	U		1	U	
AROCLOR-1221		1	U		1	U		1	U		1	U	
AROCLOR-1232		1	U		1	U		1	U		1	U	
AROCLOR-1242		1	U		1	U		1	U		1	U	
AROCLOR-1248		1	U		1	UJ	G	1	U		1	U	
AROCLOR-1254		1	U		1	UJ	G	1	U		1	U	
AROCLOR-1260		1	U		1	U		1	U		1	U	
AROCLOR-1262		1	U		1	U		1	U		1	U	
AROCLOR-1268		1	U		1	U		1	U		1	U	
BETA-BHC		0.05	U		0.05	U		0.05	U		0.05	U	
DELTA-BHC		0.05	U		0.05	U		0.05	U		0.05	U	
DIELDRIN		0.1	U		0.1	U		0.1	U		0.1	U	
ENDOSULFAN I		0.05	U		0.05	U		0.05	U		0.05	U	
ENDOSULFAN II		0.1	U		0.1	U		0.1	U		0.1	U	
ENDOSULFAN SULFATE		0.1	U		0.1	U		0.1	U		0.1	U	
ENDRIN		0.1	U		0.1	U		0.1	U		0.1	U	
ENDRIN ALDEHYDE		0.1	U		0.1	UJ	G	0.1	U		0.1	U	
ENDRIN KETONE		0.1	U		0.1	U		0.1	U		0.1	U	
GAMMA-BHC (LINDANE)		0.05	U		0.05	U		0.05	U		0.05	U	
GAMMA-CHLORDANE		0.05	U		0.05	U		0.05	U		0.05	U	
HEPTACHLOR		0.05	U		0.05	U		0.05	U		0.05	U	
HEPTACHLOR EPOXIDE		0.05	U		0.05	U		0.05	U		0.05	U	
METHOXYCHLOR		0.5	U		0.5	U		0.5	U		0.5	U	
TOXAPHENE		5	U		5	U		5	U		5	U	

PROJ_NO: 00963	NSAMPLE	TF4-MW-920-0510			TF4-MW-DUP02-051210			TF5-MW-915-0510			TF5-MW-916-0510		
SDG: J0987	LAB_ID	J0987-04D			J0987-10D			J0987-19B			J0987-20B		
FRACTION: PEST/PCB	SAMP_DATE	5/11/2010			5/12/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			FD			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF				TF4-MW-913-0510								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		0.1	U		3	U		0.1	U		0.1	U	
4,4'-DDE		0.1	U		3	U		0.1	U		0.1	U	
4,4'-DDT		0.1	U		3	U		0.1	U		0.1	U	
ALDRIN		0.05	U		1.5	U		0.05	U		0.05	U	
ALPHA-BHC		0.05	U		1.5	U		0.05	U		0.05	U	
ALPHA-CHLORDANE		0.05	U		1.5	U		0.05	U		0.05	U	
AROCLOR-1016		1	U		1	U		1	U		1	U	
AROCLOR-1221		1	U		1	U		1	U		1	U	
AROCLOR-1232		1	U		1	U		1	U		1	U	
AROCLOR-1242		1	U		1	U		1	U		1	U	
AROCLOR-1248		1	U		14	J	G	1	U		1	U	
AROCLOR-1254		1	U		5.6	J	G	1	U		1	U	
AROCLOR-1260		1	U		1	U		1	U		1	U	
AROCLOR-1262		1	U		1	U		1	U		1	U	
AROCLOR-1268		1	U		1	U		1	U		1	U	
BETA-BHC		0.05	U		1.5	U		0.05	U		0.05	U	
DELTA-BHC		0.05	U		1.5	U		0.05	U		0.05	U	
DIELDRIN		0.1	U		3	U		0.1	U		0.1	U	
ENDOSULFAN I		0.05	U		1.5	U		0.05	U		0.05	U	
ENDOSULFAN II		0.1	U		3	U		0.1	U		0.1	U	
ENDOSULFAN SULFATE		0.1	U		3	U		0.1	U		0.1	U	
ENDRIN		0.1	U		3	U		0.1	U		0.1	U	
ENDRIN ALDEHYDE		0.1	U		13	J	G	0.1	U		0.1	U	
ENDRIN KETONE		0.1	U		3	U		0.1	U		0.1	U	
GAMMA-BHC (LINDANE)		0.05	U		1.5	U		0.05	U		0.05	U	
GAMMA-CHLORDANE		0.05	U		1.5	U		0.05	U		0.05	U	
HEPTACHLOR		0.05	U		1.5	U		0.05	U		0.05	U	
HEPTACHLOR EPOXIDE		0.05	U		1.5	U		0.05	U		0.05	U	
METHOXYCHLOR		0.5	U		15	U		0.5	U		0.5	U	
TOXAPHENE		5	U		150	U		5	U		5	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-923-051810			TF5-MW-924-0510			TF5-MW-977-0510			TF5-MW-978-0510		
SDG: J0987	LAB_ID	J0987-16B			J0987-21A			J0987-26B			J0987-30B		
FRACTION: PEST/PCB	SAMP_DATE	5/18/2010			5/14/2010			5/18/2010			5/19/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		0.1	U		0.1	U		0.1	U		0.1	U	
4,4'-DDE		0.1	U		0.1	U		0.1	U		0.1	U	
4,4'-DDT		0.1	U		0.1	U		0.1	U		0.1	U	
ALDRIN		0.05	U		0.05	U		0.05	U		0.05	U	
ALPHA-BHC		0.05	U		0.05	U		0.05	U		0.05	U	
ALPHA-CHLORDANE		0.05	U		0.05	U		0.05	U		0.05	U	
AROCLOR-1016		1	U		1	U		1	U		1	U	
AROCLOR-1221		1	U		1	U		1	U		1	U	
AROCLOR-1232		1	U		1	U		1	U		1	U	
AROCLOR-1242		1	U		1	U		1	U		1	U	
AROCLOR-1248		1	U		1	U		1	U		1	U	
AROCLOR-1254		1	U		1	U		1	U		1	U	
AROCLOR-1260		1	U		1	U		1	U		1	U	
AROCLOR-1262		1	U		1	U		1	U		1	U	
AROCLOR-1268		1	U		1	U		1	U		1	U	
BETA-BHC		0.05	U		0.05	U		0.05	U		0.05	U	
DELTA-BHC		0.05	U		0.05	U		0.05	U		0.05	U	
DIELDRIN		0.1	U		0.1	U		0.1	U		0.1	U	
ENDOSULFAN I		0.05	U		0.05	U		0.05	U		0.05	U	
ENDOSULFAN II		0.1	U		0.1	U		0.1	U		0.1	U	
ENDOSULFAN SULFATE		0.1	U		0.1	U		0.1	U		0.1	U	
ENDRIN		0.1	U		0.1	U		0.1	U		0.1	U	
ENDRIN ALDEHYDE		0.1	U		0.1	U		0.1	U		0.1	U	
ENDRIN KETONE		0.1	U		0.1	U		0.1	U		0.1	U	
GAMMA-BHC (LINDANE)		0.05	U		0.05	U		0.05	U		0.05	U	
GAMMA-CHLORDANE		0.05	U		0.05	U		0.05	U		0.05	U	
HEPTACHLOR		0.05	U		0.05	U		0.05	U		0.05	U	
HEPTACHLOR EPOXIDE		0.05	U		0.05	U		0.05	U		0.05	U	
METHOXYCHLOR		0.5	U		0.5	U		0.5	U		0.5	U	
TOXAPHENE		5	U		5	U		5	U		5	U	

PROJ_NO: 00963	NSAMPLE	TF5-MW-979-0510			TF5-MW-RB02-051710			TF5-W-DUP05-051810		
SDG: J0987	LAB_ID	J0987-27B			J0987-23B			J0987-28B		
FRACTION: PEST/PCB	SAMP_DATE	5/18/2010			5/17/2010			5/18/2010		
MEDIA: WATER	QC_TYPE	NM			RB			FD		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS									
	DUP_OF							TF5-MW-979-0510		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		0.1	U		0.1	U		0.1	U	
4,4'-DDE		0.1	U		0.1	U		0.1	U	
4,4'-DDT		0.1	U		0.1	U		0.1	U	
ALDRIN		0.05	U		0.05	U		0.05	U	
ALPHA-BHC		0.05	U		0.05	U		0.05	U	
ALPHA-CHLORDANE		0.05	U		0.05	U		0.05	U	
AROCLOR-1016		1	U		1	U		1	U	
AROCLOR-1221		1	U		1	U		1	U	
AROCLOR-1232		1	U		1	U		1	U	
AROCLOR-1242		1	U		1	U		1	U	
AROCLOR-1248		1	U		1	U		1	U	
AROCLOR-1254		1	U		1	U		1	U	
AROCLOR-1260		1	U		1	U		1	U	
AROCLOR-1262		1	U		1	U		1	U	
AROCLOR-1268		1	U		1	U		1	U	
BETA-BHC		0.05	U		0.05	U		0.05	U	
DELTA-BHC		0.05	U		0.05	U		0.05	U	
DIELDRIN		0.1	U		0.1	U		0.1	U	
ENDOSULFAN I		0.05	U		0.05	U		0.05	U	
ENDOSULFAN II		0.1	U		0.1	U		0.1	U	
ENDOSULFAN SULFATE		0.1	U		0.1	U		0.1	U	
ENDRIN		0.1	U		0.1	U		0.1	U	
ENDRIN ALDEHYDE		0.1	U		0.1	U		0.1	U	
ENDRIN KETONE		0.1	U		0.1	U		0.1	U	
GAMMA-BHC (LINDANE)		0.05	U		0.05	U		0.05	U	
GAMMA-CHLORDANE		0.05	U		0.05	U		0.05	U	
HEPTACHLOR		0.05	U		0.05	U		0.05	U	
HEPTACHLOR EPOXIDE		0.05	U		0.05	U		0.05	U	
METHOXYCHLOR		0.5	U		0.5	U		0.5	U	
TOXAPHENE		5	U		5	U		5	U	

PROJ_NO: 00963	NSAMPLE	TF4-38-MW-605-0510			TF4-B8-MW-904-0510			TF4-MW-05D-0510			TF4-MW-DUP03-051210		
SDG: J0987	LAB_ID	J0987-01E			J0987-09C			J0987-05C			J0987-11C		
FRACTION: PET	SAMP_DATE	5/10/2010			5/12/2010			5/11/2010			5/12/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			FD		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS												
	DUP_OF										TF4-B8-MW904-0510		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.51			0.35	U		0.35	U		0.35	U	

PROJ_NO: 00963	NSAMPLE	TF5-50-MW-108-0510			TF5-50-MW-200-0510			TF5-50-MW-207B-0510			TF5-MW-911-0510		
SDG: J0987	LAB_ID	J0987-13C			J0987-12E			J0987-14C			J0987-22A		
FRACTION: PET	SAMP_DATE	5/13/2010			5/13/2010			5/13/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.35	U		0.35	U		0.64			0.35	UJ	E

PROJ_NO: 00963	NSAMPLE	TF5-MW-918-0510			TF5-MW-DUP04-051710			TF5-MW-RB02-051710		
SDG: J0987	LAB_ID	J0987-17C			J0987-24A			J0987-23B		
FRACTION: PET	SAMP_DATE	5/14/2010			5/17/2010			5/17/2010		
MEDIA: WATER	QC_TYPE	NM			FD			RB		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS									
	DUP_OF				TF5-MW-911-0510					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
EXTRACTABLE PETROLEUM HYDROCARBONS		0.35	UJ	E	0.35	UJ	E	0.35	UJ	E

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-06-10-3713W

Date: June 28, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: Paula DiMattei (no copy)

Subject: Tier II Organic Data Validation, SDG E1000283
Columbia Analytical Services
Tank Farms 4 and 5- Naval Station Newport, Newport, RI

PCDD/PCDF:

20/Sediments/	TF4-SD-907-0006	TF4-SD-908-0006	TF4-SD-909-0006
	TF4-SD-910-0006	TF4-SD-911-0006	TF4-SD-912-0006
	TF4-SD-DUP01-031710	TF5-SD-913-0006	TF5-SD-914-0006
	TF5-SD-915-0006	TF5-SD-916-0006	TF5-SD-917-0006
	TF5-SD-918-0006	TF5-SD-919-0006	TF5-SD-920-0006
	TF5-SD-921-0006	TF5-SD-922-0006	TF5-SD-923-0006
	TF5-SD-924-0006	TF5-SD-DUP01-031610	

(Field Duplicates: TF4-SD-911-0006/TF4-SD-DUP01-031710; and TF5-SD-923-0006/TF5-SD-DUP01-031610)

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDD/PCDF) analytical data for the samples in this SDG. The samples were collected at the Tank Farms 4 and 5 site at Naval Station Newport, Newport, Rhode Island on March 16-17, 2010. Sample collection and analysis was performed according to the requirements of the Quality Assurance Project Plan (QAPP) for the Data Gaps Investigation, Tank Farms 4 and 5, Naval Station Newport, Newport, Rhode Island, dated March 2010.

The dioxin/furan analysis was performed according to USEPA SW-846 Method 8290.

The project specific criteria listed in the site SAP were applied for data validation. The dioxin/furan (PCDD/PCDF) data validation was performed in accordance with the USEPA National Functional Guidelines for Chlorinated Dioxin/Furan data Review, September 2005.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed.

The data were evaluated based on the following parameters:

* • Data Completeness
* • Preservation and Technical Holding Times
* • Window Defining Mixture Performance
* • Initial and Continuing Calibrations

	•	Blanks
NA	•	Matrix Spike/Matrix Spike Duplicate
	•	Laboratory Duplicate
*	•	Ongoing Precision and Recovery (OPR)
	•	Labeled Compound Recoveries
	•	Field Duplicates
	•	Target Compound Identification
	•	Compound Quantitation and Reported Quantitation Limits
*	•	Data Usability

*	All criteria were met for this parameter.
NA	Not applicable

Blanks

The following table summarizes the level of blank contamination detected in the laboratory method blanks associated with the sediment samples:

Compound	Maximum Concentration (ng/Kg)	Affected samples
1,2,3,4,7,8,9-HpCDF	0.0950	TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-912-0006, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-918-0006, TF5-SD-DUP01-031610
1,2,3,7,8,9-HxCDD	0.0973	TF4-SD-912-0006
OCDF	0.2	TF4-SD-912-0006

Blank actions were applied to the affected sediment sample due to method blank contamination. The positive results in the samples affected by method blank contamination were qualified as not detected at the reported concentration (U). In cases where the reported result was identified as an EMPC, the "J" qualifier indicative of the uncertainty in the qualitative identification of this result was retained for an overall qualification of "UJ".

Although OCDF result in sample TF4-SD-912-0006 was reported with a raised reporting limit, the project sensitivity goal is not impacted since this raised reporting limit is below the project action limit for this compound.

Although the 1,2,3,4,7,8,9-HpCDF and 1,2,3,7,8,9-HxCDD results in affected samples were reported with raised reporting limits, the project sensitivity goals are not impacted since these raised reporting limits are below the project action limit for these compounds.

Laboratory Duplicate

The laboratory performed laboratory duplicate analysis on sample TF5-SD-917-0006. The following table summarizes the compounds that did not meet the laboratory duplicate relative percent difference (RPD) precision criterion of <50%.

Compound	RPD	Action	
		(+)	ND
1,2,3,4,7,8-HxCDD	62	J	
1,2,3,6,7,8-HxCDD	53	J	
1,2,3,7,8,9-HxCDD	55	J	
1,2,3,4,6,7,8-HpCDD	55	J	
2,3,7,8-TCDF	51	J	
1,2,3,7,8-PeCDF	62	J	
2,3,4,7,8-PeCDF	61	J	

The RPD QC criteria were not met for the compounds listed above; therefore, the precision project goals may be impacted. These compound results in sample TF5-SD-917-0006 are usable as estimated values.

Labeled Compound Recovery

The following table summarizes the labeled compounds that did not meet the recovery criteria of 40-135%.

Sample ID	13C-2,3,7,8-TCDF %R	Action*	
		(+)	ND
TF5-SD-924-0006	35	J	
TF5-SD-DUP01-031710	39	J	
*Actions are applied to the 2,3,7,8-TCDF results in the affected samples.			

The %R QC criteria were not met for 13C-2,3,7,8-TCDF; therefore, the accuracy project goals may be impacted. The 2,3,7,8-TCDF results in affected samples are usable as estimated values.

Field Duplicates

The following table summarizes the compounds that did not meet the field duplicate RPD precision criterion of <50% for the field duplicate pair TF4-SD-911-0006 and TF4-SD-DUP01-031710.

Compound	TF4-SD-911-0006 (ng/Kg)	TF4-SD-DUP01-031710 (ng/Kg)	RPD	Action	
				(+)	ND
1,2,3,4,6,7,8-HpCDF	27.3	13.9	65	J	
1,2,3,4,6,7,8-HpCDD	171	82.4	70	J	
OCDD	5250	2050	88	J	
OCDF	54.6	30.2	58	J	

Compound	TF4-SD-911-0006 (ng/Kg)	TF4-SD-DUP01-031710 (ng/Kg)	RPD	Action	
				(+)	ND
Total TCDF	6.91	2.68	88	J	
Total PeCDF	18.4	9.91	60	J	
Total HxCDF	29.0	13.6	72	J	
Total HxCDD	43.5	23.8	59	J	
Total HpCDF	67.5	35.6	62	J	
Total HpCDD	358	161	76	J	

The RPD QC criteria were not met for the compounds listed above; therefore, the precision project goals may be impacted. These compound results in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 are usable as estimated values.

The following table summarizes the compounds that did not meet the field duplicate RPD precision criterion of <50% for the field duplicate pair TF5-SD-923-0006 and TF5-SD-DUP01-031610.

Compound	TF5-SD-923-0006 (ng/Kg)	TF5-SD-DUP01-031610 (ng/Kg)	RPD	Action	
				(+)	ND
1,2,3,4,6,7,8-HpCDF	11.5	6.27	59	J	
OCDF	23.2	12.0	64	J	
Total HxCDD	16.5	8.94	59	J	
Total HpCDF	27.0	14.4	61	J	

The RPD QC criteria were not met for the compounds listed above; therefore, the precision project goals may be impacted. These compound results in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 are usable as estimated values.

Target Compound Identification

Several 2378-substituted isomers in most samples were reported as Estimated Maximum Potential Concentrations (EMPCs). An EMPC is defined as a detected response with a signal to noise ratio of ≥ 2.5 for both quantitation ions and having met all identification criteria with the exception of the ion abundance ratio.

Not all identification criteria were met for the results reported as EMPCs; therefore, project accuracy goals may be impacted for the target compounds estimated (J) and a qualifier code "W". These results are usable as estimated values.

Compound Quantitation and Reported Quantitation Limits

The positive results for OCDD in samples TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP01-031710, TF5-SD-913-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-921-0006, TF5-SD-922-0006, and TF5-SD-924-0006 were qualified as estimated (J) due to the uncertainty in the quantitation as a result of the exceeded calibration range. Project accuracy goals may be impacted by this uncertainty; however, these results are usable as estimated values.

The non-detected results were reported at the calculated sample specific estimated detection limit (EDL). EDL are calculated based on the signal to noise ratio for each sample as specified in Method 8290.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data.

The project goals with respect to accuracy were met for the PCDD/PCDF data set with the following exceptions. The positive 2,3,7,8-TCDF results for samples TF5-SD-924-0006 and TF5-SD-DUP01-031710 were qualified as estimated due to low labeled compound recoveries. Select PCDD/PCDF compounds were qualified as estimated (EMPC) since not all identification criteria were met. Additionally, the positive OCDD results for samples TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP01-031710, TF5-SD-913-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-921-0006, TF5-SD-922-0006, and TF5-SD-924-0006 were qualified as estimated due to the exceeded calibration range. Although specific method criteria were not met in these instances, the affected positive results are usable as estimated values which may have a minor impact on data usability.

The project goals with respect to precision were met for the PCDD/PCDF data set with the following exceptions. Select PCDD/PCDF compounds were qualified as estimated for sample TF5-SD-917-0006 due to laboratory duplicate RPD exceedances. Select PCDD/PCDF compounds were qualified as estimated for field duplicate samples TF4-SD-911-006/TF4-SD-DUP01-031710 and TF5-SD-923-0006/TF5-SD-DUP01-031610 due to field duplicate imprecision. Although specific method criteria were not met in these instances, the affected positive results are usable as estimated values which may have a minor impact on data usability.

The project goals with respect to sensitivity and completeness were met for the PCDD/PCDF data set. Data usability is not impacted with regards to sensitivity and completeness.

Tables: Data Summary Tables
Data Validation Qualifiers and Codes

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-SD-907-0006			TF4-SD-908-0006			TF4-SD-909-0006			TF4-SD-910-0006		
SDG: E1000283	LAB_ID	E1000283-014			E1000283-015			E1000283-016			E1000283-017		
FRACTION: DIOX	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	52.5			63.1			59.2			46.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		2640	J	L	2080	J	L	2120	J	L	8750	J	L
1,2,3,4,6,7,8,9-OCDF		35.4			6.8	J	P	6.95			27.6		
1,2,3,4,6,7,8-HPCDD		89.2			30.1			33.2			129		
1,2,3,4,6,7,8-HPCDF		12.4			2.87	J	P	2.99	J	P	12.3		
1,2,3,4,7,8,9-HPCDF		1.24	J	P	0.314	U	A	0.383	U	A	1.33	J	P
1,2,3,4,7,8-HXCDD		1.01	J	PW	0.415	J	P	0.37	J	PW	1.73	J	P
1,2,3,4,7,8-HXCDF		0.864	J	P	0.416	J	P	0.585	J	P	2.15	J	P
1,2,3,6,7,8-HXCDD		2.95	J	P	0.891	J	P	0.943	J	P	3.58	J	P
1,2,3,6,7,8-HXCDF		0.886	J	P	0.354	J	P	0.426	J	P	1.69	J	P
1,2,3,7,8,9-HXCDD		3.21	J	P	0.985	J	P	0.985	J	P	4.02	J	P
1,2,3,7,8,9-HXCDF		0.125	J	P	0.0791	J	PW	0.0578	U		0.093	J	PW
1,2,3,7,8-PECDD		0.655	J	P	0.192	J	P	0.244	J	P	0.928	J	P
1,2,3,7,8-PECDF		0.22	J	PW	0.133	J	P	0.224	J	P	0.853	J	P
2,3,4,6,7,8-HXCDF		0.676	J	P	0.326	J	P	0.446	J	P	1.52	J	P
2,3,4,7,8-PECDF		0.162	J	PW	0.187	J	P	0.243	J	PW	0.883	J	PW
2,3,7,8-TCDD		0.0287	U		0.0252	U		0.0249	U		0.145	J	PW
2,3,7,8-TCDF		0.257	J	P	0.292	J	P	0.408	J	P	1.56	J	P
TOTAL HPCDD		177			63.5			69.3			261		
TOTAL HPCDF		33.5			7.04			7.63			31.4		
TOTAL HXCDD		19.6			7.8			8.07			32.6		
TOTAL HXCDF		17.6			5.86			7.13			26.8		
TOTAL PECDD		2.57	J	P	0.762	J	P	1.43	J	P	8.09		
TOTAL PECDF		6.99			5.11			8.07			26.4		
TOTAL TCDD		0.0287	U		0.0252	U		0.583	J	P	3.31		
TOTAL TCDF		2.53			1.32	J	P	2.09			6.53		

PROJ_NO: 00963	NSAMPLE	TF4-SD-911-0006			TF4-SD-912-0006			TF4-SD-DUP01-031710			TF5-SD-913-0006		
SDG: E1000283	LAB_ID	E1000283-018			E1000283-019			E1000283-020			E1000283-001		
FRACTION: DIOX	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			FD			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	46.4			38.0			49.1			48.5		
	DUP_OF							TF4-SD-911-0006					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		5250	J	GL	1120			2050	J	GL	3990	J	L
1,2,3,4,6,7,8,9-OCDF		54.6	J	G	4.97	U	A	30.2	J	G	13.6		
1,2,3,4,6,7,8-HPCDD		171	J	G	27.7			82.4	J	G	75.7		
1,2,3,4,6,7,8-HPCDF		27.3	J	G	2.71	J	P	13.9	J	G	6.77		
1,2,3,4,7,8,9-HPCDF		1.87	J	P	0.292	UJ	AW	1.1	J	P	0.826	U	A
1,2,3,4,7,8-HXCDD		2.29	J	P	0.358	J	PW	1.33	J	P	0.987	J	P
1,2,3,4,7,8-HXCDF		1.81	J	P	0.317	J	PW	0.885	J	P	2.13	J	P
1,2,3,6,7,8-HXCDD		4.88	J	P	0.824	J	P	2.78	J	P	1.83	J	P
1,2,3,6,7,8-HXCDF		1.6	J	P	0.293	J	PW	0.945	J	P	0.941	J	P
1,2,3,7,8,9-HXCDD		6.3			0.926	U	A	3.31	J	P	1.94	J	PW
1,2,3,7,8,9-HXCDF		0.118	J	PW	0.0984	U		0.314	U		0.174	U	
1,2,3,7,8-PECDD		1.27	J	P	0.0694	U		0.636	J	PW	0.477	J	P
1,2,3,7,8-PECDF		0.5	J	P	0.171	J	PW	0.275	J	P	0.561	J	PW
2,3,4,6,7,8-HXCDF		1.56	J	P	0.242	J	PW	0.842	J	P	1.22	J	P
2,3,4,7,8-PECDF		0.58	J	P	0.107	J	PW	0.275	J	P	0.694	J	PW
2,3,7,8-TCDD		0.247	J	PW	0.0455	U		0.0482	U		0.119	J	PW
2,3,7,8-TCDF		0.517	J	P	0.171	U		0.365	J	N01P	1.29	J	P
TOTAL HPCDD		358	J	G	57.2			161	J	G	161		
TOTAL HPCDF		67.5	J	G	6.82			35.6	J	G	15.7		
TOTAL HXCDD		43.5	J	G	7.66			23.8	J	G	17.4		
TOTAL HXCDF		29	J	G	1.92	J	P	13.6	J	G	11.7		
TOTAL PECDD		7.25			0.0694	U		1.95	J	P	4.77	J	P
TOTAL PECDF		18.4	J	G	0.293	J	P	9.91	J	G	7.66		
TOTAL TCDD		0.0587	U		0.218	J	P	0.288	J	P	0.91	J	P
TOTAL TCDF		6.91	J	G	4.11			2.68	J	G	10.5		

PROJ_NO: 00963	NSAMPLE	TF5-SD-914-0006			TF5-SD-915-0006			TF5-SD-916-0006			TF5-SD-917-0006		
SDG: E1000283	LAB_ID	E1000283-002			E1000283-003			E1000283-004			E1000283-005		
FRACTION: DIOX	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	53.5			62.3			61.9			44.3		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		1050			1700	J	L	2780	J	L	9160	J	L
1,2,3,4,6,7,8,9-OCDF		5.52	J	P	9.13			24			90.1		
1,2,3,4,6,7,8-HPCDD		25.3			35.4			70.3			237	J	F
1,2,3,4,6,7,8-HPCDF		3.23	J	P	5.31			17.8			46.2		
1,2,3,4,7,8,9-HPCDF		0.233	UJ	AW	0.504	U	A	1.04	J	P	4.32	J	P
1,2,3,4,7,8-HXCDD		0.332	J	P	0.501	J	P	1.08	J	P	3.71	J	FP
1,2,3,4,7,8-HXCDF		0.368	J	PW	1.45	J	P	1.61	J	P	8.63		
1,2,3,6,7,8-HXCDD		0.739	J	P	0.997	J	P	2.37	J	P	8.2	J	F
1,2,3,6,7,8-HXCDF		0.268	J	P	0.619	J	PW	1.29	J	P	4.08	J	P
1,2,3,7,8,9-HXCDD		1.09	J	P	1.42	J	P	3.03	J	PW	9.36	J	F
1,2,3,7,8,9-HXCDF		0.11	U		0.0671	U		0.428	U		0.282	U	
1,2,3,7,8-PECDD		0.0503	U		0.291	J	P	0.681	J	P	1.97	J	P
1,2,3,7,8-PECDF		0.0971	J	PW	0.435	J	P	0.301	J	PW	1.5	J	FPW
2,3,4,6,7,8-HXCDF		0.322	J		0.712	J	PW	1.37	J	P	5.96		
2,3,4,7,8-PECDF		0.139	J	PW	0.517	J	PW	0.266	J	P	2.1	J	FP
2,3,7,8-TCDD		0.0444	U		0.0846	J	PW	0.123	J	PW	0.414	JK	PW
2,3,7,8-TCDF		0.178	J	PW	0.892	J	P	0.402	J	PW	2.02	J	FP
TOTAL HPCDD		49.9			70.6			136			458		
TOTAL HPCDF		6.98			11.5			35.2			107		
TOTAL HXCDD		7.55			11.3			18.7			64.9		
TOTAL HXCDF		3.52	J	P	7.36			16.7			60.1		
TOTAL PECDD		0.0503	U		3.23	J	P	3.43	J	P	14.8		
TOTAL PECDF		1.5	J	P	7.44			6.97			37.2		
TOTAL TCDD		0.0444	U		1.69			0.244	J	P	3.41		
TOTAL TCDF		0.778	J	P	2.78			3.53			33.7		

PROJ_NO: 00963	NSAMPLE	TF5-SD-918-0006			TF5-SD-919-0006			TF5-SD-920-0006			TF5-SD-921-0006		
SDG: E1000283	LAB_ID	E1000283-006			E1000283-007			E1000283-008			E1000283-009		
FRACTION: DIOX	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	21.0			37.5			59.0			40.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		2950			5500	J	L	1980	J	L	4120	J	L
1,2,3,4,6,7,8,9-OCDF		25.3			123			48.3			47.6		
1,2,3,4,6,7,8-HPCDD		85.7			327			103			169		
1,2,3,4,6,7,8-HPCDF		12.6			50.4			17.5			28.4		
1,2,3,4,7,8,9-HPCDF		1.19	U	A	3.65	J	P	1.42	J	PW	2.16	J	P
1,2,3,4,7,8-HXCDD		1.3	J	P	4.3	J	P	1.32	J	P	2.79	J	PW
1,2,3,4,7,8-HXCDF		1.89	J	P	3.87	J	P	1.95	J	P	2.69	J	P
1,2,3,6,7,8-HXCDD		3	J	P	12.1			3.6	J	P	6.16		
1,2,3,6,7,8-HXCDF		0.959	J	PW	2.9	J	P	1.25	J	P	1.84	J	P
1,2,3,7,8,9-HXCDD		3.31	J	P	10.4			3.29	J	P	7.63		
1,2,3,7,8,9-HXCDF		0.438	U		0.267	U		0.259	U		0.184	U	
1,2,3,7,8-PECDD		0.763	J	P	1.98	J	P	0.727	J	P	1.5	J	P
1,2,3,7,8-PECDF		0.605	J	P	0.605	J	PW	0.601	J	P	0.664	J	P
2,3,4,6,7,8-HXCDF		1.21	J	P	3.44	J	P	1.3	J	P	2.9	J	P
2,3,4,7,8-PECDF		0.75	J	P	0.934	J	P	0.526	J	P	0.612	J	P
2,3,7,8-TCDD		0.117	U		0.317	J	PW	0.114	J	PW	0.191	J	PW
2,3,7,8-TCDF		1.35	J	P	0.739	J	P	0.871	J	P	0.796	J	P
TOTAL HPCDD		169			579			180			325		
TOTAL HPCDF		30.6			143			51.1			66.3		
TOTAL HXCDD		26.9			76.2			24.8			45.6		
TOTAL HXCDF		13.5			51.4			21.2			15.9		
TOTAL PECDD		1.7	J	P	6.72			3.73	J	P	6.18		
TOTAL PECDF		11.4			23.9			12.7			23.1		
TOTAL TCDD		0.117	U		0.652	J	P	0.475	J	P	0.272	J	P
TOTAL TCDF		10.8			0.437	J	P	3.97			7.68		

PROJ_NO: 00963	NSAMPLE	TF5-SD-922-0006			TF5-SD-923-0006			TF5-SD-924-0006			TF5-SD-DUP01-031610		
SDG: E1000283	LAB_ID	E1000283-010			E1000283-011			E1000283-012			E1000283-013		
FRACTION: DIOX	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			FD		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	58.3			61.8			31.6			73.0		
	DUP_OF										TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		4040	J	L	1050			6520	J	L	852		
1,2,3,4,6,7,8,9-OCDF		102			23.2	J	G	147			12	J	G
1,2,3,4,6,7,8-HPCDD		244			49			302			29.3		
1,2,3,4,6,7,8-HPCDF		56.6			11.5	J	G	69.6			6.27	J	G
1,2,3,4,7,8,9-HPCDF		3.72	J	P	1.16	J	P	5.32	J	P	0.626	U	A
1,2,3,4,7,8-HXCDD		3.73	J	P	1.03	J	P	5.76	J	P	0.511	J	PW
1,2,3,4,7,8-HXCDF		4.67			1.33	J	P	6.61	J	P	0.74	J	P
1,2,3,6,7,8-HXCDD		9.61			1.86	J	P	11			1.22	J	P
1,2,3,6,7,8-HXCDF		3.6	J	P	0.971	J	P	4.49	J	P	0.542	J	P
1,2,3,7,8,9-HXCDD		9.53			2.68	J	P	14.4			1.68	J	P
1,2,3,7,8,9-HXCDF		0.389	J	P	0.189	J	P	0.575	J	P	0.0861	J	PW
1,2,3,7,8-PECDD		1.85	J	P	0.524	J	PW	3.06	J	P	0.331	J	P
1,2,3,7,8-PECDF		0.709	J	P	0.306	J	P	1.07	J	PW	0.128	J	PW
2,3,4,6,7,8-HXCDF		3.76	J	P	0.9	J	PW	5.05	J	P	0.666	J	P
2,3,4,7,8-PECDF		0.968	J	P	0.256	J	PW	1.48	J	P	0.175	J	P
2,3,7,8-TCDD		0.319	J	PW	0.0192	U		0.48	J	PW	0.0174	U	
2,3,7,8-TCDF		0.745	J		0.442	J	P	1.17	J	N01P	0.21	J	P
TOTAL HPCDD		446			90.5			575			55.2		
TOTAL HPCDF		125			27	J	G	167			14.4	J	G
TOTAL HXCDD		66.1			16.5	J	G	96.1			8.94	J	G
TOTAL HXCDF		62.1			13.1			77			9.87		
TOTAL PECDD		9.32			2.68	J	P	16			1.3	J	P
TOTAL PECDF		33			6.95			40.5			3.9		
TOTAL TCDD		0.0252	U		0.262	J	P	2.55	J	P	0.0174	U	
TOTAL TCDF		4.28			3.04			8.17			0.829	J	P

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-06-10-33714W

Date: June 29, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: Paula DiMattei (no copy) (for)

Subject: Tier II Organic Data Validation, SDG E1000284
Columbia Analytical Services
Tank Farms 4 and 5- Naval Station Newport, Newport, RI

PCDD/PCDF:

7/Sediments/	TF4-SD-901-0006	TF4-SD-902-0006	TF4-SD-903-0006
	TF4-SD-904-0006	TF4-SD-905-0006	TF4-SD-906-0006
	TF4-SD-DUP02-031810		
	(Field Duplicates: TF4-SD-902-0006/TF4-SD-DUP02-031810)		
1/Rinsate blank	TF4-SD-RB01-031710		

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDD/PCDF) analytical data for the samples in this SDG. The samples were collected at the Tank Farms 4 and 5 site at Naval Station Newport, Newport, Rhode Island on March 17-18, 2010. Sample collection and analysis was performed according to the requirements of the Quality Assurance Project Plan (QAPP) for the Data Gaps Investigation, Tank Farms 4 and 5, Naval Station Newport, Newport, Rhode Island, dated March 2010.

The dioxin/furan analysis was performed according to USEPA SW-846 Method 8290.

The project specific criteria listed in the site SAP were applied for data validation. The dioxin/furan (PCDD/PCDF) data validation was performed in accordance with the USEPA National Functional Guidelines for Chlorinated Dioxin/Furan data Review, September 2005.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed.

The data were evaluated based on the following parameters:

*	•	Data Completeness
*	•	Preservation and Technical Holding Times
*	•	Window Defining Mixture Performance
*	•	Initial and Continuing Calibrations
	•	Blanks
NA	•	Matrix Spike/Matrix Spike Duplicate

- Laboratory Duplicate
- * Ongoing Precision and Recovery (OPR)
- Labeled Compound Recoveries
- * Field Duplicates
- Target Compound Identification
- Compound Quantitation and Reported Quantitation Limits
- * Data Usability

* All criteria were met for this parameter.

Blanks

The rinsate blank TF4-SD-RB01-031710 was collected in association with the samples in this SDG. This rinsate blank was provided for informational purposes only.

The following table summarizes the level of blank contamination detected in the laboratory method blanks associated with the aqueous rinsate blank sample:

Compound	Maximum Concentration (pg/L)	Affected samples
OCDD	9.80	TF4-SD-RB01-0031710
Total HpCDD	2.66	
Total TCDF	2.85	

Blank actions were applied to the affected rinsate blank sample due to method blank contamination. The positive results in the samples affected by method blank contamination were qualified as not detected at the reported concentration (U).

Although the affected results were reported with raised reporting limits, project sensitivity goals were not impacted since there are no project action limits for the rinsate blank sample.

The following table summarizes the level of blank contamination detected in the laboratory method blanks associated with the sediment samples:

Compound	Maximum Concentration (ng/Kg)	Affected samples
1,,2,3,7,8,9-HxCDD	0.109	TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-DUP02-031810
1,2,3,4,6,7,8-HpCDF	0.144	TF4-SD-904-0006
1,2,3,4,7,8,9-HpCDF	0.160	TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-DUP02-031810
Total TCDF	2.85	TF4-SD-905-0006, TF4-SD-906-0006

Blank actions were applied to the affected sediment` samples due to method blank contamination. The positive results in the samples affected by method blank contamination were qualified as not detected

at the reported concentration (U). In cases where the reported result was identified as an EMPC, the "J" qualifier indicative of the uncertainty in the qualitative identification of this result was retained for an overall qualification of "UJ".

Although the 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,7,8,9-HpCDF results in the affected samples were reported with raised reporting limits, project sensitivity goals are not impacted since these raised reporting limits were below the project action limit for this compound.

Although the total TCDF results in the affected samples were reported with raised reporting limits, project sensitivity goals were not impacted since there are no project action limits for the total TCDF.

Laboratory Duplicate

The laboratory performed laboratory duplicate analysis on sample TF4-SD-901-0006. The following table summarizes the compounds that did not meet the laboratory duplicate relative percent difference (RPD) precision criterion of <50%.

Compound	RPD	Action	
		(+)	ND
1,2,3,4,6,7,8-HpCDD	73	J	
1,2,3,7,8-PeCDF	52	J	
1,2,3,4,6,7,8-HpCDF	70	J	
1,2,3,4,7,8,9-HpCDF	99	J	
OCDF	132	J	

The RPD QC criteria were not met for the compounds listed above; therefore, the precision project goals may be impacted. These compound results in sample TF4-SD-901-0006 are usable as estimated values.

Labeled Compound Recovery

The following table summarizes the labeled compounds that did not meet the recovery criteria of 40-135%.

Sample ID	13C-2,3,7,8-TCDF %R	Action*	
		(+)	ND
TF4-SD-904-0006	32	J	
TF4-SD-906-0006	34	J	
*Actions are applied to the 2,3,7,8-TCDF results in the affected samples.			

The %R QC criteria were not met for 13C-2,3,7,8-TCDF; therefore, the accuracy project goals may be impacted. The 2,3,7,8-TCDF results in affected samples are usable as estimated values.

Target Compound Identification

Several 2378-substituted isomers in most samples were reported as Estimated Maximum Potential Concentrations (EMPCs). An EMPC is defined as a detected response with a signal to noise ratio of ≥ 2.5 for both quantitation ions and having met all identification criteria with the exception of the ion abundance ratio.

Not all identification criteria were met for the reported EMPCs; therefore, project accuracy goals may be impacted. These results are usable as estimated values.

Compound Quantitation and Reported Quantitation Limits

The positive results for OCDD in samples TF4-SD-901-0006, TF4-SD-903-0006, and TF4-SD-904-0006 were qualified as estimated (J) due to the uncertainty in the quantitation as a result of the exceeded calibration range. Project accuracy goals may be impacted by this uncertainty; however, these results are usable as estimated values.

The non-detected results were reported at the calculated sample specific estimated detection limit (EDL). EDL are calculated based on the signal to noise ratio for each sample as specified in Method 8290

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data.

The project goals with respect to accuracy were met for the PCDD/PCDF data set with the following exceptions. The positive 2,3,7,8-TCDF results for samples TF4-SD-904-0006 and TF4-SD-906-0006 were qualified as estimated due to low labeled compound recoveries. Select PCDD/PCDF compounds were qualified as estimated (EMPC) since not all identification criteria were met. The positive OCDD results for samples TF4-SD-901-0006, TF4-SD-903-0006, and TF4-SD-904-0006 were qualified as estimated due to the exceeded calibration range. Although specific method criteria were not met in these instances, the affected positive results are usable as estimated values which may have a minor impact on data usability.

The project goals with respect to precision were met for the PCDD/PCDF data set with the following exceptions. Select PCDD/PCDF compounds were qualified as estimated due to laboratory duplicate RPD exceedances. Although specific method criteria were not met in these instances, the affected positive results are usable as estimated values which may have a minor impact on data usability.

The project goals with respect to sensitivity and completeness were met for the PCDD/PCDF data set. Data usability is not impacted with regards to sensitivity and completeness.

Tables: Data Summary Tables
Data Validation Qualifiers and Codes

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006			TF4-SD-901-0006-A			TF4-SD-902-0006			TF4-SD-902-0006-A		
SDG: E1000284	LAB_ID	E1000284-007			E1000284-007			E1000284-004			E1000284-004		
FRACTION: DIOX	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	61.9			61.9			71.6			71.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		6190	J	L				821					
1,2,3,4,6,7,8,9-OCDF		169	J	F				5.84					
1,2,3,4,6,7,8-HPCDD		203	J	F				22					
1,2,3,4,6,7,8-HPCDF		24.7	J	F				1.94	J	P			
1,2,3,4,7,8,9-HPCDF		2.65	J	FP				0.226	U	A			
1,2,3,4,7,8-HXCDD		1.74	J	P				0.29	J	P			
1,2,3,4,7,8-HXCDF		1.34	J	P				0.225	J	P			
1,2,3,6,7,8-HXCDD		4.7						0.731	J	P			
1,2,3,6,7,8-HXCDF		1.16	J	P				0.203	J	P			
1,2,3,7,8,9-HXCDD		4.07	J	P				0.686	J	P			
1,2,3,7,8,9-HXCDF		0.332	U					0.0343	U				
1,2,3,7,8-PECDD		0.83	J	P				0.184	J	P			
1,2,3,7,8-PECDF		0.272	J	FP				0.104	J	PW			
2,3,4,6,7,8-HXCDF		1.13	J	P				0.114	J	PW			
2,3,4,7,8-PECDF		0.261	J	P				0.0319	U				
2,3,7,8-TCDD		0.0398	U					0.0459	J	PW			
2,3,7,8-TCDF					0.536	J	P				0.19	J	P
TOTAL HPCDD		363						42.2					
TOTAL HPCDF		104						5.31					
TOTAL HXCDD		32.3						5.29					
TOTAL HXCDF		20						2.72	J	P			
TOTAL PECDD		4.38						0.385	J	P			
TOTAL PECDF		12						2.66	J	P			
TOTAL TCDD		0.421	J	P				0.0616	J	P			
TOTAL TCDF		5.59						1.71					

PROJ_NO: 00963	NSAMPLE	TF4-SD-903-0006			TF4-SD-903-0006-A			TF4-SD-904-0006			TF4-SD-904-0006-A		
SDG: E1000284	LAB_ID	E1000284-005			E1000284-005			E1000284-002			E1000284-002		
FRACTION: DIOX	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	48.8			48.8			69.9			69.9		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		2910	J	L				2290	J	L			
1,2,3,4,6,7,8,9-OCDF		8.03	J	P				31.2					
1,2,3,4,6,7,8-HPCDD		75.1						86.1					
1,2,3,4,6,7,8-HPCDF		2.74	J	P				12.6	U	A			
1,2,3,4,7,8,9-HPCDF		0.242	U	A				0.941	J	P			
1,2,3,4,7,8-HXCDD		0.497	J	P				1.14	J	P			
1,2,3,4,7,8-HXCDF		0.429	J	P				0.796	J	P			
1,2,3,6,7,8-HXCDD		1.09	J	P				2.93	J	P			
1,2,3,6,7,8-HXCDF		0.246	J	PW				0.727	J	P			
1,2,3,7,8,9-HXCDD		1.26	J	P				3.12	J	P			
1,2,3,7,8,9-HXCDF		0.0644	U					0.136	U				
1,2,3,7,8-PECDD		0.225	J	PW				0.665	J	P			
1,2,3,7,8-PECDF		0.0309	U					0.238	J	PW			
2,3,4,6,7,8-HXCDF		0.301	J	PW				0.477	J	PW			
2,3,4,7,8-PECDF		0.204	J	PW				0.193	J	P			
2,3,7,8-TCDD		0.0234	U					0.0966	J	PW			
2,3,7,8-TCDF					0.424	J	PW				0.108	UJ	NO1
TOTAL HPCDD		155						165					
TOTAL HPCDF		8.53						33.8					
TOTAL HXCDD		11.4						23.4					
TOTAL HXCDF		3.99	J					17.6					
TOTAL PECDD		1.5	J					3.08	J	P			
TOTAL PECDF		4.01	J					9.59					
TOTAL TCDD		0.0234	U					0.623	J	P			
TOTAL TCDF		4.12						3.84					

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006			TF4-SD-905-0006-A			TF4-SD-906-0006			TF4-SD-906-0006-A		
SDG: E1000284	LAB_ID	E1000284-003			E1000284-003			E1000284-001			E1000284-001		
FRACTION: DIOX	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/KG			NG/KG			NG/KG			NG/KG		
	PCT_SOLIDS	64.5			64.5			33.9			33.9		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		507						502					
1,2,3,4,6,7,8,9-OCDF		7.42	J	P				4.52	U	A			
1,2,3,4,6,7,8-HPCDD		20.6						14.6					
1,2,3,4,6,7,8-HPCDF		3.6	J	P				2.22	J	P			
1,2,3,4,7,8,9-HPCDF		0.229	UJ	AW				0.132	U	A			
1,2,3,4,7,8-HXCDD		0.259	J	PW				0.242	J	P			
1,2,3,4,7,8-HXCDF		0.278	J	P				0.249	J	P			
1,2,3,6,7,8-HXCDD		0.862	J	P				0.587	J	P			
1,2,3,6,7,8-HXCDF		0.211	J	P				0.129	J	PW			
1,2,3,7,8,9-HXCDD		0.789	U	A				0.572	U	A			
1,2,3,7,8,9-HXCDF		0.15	U					0.0631	U				
1,2,3,7,8-PECDD		0.201	J	P				0.0435	U				
1,2,3,7,8-PECDF		0.0762	J	P				0.106	J	PW			
2,3,4,6,7,8-HXCDF		0.201	J	PW				0.216	J	PW			
2,3,4,7,8-PECDF		0.0608	J	PW				0.164	J	P			
2,3,7,8-TCDD		0.0278	U					0.0465	U				
2,3,7,8-TCDF					0.0581	U					0.308	J	NO1 PW
TOTAL HPCDD		39						30.1					
TOTAL HPCDF		8.9						6.19	J	P			
TOTAL HXCDD		5.66						4.86	J	P			
TOTAL HXCDF		4.55						3.21	J	P			
TOTAL PECDD		0.768	J	P				0.0435	U				
TOTAL PECDF		1.9	J	P				1.69	J	P			
TOTAL TCDD		0.0278	U					0.0465	U				
TOTAL TCDF		1.67	U	A				2.79	U	A			

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP02-031810			TF4-SD-DUP02-031810-A		
SDG: E1000284	LAB_ID	E1000284-006			E1000284-006		
FRACTION: DIOX	SAMP_DATE	3/18/2010			3/18/2010		
MEDIA: SOIL	QC_TYPE	FD			FD		
	UNITS	NG/KG			NG/KG		
	PCT_SOLIDS	74.4			74.4		
	DUP_OF	TF4-SD-902-0006			TF4-SD-902-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		882					
1,2,3,4,6,7,8,9-OCDF		2.83	U	A			
1,2,3,4,6,7,8-HPCDD		16.7					
1,2,3,4,6,7,8-HPCDF		1.29	J	P			
1,2,3,4,7,8,9-HPCDF		0.19	U	A			
1,2,3,4,7,8-HXCDD		0.181	J	PW			
1,2,3,4,7,8-HXCDF		0.188	J	P			
1,2,3,6,7,8-HXCDD		0.574	J	P			
1,2,3,6,7,8-HXCDF		0.149	J	P			
1,2,3,7,8,9-HXCDD		0.528	U	A			
1,2,3,7,8,9-HXCDF		0.0329	U				
1,2,3,7,8-PECDD		0.125	J	P			
1,2,3,7,8-PECDF		0.0669	J	PW			
2,3,4,6,7,8-HXCDF		0.119	J	PW			
2,3,4,7,8-PECDF		0.0693	J	PW			
2,3,7,8-TCDD		0.0116	U				
2,3,7,8-TCDF					0.214	J	P
TOTAL HPCDD		32.1					
TOTAL HPCDF		3.42					
TOTAL HXCDD		3.69					
TOTAL HXCDF		2.87					
TOTAL PECDD		0.41	J	P			
TOTAL PECDF		1.85	J	P			
TOTAL TCDD		0.0116	U				
TOTAL TCDF		2.43					

PROJ_NO: 00963	NSAMPLE	TF4-SD-RB01-031710		
SDG: E1000284	LAB_ID	E1000284-008		
FRACTION: DIOX	SAMP_DATE	3/17/2010		
MEDIA: WATER	QC_TYPE	RB		
	UNITS	PG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
1,2,3,4,6,7,8,9-OCDD		21.3	U	A
1,2,3,4,6,7,8,9-OCDF		1.41	J	P
1,2,3,4,6,7,8-HPCDD		2.08	J	P
1,2,3,4,6,7,8-HPCDF		0.542	J	P
1,2,3,4,7,8,9-HPCDF		0.253	U	
1,2,3,4,7,8-HXCDD		0.111	U	
1,2,3,4,7,8-HXCDF		0.102	U	
1,2,3,6,7,8-HXCDD		0.0973	U	
1,2,3,6,7,8-HXCDF		0.0982	U	
1,2,3,7,8,9-HXCDD		0.106	U	
1,2,3,7,8,9-HXCDF		0.128	U	
1,2,3,7,8-PECDD		0.157	U	
1,2,3,7,8-PECDF		0.131	U	
2,3,4,6,7,8-HXCDF		0.11	U	
2,3,4,7,8-PECDF		0.129	U	
2,3,7,8-TCDD		0.189	U	
2,3,7,8-TCDF		0.241	U	
TOTAL HPCDD		4.34	U	A
TOTAL HPCDF		1.27	J	P
TOTAL HXCDD		0.0973	U	
TOTAL HXCDF		0.0982	U	
TOTAL PECDD		0.157	U	
TOTAL PECDF		0.129	U	
TOTAL TCDD		0.189	U	
TOTAL TCDF		0.938	U	A

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-10-3729W

Date: July 6, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/enc.)

To: Steve Parker (w/o enc.)

From: Jennifer Cardinal (no copy) JF (for)

Subject: Tier II Organic Data Validation, SDG J0478
Mitkem Laboratories
CTO 464, Tank Farms 4 and 5, Data Gaps Investigation, Naval Station Newport, Newport, Rhode Island

VOC/SVOC/PAH/Pesticides/PCB:

27/Sediments/	TF4-SD-901-0006	TF4-SD-902-0006
	TF4-SD-903-0006	TF4-SD-904-0006
	TF4-SD-905-0006	TF4-SD-906-0006
	TF4-SD-907-0006	TF4-SD-908-0006
	TF4-SD-909-0006	TF4-SD-910-0006
	TF4-SD-911-0006	TF4-SD-912-0006
	TF4-SD-DUP01-031710	TF4-SD-DUP02-031810
	TF5-SD-913-0006	TF5-SD-914-0006
	TF5-SD-915-0006	TF5-SD-916-0006
	TF5-SD-917-0006	TF5-SD-918-0006
	TF5-SD-919-0006	TF5-SD-920-0006
	TF5-SD-921-0006	TF5-SD-922-0006
	TF5-SD-923-0006	TF5-SD-924-0006
	TF5-SD-DUP01-031610	

(Field Duplicate pairs: TF4-SD-911-0006/TF4-SD-DUP01-031710, TF4-SD-902-0006/TF4-SD-DUP02-031810, TF5-SD-923-0006/TF5-SD-DUP01-031610)

1/Field Blank/	TF4-SD-FB01-031710
1/Rinsate Blank/	TF4-SD-RB01-031710

VOC:

3/Trip Blanks/	TF4-SD-TB01-031710	TF4-SD-TB02-031810
	TF5-SD-TB01-031610	

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polynuclear aromatic hydrocarbons (PAH), pesticide, and polychlorinated biphenyls (PCB) analytical data for the sediment samples in this SDG. The samples were collected from Tank Farms 4 and 5 as part of the Data Gaps Investigation at the Naval Station Newport, Newport, Rhode Island from March 16-18, 2010. Sample collection and analysis was performed

according to the requirements of the Sampling and Analysis Plan for the Data Gaps Investigation at Naval Station Newport, Newport, Rhode Island, Revision 3, dated March 2010.

The VOC and SVOC analyses were performed according to USEPA SW-846 Methods 8260B and 8270, respectively. The PAH analysis was performed according to USEPA SW-846 Method 8270 in the SIM mode. In addition, select SVOCs were analyzed in the SIM mode to achieve lower detection limits. (All semivolatile and PAH compounds were analyzed by the Full Scan mode for the field and rinsate blank samples). The pesticides and PCB analyses were performed according to USEPA SW-846 Methods 8081 and 8082, respectively.

The project specific criteria listed in the site SAP were applied for data validation. The VOC, SVOC, and PAH data validation was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996. The pesticides and PCB validation was performed in accordance with the Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part III, February 2004.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The data summary table with the header which identifies the fraction as "PAH" includes all analytes analyzed by USEPA SW-846 Method 8270 in the SIM mode.

The data were evaluated based on the following parameters:

- Data Completeness
- Preservation and Technical Holding Times
- * GC/MS Instrument Performance Check (Tuning)
- * Pesticide Degradation
- Initial and Continuing Calibrations
- Blanks
- Surrogate Compounds
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample/Laboratory Control Sample Duplicate
- Field Duplicates
- Analyte Identification/Quantitation
- Percent Solids
- Reporting Limits

* All criteria were met for this parameter.

Data Completeness

On June 2, 2010 the laboratory submitted their list of qualifier codes and definitions since it was not provided in the original data package. (See SDG J0477)

On June 2, 2010 the laboratory explained that positive results below the QL were not reported for SVOC SIM because of the limited mass spectral data acquired using SIM can lead to false positives. The same

applies to the reporting of pesticide and PCB results since many samples contain small peaks that are difficult to distinguish from the noise near the baseline. (However, on occasion, the laboratory will use professional judgment to report a positive below QL and above MDL (J flag) if they determine a peak is real). (See SDG J0477)

The quantitation limits for semivolatiles – full scan, semivolatiles – SIM, pesticides, and PCBs were the same for all the samples (with the exception of sample TF4-SD-906-0006 for semivolatiles – full scan and semivolatiles – SIM due to issue noted below). On June 3 and 7, 2010 the laboratory clarified that for sediments, the sample aliquot size is adjusted based on percent moisture to ensure that the quantitation limits are not elevated due to the moisture of the samples.

Semivolatiles - Full Scan/Semivolatiles – SIM

The laboratory noted that, due to sample matrix, sample TF4-SD-906-0006 had a final extract volume of 4 mL instead of 1 ml for the semivolatiles – full scan and semivolatiles – SIM samples.

Several semivolatiles – full scan and semivolatiles – SIM samples had an incorrect extraction date of 3/31/10 listed on the Form Is and in the preparation log book pages. The correct extraction date for these samples is 3/30/10. The internal chain of custody shows the samples removed from storage on 3/30/10. The extracts were concentrated and transferred to the instrument laboratory the next day, 3/31/10. Also, pesticide and PCB extractions were performed on 3/30/10 for the affected samples and semivolatile extractions are generally performed on the same day as pesticide and PCB extractions because it is more efficient to remove the sample jars from storage at the same time. Due to analyst error, the incorrect date was used when the report worksheet was being transcribed into the handwritten preparation logbook. n June 9, 2010 the laboratory resubmitted the Form Is for the affected samples as well as Forms 4s to show the correct extraction date of 3/30/10. In addition, the laboratory resubmitted the preparation logbook pages to correct the extraction date and resubmitted the case narrative to explain the incorrect dates documented on the logbook pages.

Semivolatiles – Full Scan

On June 3, 2010 the laboratory explained that there are two ICV results for benzaldehyde since the laboratory uses one ICV solution for every analyte except benzaldehyde and a separate solution for benzaldehyde alone. The ICV form combines the results of the two injections.

Semivolatiles – SIM

On June 3, 2010 the laboratory explained that the rinsate and field blank samples were not analyzed by the SIM mode since it was the laboratory's understanding that the reporting limits for the aqueous QC were sufficient using Full Scan and that SIM analysis was not required for aqueous QC associated with the sediments. No further action was taken.

Pesticides and PCBs

On June 3, 2010 the laboratory resubmitted the Form 10 for the pesticide and PCB analyses since the original forms did not include the calculation of RPD as required by the Method.

On June 4, 2010 the laboratory resubmitted the pesticide and PCB analytical sequences (Form 8s) to include the ICV standard since it was not provided on the original forms. (Note that the second source ICV standards for pesticides and PCBs do not contain the surrogates so the surrogate retention times are flagged with an "*". On June 9, 2010 the laboratory clarified that the TCX retention time noted on resubmitted page 2348R is most likely a small peak or carryover. Surrogates are added to the other initial calibration standards, and on occasion, the analyst may add them to the ICV solution as well. Since they are not from a second source, these would not be evaluated. In this case, since DCB was not detected, the TCX is most likely a spurious small peak.)

Volatiles

On June 4, 2010 and June 9, 2010 the laboratory submitted the volatiles ICV recovery forms since they were not provided in the original data package.

Preservation and Technical Holding Times

Pesticides

Sample TF4-SD-RB01-031710 was analyzed 9 days beyond the 40-day technical holding time criterion. The non-detected pesticide results for this sample are estimated (UJ) due the exceeded holding time criterion.

Although the method required holding time criterion was not met for sample TF4-SD-RB01-031710; the project accuracy goals are not impacted since there are no project action limits established for the rinsate blank sample. The non-detected pesticide results in sample TF4-SD-RB01-031710 are usable as estimated quantitation limits which may be biased low.

Initial and Continuing Calibrations

Volatiles

The following table summarizes the volatile compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Bromomethane	23.0		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710
Acetone	35.2, -26.1, 47.7	J	UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-921-0006, TF5-SD-922-0006, TF4-SD-907-0006RX
Methyl acetate	23.1		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710
1,2,4-Trichlorobenzene	34.2		UJ	All sediment samples and trip blanks
1,2,3-Trichlorobenzene	35.3		UJ	

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Dichlorodifluoromethane	-31.2, -20.6, -27.4, -38.7, -41.8		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF4-SD-TB01-031710, TF5-SD-TB01-031610, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-908-0006, TF4-SD-909-0006, TF5-SD-921-0006, TF5-SD-922-0006, TF4-SD-907-0006RX, TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP02-031810, TF4-SD-TB02-031810
Carbon disulfide	-21.4		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710
Bromoform	22.8		UJ	
1,1,2,2-Tetrachloroethane	22.7		UJ	
1,2-Dibromo-3-chloropropane	-20.6, -22.5		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710, TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP02-031810, TF4-SD-TB02-031810
1,1-Dichloroethene	22.1, 24.8		UJ	TF5-SD-913-0006, TF5-SD-914-000, TF5-SD-915-0006, TF5-SD-916-0006, TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP02-031810, TF4-SD-TB02-031810
2-Hexanone	-20.6		UJ	TF5-SD-913-0006, TF5-SD-914-000, TF5-SD-915-0006, TF5-SD-916-0006
1,1,2-Trichloro-1,2,2-trifluoromethane	-23.7		UJ	TF4-SD-TB01-031710, TF5-SD-TB01-031610, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-908-0006, TF4-SD-909-0006

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Benzene	25.1		UJ	TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP02-031810, TF4-SD-TB02-031810
1,2-Dichloropropane	23.9		UJ	
Tetrachloroethene	22.1		UJ	

The RSD and/or %D was above the QC limit for acetone, carbon disulfide, 1,2-dibromo-3-chloropropane 2-hexanone; therefore, the project accuracy goals may be impacted. The positive and non-detected acetone, carbon disulfide, 1,2-dibromo-3-chloropropane 2-hexanone results in the affected samples are usable as estimated values and estimated quantitation limits.

Although the RSD and/or %D was above the QC limit for bromomethane, methyl acetate, 1,2,4-trichlorobenzene, 1,2,3-trichlorobenzene, dichlorodifluoromethane, bromoform, 1,1,2,2-tetrachloroethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, benzene, 1,2-dichloropropane, and tetrachloroethene; the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits or there are no project action limits established for the affected compounds. The non-detected bromomethane, methyl acetate, 1,2,4-trichlorobenzene, 1,2,3-trichlorobenzene, dichlorodifluoromethane, bromoform, 1,1,2,2-tetrachloroethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, benzene, 1,2-dichloropropane, and tetrachloroethene results in the affected samples are usable as estimated quantitation limits.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Benzaldehyde	23.5, 30.2, 24.8, 24.9	J	UJ	All sediment samples and TF4-SD-FB01-031710, TF4-SD-RB01-031710
2,4-Dimethylphenol	42.0		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710
Hexachlorocyclopentadiene	37.7, 41.8		UJ	
2,4-Dinitrophenol	24.7		UJ	
Pentachlorophenol	29.9		UJ	
Dibenzo(a,h)anthracene	22.3		UJ	
Atrazine	28.3		UJ	
4-Nitrophenol	-31.8, -25.3		UJ	All sediment samples
Nitrobenzene	-36.7		UJ	TF4-SD-907-0006, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006,

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Nitrobenzene	-36.7		UJ	TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-921-0006, TF5-SD-922-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610

Although the RSD and/or %D was above the QC limit for benzaldehyde, 2,4-dimethylphenol, hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol, dibenzo(a,h)anthracene, atrazine, 4-nitrophenol, and nitrobenzene; the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits and there are no project action limits established for the field and rinsate blank samples. The positive and non-detected benzaldehyde, 2,4-dimethylphenol, hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol, dibenzo(a,h)anthracene, atrazine, 4-nitrophenol, and nitrobenzene results in the affected samples are usable as estimated values and estimated quantitation limits.

The following table summarizes the semivolatile – full scan compounds that failed to meet the initial calibration verification (ICV) recovery criteria of 80-120%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
4-Chloroaniline	59.9, 61.5		UJ	All sediment samples and TF4-SD-FB01-031710, TF4-SD-RB01-031710
1,1'-Biphenyl	75.6		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710
1,4-Dioxane	0.0		UR	
Acetophenone	79.3		UJ	

Although initial calibration verification recoveries for 4-chloroaniline, 1,1'-biphenyl, and acetophenone were below the QC limit, the project accuracy goals are not impacted affected sample results are much lower than the project action limits and there are no project action limits established for the field and rinsate blank samples. The non-detected 4-chloroaniline, 1,1'-biphenyl, and acetophenone results in the affected samples are usable as estimated quantitation limits which may be biased low.

The was no recovery for 1,4-dioxane in the initial calibration verification. Therefore, the non-detected 1,4-dioxane results in the rinsate and field blank sample are rejected (UR). These results are not usable for project decisions. The data completeness goals may be impacted.

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM compounds that failed to meet the initial calibration (IC) criterion of %RSD <20% or the continuing calibration (CC) criterion of %D <20%:

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
Benzo(a)anthracene	32.2, 36.7	J		TF5-SD-913-0006, TF5-SD-914-000, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-920-0006, TF5-SD-923-0006, TF5-SD-DUP01-031610, TF5-SD-919-0006DL, TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810
Chrysene	24.7	J		TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810, TF5-SD-916-0006DL, TF5-SD-918-0006DL, TF5-SD-919-0006DL, TF5-SD-DUP01-031610
Benzo(b)fluoranthene	30.4, 46.9	J		TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810, TF5-SD-916-0006DL, TF5-SD-917-0006DL, TF5-SD-918-0006DL, TF5-SD-919-0006DL, TF5-SD-DUP01-031610, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-920-0006
4-Chloro-3-methylphenol	22.9		UJ	TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-921-0006
Benzo(k)fluoranthene	-23.1, 20.9	J		TF5-SD-913-0006, TF5-SD-914-000, TF5-SD-915-0006, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-920-0006, TF4-SD-912-0006

Compound	%RSD or %D	Action		Affected Samples
		(+)	NDs	
2-Methylphenol	21.2, 38.3	J	UJ	TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810, TF5-SD-922-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610, TF4-SD-912-0006
Pentachlorophenol	27.0		UJ	TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810, TF5-SD-922-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610
2,4-Dimethylphenol	-31.5		UJ	TF4-SD-912-0006
2,3,4,6-Tetrachlorophenol	27.1		UJ	

Although the %D was above the QC limit for 4-chloro-3-methylphenol, 2-methylphenol, 2,4-dimethylphenol, and 2,3,4,6-tetrachlorophenol, the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits, and there are no project action limits established for 4-chloro-3-methylphenol for the sediment samples. The positive and non-detected 4-chloro-3-methylphenol, 2-methylphenol, 2,4-dimethylphenol, and 2,3,4,6-tetrachlorophenol results in the affected samples are usable as estimated values and estimated quantitation limits.

The RSD and/or %D were above the QC limit for benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and pentachlorophenol; the project accuracy goals may be impacted. The positive and non-detected benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and pentachlorophenol results in the affected samples are usable as estimated values and estimated quantitation limits.

The following table summarizes the semivolatile – SIM compounds that failed to meet the initial calibration verification recovery criteria of 80-120%:

Compound	%R	Action		Affected Samples
		(+)	NDs	
Atrazine	56.9, 64.4	J	UJ	All sediment samples
2-Methylphenol	124.3	J		TF4-SD-901-0006, TF4-SD-912-0006

Although initial calibration verification recoveries for atrazine and 2-methylphenol were outside the QC limits, the project accuracy goals are not impacted since the affected sample results are much lower than the

project action limits. The positive and non-detected atrazine results in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low. The positive 2-methylphenol results in the affected samples are usable as estimated values which may be biased high.

Pesticides

The following table summarizes the pesticide compound that failed to meet the continuing calibration (CC) criterion of %D <20:

Compound	%D Column 1/Column 2	Action		Affected Sample
		(+)	NDs	
4,4'-DDE	-31.0 / -	J		TF4-SD-910-0006

-Criterion met

The %D was outside of the QC limits for 4,4'-DDE; therefore, the project accuracy goals may be impacted. The positive 4,4'-DDE result in the affected sample is usable as an estimated value.

Blanks

Volatiles

The following table summarizes the maximum level of blank contamination detected in the method blanks and the affected samples:

Compound	Type of Blank	Max. Conc. (µg/kg)	Action Level (µg/kg)	Affected Samples
1,4-Dichlorobenzene	Method	1.6	8.0	TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-916-0006, TF5-SD-TB01-031610

Blank actions are applied to the affected sediment and trip blank samples due to 1,4-dichlorobenzene method blank contamination. The 5x rule applies to 1,4-dichlorobenzene to determine the blank action level. The positive results below the blank action levels and below the quantitation limit are changed to non-detected values (U) at the quantitation limit.

Although 1,4-dichlorobenzene contamination was found in the method blank; the project sensitivity goals are not impacted since the affected sample results are much lower than the project action limit. The results in the affected samples are usable as non-detected values.

Surrogate Compounds

Volatiles

The following samples had a surrogate spike recovery outside of the recovery limits:

Sample	Surrogate	% Recovery	QC Limits	Action	
				(+)	NDs
TF5-SD-917-0006	Bromofluorobenzene	75	77-111	J	UJ
TF5-SD-918-0006		75		J	UJ
TF5-SD-919-0006		75		J	UJ
TF5-SD-920-0006		75		J	UJ
TF5-SD-923-0006		71		J	UJ
TF5-SD-924-0006		71		J	UJ
TF5-SD-DUP01-031610		70		J	UJ
TF4-SD-912-0006		65		J	UJ
TF4-SD-DUP01-031710		68		J	UJ
TF4-SD-908-0006		70			UJ
TF4-SD-909-0006		71		J	UJ
TF5-SD-921-0006		76		J	UJ
TF5-SD-922-0006		75		J	UJ
TF4-SD-907-0006RX		72		J	UJ
TF4-SD-911-0006		75		J	UJ
TF4-SD-906-0006		74		J	UJ
TF4-SD-901-0006		76		J	UJ
TF4-SD-902-0006		75			UJ
TF4-SD-DUP02-031810		76			UJ
TF4-SD-TB02-031810		73			UJ

The surrogate bromofluorobenzene recovered outside of the QC limits in the sample listed above. The positive and non-detected results are qualified as estimated (J, UJ) in the affected samples due to low surrogate recoveries.

The surrogate recovery QC criteria were not met for bromofluorobenzene; therefore, the project accuracy goals may be impacted. The positive and non-detected volatiles results in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low.

PCB

The following samples had a surrogate spike recovery outside of the recovery limits:

Sample	Surrogate	Column 1 % Rec.	Column 2 % Rec.	QC Limits	Action	
					(+)	NDs
TF4-SD-FB01-031710	DCB	26	25	40-135		UJ
TF4-SD-RB01-031710		31	27			UJ
TF5-SD-920-0006		-	58	60-125	J (+) from Column 2	
TF5-SD-922-0006		182	39		J	UJ
TF5-SD-924-0006		-	51		J (+) from Column 2	
TF4-SD-912-0006		55	57			UJ
TF4-SD-DUP01-031710		56	56			UJ

Sample	Surrogate	Column 1 % Rec.	Column 2 % Rec.	QC Limits	Action	
					(+)	NDs
TF4-SD-907-0006		57	55			UJ
TF4-SD-910-0006		43	42			UJ

The surrogate recovery QC criteria were not met for decachlorobiphenyl (DCB); therefore, the project accuracy goals may be impacted. However, the project accuracy goals are not impacted for the rinsate and field blank samples since there are no project action limits established for those samples. The positive and non-detected Aroclor results in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low. (However, the bias for sample TF5-SD-922-0006 results is indeterminate).

Internal Standards

Volatiles

The following table summarizes the volatile internal standard that failed to meet the acceptance criteria:

Internal Standard	IS Area	Acceptable Range	Action		Affected Samples
			(+)	NDs	
1,4-Dichlorobenzene-d4	138867	146203-584812		UJ	TF5-SD-923-0006
	130702			UJ	TF5-SD-924-0006
	120875			UJ	TF5-SD-DUP01-031610
	94548			UJ	TF4-SD-912-0006
	120296			UJ	TF4-SD-DUP01-031710
	122649			UJ	TF4-SD-908-0006
	131095			UJ	TF4-SD-909-0006
	150964	151756-607022		UJ	TF5-SD-922-0006
	145578			UJ	TF4-SD-907-0006RX
	143582	143596-574384		UJ	TF4-SD-906-0006

The internal standard areas of 1,4-dichlorobenzene-d4 failed to meet the acceptable range for the samples listed above. All non-detected results for the associated compounds are estimated (UJ) in the affected samples due to poor internal standard performance.

The target compounds associated with 1,4-dichlorobenzene-d4 are 1,1,2,2-tetrachloroethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dibromo-3-chloropropane, 1,2,4-trichlorobenzene, and 1,2,3-trichlorobenzene.

The QC criteria were not met for the internal standard areas of 1,4-dichlorobenzene-d4 for the above samples; therefore, the project accuracy goals may be impacted for the compounds associated with this internal standard. The non-detected results in the affected samples are usable as estimated quantitation limits.

Matrix Spike/Matrix Spike Duplicate

Volatiles

The matrix spike/matrix spike duplicate (MS/MSD) results for samples TF5-SD-917-0006 and TF4-SD-901-0006 recovered the majority of the volatile compounds below the compound-specific recovery limits and above the relative percent difference QC limits. All positive results are estimated (J) and all non-detected results are estimated (UJ) in samples TF5-SD-917-0006 and TF4-SD-901-0006 due to low MS/MSD recoveries and poor MS/MSD precision.

The matrix spike/matrix spike duplicate recoveries for the majority of the volatile compounds did not meet the QC limits; therefore, the project accuracy goals may be impacted. The positive and non-detected results in samples TF5-SD-917-0006 and TF4-SD-901-0006 are usable as estimated values and estimated quantitation limits which may be biased low.

The matrix spike/matrix spike duplicate relative percent differences for the majority of the volatile compounds did not meet the QC limits; therefore, the project precision goals may be impacted. The positive and non-detected results in samples TF5-SD-917-0006 and TF4-SD-901-0006 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan matrix spiking relative percent differences (RPDs) that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

TF5-SD-917-0006				
Compound	MS/MSD RPD	QC Limits	Action	
		RPD	(+)	ND
3,3'-Dichlorobenzidine	59	40		UJ

Although the MS/MSD RPD criterion was not met for 3,3'-dichlorobenzidine, the project precision goals are not impacted since the affected sample result is much lower than the project action limit. The non-detected 3,3'-dichlorobenzidine result in sample TF5-SD-917-0006 is usable as an estimated quantitation limit for which the bias is indeterminate.

The following table summarizes the semivolatile – full scan matrix spiking relative percent differences (RPDs) that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

TF4-SD-901-0006				
Compound	MS/MSD RPD	QC Limits	Action	
		RPD	(+)	ND
4-Chloroaniline	45	40		UJ

Although the MS/MSD RPD criterion was not met for 4-chloroaniline, the project precision goals are not impacted since the affected sample result is much lower than the project action limit. The non-detected 4-chloroaniline result in sample TF4-SD-901-0006 is usable as an estimated quantitation limit for which the bias is indeterminate.

Semivolatiles - SIM

The following table summarizes the semivolatile – SIM matrix spiking recoveries and relative percent differences (RPDs) that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

TF5-SD-917-0006						
Compound	MS/MSD %REC	MS/MSD RPD	QC Limits		Action	
			%REC	RPD	(+)	ND
Phenanthrene	28 / -42	-963	38-108	40	J	
Benzo(a)anthracene	18 / -28	-878	39-111	40	J	
Chrysene	28 / -39	-206	36-112	40	J	
Benzo(k)fluoranthene	-190 / -224	-16	30-133	40	J	
Benzo(a)pyrene	-7 / -76	-165	43-119	40	J	
Indeno(1,2,3-cd)pyrene	17 / -39	-518	48-119	40	J	
Benzo(g,h,i)perylene	7 / -57	-253	45-166	40	J	

-Criterion met

The MS/MSD RPD criterion was not met for phenanthrene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene; therefore, the project precision goals may be impacted. The positive phenanthrene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results in sample TF5-SD-917-0006 are usable as estimated values for which the bias is indeterminate.

The MS/MSD recovery criteria were not met for phenanthrene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene; therefore, the project accuracy goals may be impacted. The positive phenanthrene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene results in sample TF5-SD-917-0006 are usable as estimated values which may be biased low.

The following table summarizes the semivolatile – SIM matrix spiking recoveries and relative percent differences (RPDs) that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

TF4-SD-901-0006						
Compound	MS/MSD %REC	MS/MSD RPD	QC Limits		Action	
			%REC	RPD	(+)	ND
Atrazine	39 / -	41	45-135	40		UJ

TF4-SD-901-0006						
Compound	MS/MSD %REC	MS/MSD RPD	QC Limits		Action	
			%REC	RPD	(+)	ND
2-Chlorophenol	- / -	41	-	40		UJ
2-Methylphenol	- / -	53	-	40	J	
2,4-Dichlorophenol	- / -	44	-	40		UJ
Fluoranthene	- / 124	-	41-117	-	J	
Chrysene	- / -	65	-	40	J	
Benzo(a)pyrene	- / -	42	-	40	J	
Indeno(1,2,3-cd)pyrene	- / -	49	-	40	J	
Dibenzo(a,h)anthracene	- / -	50	-	40	J	
Benzo(g,h,i)perylene	- / -	54	-	40	J	
2,3,4,6-Tetrachlorophenol	- / -	54	-	40		UJ

-Criterion met

The MS/MSD RPD criterion was not met for benzo(a)pyrene and dibenzo(a,h)anthracene; therefore, the project precision goals may be impacted. The positive benzo(a)pyrene and dibenzo(a,h)anthracene results in sample TF4-SD-901-0006 are usable as estimated values for which the bias is indeterminate.

Although MS/MSD RPD criterion was not met for atrazine, 2-chlorophenol, 2-methylphenol, 2,4-dichlorophenol, chrysene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, and 2,3,4,6-tetrachlorophenol; the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The positive and non-detected atrazine, 2-chlorophenol, 2-methylphenol, 2,4-dichlorophenol, chrysene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, and 2,3,4,6-tetrachlorophenol results in sample TF5-SD-901-0006 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

Although the MS/MSD recovery criteria were not met for atrazine and fluoranthene, the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits. The non-detected atrazine result in sample TF4-SD-901-0006 is usable as an estimated quantitation limits which may be biased low. The positive fluoranthene result in sample TF4-SD-901-0006 is usable as an estimated value which may be biased high.

Pesticides

The matrix spike/matrix spike duplicate (MS/MSD) results for sample TF5-SD-917-0006 recovered the majority of the pesticide compounds below the compound-specific recovery limits and select pesticide compounds above the relative percent difference QC limits. All positive results are estimated (J) and all non-detected results are estimated (UJ) in sample TF5-SD-917-0006 due to low MS/MSD recoveries and poor MS/MSD precision.

The matrix spike/matrix spike duplicate recoveries for the majority of the pesticide compounds did not meet the QC limits; therefore, the project accuracy goals may be impacted. The positive and non-

detected results in sample TF5-SD-917-0006 are usable as estimated values and estimated quantitation limits which may be biased low.

The matrix spike/matrix spike duplicate relative percent differences for select pesticide compounds did not meet the QC limits; therefore, the project precision goals may be impacted. The positive and non-detected results in sample TF5-SD-917-0006 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

The following table summarizes the pesticide matrix spiking recoveries and relative percent differences (RPDs) that did not meet the statistically derived laboratory QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

TF4-SD-901-0006						
Compound	MS/MSD %REC (C1 MS/MSD, C2 MS/MSD)	MS/MSD RPD (C1, C2)	QC Limits		Action	
			%REC	RPD	(+)	ND
Heptachlor epoxide	52 / -, 57 / 60	42, -	65-130	30		UJ
Dieldrin	54 / 62, 60 / -	-, -	65-125	-		UJ
4,4'-DDE	60 / 62, 57 / 57	-, -	70-125	-		UJ
Endrin	57 / -, 60 / -	-, -	60-135	-		UJ
Alpha-chlordane	51 / 44, 53 / 58	-, -	65-120	-		UJ
Gamma-chlordane	44 / 49, 45 / 48	-, -	65-125	-		UJ
Beta-BHC	- / 151, 34 / 39	67, -	60-125	30		UJ
4,4'-DDD	- / 985, - / -	171, 48	30-135	30		UJ

-Criterion met
C1 = Column 1
C2 = Column 2

Although the MS/MSD RPD criterion was not met for heptachlor epoxide, beta-BHC, and 4,4'-DDD; the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The non-detected heptachlor epoxide, beta-BHC, and 4,4'-DDD results in sample TF4-SD-901-0006 are usable as estimated quantitation limits for which the bias is indeterminate.

Although the MS/MSD recovery criteria were not met for heptachlor epoxide, alpha-chlordane, gamma-chlordane, beta-BHC, and 4,4'-DDD, the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits. The non-detected heptachlor epoxide, alpha-chlordane, gamma-chlordane, beta-BHC, and 4,4'-DDD results in sample TF4-SD-901-0006 are usable as estimated quantitation limits which may be biased low.

The MS/MSD recovery criteria were not met for dieldrin, 4,4'-DDE, and endrin; therefore, the project accuracy goals may be impacted. The non-detected dieldrin, 4,4'-DDE, and endrin results in sample TF4-SD-901-0006 are usable as estimated quantitation limits which may be biased low.

Laboratory Control Sample/Laboratory Control Sample Duplicates

Volatiles

The following table summarizes the volatile compounds that failed to meet the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) relative percent difference (RPD) QC limits:

Compound	RPD	RPD QC Limits	Action		Affected Samples
			(+)	NDs	
Acetone	51	40	J	UJ	TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610, TF4-SD-TB01-031710, TF5-SD-TB01-031610
2-Butanone	42	40		UJ	

The LCS/LCSD RPD criterion was not met for acetone; therefore, the project precision goals may be impacted. The positive and non-detected acetone results in the affected samples are usable as estimated values and estimated quantitation limits which for which the bias is indeterminate.

Although the LCS/LCSD RPD criterion was not met for 2-butanone, the project precision goals are not impacted since the affected sample results are much lower than the project action limit. The non-detected 2-butanone results in the affected samples are usable as estimated quantitation limits for which the bias is indeterminate.

Semivolatiles – Full Scan

The following table summarizes the semivolatile – full scan compounds that failed to meet the statistically derived laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
2,4-Dimethylphenol	23 / 21	30-110		UJ	TF4-SD-FB01-031710, TF4-SD-RB01-031710
Benzaldehyde	41	50-150	J	UJ	TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810

Although the LCS/LCSD recovery criteria were not met for 2,4-dimethylphenol and benzaldehyde; the project accuracy goals are not impacted for benzaldehyde since the affected sample results are much lower than the project action limit and since there are no project action limits established for 2,4-dimethylphenol for the rinsate and field blank samples. The positive and non-detected 2,4-dimethylphenol and benzaldehyde results in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low.

Semivolatiles – SIM

The following table summarizes the semivolatile – SIM compounds that failed to meet the statistically derived laboratory control sample (LCS) recovery QC limits:

Compound	% Rec.	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
Atrazine	27	45-135	J	UJ	TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-921-0006, TF5-SD-922-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610
Benzo(b) fluoranthene	139	39-128	J		TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-903-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-909-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF4-SD-DUP02-031810

-Criterion met

The LCS recovery criteria were not met for benzo(b)fluoranthene; therefore, the project accuracy goals may be impacted. The positive benzo(b)fluoranthene results in the affected samples are usable as estimated values which may be biased high.

Although the LCS recovery criteria were not met for atrazine; the project accuracy goals are not impacted since the affected sample results are much lower than the project action limits. The positive and non-detected atrazine results in the affected samples are usable as estimated values and estimated quantitation limits which may be biased low.

Pesticides

The following table summarizes the pesticide compound that failed to meet the statistically derived laboratory control sample (LCS) recovery QC limits:

Compound	% Rec. (C1/C2)	% Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
4,4'-DDE	59/met	70-125	J		TF4-SD-910-0006

C1 = Column 1 C2 = Column 2

The LCS recovery criteria were not met for 4,4'-DDE; therefore, the project accuracy goals may be impacted. The positive 4,4'-DDE result in the affected sample is usable as an estimated value which may be biased low.

Field Duplicates

Volatiles

The field duplicate pair TF5-SD-923-0006/TF5-SD-DUP01-031610 did not meet the field duplicate QC criteria of RPD <50% for the following compound:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
Acetone	18	8.8	67	J	

While the sample result is greater than 2x the quantitation limit (QL), the duplicate result is less than 2x the QL.

The field duplicate QC criteria were not met for acetone; therefore, the project precision goals may be impacted. The positive acetone results in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 are usable as estimated values for which the bias is indeterminate.

The field duplicate pair TF4-SD-911-0006/TF4-SD-DUP01-031710 did not meet the field duplicate QC criteria of RPD <50% for the following compound:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
Acetone	170	71	82	J	

The field duplicate QC criteria were not met for acetone; therefore, the project precision goals may be impacted. The positive acetone results in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 are usable as estimated values for which the bias is indeterminate.

Semivolatiles - SIM

The field duplicate pair TF5-SD-923-0006/TF5-SD-DUP01-031610 did not meet the field duplicate QC criteria of RPD <50% for the following compounds:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
Acenaphthene	15	8.7	53	J	
Anthracene	51	29	55	J	
Benzo(k)fluoranthene	500*	220	78	J	
Chrysene	550*	250	75	J	
Dibenzo(a,h)anthracene	110	64	53	J	
Fluorene	25	15	50	J	

*Result is reported from the semivolatiles - full scan analysis. The appropriate results are qualified accordingly.

Although the field duplicate QC criteria were not met for acenaphthene and fluorene, the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The positive acenaphthene and fluorene results in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 are usable as estimated values for which the bias is indeterminate.

The field duplicate QC criteria were not met for anthracene, benzo(k)fluoranthene, chrysene, and dibenzo(a,h)anthracene; therefore, the project precision goals may be impacted. The positive anthracene, benzo(k)fluoranthene, chrysene, and dibenzo(a,h)anthracene results in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 are usable as estimated values for which the bias is indeterminate.

The field duplicate pair TF4-SD-911-0006/TF4-SD-DUP01-031710 did not meet the field duplicate QC criteria of RPD <50% for the following compounds:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
Acenaphthene	ND	10	NC	J	UJ
Acenaphthylene	3.3	8.5	88	J	
Anthracene	6.7	35	136	J	
Benzo(a)anthracene	24	120	133	J	
Benzo(a)pyrene	30	130	125	J	
Benzo(b)fluoranthene	35	150	124	J	
Benzo(g,h,i)perylene	22	120	138	J	
Benzo(k)fluoranthene	32	190	142	J	
Chrysene	33	150	128	J	
Dibenzo(a,h)anthracene	7	43	144	J	
Fluoranthene	47	220	130	J	
Fluorene	3.4	16	130	J	
Indeno(1,2,3-cd)pyrene	19	100	136	J	
Naphthalene	ND	7.2	NC	J	UJ
Phenanthrene	27	150	139	J	
Pyrene	38	190	133	J	

NC – Not calculated
ND – Not detected

While the sample results for acenaphthene and naphthalene are not detected, the duplicate results are greater than 2x the QL. Also, while the acenaphthylene sample result is at the QL, the duplicate result is greater than 2x the QL.

Although the field duplicate QC criteria were not met for acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, and phenanthrene; the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The positive and non-detected acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene,

naphthalene, and phenanthrene results in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

The field duplicate QC criteria were not met for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and pyrene; therefore, the project precision goals may be impacted. The positive benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and pyrene results in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 are usable as estimated values for which the bias is indeterminate.

The field duplicate pair TF4-SD-902-0006/TF4-SD-DUP02-031810 did not meet the field duplicate QC criteria of RPD <50% for the following compounds:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
2-Methylnaphthalene	7.6	ND	NC	J	UJ
Benzo(a)anthracene	18	36	67	J	
Benzo(a)pyrene	16	31	64	J	
Benzo(b)fluoranthene	18	32	56	J	
Benzo(k)fluoranthene	23	43	61	J	
Chrysene	22	49	76	J	
Dibenzo(a,h)anthracene	4.6	8.6	61	J	
Fluoranthene	34	65	63	J	
Indeno(1,2,3-cd)pyrene	12	21	55	J	
Phenanthrene	19	39	69	J	

NC – Not calculated
ND – Not detected

While the duplicate result for 2-methylnaphthlane was not detected, the sample result was greater than 2x the QL.

Although the field duplicate QC criteria were not met for 2-methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene; the project precision goals are not impacted since the affected sample results are much lower than the project action limits. The positive and non-detected 2-methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene results in samples TF4-SD-902-0006 and TF4-SD-DUP02-031810 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

The field duplicate QC criteria were not met for benzo(a)pyrene; therefore, the project precision goals may be impacted. The positive benzo(a)pyrene results in samples TF4-SD-902-0006 and TF4-SD-DUP02-031810 are usable as estimated values for which the bias is indeterminate.

Pesticides

The field duplicate pair TF4-SD-902-0006/TF4-SD-DUP02-031810 did not meet the field duplicate QC criteria for the following compound:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
Endrin ketone	40	ND	NC	J	UJ

NC – Not calculated
ND – Not detected

While the duplicate result is not detected, the sample result is greater than 2x the quantitation limit (QL = 33 µg/kg).

Although the field duplicate QC criteria were not met for endrin ketone, the project precision goals are not impacted since the affected sample results are much lower than the project action limit. The positive and non-detected endrin ketone results in samples TF4-SD-902-0006 and TF4-SD-DUP02-031810 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

PCBs

The field duplicate pair TF5-SD-923-0006/TF5-SD-DUP01-031610 did not meet the field duplicate QC criteria for the following Aroclor:

Analyte	Sample Result (µg/kg)	Duplicate Result (µg/kg)	RPD	Action	
				(+)	NDs
Aroclor 1260	ND	92	NC	J	UJ

NC – Not calculated
ND – Not detected

While the sample result is not detected, the duplicate result is greater than 2x the quantitation limit (QL = 33 µg/kg).

The field duplicate QC criteria were not met for Aroclor 1260; therefore, the project precision goals may be impacted. The positive and non-detected Aroclor 1260 results in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 are usable as estimated values and estimated quantitation limits for which the bias is indeterminate.

<u>Analyte Identification/Quantitation</u>

Pesticides

The %RPD between the results of analytical columns 1 and 2 exceeded the 40% RPD QC criterion for the compounds in the following samples:

Sample	Analyte	%RPD	Action
			(+)
TF5-SD-917-0006	4,4'-DDD	54.9	J
TF5-SD-922-0006	4,4'-DDD	147.3	UJ* at 51
	Alpha-chlordane	154.1	UJ* at 79
	Beta-BHC	165.1	UJ* at 91

Sample	Analyte	%RPD	Action (+)
TF5-SD-922-0006	Gamma-chlordane	45.3	J
	Methoxychlor	169.2	UJ* at 325
TF5-SD-DUP01-031610	4,4'-DDD	72.0	J
	Endrin aldehyde	40.7	J

*Professional judgment was used to raise the result to the higher of the two results and qualify the result as estimated, non-detected (UJ).

The analyte quantitation relative percent differences exceeded the 40% RPD QC limit for 4,4'-DDD, gamma-chlordane, and endrin aldehyde in the samples listed above; therefore, the project accuracy goals may be affected due to analytical interferences detected in the dual column analysis. The positive results for the affected compounds in the affected samples are usable as estimated values.

The analyte quantitation relative percent differences exceeded the 100% RPD QC limit for 4,4'-DDD, alpha-chlordane, and beta-BHC in sample TF5-SD-922-0006; therefore, the project sensitivity goals may be affected since the affected results exceed the project action limits for the affected compounds. The estimated, non-detected values for 4,4'-DDD, alpha-chlordane, and beta-BHC in sample TF5-SD-922-0006 are usable as estimated quantitation limits.

Although the analyte quantitation relative percent differences exceeded the 100% RPD QC limit for methoxychlor in sample TF5-SD-922-0006, the project sensitivity goals are not impacted since the affected sample result is much lower than the project action limit. The estimated, non-detected value for the methoxychlor in sample TF5-SD-922-0006 is usable as an estimated quantitation limit.

PCBs

The %RPD between the results of analytical columns 1 and 2 exceeded the 40% RPD QC criterion for the compounds in the following samples:

Sample	Analyte	%RPD	Action (+)
TF5-SD-922-0006	Aroclor 1260	45.7	J
TF5-SD-924-0006	Aroclor 1260	47.0	J
TF5-SD-DUP01-031610	Aroclor 1260	90.8	J

The analyte quantitation relative percent differences exceeded the 40% RPD QC limit for Aroclor 1260 in the samples listed above; therefore, the project accuracy goals may be affected due to analytical interferences detected in the dual column analysis. The positive Aroclor 1260 results for the affected compounds in the affected samples are usable as estimated values.

<u>Percent Solids</u>

Volatiles

The percent solids were below 30% for sample TF5-SD-918-0006. Professional judgment was applied to estimate only the results for target compounds which have PALs below QLs. The positive and non-

detected 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, acetone, carbon disulfide, cis-1,3-dichloropropene, and trans-1,3-dichloropropene results are estimated (J, UJ) in the affected sample since the project action limits are exceeded by the elevated quantitation limits for these analytes in sample TF5-SD-918-0006. The project sensitivity goals may be impacted. The positive and non-detected 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, acetone, carbon disulfide, cis-1,3-dichloropropene, and trans-1,3-dichloropropene results in sample TF5-SD-918-0006 are usable as estimated values and estimated quantitation limits.

Reporting Limits

The laboratory reported all non-detected results down to the quantitation limit (QL). The positive volatiles and semivolatiles – full scan results below the QL and above the method detection limit (MDL) are estimated (J) due to uncertainty below the QL. (J Flags were not utilized for the semivolatiles – SIM, pesticide, and PCB fractions. See note in Data Completeness section).

Volatiles

Not all the project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs due to the percent moisture of the samples. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except for 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, acetone, carbon disulfide, cis-1,3-dichloropropene, and trans-1,3-dichloropropene. Data usability may be impacted for these target compounds.

There are no project action limits established for the field blank and rinsate blank samples.

Results for 1,4-dichlorobenzene were changed to non-detected values in select samples due to blank contamination. As discussed above in the Blanks section, data usability is not impacted.

Semivolatiles – Full Scan/Semivolatiles – SIM

Select semivolatile analytes were analyzed by both the Full Scan and SIM modes. The SIM results were selected for reporting, unless otherwise noted, since the SIM mode provides lower detection limits.

Semivolatiles – Full Scan

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs except for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol. Also, all QLs for sample TF4-SD-906-0006 exceeded the PQL goals and laboratory-specific QLs due an extract volume of 4 mL. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except for 4,6-dinitro-2-methylphenol, bis(2-chloroethyl)ether, and n-nitrosodi-n-propylamine. Data usability may be impacted for these target compounds. Also, the project action limits were achieved for all analytes in sample TF4-SD-906-0006 except for 1,1'-biphenyl, 2,4-dinitrotoluene, 3,3'-dichlorobenzidine, 4,6-dinitro-2-methylphenol, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, diethyl phthalate, hexachloroethane, n-nitrosodi-n-propylamine, and 3-nitroaniline. Data usability may be impacted for these target compounds in the affected sample.

There are no project action limits established for the field blank and rinsate blank samples.

Semivolatiles - SIM

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs except for pentachlorophenol. Also, all QLs for sample TF4-SD-906-0006 exceeded the PQL goals and laboratory-specific QLs due an extract volume of 4 mL. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except pentachlorophenol. Also, the project action limits were achieved for all analytes in sample TF4-SD-906-0006 except for pentachlorophenol. Data usability may be impacted for this target compound.

Pesticides

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except 4,4'-DDE, dieldrin, and endrin as highlighted in worksheet 15b of the SAP. Data usability may be impacted for the affected target compounds.

There are no project action limits established for the field blank and rinsate blank samples.

Results for 4,4'-DDD, alpha-chlordane, beta-BHC, and methoxychlor were changed to non-detected values in sample TF5-SD-922-0006 due to analytical interferences detected in the dual column analysis. As discussed above in the Analyte Identification/Quantitation section, data usability may be impacted for 4,4'-DDD, alpha-chlordane, and beta-BHC in the affected sample.

PCBs

All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15d of the SAP were met by the laboratory's actual QLs. All project action limits were achieved by the actual QLs. (The total PCB project action limit was not evaluated).

There are no project action limits established for the field blank and rinsate blank samples.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles

The project goals with respect to accuracy were met for the volatiles data set with the following exceptions. Acetone, carbon disulfide, 1,2-dibromo-3-chloropropane 2-hexanone were qualified as estimated in select samples due to instrument calibration variability. Several volatiles samples were qualified as estimated due to low surrogate recoveries; the affected results may be biased low. 1,1,2,2-Tetrachloroethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dibromo-3-chloropropane, 1,2,4-trichlorobenzene, and 1,2,3-trichlorobenzene were qualified as estimated in several samples due to poor internal standard performance. Samples TF5-SD-917-0006 and TF4-SD-901-0006

were qualified as estimated due to low MS/MSD recoveries; the affected results may be biased low. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. Additionally, bromomethane, methyl acetate, 1,2,4-trichlorobenzene, 1,2,3-trichlorobenzene, dichlorodifluoromethane, bromoform, 1,1,2,2-tetrachloroethane, 1,1-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane, benzene, 1,2-dichloropropane, and tetrachloroethene were qualified as estimated in select samples due to instrument calibration variability. Although specific method criteria were not met in this instance, data usability is not impacted and the affected non-detected results are usable as estimated quantitation limits.

The project goals with respect to precision were met for the volatiles data set with the following exceptions. Samples TF5-SD-917-0006 and TF4-SD-901-0006 were qualified as estimated due to poor MS/MSD precision. Acetone was qualified as estimated in select samples due to poor LCS/LCSD precision. Acetone was qualified as estimated in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 due to poor field duplicate precision. Acetone was qualified as estimated in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 due to poor field duplicate precision. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. Additionally, 2-butanone qualified as estimated in select samples due to poor LCS/LCSD precision. Although specific method criteria were not met in this instance, data usability is not impacted and the affected non-detected results are usable as estimated quantitation limits.

The project goals with respect to sensitivity were met for the volatiles data set with the following exceptions. The percent solids were below 30% for sample TF5-SD-918-0006. The positive and non-detected 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, acetone, carbon disulfide, cis-1,3-dichloropropene, and trans-1,3-dichloropropene results are estimated in the affected sample. Data usability may be impacted. In addition, all project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were not met by the laboratory's actual QLs due to the percent moisture of the samples. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except for 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, acetone, carbon disulfide, cis-1,3-dichloropropene, and trans-1,3-dichloropropene. Data usability may be impacted for these target compounds.

The project goals with respect to completeness were met for the volatiles data set. Data usability was not impacted with regards to completeness.

Semivolatiles – Full Scan

The project goals with respect to accuracy were met for the semivolatiles – full scan data set. Benzaldehyde, 2,4-dimethylphenol, hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol, dibenzo(a,h)anthracene, atrazine, 4-nitrophenol, and nitrobenzene were qualified as estimated in select samples due to instrument calibration variability. 4-Chloroaniline, 1,1'-biphenyl, and acetophenone were qualified as estimated in select samples due to low ICV recoveries. 2,4-Dimethylphenol and benzaldehyde were qualified as estimated in select samples due to low LCS/LCSD recoveries. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision were met for the semivolatiles – full scan data set. 3,3'-Dichlorobenzidine was qualified as estimated in sample TF5-SD-917-0006 due to poor MS/MSD precision. 4-Chloroaniline was qualified as estimated in sample TF4-SD-901-0006 due to poor MS/MSD precision. Although specific method criteria were not met in these instances, data usability is not impacted and the affected non-detected results are usable as estimated quantitation limits.

The project goals with respect to sensitivity were met for the semivolatiles – full scan data set with the following exceptions. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs except for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol. Also, all QLs for sample TF4-SD-906-0006 exceeded the PQL goals and laboratory-specific QLs due an extract volume of 4 mL. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except for 4,6-dinitro-2-methylphenol, bis(2-chloroethyl)ether, and n-nitrosodi-n-propylamine. Data usability may be impacted for these target compounds. Also, the project action limits were achieved for all analytes in sample TF4-SD-906-0006 except for 1,1'-biphenyl, 2,4-dinitrotoluene, 3,3'-dichlorobenzidine, 4,6-dinitro-2-methylphenol, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, diethyl phthalate, hexachloroethane, n-nitrosodi-n-propylamine, and 3-nitroaniline. Data usability may be impacted for these target compounds in the affected sample.

The project goals with respect to completeness were met for the semivolatiles – full scan data set with the following exception. The was no recovery for 1,4-dioxane in the initial calibration verification. Therefore, the non-detected 1,4-dioxane results in the rinsate and field blank sample are rejected. These results are not usable for project decisions and the data completeness goals may be impacted.

Semivolatiles – SIM

The project goals with respect to accuracy were met for the semivolatiles – SIM data set with the following exceptions. Benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and pentachlorophenol were qualified as estimated in select samples due to instrument calibration variability. Phenanthrene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene were qualified as estimated in sample TF5-SD-917-0006 due to low MS/MSD recoveries; the affected results may be biased low. Benzo(b)fluoranthene was qualified as estimated in select samples due to a high LCS recovery; the affected results may be biased high. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, 4-chloro-3-methylphenol, 2-methylphenol, 2,4-dimethylphenol, and 2,3,4,6-tetrachlorophenol were qualified as estimated in select samples due to instrument calibration variability. Atrazine was qualified as estimated in select samples due to a low ICV recovery. 2-Methylphenol was qualified as estimated in select samples due to a high ICV recovery. Atrazine was qualified as estimated in sample TF4-SD-901-0006 due to a low MS recovery. Fluoranthene was qualified as estimated in sample TF4-SD-901-0006 due to a high MSD recovery. Atrazine was qualified as estimated in select samples due to a low LCS recovery. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision were met for the semivolatiles – SIM data set with the following exceptions. Phenanthrene, benzo(a)anthracene, chrysene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene were qualified as estimated in sample TF5-SD-917-0006

due to poor MS/MSD precision. Benzo(a)pyrene and dibenzo(a,h)anthracene were qualified as estimated in sample TF4-SD-901-0006 due to poor MS/MSD precision. Anthracene, benzo(k)fluoranthene, chrysene, and dibenzo(a,h)anthracene were qualified as estimated in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 due to poor field duplicate precision. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and pyrene were qualified as estimated in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 due to poor field duplicate precision. Benzo(a)pyrene was qualified as estimated in samples TF4-SD-902-0006 and TF4-SD-DUP02-031810 due to poor field duplicate precision. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, atrazine, 2-chlorophenol, 2-methylphenol, 2,4-dichlorophenol, chrysene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, and 2,3,4,6-tetrachlorophenol were qualified as estimated in sample TF5-SD-901-0006 due to poor MS/MSD precision. Acenaphthene and fluorene were qualified as estimated in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 due to poor field duplicate precision. Acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, and phenanthrene was qualified as estimated in samples TF4-SD-911-0006 and TF4-SD-DUP01-031710 due to poor field duplicate precision. 2-Methylnaphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene were qualified as estimated in samples TF4-SD-902-0006 and TF4-SD-DUP02-031810 due to poor field duplicate precision. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to sensitivity were met for the semivolatiles – SIM data set with the following exception. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs except for pentachlorophenol. Also, all QLs for sample TF4-SD-906-0006 exceeded the PQL goals and laboratory-specific QLs due an extract volume of 4 mL. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except pentachlorophenol. Also, the project action limits were achieved for all analytes in sample TF4-SD-906-0006 except for pentachlorophenol. Data usability may be impacted for this target compound.

The project goals with respect to completeness were met for the semivolatiles – SIM data set. Data usability was not impacted with regards to completeness.

Pesticides

The project goals with respect to accuracy were met for the pesticides data set with the following exceptions. 4,4'-DDE was qualified as estimated in select samples due to instrument calibration variability. Sample TF5-SD-917-0006 was qualified as estimated due to low MS/MSD recoveries; the affected results may be biased low. Dieldrin, 4,4'-DDE, and endrin were qualified as estimated in sample TF4-SD-901-0006 due to low MS/MSD recoveries; the affected results may be biased low. 4,4'-DDE was qualified as estimated in select samples due to a low LCS recovery; the affected results may be biased low. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, sample TF4-SD-RB01-031710 was qualified as estimated due to holding time exceedances. Heptachlor epoxide, alpha-chlordane, gamma-chlordane, beta-BHC, and 4,4'-DDD were qualified as estimated in sample TF4-SD-901-0006 due to low MS/MSD recoveries. 4,4'-DDD, gamma-

chlordane, and endrin aldehyde were qualified as estimated in select samples due to analytical interferences detected in the dual column analysis. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to precision were met for the pesticides data set with the following exception. Sample TF5-SD-917-0006 was qualified as estimated due to poor MS/MSD precision. Although specific method criteria were not met in this instance, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, heptachlor epoxide, beta-BHC, and 4,4'-DDD were qualified as estimated in sample TF4-SD-901-0006 due to poor MS/MSD precision. Endrin ketone was qualified as estimated in samples TF4-SD-902-0006 and TF4-SD-DUP02-031810 due to poor field duplicate precision. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated quantitation limits.

The project goals with respect to sensitivity were met for the pesticides data set with the following exceptions. All project quantitation limit (PQL) goals and laboratory-specific QLs in worksheet 15b of the SAP were met by the laboratory's actual QLs. Project action limits were achieved by the laboratory's action QLs for the sediment samples for all analytes except 4,4'-DDE, dieldrin, and endrin as highlighted in worksheet 15b of the SAP. Data usability may be impacted for the affected target compounds. In addition, results for 4,4'-DDD, alpha-chlordane, beta-BHC, and methoxychlor were changed to non-detected values in sample TF5-SD-922-0006 due to analytical interferences detected in the dual column analysis. Data usability may be impacted for 4,4'-DDD, alpha-chlordane, and beta-BHC in the affected sample.

The project goals with respect to completeness were met for the pesticides data set. Data usability was not impacted with regards to completeness

PCBs

The project goals with respect to accuracy were met for the PCB data set with the following exceptions. Several PCB sediment samples were qualified as estimated due to low surrogate recoveries; the affected results may be biased low. Aroclor 1260 was qualified as estimated in select samples due to analytical interferences detected in the dual column analysis. Although specific method criteria were not met in this instance, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability. In addition, the field blank and rinsate blank were qualified as estimated due to low surrogate recoveries. Although specific method criteria were not met in this instance, data usability is not impacted and the affected non-detected results are usable as estimated quantitation limits.

The project goals with respect to precision were met for the PCBs data set with the following exception. Aroclor 1260 was qualified as estimated in samples TF5-SD-923-0006 and TF5-SD-DUP01-031610 due to poor field duplicate precision. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability.

The project goals with respect to sensitivity and completeness were met for the PCB data set. Data usability was not impacted with regards to sensitivity and completeness

Tables:	Data Validation Qualifiers and Codes Data Summary Tables
Enclosures:	Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
SDG: J0478	LAB_ID	J0478-28C			J0478-29C			J0478-30C			J0478-25C		
FRACTION: OV	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,1,2,2-TETRACHLOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,1,2-TRICHLOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,1-DICHLOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,1-DICHLOROETHENE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
1,2,3-TRICHLOROBENZENE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
1,2,4-TRICHLOROBENZENE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
1,2-DIBROMO-3-CHLOROPROPANE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
1,2-DIBROMOETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,2-DICHLOROBENZENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,2-DICHLOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,2-DICHLOROPROPANE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
1,3-DICHLOROBENZENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
1,4-DICHLOROBENZENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
2-BUTANONE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
2-HEXANONE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
4-METHYL-2-PENTANONE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
ACETONE		90	J	DR	5.3	UJ	R	150			16		
BENZENE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
BROMOCHLOROMETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
BROMODICHLOROMETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
BROMOFORM		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
BROMOMETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CARBON DISULFIDE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CARBON TETRACHLORIDE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CHLOROBENZENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CHLORODIBROMOMETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CHLOROETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CHLOROFORM		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CHLOROMETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CIS-1,2-DICHLOROETHENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CIS-1,3-DICHLOROPROPENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
CYCLOHEXANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
DICHLORODIFLUOROMETHANE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006RE			TF4-SD-908-0006		
SDG: J0478	LAB_ID	J0478-26C			J0478-27C			J0478-20CRE			J0478-21C		
FRACTION: OV	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
1,1,2,2-TETRACHLOROETHANE		7.8	U		7.2	UJ	NR	8	UJ	NR	4.3	UJ	NR
1,1,2-TRICHLOROETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
1,1,2-TRICHLOROTRIFLUOROETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	CR
1,1-DICHLOROETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
1,1-DICHLOROETHENE		7.8	UJ	C	7.2	UJ	CR	8	UJ	R	4.3	UJ	R
1,2,3-TRICHLOROBENZENE		7.8	UJ	C	7.2	UJ	CNR	8	UJ	CNR	4.3	UJ	CNR
1,2,4-TRICHLOROBENZENE		7.8	UJ	C	7.2	UJ	CNR	8	UJ	CNR	4.3	UJ	CNR
1,2-DIBROMO-3-CHLOROPROPANE		7.8	UJ	C	7.2	UJ	CNR	8	UJ	NR	4.3	UJ	NR
1,2-DIBROMOETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
1,2-DICHLOROBENZENE		7.8	U		7.2	UJ	NR	8	UJ	NR	4.3	UJ	NR
1,2-DICHLOROETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
1,2-DICHLOROPROPANE		7.8	UJ	C	7.2	UJ	CR	8	UJ	R	4.3	UJ	R
1,3-DICHLOROBENZENE		7.8	U		7.2	UJ	NR	8	UJ	NR	4.3	UJ	NR
1,4-DICHLOROBENZENE		7.8	U		7.2	UJ	NR	8	UJ	NR	4.3	UJ	NR
2-BUTANONE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	ER
2-HEXANONE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
4-METHYL-2-PENTANONE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
ACETONE		81			55	J	R	240	J	CR	4.3	UJ	ER
BENZENE		7.8	UJ	C	7.2	UJ	CR	8	UJ	R	4.3	UJ	R
BROMOCHLOROMETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
BROMODICHLOROMETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
BROMOFORM		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
BROMOMETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CARBON DISULFIDE		7.8	U		1.9	J	PR	8	UJ	R	4.3	UJ	R
CARBON TETRACHLORIDE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CHLOROBENZENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CHLORODIBROMOMETHANE		7.8	U		7.2	UJ	R	8	UJ	CR	4.3	UJ	R
CHLOROETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CHLOROFORM		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CHLOROMETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CIS-1,2-DICHLOROETHENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CIS-1,3-DICHLOROPROPENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
CYCLOHEXANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
DICHLORODIFLUOROMETHANE		7.8	UJ	C	7.2	UJ	CR	8	UJ	CR	4.3	UJ	CR

PROJ_NO: 00963	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
SDG: J0478	LAB_ID	J0478-22C			J0478-23C			J0478-24C			J0478-15C		
FRACTION: OV	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
1,1,2,2-TETRACHLOROETHANE		8.9	UJ	NR	11	U		6.8	UJ	R	4.5	UJ	NR
1,1,2-TRICHLOROETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
1,1,2-TRICHLOROTRIFLUOROETHANE		8.9	UJ	CR	11	U		6.8	UJ	R	4.5	UJ	CR
1,1-DICHLOROETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
1,1-DICHLOROETHENE		8.9	UJ	R	11	UJ	C	6.8	UJ	CR	4.5	UJ	R
1,2,3-TRICHLOROBENZENE		8.9	UJ	CNR	11	UJ	C	6.8	UJ	CR	4.5	UJ	CNR
1,2,4-TRICHLOROBENZENE		8.9	UJ	CNR	11	UJ	C	6.8	UJ	CR	4.5	UJ	CNR
1,2-DIBROMO-3-CHLOROPROPANE		8.9	UJ	NR	11	UJ	C	6.8	UJ	CR	4.5	UJ	NR
1,2-DIBROMOETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
1,2-DICHLOROBENZENE		8.9	UJ	NR	11	U		6.8	UJ	R	4.5	UJ	NR
1,2-DICHLOROETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
1,2-DICHLOROPROPANE		8.9	UJ	R	11	UJ	C	6.8	UJ	CR	4.5	UJ	R
1,3-DICHLOROBENZENE		8.9	UJ	NR	11	U		6.8	UJ	R	4.5	UJ	NR
1,4-DICHLOROBENZENE		8.9	UJ	NR	11	U		6.8	UJ	R	4.5	UJ	NR
2-BUTANONE		8.9	UJ	ER	11	U		6.8	UJ	R	4.5	UJ	ER
2-HEXANONE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
4-METHYL-2-PENTANONE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
ACETONE		16	J	ER	11	U		170	J	GR	73	J	ER
BENZENE		8.9	UJ	R	11	UJ	C	6.8	UJ	CR	4.5	UJ	R
BROMOCHLOROMETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
BROMODICHLOROMETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
BROMOFORM		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
BROMOMETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CARBON DISULFIDE		8.9	UJ	R	11	U		6.8	UJ	R	15	J	R
CARBON TETRACHLORIDE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CHLOROBENZENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CHLORODIBROMOMETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CHLOROETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CHLOROFORM		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CHLOROMETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CIS-1,2-DICHLOROETHENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CIS-1,3-DICHLOROPROPENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
CYCLOHEXANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
DICHLORODIFLUOROMETHANE		8.9	UJ	CR	11	UJ	C	6.8	UJ	CR	4.5	UJ	CR

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF4-SD-TB01-031710			TF4-SD-TB02-031810		
SDG: J0478	LAB_ID	J0478-16C			J0478-31C			J0478-17C			J0478-32C		
FRACTION: OV	SAMP_DATE	3/17/2010			3/18/2010			3/17/2010			3/18/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			FD			TB			TB		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	43.0			68.0								
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
1,1,2,2-TETRACHLOROETHANE		9.7	UJ	NR	5.6	UJ	R	5	U		5	UJ	R
1,1,2-TRICHLOROETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
1,1,2-TRICHLOROTRIFLUOROETHANE		9.7	UJ	CR	5.6	UJ	R	5	UJ	C	5	UJ	R
1,1-DICHLOROETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
1,1-DICHLOROETHENE		9.7	UJ	R	5.6	UJ	CR	5	U		5	UJ	CR
1,2,3-TRICHLOROBENZENE		9.7	UJ	CNR	5.6	UJ	CR	5	UJ	C	5	UJ	CR
1,2,4-TRICHLOROBENZENE		9.7	UJ	CNR	5.6	UJ	CR	5	UJ	C	5	UJ	CR
1,2-DIBROMO-3-CHLOROPROPANE		9.7	UJ	NR	5.6	UJ	CR	5	U		5	UJ	CR
1,2-DIBROMOETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
1,2-DICHLOROBENZENE		9.7	UJ	NR	5.6	UJ	R	5	U		5	UJ	R
1,2-DICHLOROETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
1,2-DICHLOROPROPANE		9.7	UJ	R	5.6	UJ	CR	5	U		5	UJ	CR
1,3-DICHLOROBENZENE		9.7	UJ	NR	5.6	UJ	R	5	U		5	UJ	R
1,4-DICHLOROBENZENE		9.7	UJ	NR	5.6	UJ	R	5	U		5	UJ	R
2-BUTANONE		9.7	UJ	ER	5.6	UJ	R	5	UJ	E	5	UJ	R
2-HEXANONE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
4-METHYL-2-PENTANONE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
ACETONE		71	J	EGR	5.6	UJ	R	5	UJ	E	5	UJ	R
BENZENE		9.7	UJ	R	5.6	UJ	CR	5	U		5	UJ	CR
BROMOCHLOROMETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
BROMODICHLOROMETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
BROMOFORM		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
BROMOMETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CARBON DISULFIDE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CARBON TETRACHLORIDE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CHLOROBENZENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CHLORODIBROMOMETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CHLOROETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CHLOROFORM		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CHLOROMETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CIS-1,2-DICHLOROETHENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CIS-1,3-DICHLOROPROPENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
CYCLOHEXANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
DICHLORODIFLUOROMETHANE		9.7	UJ	CR	5.6	UJ	CR	5	UJ	C	5	UJ	CR

PROJ_NO: 00963	NSAMPLE	TF5-SD-913-0006			TF5-SD-914-0006			TF5-SD-915-0006			TF5-SD-916-0006		
SDG: J0478	LAB_ID	J0478-01C			J0478-02C			J0478-03C			J0478-04C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	51.0			55.0			58.0			66.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,1,2,2-TETRACHLOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,1,2-TRICHLOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,1-DICHLOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,1-DICHLOROETHENE		7.1	UJ	C	6.1	UJ	C	5.5	UJ	C	4.3	UJ	C
1,2,3-TRICHLOROBENZENE		7.1	UJ	C	6.1	UJ	C	5.5	UJ	C	4.3	UJ	C
1,2,4-TRICHLOROBENZENE		7.1	UJ	C	6.1	UJ	C	5.5	UJ	C	4.3	UJ	C
1,2-DIBROMO-3-CHLOROPROPANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,2-DIBROMOETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,2-DICHLOROBENZENE		1.6	J	P	6.1	U		5.5	U		4.3	U	
1,2-DICHLOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,2-DICHLOROPROPANE		7.1	U		6.1	U		5.5	U		4.3	U	
1,3-DICHLOROBENZENE		7.1	U		6.1	U		5.5	U		4.3	U	
1,4-DICHLOROBENZENE		7.1	U	A	6.1	U	A	5.5	U		4.3	U	A
2-BUTANONE		7.1	U		6.1	U		5.5	U		4.3	U	
2-HEXANONE		7.1	UJ	C	6.1	UJ	C	5.5	UJ	C	4.3	UJ	C
4-METHYL-2-PENTANONE		7.1	U		6.1	U		5.5	U		4.3	U	
ACETONE		38	J	C	6.1	UJ	C	38	J	C	37	J	C
BENZENE		7.1	U		6.1	U		5.5	U		4.3	U	
BROMOCHLOROMETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
BROMODICHLOROMETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
BROMOFORM		7.1	U		6.1	U		5.5	U		4.3	U	
BROMOMETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
CARBON DISULFIDE		7.1	U		6.1	U		5.5	U		4.3	U	
CARBON TETRACHLORIDE		7.1	U		6.1	U		5.5	U		4.3	U	
CHLOROBENZENE		7.1	U		6.1	U		5.5	U		4.3	U	
CHLORODIBROMOMETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
CHLOROETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
CHLOROFORM		7.1	U		6.1	U		5.5	U		4.3	U	
CHLOROMETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
CIS-1,2-DICHLOROETHENE		7.1	U		6.1	U		5.5	U		4.3	U	
CIS-1,3-DICHLOROPROPENE		7.1	U		6.1	U		5.5	U		4.3	U	
CYCLOHEXANE		7.1	U		6.1	U		5.5	U		4.3	U	
DICHLORODIFLUOROMETHANE		7.1	UJ	C	6.1	UJ	C	5.5	UJ	C	4.3	UJ	C

PROJ_NO: 00963	NSAMPLE	TF5-SD-917-0006			TF5-SD-918-0006			TF5-SD-919-0006			TF5-SD-920-0006		
SDG: J0478	LAB_ID	J0478-05C			J0478-06C			J0478-07C			J0478-08C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	46.0			21.0			39.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,1,2,2-TETRACHLOROETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,1,2-TRICHLOROETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,1,2-TRICHLOROTRIFLUOROETHANE		11	UJ	CDR	19	UJ	CR	12	UJ	CR	8.4	UJ	CR
1,1-DICHLOROETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,1-DICHLOROETHENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,2,3-TRICHLOROBENZENE		11	UJ	CDR	19	UJ	CR	12	UJ	CR	8.4	UJ	CR
1,2,4-TRICHLOROBENZENE		11	UJ	CDR	19	UJ	CR	12	UJ	CR	8.4	UJ	CR
1,2-DIBROMO-3-CHLOROPROPANE		11	UJ	DR	19	UJ	RY	12	UJ	R	8.4	UJ	R
1,2-DIBROMOETHANE		11	UJ	DR	19	UJ	RY	12	UJ	R	8.4	UJ	R
1,2-DICHLOROBENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,2-DICHLOROETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,2-DICHLOROPROPANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,3-DICHLOROBENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
1,4-DICHLOROBENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
2-BUTANONE		11	UJ	DER	19	UJ	ER	12	UJ	ER	8.4	UJ	ER
2-HEXANONE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
4-METHYL-2-PENTANONE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
ACETONE		130	J	DER	200	J	ERY	48	J	ER	63	J	ER
BENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
BROMOCHLOROMETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
BROMODICHLOROMETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
BROMOFORM		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
BROMOMETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CARBON DISULFIDE		11	UJ	DR	19	UJ	RY	12	UJ	R	8.4	UJ	R
CARBON TETRACHLORIDE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CHLOROBENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CHLORODIBROMOMETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CHLOROETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CHLOROFORM		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CHLOROMETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CIS-1,2-DICHLOROETHENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
CIS-1,3-DICHLOROPROPENE		11	UJ	DR	19	UJ	RY	12	UJ	R	8.4	UJ	R
CYCLOHEXANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
DICHLORODIFLUOROMETHANE		11	UJ	CDR	19	UJ	CR	12	UJ	CR	8.4	UJ	CR

PROJ_NO: 00963	NSAMPLE	TF5-SD-921-0006			TF5-SD-922-0006			TF5-SD-923-0006			TF5-SD-924-0006		
SDG: J0478	LAB_ID	J0478-09C			J0478-10C			J0478-11C			J0478-12C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	34.0			57.0			59.0			34.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,1,2,2-TETRACHLOROETHANE		14	UJ	R	7.1	UJ	NR	7.2	UJ	NR	13	UJ	NR
1,1,2-TRICHLOROETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,1,2-TRICHLOROTRIFLUOROETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	CR	13	UJ	CR
1,1-DICHLOROETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,1-DICHLOROETHENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,2,3-TRICHLOROBENZENE		14	UJ	CR	7.1	UJ	CNR	7.2	UJ	CNR	13	UJ	CNR
1,2,4-TRICHLOROBENZENE		14	UJ	CR	7.1	UJ	CNR	7.2	UJ	CNR	13	UJ	CNR
1,2-DIBROMO-3-CHLOROPROPANE		14	UJ	R	7.1	UJ	NR	7.2	UJ	NR	13	UJ	NR
1,2-DIBROMOETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,2-DICHLOROBENZENE		14	UJ	R	7.1	UJ	NR	7.2	UJ	NR	13	UJ	NR
1,2-DICHLOROETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,2-DICHLOROPROPANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
1,3-DICHLOROBENZENE		14	UJ	R	7.1	UJ	NR	7.2	UJ	NR	13	UJ	NR
1,4-DICHLOROBENZENE		14	UJ	R	7.1	UJ	NR	7.2	UJ	NR	13	UJ	NR
2-BUTANONE		14	UJ	R	7.1	UJ	R	7.2	UJ	ER	13	UJ	ER
2-HEXANONE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
4-METHYL-2-PENTANONE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
ACETONE		170	J	CR	91	J	CR	18	J	EGR	140	J	ER
BENZENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
BROMOCHLOROMETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
BROMODICHLOROMETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
BROMOFORM		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
BROMOMETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CARBON DISULFIDE		3.9	J	PR	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CARBON TETRACHLORIDE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CHLOROBENZENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CHLORODIBROMOMETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CHLOROETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CHLOROFORM		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CHLOROMETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CIS-1,2-DICHLOROETHENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CIS-1,3-DICHLOROPROPENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
CYCLOHEXANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
DICHLORODIFLUOROMETHANE		14	UJ	CR	7.1	UJ	CR	7.2	UJ	CR	13	UJ	CR

PROJ_NO: 00963	NSAMPLE	TF5-SD-DUP01-031610			TF5-SD-TB01-031610		
SDG: J0478	LAB_ID	J0478-13C			J0478-14C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			TB		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	67.0					
	DUP_OF	TF5-SD-923-0006					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		4.7	UJ	R	4.2	U	
1,1,2,2-TETRACHLOROETHANE		4.7	UJ	NR	4.2	U	
1,1,2-TRICHLOROETHANE		4.7	UJ	R	4.2	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		4.7	UJ	CR	4.2	UJ	C
1,1-DICHLOROETHANE		4.7	UJ	R	4.2	U	
1,1-DICHLOROETHENE		4.7	UJ	R	4.2	U	
1,2,3-TRICHLOROBENZENE		4.7	UJ	CNR	4.2	UJ	C
1,2,4-TRICHLOROBENZENE		4.7	UJ	CNR	4.2	UJ	C
1,2-DIBROMO-3-CHLOROPROPANE		4.7	UJ	NR	4.2	U	
1,2-DIBROMOETHANE		4.7	UJ	R	4.2	U	
1,2-DICHLOROBENZENE		4.7	UJ	NR	4.2	U	
1,2-DICHLOROETHANE		4.7	UJ	R	4.2	U	
1,2-DICHLOROPROPANE		4.7	UJ	R	4.2	U	
1,3-DICHLOROBENZENE		4.7	UJ	NR	4.2	U	
1,4-DICHLOROBENZENE		4.7	UJ	NR	4.2	U	A
2-BUTANONE		4.7	UJ	ER	4.2	UJ	E
2-HEXANONE		4.7	UJ	R	4.2	U	
4-METHYL-2-PENTANONE		4.7	UJ	R	4.2	U	
ACETONE		8.8	J	EGR	4.2	UJ	E
BENZENE		4.7	UJ	R	4.2	U	
BROMOCHLOROMETHANE		4.7	UJ	R	4.2	U	
BROMODICHLOROMETHANE		4.7	UJ	R	4.2	U	
BROMOFORM		4.7	UJ	R	4.2	U	
BROMOMETHANE		4.7	UJ	R	4.2	U	
CARBON DISULFIDE		4.7	UJ	R	4.2	U	
CARBON TETRACHLORIDE		4.7	UJ	R	4.2	U	
CHLOROBENZENE		4.7	UJ	R	4.2	U	
CHLORODIBROMOMETHANE		4.7	UJ	R	4.2	U	
CHLOROETHANE		4.7	UJ	R	4.2	U	
CHLOROFORM		4.7	UJ	R	4.2	U	
CHLOROMETHANE		4.7	UJ	R	4.2	U	
CIS-1,2-DICHLOROETHENE		4.7	UJ	R	4.2	U	
CIS-1,3-DICHLOROPROPENE		4.7	UJ	R	4.2	U	
CYCLOHEXANE		4.7	UJ	R	4.2	U	
DICHLORODIFLUOROMETHANE		4.7	UJ	CR	4.2	UJ	C

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
SDG: J0478	LAB_ID	J0478-28C			J0478-29C			J0478-30C			J0478-25C		
FRACTION: OV	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
ISOPROPYLBENZENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
M+P-XYLENES		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
METHYL ACETATE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
METHYL CYCLOHEXANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
METHYL TERT-BUTYL ETHER		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
METHYLENE CHLORIDE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
O-XYLENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
STYRENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
TETRACHLOROETHENE		7.2	UJ	CDR	5.3	UJ	CR	9.6	UJ	C	5.1	UJ	C
TOLUENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
TOTAL XYLENES		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
TRANS-1,2-DICHLOROETHENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
TRANS-1,3-DICHLOROPROPENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
TRICHLOROETHENE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
TRICHLOROFLUOROMETHANE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	
VINYL CHLORIDE		7.2	UJ	DR	5.3	UJ	R	9.6	U		5.1	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006RE			TF4-SD-908-0006		
SDG: J0478	LAB_ID	J0478-26C			J0478-27C			J0478-20CRE			J0478-21C		
FRACTION: OV	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
ISOPROPYLBENZENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
M+P-XYLENES		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
METHYL ACETATE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
METHYL CYCLOHEXANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
METHYL TERT-BUTYL ETHER		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
METHYLENE CHLORIDE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
O-XYLENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
STYRENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
TETRACHLOROETHENE		7.8	UJ	C	7.2	UJ	CR	8	UJ	R	4.3	UJ	R
TOLUENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
TOTAL XYLENES		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
TRANS-1,2-DICHLOROETHENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
TRANS-1,3-DICHLOROPROPENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
TRICHLOROETHENE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
TRICHLOROFLUOROMETHANE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R
VINYL CHLORIDE		7.8	U		7.2	UJ	R	8	UJ	R	4.3	UJ	R

PROJ_NO: 00963 SDG: J0478 FRACTION: OV MEDIA: SEDIMENT	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
	LAB_ID	J0478-22C			J0478-23C			J0478-24C			J0478-15C		
	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
ISOPROPYLBENZENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
M+P-XYLENES		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
METHYL ACETATE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
METHYL CYCLOHEXANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
METHYL TERT-BUTYL ETHER		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
METHYLENE CHLORIDE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
O-XYLENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
STYRENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
TETRACHLOROETHENE		8.9	UJ	R	11	UJ	C	6.8	UJ	CR	4.5	UJ	R
TOLUENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
TOTAL XYLENES		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
TRANS-1,2-DICHLOROETHENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
TRANS-1,3-DICHLOROPROPENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
TRICHLOROETHENE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
TRICHLOROFLUOROMETHANE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R
VINYL CHLORIDE		8.9	UJ	R	11	U		6.8	UJ	R	4.5	UJ	R

PROJ_NO: 00963 SDG: J0478 FRACTION: OV MEDIA: SEDIMENT	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF4-SD-TB01-031710			TF4-SD-TB02-031810		
	LAB_ID	J0478-16C			J0478-31C			J0478-17C			J0478-32C		
	SAMP_DATE	3/17/2010			3/18/2010			3/17/2010			3/18/2010		
	QC_TYPE	FD			FD			TB			TB		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	43.0			68.0								
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
ISOPROPYLBENZENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
M+P-XYLENES		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
METHYL ACETATE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
METHYL CYCLOHEXANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
METHYL TERT-BUTYL ETHER		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
METHYLENE CHLORIDE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
O-XYLENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
STYRENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
TETRACHLOROETHENE		9.7	UJ	R	5.6	UJ	CR	5	U		5	UJ	CR
TOLUENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
TOTAL XYLENES		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
TRANS-1,2-DICHLOROETHENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
TRANS-1,3-DICHLOROPROPENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
TRICHLOROETHENE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
TRICHLOROFLUOROMETHANE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R
VINYL CHLORIDE		9.7	UJ	R	5.6	UJ	R	5	U		5	UJ	R

PROJ_NO: 00963	NSAMPLE	TF5-SD-913-0006			TF5-SD-914-0006			TF5-SD-915-0006			TF5-SD-916-0006		
SDG: J0478	LAB_ID	J0478-01C			J0478-02C			J0478-03C			J0478-04C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	51.0			55.0			58.0			66.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		7.1	U		6.1	U		5.5	U		4.3	U	
ISOPROPYLBENZENE		7.1	U		6.1	U		5.5	U		4.3	U	
M+P-XYLENES		7.1	U		6.1	U		5.5	U		4.3	U	
METHYL ACETATE		7.1	U		6.1	U		5.5	U		4.3	U	
METHYL CYCLOHEXANE		7.1	U		6.1	U		5.5	U		4.3	U	
METHYL TERT-BUTYL ETHER		7.1	U		6.1	U		5.5	U		4.3	U	
METHYLENE CHLORIDE		7.1	U		6.1	U		5.5	U		4.3	U	
O-XYLENE		7.1	U		6.1	U		5.5	U		4.3	U	
STYRENE		7.1	U		6.1	U		5.5	U		4.3	U	
TETRACHLOROETHENE		7.1	U		6.1	U		5.5	U		4.3	U	
TOLUENE		7.1	U		6.1	U		5.5	U		4.3	U	
TOTAL XYLENES		7.1	U		6.1	U		5.5	U		4.3	U	
TRANS-1,2-DICHLOROETHENE		7.1	U		6.1	U		5.5	U		4.3	U	
TRANS-1,3-DICHLOROPROPENE		7.1	U		6.1	U		5.5	U		4.3	U	
TRICHLOROETHENE		7.1	U		6.1	U		5.5	U		4.3	U	
TRICHLOROFLUOROMETHANE		7.1	U		6.1	U		5.5	U		4.3	U	
VINYL CHLORIDE		7.1	U		6.1	U		5.5	U		4.3	U	

PROJ_NO: 00963	NSAMPLE	TF5-SD-917-0006			TF5-SD-918-0006			TF5-SD-919-0006			TF5-SD-920-0006		
SDG: J0478	LAB_ID	J0478-05C			J0478-06C			J0478-07C			J0478-08C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	46.0			21.0			39.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
ISOPROPYLBENZENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
M+P-XYLENES		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
METHYL ACETATE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
METHYL CYCLOHEXANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
METHYL TERT-BUTYL ETHER		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
METHYLENE CHLORIDE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
O-XYLENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
STYRENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
TETRACHLOROETHENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
TOLUENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
TOTAL XYLENES		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
TRANS-1,2-DICHLOROETHENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
TRANS-1,3-DICHLOROPROPENE		11	UJ	DR	19	UJ	RY	12	UJ	R	8.4	UJ	R
TRICHLOROETHENE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
TRICHLOROFLUOROMETHANE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R
VINYL CHLORIDE		11	UJ	DR	19	UJ	R	12	UJ	R	8.4	UJ	R

PROJ_NO: 00963	NSAMPLE	TF5-SD-921-0006			TF5-SD-922-0006			TF5-SD-923-0006			TF5-SD-924-0006		
SDG: J0478	LAB_ID	J0478-09C			J0478-10C			J0478-11C			J0478-12C		
FRACTION: OV	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	34.0			57.0			59.0			34.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
ISOPROPYLBENZENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
M+P-XYLENES		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
METHYL ACETATE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
METHYL CYCLOHEXANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
METHYL TERT-BUTYL ETHER		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
METHYLENE CHLORIDE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
O-XYLENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
STYRENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TETRACHLOROETHENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TOLUENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TOTAL XYLENES		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TRANS-1,2-DICHLOROETHENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TRANS-1,3-DICHLOROPROPENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TRICHLOROETHENE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
TRICHLOROFLUOROMETHANE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R
VINYL CHLORIDE		14	UJ	R	7.1	UJ	R	7.2	UJ	R	13	UJ	R

PROJ_NO: 00963 SDG: J0478 FRACTION: OV MEDIA: SEDIMENT	NSAMPLE	TF5-SD-DUP01-031610			TF5-SD-TB01-031610		
	LAB_ID	J0478-13C			J0478-14C		
	SAMP_DATE	3/16/2010			3/16/2010		
	QC_TYPE	FD			TB		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	67.0					
	DUP_OF	TF5-SD-923-0006					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		4.7	UJ	R	4.2	U	
ISOPROPYLBENZENE		4.7	UJ	R	4.2	U	
M+P-XYLENES		4.7	UJ	R	4.2	U	
METHYL ACETATE		4.7	UJ	R	4.2	U	
METHYL CYCLOHEXANE		4.7	UJ	R	4.2	U	
METHYL TERT-BUTYL ETHER		4.7	UJ	R	4.2	U	
METHYLENE CHLORIDE		4.7	UJ	R	4.2	U	
O-XYLENE		4.7	UJ	R	4.2	U	
STYRENE		4.7	UJ	R	4.2	U	
TETRACHLOROETHENE		4.7	UJ	R	4.2	U	
TOLUENE		4.7	UJ	R	4.2	U	
TOTAL XYLENES		4.7	UJ	R	4.2	U	
TRANS-1,2-DICHLOROETHENE		4.7	UJ	R	4.2	U	
TRANS-1,3-DICHLOROPROPENE		4.7	UJ	R	4.2	U	
TRICHLOROETHENE		4.7	UJ	R	4.2	U	
TRICHLOROFLUOROMETHANE		4.7	UJ	R	4.2	U	
VINYL CHLORIDE		4.7	UJ	R	4.2	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-FB01-031710			TF4-SD-RB01-031710		
SDG: J0478	LAB_ID	J0478-18A			J0478-19A		
FRACTION: OV	SAMP_DATE	3/17/2010			3/17/2010		
MEDIA: WATER	QC_TYPE	FB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE		1	UJ	C	1	UJ	C
1,1,2-TRICHLOROETHANE		1	U		1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE		1	U		1	U	
1,1-DICHLOROETHANE		1	U		1	U	
1,1-DICHLOROETHENE		1	U		1	U	
1,2,3-TRICHLOROBENZENE		1	U		1	U	
1,2,4-TRICHLOROBENZENE		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	UJ	C
1,2-DIBROMOETHANE		1	U		1	U	
1,2-DICHLOROBENZENE		1	U		1	U	
1,2-DICHLOROETHANE		1	U		1	U	
1,2-DICHLOROPROPANE		1	U		1	U	
1,3-DICHLOROBENZENE		1	U		1	U	
1,4-DICHLOROBENZENE		1	U		1	U	
2-BUTANONE		5	U		5	U	
2-HEXANONE		5	U		5	U	
4-METHYL-2-PENTANONE		5	U		5	U	
ACETONE		29	J	C	40	J	C
BENZENE		1	U		1	U	
BROMOCHLOROMETHANE		1	U		1	U	
BROMODICHLOROMETHANE		1	U		1	U	
BROMOFORM		1	UJ	C	1	U	
BROMOMETHANE		1	UJ	C	1	UJ	C
CARBON DISULFIDE		1	UJ	C	1	UJ	C
CARBON TETRACHLORIDE		1	U		1	UJ	C
CHLOROBENZENE		1	U		1	U	
CHLORODIBROMOMETHANE		1	U		1	U	
CHLOROETHANE		1	U		1	U	
CHLOROFORM		1	U		1	U	
CHLOROMETHANE		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U	
CIS-1,3-DICHLOROPROPENE		1	U		1	U	
CYCLOHEXANE		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	UJ	C	1	UJ	C

PROJ_NO: 00963 SDG: J0478 FRACTION: OV MEDIA: WATER	NSAMPLE	TF4-SD-FB01-031710			TF4-SD-RB01-031710		
	LAB_ID	J0478-18A			J0478-19A		
	SAMP_DATE	3/17/2010			3/17/2010		
	QC_TYPE	FB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHYLBENZENE		1	U		1	U	
ISOPROPYLBENZENE		1	U		1	U	
M+P-XYLENES		1	U		1	U	
METHYL ACETATE		1	UJ	C	1	UJ	C
METHYL CYCLOHEXANE		1	U		1	U	
METHYL TERT-BUTYL ETHER		1	U		1	U	
METHYLENE CHLORIDE		1	U		1	U	
O-XYLENE		1	U		1	U	
STYRENE		1	U		1	U	
TETRACHLOROETHENE		1	U		1	U	
TOLUENE		1	U		1	U	
TOTAL XYLENES		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		1	U		1	U	
TRICHLOROETHENE		1	U		1	U	
TRICHLOROFLUOROMETHANE		1	U		1	U	
VINYL CHLORIDE		1	U		1	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
SDG: J0478	LAB_ID	J0478-28A			J0478-29A			J0478-30A			J0478-25A		
FRACTION: OS	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		330	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		330	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		670	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		330	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		670	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		330	U		330	U		330	U	
2-NITROANILINE		670	U		670	U		670	U		670	U	
2-NITROPHENOL		330	U		330	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		330	U		330	U		330	U	
3-NITROANILINE		670	U		670	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		670	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	CD	330	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-NITROANILINE		670	U		670	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	670	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		330	U		330	U		330	U	
BENZALDEHYDE		330	UJ	CE	330	UJ	CE	170	J	CEP	330	UJ	CE
BENZO(A)ANTHRACENE													
BENZO(A)PYRENE													
BENZO(B)FLUORANTHENE													
BENZO(G,H,I)PERYLENE													
BENZO(K)FLUORANTHENE													
BIS(2-CHLOROETHOXY)METHANE		330	U		330	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		330	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		120	J	P	330	U		210	J	P	41	J	P
BUTYL BENZYL PHTHALATE		330	U		330	U		330	U		330	U	
CAPROLACTAM		330	U		330	U		330	U		330	U	
CARBAZOLE		330	U		330	U		330	U		330	U	
CHRYSENE													
DIBENZOFURAN		330	U		330	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		330	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		330	U		330	U		330	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006			TF4-SD-908-0006		
SDG: J0478	LAB_ID	J0478-26A			J0478-27A			J0478-20A			J0478-21A		
FRACTION: OS	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		1300	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		1300	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		2700	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		1300	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		2700	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		1300	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		1300	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		1300	U		330	U		330	U	
2-NITROANILINE		670	U		2700	U		670	U		670	U	
2-NITROPHENOL		330	U		1300	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		1300	U		330	U		330	U	
3-NITROANILINE		670	U		2700	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		2700	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		1300	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	C	1300	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		1300	U		330	U		330	U	
4-NITROANILINE		670	U		2700	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	2700	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		1300	U		330	U		330	U	
BENZALDEHYDE		330	UJ	CE	1300	UJ	CE	64	J	CEP	330	UJ	CE
BENZO(A)ANTHRACENE													
BENZO(A)PYRENE													
BENZO(B)FLUORANTHENE													
BENZO(G,H,I)PERYLENE													
BENZO(K)FLUORANTHENE													
BIS(2-CHLOROETHOXY)METHANE		330	U		1300	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		1300	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		57	J	P	1300	U		220	J	P	35	J	P
BUTYL BENZYL PHTHALATE		330	U		1300	U		330	U		330	U	
CAPROLACTAM		330	U		1300	U		330	U		330	U	
CARBAZOLE		330	U		1300	U		330	U		330	U	
CHRYSENE													
DIBENZOFURAN		330	U		1300	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		1300	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		1300	U		330	U		330	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
SDG: J0478	LAB_ID	J0478-22A			J0478-23A			J0478-24A			J0478-15A		
FRACTION: OS	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		330	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		330	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		670	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		330	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		670	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		330	U		330	U		330	U	
2-NITROANILINE		670	U		670	U		670	U		670	U	
2-NITROPHENOL		330	U		330	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		330	U		330	U		330	U	
3-NITROANILINE		670	U		670	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		670	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-NITROANILINE		670	U		670	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	670	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		330	U		330	U		330	U	
BENZALDEHYDE		330	UJ	CE	330	UJ	CE	330	UJ	CE	160	J	CEP
BENZO(A)ANTHRACENE													
BENZO(A)PYRENE													
BENZO(B)FLUORANTHENE													
BENZO(G,H,I)PERYLENE													
BENZO(K)FLUORANTHENE													
BIS(2-CHLOROETHOXY)METHANE		330	U		330	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		330	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		330	U		330	U		330	U		150	J	P
BUTYL BENZYL PHTHALATE		330	U		330	U		330	U		330	U	
CAPROLACTAM		330	U		330	U		330	U		330	U	
CARBAZOLE		330	U		330	U		330	U		330	U	
CHRYSENE													
DIBENZOFURAN		330	U		330	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		330	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		330	U		330	U		330	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF5-SD-913-0006			TF5-SD-914-0006		
SDG: J0478	LAB_ID	J0478-16A			J0478-31A			J0478-01A			J0478-02A		
FRACTION: OS	SAMP_DATE	3/17/2010			3/18/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			FD			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	43.0			68.0			51.0			55.0		
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		330	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		330	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		670	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		330	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		670	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		330	U		330	U		330	U	
2-NITROANILINE		670	U		670	U		670	U		670	U	
2-NITROPHENOL		330	U		330	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		330	U		330	U		330	U	
3-NITROANILINE		670	U		670	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		670	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-NITROANILINE		670	U		670	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	670	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		330	U		330	U		330	U	
BENZALDEHYDE		200	J	CEP	330	UJ	CE	330	UJ	C	330	UJ	C
BENZO(A)ANTHRACENE													
BENZO(A)PYRENE													
BENZO(B)FLUORANTHENE													
BENZO(G,H,I)PERYLENE													
BENZO(K)FLUORANTHENE													
BIS(2-CHLOROETHOXY)METHANE		330	U		330	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		330	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		160	J	P	330	U		330	U		45	J	P
BUTYL BENZYL PHTHALATE		330	U		330	U		330	U		330	U	
CAPROLACTAM		330	U		330	U		330	U		330	U	
CARBAZOLE		330	U		330	U		330	U		330	U	
CHRYSENE													
DIBENZOFURAN		330	U		330	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		330	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		330	U		330	U		330	U	

PROJ_NO: 00963	NSAMPLE	TF5-SD-915-0006			TF5-SD-916-0006			TF5-SD-917-0006			TF5-SD-918-0006		
SDG: J0478	LAB_ID	J0478-03A			J0478-04A			J0478-05A			J0478-06A		
FRACTION: OS	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	58.0			66.0			46.0			21.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		330	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		330	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		670	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		330	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		670	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		330	U		330	U		330	U	
2-NITROANILINE		670	U		670	U		670	U		670	U	
2-NITROPHENOL		330	U		330	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		330	U		330	UJ	D	330	U	
3-NITROANILINE		670	U		670	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		670	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-NITROANILINE		670	U		670	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	670	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		330	U		330	U		330	U	
BENZALDEHYDE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
BENZO(A)ANTHRACENE													
BENZO(A)PYRENE													
BENZO(B)FLUORANTHENE													
BENZO(G,H,I)PERYLENE													
BENZO(K)FLUORANTHENE													
BIS(2-CHLOROETHOXY)METHANE		330	U		330	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		330	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		41	J	P	130	J	P	250	J	P	140	J	P
BUTYL BENZYL PHTHALATE		330	U		330	U		330	U		330	U	
CAPROLACTAM		330	U		330	U		330	U		330	U	
CARBAZOLE		330	U		39	J	P	330	U		36	J	P
CHRYSENE													
DIBENZOFURAN		330	U		330	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		330	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		330	U		330	U		330	U	

PROJ_NO: 00963	NSAMPLE	TF5-SD-919-0006			TF5-SD-920-0006			TF5-SD-921-0006			TF5-SD-922-0006		
SDG: J0478	LAB_ID	J0478-07A			J0478-08A			J0478-09A			J0478-10A		
FRACTION: OS	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	39.0			54.0			34.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		330	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		330	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		670	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		330	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		670	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		330	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		330	U		330	U		330	U	
2-NITROANILINE		670	U		670	U		670	U		670	U	
2-NITROPHENOL		330	U		330	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		330	U		330	U		330	U	
3-NITROANILINE		670	U		670	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		670	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		330	U		330	U		330	U	
4-NITROANILINE		670	U		670	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	670	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		330	U		330	U		330	U	
BENZALDEHYDE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
BENZO(A)ANTHRACENE								650			620		
BENZO(A)PYRENE								780			690		
BENZO(B)FLUORANTHENE								750			710		
BENZO(G,H,I)PERYLENE								600			450		
BENZO(K)FLUORANTHENE								860			630		
BIS(2-CHLOROETHOXY)METHANE		330	U		330	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		330	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		130	J	P	310	J	P	410			220	J	P
BUTYL BENZYL PHTHALATE		330	U		330	U		330	U		330	U	
CAPROLACTAM		330	U		330	U		330	U		330	U	
CARBAZOLE		49	J	P	330	U		100	J	P	81	J	P
CHRYSENE								860			860		
DIBENZOFURAN		330	U		330	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		330	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		330	U		330	U		330	U	

PROJ_NO: 00963	NSAMPLE	TF5-SD-923-0006			TF5-SD-924-0006			TF5-SD-DUP01-031610		
SDG: J0478	LAB_ID	J0478-11A			J0478-12A			J0478-13A		
FRACTION: OS	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			FD		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	59.0			34.0			67.0		
	DUP_OF							TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		330	U		330	U		330	U	
2,2'-OXYBIS(1-CHLOROPROPANE)		330	U		330	U		330	U	
2,4,5-TRICHLOROPHENOL		670	U		670	U		670	U	
2,4,6-TRICHLOROPHENOL		330	U		330	U		330	U	
2,4-DINITROPHENOL		670	U		670	U		670	U	
2,4-DINITROTOLUENE		330	U		330	U		330	U	
2,6-DINITROTOLUENE		330	U		330	U		330	U	
2-CHLORONAPHTHALENE		330	U		330	U		330	U	
2-NITROANILINE		670	U		670	U		670	U	
2-NITROPHENOL		330	U		330	U		330	U	
3,3'-DICHLOROBENZIDINE		330	U		330	U		330	U	
3-NITROANILINE		670	U		670	U		670	U	
4,6-DINITRO-2-METHYLPHENOL		670	U		670	U		670	U	
4-BROMOPHENYL PHENYL ETHER		330	U		330	U		330	U	
4-CHLOROANILINE		330	UJ	C	330	UJ	C	330	UJ	C
4-CHLOROPHENYL PHENYL ETHER		330	U		330	U		330	U	
4-NITROANILINE		670	U		670	U		670	U	
4-NITROPHENOL		670	UJ	C	670	UJ	C	670	UJ	C
ACETOPHENONE		330	U		330	U		330	U	
BENZALDEHYDE		330	UJ	C	330	UJ	C	330	UJ	C
BENZO(A)ANTHRACENE					600					
BENZO(A)PYRENE					760					
BENZO(B)FLUORANTHENE		450			1000					
BENZO(G,H,I)PERYLENE					630					
BENZO(K)FLUORANTHENE		500	J	G	720					
BIS(2-CHLOROETHOXY)METHANE		330	U		330	U		330	U	
BIS(2-CHLOROETHYL)ETHER		330	U		330	U		330	U	
BIS(2-ETHYLHEXYL)PHTHALATE		130	J	P	210	J	P	95	J	P
BUTYL BENZYL PHTHALATE		330	U		330	U		330	U	
CAPROLACTAM		330	U		330	U		330	U	
CARBAZOLE		60	J	P	100	J	P	41	J	P
CHRYSENE		550	J	G	890					
DIBENZOFURAN		330	U		330	U		330	U	
DIETHYL PHTHALATE		330	U		330	U		330	U	
DIMETHYL PHTHALATE		330	U		330	U		330	U	

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: SEDIMENT	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
	LAB_ID	J0478-28A			J0478-29A			J0478-30A			J0478-25A		
	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		330	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		330	U		330	U		330	U	
FLUORANTHENE													
HEXACHLOROBUTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROETHANE		330	U		330	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE													
ISOPHORONE		330	U		330	U		330	U		330	U	
NITROBENZENE		330	U		330	U		330	U		330	U	
N-NITROSO-DI-N-PROPYLAMINE		330	U		330	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		330	U		330	U		330	U	
PHENANTHRENE													
PYRENE													

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: SEDIMENT	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006			TF4-SD-908-0006		
	LAB_ID	J0478-26A			J0478-27A			J0478-20A			J0478-21A		
	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		1300	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		1300	U		330	U		330	U	
FLUORANTHENE													
HEXACHLOROBUTADIENE		330	U		1300	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		1300	U		330	U		330	U	
HEXACHLOROETHANE		330	U		1300	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE													
ISOPHORONE		330	U		1300	U		330	U		330	U	
NITROBENZENE		330	U		1300	U		330	UJ	C	330	U	
N-NITROSO-DI-N-PROPYLAMINE		330	U		1300	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		1300	U		330	U		330	U	
PHENANTHRENE													
PYRENE													

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: SEDIMENT	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
	LAB_ID	J0478-22A			J0478-23A			J0478-24A			J0478-15A		
	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		330	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		330	U		330	U		330	U	
FLUORANTHENE													
HEXACHLOROBUTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROETHANE		330	U		330	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE													
ISOPHORONE		330	U		330	U		330	U		330	U	
NITROBENZENE		330	U		330	U		330	U		330	U	
N-NITROSO-DI-N-PROPYLAMINE		330	U		330	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		330	U		330	U		330	U	
PHENANTHRENE													
PYRENE													

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF5-SD-913-0006			TF5-SD-914-0006		
SDG: J0478	LAB_ID	J0478-16A			J0478-31A			J0478-01A			J0478-02A		
FRACTION: OS	SAMP_DATE	3/17/2010			3/18/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			FD			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	43.0			68.0			51.0			55.0		
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		330	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		330	U		330	U		330	U	
FLUORANTHENE								400					
HEXACHLOROBUTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROETHANE		330	U		330	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE													
ISOPHORONE		330	U		330	U		330	U		330	U	
NITROBENZENE		330	U		330	U		330	UJ	C	330	UJ	C
N-NITROSO-DI-N-PROPYLAMINE		330	U		330	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		330	U		330	U		330	U	
PHENANTHRENE								430					
PYRENE								370					

PROJ_NO: 00963	NSAMPLE	TF5-SD-915-0006			TF5-SD-916-0006			TF5-SD-917-0006			TF5-SD-918-0006		
SDG: J0478	LAB_ID	J0478-03A			J0478-04A			J0478-05A			J0478-06A		
FRACTION: OS	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	58.0			66.0			46.0			21.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		330	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		330	U		330	U		330	U	
FLUORANTHENE													
HEXACHLOROBUTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROETHANE		330	U		330	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE													
ISOPHORONE		330	U		330	U		330	U		330	U	
NITROBENZENE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
N-NITROSO-DI-N-PROPYLAMINE		330	U		330	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		330	U		330	U		330	U	
PHENANTHRENE													
PYRENE													

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: SEDIMENT	NSAMPLE	TF5-SD-919-0006			TF5-SD-920-0006			TF5-SD-921-0006			TF5-SD-922-0006		
	LAB_ID	J0478-07A			J0478-08A			J0478-09A			J0478-10A		
	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	39.0			54.0			34.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		330	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		330	U		330	U		330	U	
FLUORANTHENE								1800			1500		
HEXACHLOROBUTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		330	U		330	U		330	U	
HEXACHLOROETHANE		330	U		330	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE								590			430		
ISOPHORONE		330	U		330	U		330	U		330	U	
NITROBENZENE		330	UJ	C	330	UJ	C	330	UJ	C	330	UJ	C
N-NITROSO-DI-N-PROPYLAMINE		330	U		330	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		330	U		330	U		330	U	
PHENANTHRENE								690			640		
PYRENE								1300			1100		

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: SEDIMENT	NSAMPLE	TF5-SD-923-0006			TF5-SD-924-0006			TF5-SD-DUP01-031610		
	LAB_ID	J0478-11A			J0478-12A			J0478-13A		
	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010		
	QC_TYPE	NM			NM			FD		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	59.0			34.0			67.0		
	DUP_OF							TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
DI-N-BUTYL PHTHALATE		330	U		330	U		330	U	
DI-N-OCTYL PHTHALATE		330	U		330	U		330	U	
FLUORANTHENE		1000			1800			710		
HEXACHLOROBUTADIENE		330	U		330	U		330	U	
HEXACHLOROCYCLOPENTADIENE		330	U		330	U		330	U	
HEXACHLOROETHANE		330	U		330	U		330	U	
INDENO(1,2,3-CD)PYRENE					660					
ISOPHORONE		330	U		330	U		330	U	
NITROBENZENE		330	UJ	C	330	UJ	C	330	UJ	C
N-NITROSO-DI-N-PROPYLAMINE		330	U		330	U		330	U	
N-NITROSODIPHENYLAMINE		330	U		330	U		330	U	
PHENANTHRENE					550					
PYRENE		730			1300			490		

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: WATER	NSAMPLE	TF4-SD-FB01-031710			TF4-SD-RB01-031710		
	LAB_ID	J0478-18C			J0478-19C		
	SAMP_DATE	3/17/2010			3/17/2010		
	QC_TYPE	FB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-BIPHENYL		10	UJ	C	10	UJ	C
1,2,4,5-TETRACHLOROBENZENE		10	U		10	U	
1,4-DIOXANE		10	UR	C	10	UR	C
2,2'-OXYBIS(1-CHLOROPROPANE)		10	U		10	U	
2,3,4,6-TETRACHLOROPHENOL		25	U		25	U	
2,4,5-TRICHLOROPHENOL		20	U		20	U	
2,4,6-TRICHLOROPHENOL		10	U		10	U	
2,4-DICHLOROPHENOL		10	U		10	U	
2,4-DIMETHYLPHENOL		10	UJ	CE	10	UJ	CE
2,4-DINITROPHENOL		20	UJ	C	20	UJ	C
2,4-DINITROTOLUENE		10	U		10	U	
2,6-DINITROTOLUENE		10	U		10	U	
2-CHLORONAPHTHALENE		10	U		10	U	
2-CHLOROPHENOL		10	U		10	U	
2-METHYLNAPHTHALENE		10	U		10	U	
2-METHYLPHENOL		10	U		10	U	
2-NITROANILINE		20	U		20	U	
2-NITROPHENOL		10	U		10	U	
3,3'-DICHLOROBENZIDINE		10	U		10	U	
3-NITROANILINE		20	U		20	U	
4,6-DINITRO-2-METHYLPHENOL		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER		10	U		10	U	
4-CHLORO-3-METHYLPHENOL		10	U		10	U	
4-CHLOROANILINE		10	UJ	C	10	UJ	C
4-CHLOROPHENYL PHENYL ETHER		10	U		10	U	
4-METHYLPHENOL		10	U		10	U	
4-NITROANILINE		20	U		20	U	
4-NITROPHENOL		20	U		20	U	
ACENAPHTHENE		10	U		10	U	
ACENAPHTHYLENE		10	U		10	U	
ACETOPHENONE		10	UJ	C	10	UJ	C
ANTHRACENE		10	U		10	U	
ATRAZINE		10	UJ	C	10	UJ	C
BENZALDEHYDE		10	UJ	C	10	UJ	C
BENZO(A)ANTHRACENE		10	U		10	U	

PROJ_NO: 00963 SDG: J0478 FRACTION: OS MEDIA: WATER	NSAMPLE	TF4-SD-FB01-031710			TF4-SD-RB01-031710		
	LAB_ID	J0478-18C			J0478-19C		
	SAMP_DATE	3/17/2010			3/17/2010		
	QC_TYPE	FB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)PYRENE		10	U		10	U	
BENZO(B)FLUORANTHENE		10	U		10	U	
BENZO(G,H,I)PERYLENE		10	U		10	U	
BENZO(K)FLUORANTHENE		10	U		10	U	
BIS(2-CHLOROETHOXY)METHANE		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE		10	U		10	U	
BUTYL BENZYL PHTHALATE		10	U		10	U	
CAPROLACTAM		10	U		10	U	
CARBAZOLE		10	U		10	U	
CHRYSENE		10	U		10	U	
DIBENZO(A,H)ANTHRACENE		10	UJ	C	10	UJ	C
DIBENZOFURAN		10	U		10	U	
DIETHYL PHTHALATE		10	U		10	U	
DIMETHYL PHTHALATE		10	U		10	U	
DI-N-BUTYL PHTHALATE		10	U		10	U	
DI-N-OCTYL PHTHALATE		10	U		10	U	
FLUORANTHENE		10	U		10	U	
FLUORENE		10	U		10	U	
HEXACHLOROBENZENE		10	U		10	U	
HEXACHLOROBUTADIENE		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE		10	UJ	C	10	UJ	C
HEXACHLOROETHANE		10	U		10	U	
INDENO(1,2,3-CD)PYRENE		10	U		10	U	
ISOPHORONE		10	U		10	U	
NAPHTHALENE		10	U		10	U	
NITROBENZENE		10	U		10	U	
N-NITROSO-DI-N-PROPYLAMINE		10	U		10	U	
N-NITROSODIPHENYLAMINE		10	U		10	U	
PENTACHLOROPHENOL		20	UJ	C	20	UJ	C
PHENANTHRENE		10	U		10	U	
PHENOL		10	U		10	U	
PYRENE		10	U		10	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
SDG: J0478	LAB_ID	J0478-28A			J0478-29A			J0478-30A			J0478-25A		
FRACTION: PAH	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		3.3	U		3.3	U		3.3	U		3.3	U	
1,4-DIOXANE		3.3	U		3.3	U		3.3	U		3.3	U	
2,3,4,6-TETRACHLOROPHENOL		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
2,4-DICHLOROPHENOL		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
2,4-DIMETHYLPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2-CHLOROPHENOL		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
2-METHYLNAPHTHALENE		3.3	U		7.6	J	G	10			3.3	U	
2-METHYLPHENOL		10	J	CD	3.3	UJ	C	3.3	UJ	C	3.3	UJ	C
4-CHLORO-3-METHYLPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
4-METHYLPHENOL		3.3	U		3.3	U		5.9			16		
ACENAPHTHENE		3.3	U		3.3	U		8.9			3.3	U	
ACENAPHTHYLENE		4.7			3.3	U		28			3.3	U	
ANTHRACENE		11			6			120			8.5		
ATRAZINE		3.3	UJ	CD	3.3	UJ	C	3.3	UJ	C	3.3	UJ	C
BENZO(A)ANTHRACENE		46	J	C	18	J	CG	200	J	C	34	J	C
BENZO(A)PYRENE		61	J	D	16	J	G	210			49		
BENZO(B)FLUORANTHENE		67	J	CE	18	J	CEG	240	J	CE	61	J	CE
BENZO(G,H,I)PERYLENE		49	J	D	15			150			39		
BENZO(K)FLUORANTHENE		68			23	J	G	200			51		
CHRYSENE		78	J	CD	22	J	CG	290	J	C	53	J	C
DIBENZO(A,H)ANTHRACENE		13	J	D	4.6	J	G	53			11		
FLUORANTHENE		110	J	D	34	J	G	330			86		
FLUORENE		5.4			3.7			3.3	U		3.9		
HEXACHLOROBENZENE		3.3	U		3.3	U		3.3	U		3.3	U	
INDENO(1,2,3-CD)PYRENE		39	J	D	12	J	G	120			34		
NAPHTHALENE		4.1			3.3	U		6			3.3	U	
PENTACHLOROPHENOL		33	UJ	C	33	UJ	C	33	UJ	C	33	UJ	C
PHENANTHRENE		57			19	J	G	170			42		
PHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
PYRENE		83			32			260			66		

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006			TF4-SD-908-0006		
SDG: J0478	LAB_ID	J0478-26A			J0478-27A			J0478-20A			J0478-21A		
FRACTION: PAH	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		3.3	U		13	U		3.3	U		3.3	U	
1,4-DIOXANE		3.3	U		13	U		3.3	U		3.3	U	
2,3,4,6-TETRACHLOROPHENOL		3.3	U		13	U		3.3	U		3.3	U	
2,4-DICHLOROPHENOL		3.3	U		13	U		3.3	U		3.3	U	
2,4-DIMETHYLPHENOL		3.3	U		13	U		3.3	U		3.3	U	
2-CHLOROPHENOL		3.3	U		13	U		3.3	U		3.3	U	
2-METHYLNAPHTHALENE		4.2			13	U		3.3	U		3.3	U	
2-METHYLPHENOL		3.3	UJ	C	13	UJ	C	3.3	UJ	C	3.3	UJ	C
4-CHLORO-3-METHYLPHENOL		3.3	U		13	U		3.3	U		3.3	U	
4-METHYLPHENOL		10			13	U		5			3.3	U	
ACENAPHTHENE		19			13	U		6.5			3.3	U	
ACENAPHTHYLENE		4.9			13	U		10			3.3	U	
ANTHRACENE		61			15			28			6.2		
ATRAZINE		3.3	UJ	C	13	UJ	C	3.3	UJ	C	3.3	UJ	C
BENZO(A)ANTHRACENE		100	J	C	66	J	C	130	J	C	26	J	C
BENZO(A)PYRENE		120			73			140			34		
BENZO(B)FLUORANTHENE		130	J	CE	76	J	CE	170	J	CE	41	J	CE
BENZO(G,H,I)PERYLENE		92			55			130			27		
BENZO(K)FLUORANTHENE		130			71			200			43		
CHRYSENE		130	J	C	70	J	C	160	J	C	40	J	C
DIBENZO(A,H)ANTHRACENE		30			14			36			8.2		
FLUORANTHENE		230			130			260			69		
FLUORENE		24			13	U		10			3.3	U	
HEXACHLOROBENZENE		3.3	U		13	U		3.3	U		3.3	U	
INDENO(1,2,3-CD)PYRENE		80			46			110			23		
NAPHTHALENE		5.8			13	U		5			5.3		
PENTACHLOROPHENOL		33	UJ	C	130	UJ	C	33	UJ	C	33	UJ	C
PHENANTHRENE		190			61			140			33		
PHENOL		15			13	U		4.8			3.3	U	
PYRENE		180			100			210			55		

PROJ_NO: 00963 SDG: J0478 FRACTION: PAH MEDIA: SEDIMENT	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
	LAB_ID	J0478-22A			J0478-23A			J0478-24A			J0478-15A		
	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		3.3	U		3.3	U		3.3	U		3.3	U	
1,4-DIOXANE		3.3	U		3.3	U		3.3	U		3.3	U	
2,3,4,6-TETRACHLOROPHENOL		3.3	U		3.3	U		3.3	U		3.3	UJ	C
2,4-DICHLOROPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2,4-DIMETHYLPHENOL		3.3	U		3.3	U		3.3	U		3.3	UJ	C
2-CHLOROPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2-METHYLNAPHTHALENE		3.3	U		3.3	U		3.3	U		3.3	U	
2-METHYLPHENOL		3.3	UJ	C	3.3	UJ	C	3.3	UJ	C	12	J	C
4-CHLORO-3-METHYLPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
4-METHYLPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
ACENAPHTHENE		3.3	U		3.3	U		3.3	UJ	G	3.3	U	
ACENAPHTHYLENE		5.3			5			3.3	J	G	4.5		
ANTHRACENE		8.3			6.1			6.7	J	G	11		
ATRAZINE		3.3	UJ	C	3.3	UJ	C	3.3	UJ	C	3.3	UJ	C
BENZO(A)ANTHRACENE		32	J	C	27	J	C	24	J	CG	50	J	C
BENZO(A)PYRENE		44			41			30	J	G	55		
BENZO(B)FLUORANTHENE		50	J	CE	48	J	CE	35	J	CEG	64	J	CE
BENZO(G,H,I)PERYLENE		32			33			22	J	G	34		
BENZO(K)FLUORANTHENE		42			36			32	J	G	66	J	C
CHRYSENE		48	J	C	40	J	C	33	J	CG	81	J	C
DIBENZO(A,H)ANTHRACENE		13			12			7	J	G	11		
FLUORANTHENE		73			64			47	J	G	110		
FLUORENE		4			3.3	U		3.4	J	G	5.6		
HEXACHLOROBENZENE		3.3	U		3.3	U		3.3	U		3.3	U	
INDENO(1,2,3-CD)PYRENE		28			28			19	J	G	27		
NAPHTHALENE		5.5			3.3	U		3.3	UJ	G	4.2		
PENTACHLOROPHENOL		33	UJ	C	33	UJ	C	33	UJ	C	33	U	
PHENANTHRENE		36			27			27	J	G	60		
PHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
PYRENE		60			55			38	J	G	96		

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF5-SD-913-0006			TF5-SD-914-0006		
SDG: J0478	LAB_ID	J0478-16A			J0478-31A			J0478-01A			J0478-02A		
FRACTION: PAH	SAMP_DATE	3/17/2010			3/18/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			FD			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	43.0			68.0			51.0			55.0		
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		3.3	U		3.3	U		3.3	U		3.3	U	
1,4-DIOXANE		3.3	U		3.3	U		3.3	U		3.3	U	
2,3,4,6-TETRACHLOROPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2,4-DICHLOROPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2,4-DIMETHYLPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2-CHLOROPHENOL		3.3	U		3.3	U		3.3	U		3.3	U	
2-METHYLNAPHTHALENE		3.7			3.3	U		210			24		
2-METHYLPHENOL		3.3	UJ	C	3.3	UJ	C	3.3	U		3.3	U	
4-CHLORO-3-METHYLPHENOL		3.3	U		3.3	U		3.3	UJ	C	3.3	UJ	C
4-METHYLPHENOL		5.7			3.3	U		3.3	U		3.3	U	
ACENAPHTHENE		10	J	G	3.3	U		48			24		
ACENAPHTHYLENE		8.5	J	G	3.3	U		110			14		
ANTHRACENE		35	J	G	9.7			120			29		
ATRAZINE		3.3	UJ	C	3.3	UJ	C	3.3	UJ	CE	3.3	UJ	CE
BENZO(A)ANTHRACENE		120	J	CG	36	J	C	140	J	C	33	J	C
BENZO(A)PYRENE		130	J	G	31			190			42		
BENZO(B)FLUORANTHENE		150	J	CEG	32	J	CE	290	J	C	72	J	C
BENZO(G,H,I)PERYLENE		120	J	G	24			150			32		
BENZO(K)FLUORANTHENE		190	J	G	43			140	J	C	29	J	C
CHRYSENE		150	J	CG	49	J	C	220			51		
DIBENZO(A,H)ANTHRACENE		43	J	G	8.6			40			8.7		
FLUORANTHENE		220	J	G	65						100		
FLUORENE		16	J	G	4.7			120			34		
HEXACHLOROBENZENE		3.3	U		3.3	U		3.3	U		3.3	U	
INDENO(1,2,3-CD)PYRENE		100	J	G	21			130			29		
NAPHTHALENE		7.2	J	G	3.3	U		130			9.6		
PENTACHLOROPHENOL		33	UJ	C	33	UJ	C	33	U		33	U	
PHENANTHRENE		150	J	G	39						130		
PHENOL		5.4			3.3	U		3.3	U		3.3	U	
PYRENE		190	J	G	51						85		

PROJ_NO: 00963	NSAMPLE	TF5-SD-915-0006			TF5-SD-916-0006			TF5-SD-916-0006DL			TF5-SD-917-0006		
SDG: J0478	LAB_ID	J0478-03A			J0478-04A			J0478-04ADL			J0478-05A		
FRACTION: PAH	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	58.0			66.0			66.0			46.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		3.3	U		3.3	U					3.3	U	
1,4-DIOXANE		3.3	U		3.3	U					3.3	U	
2,3,4,6-TETRACHLOROPHENOL		3.3	U		3.3	U					3.3	U	
2,4-DICHLOROPHENOL		3.3	U		3.3	U					3.3	U	
2,4-DIMETHYLPHENOL		3.3	U		3.3	U					3.3	U	
2-CHLOROPHENOL		3.3	U		3.3	U					3.3	U	
2-METHYLNAPHTHALENE		31			4.7						7.3		
2-METHYLPHENOL		3.3	U		3.3	U					3.3	U	
4-CHLORO-3-METHYLPHENOL		3.3	UJ	C	3.3	UJ	C				3.3	UJ	C
4-METHYLPHENOL		3.3	U		11						5.3		
ACENAPHTHENE		14			10						8.9		
ACENAPHTHYLENE		31			19						20		
ANTHRACENE		54			51						35		
ATRAZINE		3.3	UJ	CE	3.3	UJ	CE				3.3	UJ	CE
BENZO(A)ANTHRACENE		96	J	C	270	J	C				160	J	CD
BENZO(A)PYRENE		130						260			230	J	D
BENZO(B)FLUORANTHENE		170	J	C				420	J	C			
BENZO(G,H,I)PERYLENE		81						250			200	J	D
BENZO(K)FLUORANTHENE		91	J	C				160			290	J	CD
CHRYSENE		130						330	J	C	230	J	D
DIBENZO(A,H)ANTHRACENE		26			130						57		
FLUORANTHENE		210						710					
FLUORENE		35			20						16		
HEXACHLOROBENZENE		3.3	U		3.3	U					3.3	U	
INDENO(1,2,3-CD)PYRENE		72			320						180	J	D
NAPHTHALENE		21			4.2						7		
PENTACHLOROPHENOL		33	U		33	U					33	U	
PHENANTHRENE		180			310						200	J	D
PHENOL		3.3	U		7.6						3.3	U	
PYRENE		200						560					

PROJ_NO: 00963 SDG: J0478 FRACTION: PAH MEDIA: SEDIMENT	NSAMPLE	TF5-SD-917-0006DL			TF5-SD-918-0006			TF5-SD-918-0006DL			TF5-SD-919-0006		
	LAB_ID	J0478-05ADL			J0478-06A			J0478-06ADL			J0478-07A		
	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	46.0			21.0			21.0			39.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE					3.3	U					3.3	U	
1,4-DIOXANE					3.3	U					3.3	U	
2,3,4,6-TETRACHLOROPHENOL					3.3	U					3.3	U	
2,4-DICHLOROPHENOL					3.3	U					3.3	U	
2,4-DIMETHYLPHENOL					3.3	U					3.5		
2-CHLOROPHENOL					3.3	U					3.3	U	
2-METHYLNAPHTHALENE					7.4						15		
2-METHYLPHENOL					12						3.5		
4-CHLORO-3-METHYLPHENOL					3.3	UJ	C				3.3	UJ	C
4-METHYLPHENOL					8.8						6.3		
ACENAPHTHENE					12						36		
ACENAPHTHYLENE					24						64		
ANTHRACENE					59						130		
ATRAZINE					4.6	J	CE				3.3	UJ	CE
BENZO(A)ANTHRACENE					230	J	C						
BENZO(A)PYRENE								300					
BENZO(B)FLUORANTHENE		230	J	C				430	J	C			
BENZO(G,H,I)PERYLENE					320								
BENZO(K)FLUORANTHENE					200	J	C						
CHRYSENE								350	J	C			
DIBENZO(A,H)ANTHRACENE					110						110		
FLUORANTHENE		380						700					
FLUORENE					22						62		
HEXACHLOROBENZENE					3.3	U					3.3	U	
INDENO(1,2,3-CD)PYRENE					280						310		
NAPHTHALENE					8.6						22		
PENTACHLOROPHENOL					33	U					34		
PHENANTHRENE					260								
PHENOL					7.3						6.2		
PYRENE		310						540					

PROJ_NO: 00963	NSAMPLE	TF5-SD-919-0006DL			TF5-SD-920-0006			TF5-SD-921-0006			TF5-SD-922-0006		
SDG: J0478	LAB_ID	J0478-07ADL			J0478-08A			J0478-09A			J0478-10A		
FRACTION: PAH	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	39.0			54.0			34.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE					3.3	U		3.3	U		3.3	U	
1,4-DIOXANE					3.3	U		3.3	U		3.3	U	
2,3,4,6-TETRACHLOROPHENOL					3.3	U		3.3	U		3.3	U	
2,4-DICHLOROPHENOL					3.3	U		3.3	U		3.3	U	
2,4-DIMETHYLPHENOL					3.3	U		3.3	U		3.3	U	
2-CHLOROPHENOL					3.3	U		3.3	U		3.3	U	
2-METHYLNAPHTHALENE					3.3	U		5.8			11		
2-METHYLPHENOL					3.3	U		3.3	U		3.3	UJ	C
4-CHLORO-3-METHYLPHENOL					3.3	UJ	C	3.3	UJ	C	3.3	U	
4-METHYLPHENOL					9.4			21			3.8		
ACENAPHTHENE					7.2			25			41		
ACENAPHTHYLENE					14			31			39		
ANTHRACENE					29			120			150		
ATRAZINE					3.3	UJ	CE	3.3	UJ	CE	3.3	UJ	CE
BENZO(A)ANTHRACENE		270	J	C	90	J	C						
BENZO(A)PYRENE		390			130								
BENZO(B)FLUORANTHENE		470	J	C	250	J	C						
BENZO(G,H,I)PERYLENE		350			100								
BENZO(K)FLUORANTHENE		460			69	J	C						
CHRYSENE		440	J	C	170								
DIBENZO(A,H)ANTHRACENE					38			180			150		
FLUORANTHENE		640			270								
FLUORENE					14			42			66		
HEXACHLOROBENZENE					3.3	U		3.3	U		3.3	U	
INDENO(1,2,3-CD)PYRENE					92						300		
NAPHTHALENE					3.3	U		7.7			17		
PENTACHLOROPHENOL					33	U		33	U		33	UJ	C
PHENANTHRENE		360			130								
PHENOL					3.3	U		8.7			3.3	U	
PYRENE		580			220								

PROJ_NO: 00963	NSAMPLE	TF5-SD-923-0006			TF5-SD-924-0006			TF5-SD-DUP01-031610		
SDG: J0478	LAB_ID	J0478-11A			J0478-12A			J0478-13A		
FRACTION: PAH	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			FD		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	59.0			34.0			67.0		
	DUP_OF							TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,2,4,5-TETRACHLOROBENZENE		3.3	U		3.3	U		3.3	U	
1,4-DIOXANE		3.3	U		3.3	U		3.3	U	
2,3,4,6-TETRACHLOROPHENOL		3.3	U		3.3	U		3.3	U	
2,4-DICHLOROPHENOL		3.3	U		3.3	U		3.3	U	
2,4-DIMETHYLPHENOL		3.3	U		3.3	U		3.3	U	
2-CHLOROPHENOL		3.3	U		3.3	U		3.3	U	
2-METHYLNAPHTHALENE		3.3	U		3.6			3.3	U	
2-METHYLPHENOL		3.3	UJ	C	3.3	UJ	C	3.3	UJ	C
4-CHLORO-3-METHYLPHENOL		3.3	U		3.3	U		3.3	U	
4-METHYLPHENOL		3.3	U		5.3			6.1		
ACENAPHTHENE		15	J	G	14			8.7	J	G
ACENAPHTHYLENE		7.4			12			5.8		
ANTHRACENE		51	J	G	55			29	J	G
ATRAZINE		3.3	UJ	CE	3.3	UJ	CE	3.3	UJ	CE
BENZO(A)ANTHRACENE		230	J	C				150	J	C
BENZO(A)PYRENE		320						240		
BENZO(B)FLUORANTHENE								320	J	C
BENZO(G,H,I)PERYLENE		310						230		
BENZO(K)FLUORANTHENE								220	J	G
CHRYSENE								250	J	CG
DIBENZO(A,H)ANTHRACENE		110	J	G	160			64	J	G
FLUORANTHENE										
FLUORENE		25	J	G	24			15	J	G
HEXACHLOROBENZENE		3.3	U		3.3	U		3.3	U	
INDENO(1,2,3-CD)PYRENE		250						180		
NAPHTHALENE		3.3	U		7.7			6.2		
PENTACHLOROPHENOL		33	UJ	C	33	UJ	C	33	UJ	C
PHENANTHRENE		300						190		
PHENOL		3.3	U		5.5			3.4		
PYRENE										

PROJ_NO: 00963 SDG: J0478 FRACTION: PEST/PCB MEDIA: SEDIMENT	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
	LAB_ID	J0478-28A			J0478-29A			J0478-30A			J0478-25A		
	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
4,4'-DDE		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
4,4'-DDT		3.3	U		3.3	U		3.3	U		3.3	U	
ALDRIN		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-CHLORDANE		1.7	UJ	D	1.7	U		1.7	U		1.7	U	
AROCLOR-1016		33	U		33	U		33	U		33	U	
AROCLOR-1221		33	U		33	U		33	U		33	U	
AROCLOR-1232		33	U		33	U		33	U		33	U	
AROCLOR-1242		33	U		33	U		33	U		33	U	
AROCLOR-1248		33	U		33	U		33	U		33	U	
AROCLOR-1254		33	U		33	U		33	U		33	U	
AROCLOR-1260		33	U		33	U		33	U		33	U	
AROCLOR-1262		33	U		33	U		33	U		33	U	
AROCLOR-1268		33	U		33	U		33	U		33	U	
BETA-BHC		1.7	UJ	D	1.7	U		1.7	U		1.7	U	
DELTA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DIELDRIN		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	U		1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN		3.3	UJ	D	3.3	U		3.3	U		3.3	U	
ENDRIN ALDEHYDE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN KETONE		3.3	U		40	J	G	3.3	U		3.3	U	
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	U		1.7	U	
GAMMA-CHLORDANE		1.7	UJ	D	1.7	U		1.7	U		1.7	U	
HEPTACHLOR		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR EPOXIDE		1.7	UJ	D	1.7	U		1.7	U		1.7	U	
METHOXYCHLOR		17	U		17	U		17	U		17	U	
TOXAPHENE		170	U		170	U		170	U		170	U	

PROJ_NO: 00963 SDG: J0478 FRACTION: PEST/PCB MEDIA: SEDIMENT	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006			TF4-SD-908-0006		
	LAB_ID	J0478-26A			J0478-27A			J0478-20A			J0478-21A		
	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	U		3.3	U		3.3	U		3.3	U	
4,4'-DDE		3.3	U		3.3	U		3.3	U		3.3	U	
4,4'-DDT		3.3	U		3.3	U		3.3	U		3.3	U	
ALDRIN		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-CHLORDANE		1.7	U		1.7	U		1.7	U		1.7	U	
AROCLOR-1016		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1221		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1232		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1242		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1248		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1254		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1260		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1262		33	U		33	U		33	UJ	R	33	U	
AROCLOR-1268		33	U		33	U		33	UJ	R	33	U	
BETA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DELTA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DIELDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	U		1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN ALDEHYDE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN KETONE		3.3	U		3.3	U		3.3	U		3.3	U	
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	U		1.7	U	
GAMMA-CHLORDANE		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR EPOXIDE		1.7	U		1.7	U		1.7	U		1.7	U	
METHOXYCHLOR		17	U		17	U		17	U		17	U	
TOXAPHENE		170	U		170	U		170	U		170	U	

PROJ_NO: 00963 SDG: J0478 FRACTION: PEST/PCB MEDIA: SEDIMENT	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
	LAB_ID	J0478-22A			J0478-23A			J0478-24A			J0478-15A		
	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	U		3.4			3.3	U		3.3	U	
4,4'-DDE		3.3	U		15	J	CD	3.3	U		3.3	U	
4,4'-DDT		3.3	U		6.7			3.3	U		3.3	U	
ALDRIN		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-CHLORDANE		1.7	U		1.7	U		1.7	U		1.7	U	
AROCLOR-1016		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1221		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1232		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1242		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1248		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1254		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1260		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1262		33	U		33	UJ	R	33	U		33	UJ	R
AROCLOR-1268		33	U		33	UJ	R	33	U		33	UJ	R
BETA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DELTA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DIELDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	U		1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN ALDEHYDE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN KETONE		3.3	U		3.3	U		3.3	U		3.3	U	
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	U		1.7	U	
GAMMA-CHLORDANE		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR EPOXIDE		1.7	U		1.7	U		1.7	U		1.7	U	
METHOXYCHLOR		17	U		17	U		17	U		17	U	
TOXAPHENE		170	U		170	U		170	U		170	U	

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF5-SD-913-0006			TF5-SD-914-0006		
SDG: J0478	LAB_ID	J0478-16A			J0478-31A			J0478-01A			J0478-02A		
FRACTION: PEST/PCB	SAMP_DATE	3/17/2010			3/18/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			FD			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	43.0			68.0			51.0			55.0		
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	U		3.3	U		3.3	U		3.3	U	
4,4'-DDE		3.3	U		3.3	U		3.3	U		3.3	U	
4,4'-DDT		3.3	U		3.3	U		3.3	U		3.3	U	
ALDRIN		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
ALPHA-CHLORDANE		1.7	U		1.7	U		1.7	U		1.7	U	
AROCLOR-1016		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1221		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1232		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1242		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1248		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1254		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1260		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1262		33	UJ	R	33	U		33	U		33	U	
AROCLOR-1268		33	UJ	R	33	U		33	U		33	U	
BETA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DELTA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DIELDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	U		1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN ALDEHYDE		3.8			3.3	U		3.3	U		3.3	U	
ENDRIN KETONE		3.3	U		3.3	UJ	G	3.3	U		3.3	U	
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	U		1.7	U	
GAMMA-CHLORDANE		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR EPOXIDE		1.7	U		1.7	U		1.7	U		1.7	U	
METHOXYCHLOR		17	U		17	U		17	U		17	U	
TOXAPHENE		170	U		170	U		170	U		170	U	

PROJ_NO: 00963	NSAMPLE	TF5-SD-915-0006			TF5-SD-916-0006			TF5-SD-917-0006			TF5-SD-918-0006		
SDG: J0478	LAB_ID	J0478-03A			J0478-04A			J0478-05A			J0478-06A		
FRACTION: PEST/PCB	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	58.0			66.0			46.0			21.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	U		3.3	U		3.4	J	DU	3.3	U	
4,4'-DDE		4.8			3.3	U		3.3	UJ	D	3.3	U	
4,4'-DDT		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
ALDRIN		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
ALPHA-BHC		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
ALPHA-CHLORDANE		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
AROCLOR-1016		33	U		33	U		33	U		33	U	
AROCLOR-1221		33	U		33	U		33	U		33	U	
AROCLOR-1232		33	U		33	U		33	U		33	U	
AROCLOR-1242		33	U		33	U		33	U		33	U	
AROCLOR-1248		33	U		33	U		33	U		33	U	
AROCLOR-1254		33	U		33	U		33	U		33	U	
AROCLOR-1260		33	U		33	U		33	U		33	U	
AROCLOR-1262		33	U		33	U		33	U		33	U	
AROCLOR-1268		33	U		33	U		33	U		33	U	
BETA-BHC		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
DELTA-BHC		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
DIELDRIN		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
ENDRIN		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
ENDRIN ALDEHYDE		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
ENDRIN KETONE		3.3	U		3.3	U		3.3	UJ	D	3.3	U	
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
GAMMA-CHLORDANE		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
HEPTACHLOR		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
HEPTACHLOR EPOXIDE		1.7	U		1.7	U		1.7	UJ	D	1.7	U	
METHOXYCHLOR		17	U		17	U		17	UJ	D	17	U	
TOXAPHENE		170	U		170	U		170	UJ	D	170	U	

PROJ_NO: 00963	NSAMPLE	TF5-SD-919-0006			TF5-SD-920-0006			TF5-SD-921-0006			TF5-SD-922-0006		
SDG: J0478	LAB_ID	J0478-07A			J0478-08A			J0478-09A			J0478-10A		
FRACTION: PEST/PCB	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	39.0			54.0			34.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	U		3.3	U		3.3	U		51	UJ	U
4,4'-DDE		4.7			3.3	U		3.3	U		5.4		
4,4'-DDT		3.4			3.3	U		3.3	U		15		
ALDRIN		1.7	U		1.7	U		1.7	U		2.6		
ALPHA-BHC		1.7	U		1.7	U		1.7	U		2.1		
ALPHA-CHLORDANE		1.7	U		1.7	U		1.7	U		79	UJ	U
AROCLOR-1016		33	U		33	U		33	U		33	UJ	R
AROCLOR-1221		33	U		33	U		33	U		33	UJ	R
AROCLOR-1232		33	U		33	U		33	U		33	UJ	R
AROCLOR-1242		33	U		33	U		33	U		33	UJ	R
AROCLOR-1248		33	U		33	U		33	U		33	UJ	R
AROCLOR-1254		33	U		33	U		33	U		33	UJ	R
AROCLOR-1260		45			40	J	R	33	U		78	J	RU
AROCLOR-1262		33	U		33	U		33	U		33	UJ	R
AROCLOR-1268		33	U		33	U		33	U		33	UJ	R
BETA-BHC		1.7	U		1.7	U		1.7	U		91	UJ	U
DELTA-BHC		1.7	U		1.7	U		1.7	U		1.7	U	
DIELDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	U		1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	U		3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN ALDEHYDE		3.3	U		3.3	U		3.3	U		3.3	U	
ENDRIN KETONE		3.4			3.3	U		3.3	U		11		
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	U		1.7	U	
GAMMA-CHLORDANE		1.7	U		1.7	U		1.7	U		4.9	J	U
HEPTACHLOR		1.7	U		1.7	U		1.7	U		1.7	U	
HEPTACHLOR EPOXIDE		1.7	U		1.7	U		1.7	U		1.7	U	
METHOXYCHLOR		17	U		17	U		17	U		325	UJ	U
TOXAPHENE		170	U		170	U		170	U		170	U	

PROJ_NO: 00963 SDG: J0478 FRACTION: PEST/PCB MEDIA: SEDIMENT	NSAMPLE	TF5-SD-923-0006			TF5-SD-924-0006			TF5-SD-DUP01-031610		
	LAB_ID	J0478-11A			J0478-12A			J0478-13A		
	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010		
	QC_TYPE	NM			NM			FD		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	59.0			34.0			67.0		
	DUP_OF							TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		3.3	U		3.3	U		5.6	J	U
4,4'-DDE		3.3	U		3.9			3.3	U	
4,4'-DDT		3.3	U		4.3			3.3	U	
ALDRIN		1.7	U		1.7	U		1.7	U	
ALPHA-BHC		1.7	U		1.7	U		1.7	U	
ALPHA-CHLORDANE		1.7	U		1.7	U		1.7	U	
AROCLOR-1016		33	U		33	U		33	U	
AROCLOR-1221		33	U		33	U		33	U	
AROCLOR-1232		33	U		33	U		33	U	
AROCLOR-1242		33	U		33	U		33	U	
AROCLOR-1248		33	U		33	U		33	U	
AROCLOR-1254		33	U		33	U		33	U	
AROCLOR-1260		33	UJ	G	73	J	RU	92	J	GU
AROCLOR-1262		33	U		33	U		33	U	
AROCLOR-1268		33	U		33	U		33	U	
BETA-BHC		1.7	U		1.7	U		1.7	U	
DELTA-BHC		1.7	U		1.7	U		1.7	U	
DIELDRIN		3.3	U		3.3	U		3.3	U	
ENDOSULFAN I		1.7	U		1.7	U		1.7	U	
ENDOSULFAN II		3.3	U		3.3	U		3.3	U	
ENDOSULFAN SULFATE		3.3	U		3.3	U		3.3	U	
ENDRIN		3.3	U		3.3	U		3.3	U	
ENDRIN ALDEHYDE		3.3	U		3.5			4.2	J	U
ENDRIN KETONE		3.3	U		3.3	U		4		
GAMMA-BHC (LINDANE)		1.7	U		1.7	U		1.7	U	
GAMMA-CHLORDANE		1.7	U		1.7	U		1.7	U	
HEPTACHLOR		1.7	U		1.7	U		1.7	U	
HEPTACHLOR EPOXIDE		1.7	U		1.7	U		1.7	U	
METHOXYCHLOR		17	U		17	U		17	U	
TOXAPHENE		170	U		170	U		170	U	

PROJ_NO: 00963 SDG: J0478 FRACTION: PEST/PCB MEDIA: WATER	NSAMPLE	TF4-SD-FB01-031710			TF4-SD-RB01-031710		
	LAB_ID	J0478-18C			J0478-19C		
	SAMP_DATE	3/17/2010			3/17/2010		
	QC_TYPE	FB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
4,4'-DDD		0.1	U		0.1	UJ	H
4,4'-DDE		0.1	U		0.1	UJ	H
4,4'-DDT		0.1	U		0.1	UJ	H
ALDRIN		0.05	U		0.05	UJ	H
ALPHA-BHC		0.05	U		0.05	UJ	H
ALPHA-CHLORDANE		0.05	U		0.05	UJ	H
AROCLOR-1016		1	UJ	R	1	UJ	R
AROCLOR-1221		1	UJ	R	1	UJ	R
AROCLOR-1232		1	UJ	R	1	UJ	R
AROCLOR-1242		1	UJ	R	1	UJ	R
AROCLOR-1248		1	UJ	R	1	UJ	R
AROCLOR-1254		1	UJ	R	1	UJ	R
AROCLOR-1260		1	UJ	R	1	UJ	R
AROCLOR-1262		1	UJ	R	1	UJ	R
AROCLOR-1268		1	UJ	R	1	UJ	R
BETA-BHC		0.05	U		0.05	UJ	H
DELTA-BHC		0.05	U		0.05	UJ	H
DIELDRIN		0.1	U		0.1	UJ	H
ENDOSULFAN I		0.05	U		0.05	UJ	H
ENDOSULFAN II		0.1	U		0.1	UJ	H
ENDOSULFAN SULFATE		0.1	U		0.1	UJ	H
ENDRIN		0.1	U		0.1	UJ	H
ENDRIN ALDEHYDE		0.1	U		0.1	UJ	H
ENDRIN KETONE		0.1	U		0.1	UJ	H
GAMMA-BHC (LINDANE)		0.05	U		0.05	UJ	H
GAMMA-CHLORDANE		0.05	U		0.05	UJ	H
HEPTACHLOR		0.05	U		0.05	UJ	H
HEPTACHLOR EPOXIDE		0.05	U		0.05	UJ	H
METHOXYCHLOR		0.5	U		0.5	UJ	H
TOXAPHENE		5	U		5	UJ	H

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-10-3736W

Date: July 9, 2010

c: File G00963-4.10 (w/enc.-original)
D. Seiken (w/o enc.)

To: Steve Parker (w/o enc.)

From: JF for Jennifer Cardinal (no copy)

Subject: Tier I/Tier II Inorganic Data Validation, SDG J0478
Mitkem Laboratories
CTO 464, Tank Farms 4 and 5, Data Gaps Investigation, Naval Station Newport, Newport, Rhode Island

Metals/TOC/pH:

27/Sediments/

TF4-SD-901-0006	TF4-SD-902-0006
TF4-SD-903-0006	TF4-SD-904-0006
TF4-SD-905-0006	TF4-SD-906-0006
TF4-SD-907-0006	TF4-SD-908-0006
TF4-SD-909-0006	TF4-SD-910-0006
TF4-SD-911-0006	TF4-SD-912-0006
TF4-SD-DUP01-031710	TF4-SD-DUP02-031810
TF5-SD-913-0006	TF5-SD-914-0006
TF5-SD-915-0006	TF5-SD-916-0006
TF5-SD-917-0006	TF5-SD-918-0006
TF5-SD-919-0006	TF5-SD-920-0006
TF5-SD-921-0006	TF5-SD-922-0006
TF5-SD-923-0006	TF5-SD-924-0006
TF5-SD-DUP01-031610	

(Field Duplicate pairs: TF4-SD-911-0006/TF4-SD-DUP01-031710, TF4-SD-902-0006/TF4-SD-DUP02-031810, TF5-SD-923-0006/TF5-SD-DUP01-031610)

Metals:

1/Field Blank/ TF4-SD-FB01-031710

1/Rinsate Blank/ TF4-SD-RB01-031710

Tetra Tech NUS, Inc. (TtNUS) performed a Tier II data validation on the metals analytical data and a Tier I data validation on the TOC and pH analytical data for the sediment samples collected from Tank Farms 4 and 5 as part of the Data Gaps Investigation at the Naval Station Newport, Newport, Rhode Island from March 16-18, 2010. Sample collection and analysis was performed according to the requirements of the Sampling and Analysis Plan for the Data Gaps Investigation at Naval Station Newport, Newport, Rhode Island, Revision 3, dated March 2010.

The metals analysis was performed according to USEPA SW-846 Methods 6010C/7470A/7471B. The TOC analysis was performed according to the Walkley-Black method and the pH analysis was performed according to USEPA SW-846 Method 9045.

The project-specific criteria listed in the site SAP were applied for data validation of the metals data. The Tier II data validation was performed according to the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV, November 2008. Tier I validation includes only the verification (Step I) process outlined on Worksheet #34 of the SAP.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed.

The analytical data from this SDG were evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- * Calibration Verification
- Laboratory Blank Analyses
- ICP Interference Check Sample Results
- Matrix Spike/Matrix Spike Duplicate Results
- * Laboratory Duplicate Results
- * Laboratory Control Sample Results
- Field Duplicate Precision
- ICP Serial Dilution Results
- Percent Solids
- Reporting Limits

* All quality control criteria were met for this parameter.

Data Completeness

The pH and TOC data are complete.

On June 2, 2010 the laboratory:

- provided a list of the laboratory's qualifier codes and definitions (from SDG J0477);
- resubmitted the Form 3 (Blanks summary form) on page 3368 to increase the significant figures displayed for the detected beryllium CCB results, which were reported as 0.0 in the original data package;
- explained that certain elements (mainly Al, Ca, Fe, Mg, Mn, Na, and K) are present in sediment at high concentrations and are not included in the MS/MSD analysis due to their spike recovery typically being obscured by the high sample concentration; and
- explained that the analysis of a serial dilution for mercury is not required by DOD QSM 4.

Laboratory Blank Analyses

The field and rinsate blanks are used for informational purposes only. They were not used to establish blank action levels.

Metals (Sediments)

The following table summarizes the maximum levels of laboratory blank contamination and blank action levels associated with the sediment samples in the metals analysis:

Analyte	Maximum Conc.	Action Level (mg/kg)	Affected Samples
Antimony	0.965 mg/kg	4.825	TF4-SD-905-0006, TF4-SD-908-0006, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-918-0006
Selenium	12.3 µg/L	3.08	TF4-SD-901-0006, TF4-SD-902-0006, TF4-SD-904-0006, TF4-SD-905-0006, TF4-SD-907-0006, TF4-SD-908-0006, TF4-SD-910-0006, TF4-SD-911-0006, TF4-SD-912-0006, TF4-SD-DUP01-031710, TF5-SD-913-0006, TF5-SD-914-0006, TF5-SD-915-0006, TF5-SD-916-0006, TF5-SD-917-0006, TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-920-0006, TF5-SD-921-0006, TF5-SD-922-0006, TF5-SD-923-0006, TF5-SD-924-0006, TF5-SD-DUP01-031610

The positive antimony and selenium results below the blank action level are changed to non-detected values (U) due to laboratory blank contamination.

Although antimony was found in the laboratory blanks, the project sensitivity goals are not impacted since the affected sample results are much lower than the project action limit. The antimony results in the affected samples are usable as non-detected values at elevated reporting limits.

Selenium was found in the laboratory blanks; therefore, the project sensitivity goals may be impacted. The selenium results in the affected samples are usable as non-detected values at elevated reporting limits.

Metals (Aqueous)

The following table summarizes the maximum levels of laboratory blank contamination and blank action levels associated with the field and rinsate blank samples in the metals analysis:

Analyte	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Antimony	11.822	59.11	TF4-SD-FB01-031710
Arsenic	3.477	17.39	TF4-SD-FB01-031710, TF4-SD-RB01-031710
Beryllium	0.1	0.5	TF4-SD-FB01-031710
Vanadium	1.1	5.5	TF4-SD-FB01-031710

The positive antimony, arsenic, beryllium, and vanadium results below the blank action level are changed to non-detected values (U) due to laboratory blank contamination.

Although antimony, arsenic, beryllium, and vanadium were found in the laboratory blanks, the project sensitivity goals are not impacted since there are no project action limits established for the field and rinsate blank samples. The antimony, arsenic, beryllium, and vanadium results in the affected samples are usable as non-detected values at elevated reporting limits.

ICP Interference Check Sample Results

The following results were qualified in the affected samples due to ICP interference attributed to the high concentration of iron in the samples:

Analyte	Action		Bias	Affected Samples
	(+)	ND		
Antimony	J	UJ	Low	All samples
Arsenic	J		High	TF4-SD-903-0006, TF4-SD-905-0006, TF4-SD-906-0006, TF4-SD-909-0006, TF4-SD-910-0006
Lead	J		Low	TF4-SD-906-0006, TF4-SD-912-0006, TF5-SD-914-0006
Potassium	J		High	TF4-SD-906-0006, TF4-SD-912-0006, TF4-SD-DUP02-031810, TF5-SD-914-0006
Selenium	UJ		High	All samples except TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-921-0006, TF5-SD-924-0006
	J			TF5-SD-918-0006, TF5-SD-919-0006, TF5-SD-921-0006, TF5-SD-924-0006
Vanadium	J		Low	TF5-SD-914-0006

The positive results for arsenic, potassium, and selenium results in the affected samples are qualified as estimated (J) due to positive ICP interference attributed to iron. The affected arsenic, potassium, and selenium results may be biased high.

The positive and non-detected antimony results are qualified as estimated (J, UJ) in the affected samples due to negative ICP interference attributed to iron. The positive lead and vanadium results are qualified as estimated (J) in the affected samples due to negative ICP interference attributed to iron. The affected antimony, lead, and vanadium results may be biased low.

Professional judgment was used to change the positive selenium results to estimated, non-detected values (UJ) in the affected samples, rather than reject them as provided in the data validation guidelines, because the reported concentrations may be due entirely (≥90%) to positive iron ICP interference. The results may be false positive.

There were positive and negative ICP interferences attributed to the high concentration of iron that resulted in estimating the positive results for antimony, arsenic, and selenium in the samples listed above; therefore, the project accuracy goals may be slightly impacted. The positive results for arsenic and selenium in the affected samples are usable as estimated values which may be biased high; and the positive and non-detected antimony results are usable as estimated values and estimated reporting limits which may be biased low.

Although there were positive ICP interferences attributed to the high concentration of iron that resulted in estimating the positive results for potassium in the samples listed above, the project accuracy goals are not impacted since there are no project action limits established for potassium for the sediment samples. The positive results for potassium in the affected samples are usable as estimated values which may be biased high.

Although there were negative ICP interferences attributed to the high concentration of iron that resulted in estimating the results for lead and vanadium in the samples listed above, the project accuracy goals are not impacted since the affected sample results and estimated interference are much lower than the

project action limits. The positive lead and vanadium results in the affected samples are usable as estimated values which may be biased low.

There were positive ICP interferences attributed to the high concentration of iron that resulted in raising the reporting limits for selenium in the samples listed above; therefore, the project sensitivity goals may be impacted. The selenium results in the affected samples are usable as estimated, non-detected values which may be false positive.

Matrix Spike/Matrix Spike Duplicate

Metals (Sediments)

The following table summarizes the analytes that recovered outside of the 75-125% recovery QC limits in the matrix spike (MS) analysis of the sample TF4-SD-901-0006:

Analyte	%Recovery	Action	
		(+)	NDs
Antimony	39	J	UJ

The following table summarizes the analytes that recovered outside of the 75-125% recovery QC limits in the matrix spike (MS) analysis of the sample TF5-SD-917-0006:

Analyte	%Recovery	Action	
		(+)	NDs
Antimony	39	J	UJ

The positive and non-detected antimony results are estimated (J, UJ) in all sediment samples due to low MS recoveries.

Although the percent recovery criterion was not met for antimony, the project accuracy goals are not impacted since the affected sample results are much lower than the project action limit. The positive and non-detected antimony results in all sediment samples are usable as estimated values and estimated reporting limits which may be biased low.

Field Duplicate Precision

Metals (Sediments)

The following table summarizes the analytes that recovered outside of the 50% RPD QC limit in the analysis of the field duplicate pair TF4-SD-902-0006/TF4-SD-DUP02-031810:

Analyte	Sample Result	Duplicate Result	RPD	Action	
	mg/kg	mg/kg		(+)	NDs
Chromium	9.5	48.8	135	J	
Lead	19.5	173	159	J	

The positive chromium and lead results are estimated (J) in all sediment samples due to poor field duplicate precision.

The results of the field duplicate analysis exceeded the QC limits for chromium and lead; therefore, the project precision goals may be impacted. The positive chromium and lead results in all sediment samples are usable as estimated values for which the bias is indeterminate.

The following table summarizes the analytes that recovered outside of the 50% RPD QC limit in the analysis of the field duplicate pair TF5-SD-923-0006/TF5-SD-DUP01-031610:

Analyte	Sample Result	Duplicate Result	RPD	Action	
	mg/kg	mg/kg		(+)	NDs
Calcium	1270	738	53	J	UJ

The positive and non-detected calcium results are estimated (J) in select sediment samples due to poor field duplicate precision.

Although the results of the field duplicate analysis exceeded the QC limits for calcium, the project precision goals are not impacted since there are no project action limits established for calcium for the sediment samples. The positive and non-detected calcium results in the sediment samples are usable as estimated values and estimated reporting limits for which the bias is indeterminate.

ICP Serial Dilution Results

Metals (Sediments)

The following table summarizes the results in the ICP serial dilution analysis of sample TF5-SD-917-0006 for which the percent difference between the initial and diluted results was above the 15% QC criterion when the initial sample result was above 50 times the method detection limit (MDL):

Analyte	% Difference	Bias	Action	
			(+)	NDs
Calcium	16	Low	J	UJ

The positive and non-detected results for calcium are estimated (J, UJ) in all sediment samples. Since the initial sample result was lower than the diluted result, the affected calcium results may be biased low.

Although a sample matrix suppressing effect for calcium was detected in the ICP serial dilution analysis, the project accuracy goals are not impacted since there are no project action limits established for calcium for the sediment samples. The positive and non-detected calcium results in the sediment samples are usable as estimated values and estimated reporting limits which may be biased low.

The following table summarizes the results in the ICP serial dilution analysis of sample TF4-SD-901-0006 for which the percent difference between the initial and diluted results was above the 15% QC criterion when the initial sample result was above 50 times the method detection limit (MDL):

Analyte	% Difference	Bias	Action	
			(+)	NDs
Calcium	34	Low	J	UJ
Barium	26	Low	J	
Beryllium	32	Low	J	

The positive and non-detected results for calcium are estimated (J, UJ) in all sediment samples. The positive results for barium and beryllium are estimated (J) in all sediment samples. Since the initial sample results were lower than the diluted results, the affected calcium, barium, and beryllium results may be biased low.

Although a sample matrix suppressing effect for calcium was detected in the ICP serial dilution analysis, the project accuracy goals are not impacted since there are no project action limits established for calcium for the sediment samples. The positive and non-detected calcium results in the sediment samples are usable as estimated values and estimated reporting limits which may be biased low.

A sample matrix suppressing effect for barium and beryllium was detected in the ICP serial dilution analysis; therefore, the project accuracy goals may be impacted. The positive barium and beryllium results in the sediment samples are usable as estimated values which may be biased low.

Percent Solids

Metals (Sediments)

The percent solids were below 30% for sample TF5-SD-918-0006. The positive and non-detected metals results for antimony, beryllium, cadmium, cobalt, selenium, silver, thallium, and mercury were qualified as estimated (J, UJ) in the affected sample. The positive and non-detected results in the affected sample are usable as estimated values and estimated reporting limits. The sample-specific method detection limit (MDL) associated with the non-detected thallium result for this sample is above the project action limit. The project sensitivity goals may be impacted for thallium in sample TF5-SD-918-0006.

Reporting Limits

The laboratory reported non-detected metals results down to the MDLs. The positive results below than the laboratory's quantitation limit (QL) and above the MDL are estimated (J) due to uncertainty below the QL.

Metals (Sediments)

All project quantitation limit (PQL) goals and laboratory-specific QLs listed in SAP Worksheet 15b were met by the actual laboratory QLs (unadjusted for sample-specific weight and percent solids). All project action limits were achieved by the actual laboratory QLs (unadjusted) except for arsenic, cobalt, selenium, silver, and thallium as highlighted in the SAP. All project action limits were achieved by the actual laboratory MDLs (unadjusted). All project action limits were achieved by the actual laboratory MDLs (adjusted) for non-detected results except for thallium in sample TF5-SD-918-0006 due to high percent moisture (as noted above). Data usability may be impacted for thallium in sample TF5-SD-918-0006.

As discussed above in the Laboratory Blank Analyses section, reporting limits were raised for antimony and selenium in select sediment samples due to laboratory blank contamination. Data usability may be impacted for selenium in the affected samples.

As discussed above in the ICP Interference Check Sample Results section, reporting limits were raised for selenium in select samples due to ICP interferences. Data usability may be impacted for selenium in the affected samples.

Metals (Aqueous)

As discussed above in the Laboratory Blank Analyses section, reporting limits were raised for antimony, arsenic, beryllium, and vanadium in select rinsate and field blank samples due to laboratory blank contamination. Data usability is not impacted.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Metals

The project goals with respect to accuracy were met for the metals data set with the following exceptions. Antimony, arsenic, and selenium were qualified as estimated in select sediment samples due to positive and negative ICP interferences; the affected arsenic and selenium results may be biased high, and the affected antimony results may be biased low. Barium and beryllium were qualified as estimated in all sediment samples due to a sample matrix suppressing effect detected in the ICP serial dilution analysis; the results may be biased low. Although specific method criteria were not met in these instances, the affected positive results are usable as estimated values and estimated reporting limits which may have a minor impact on data usability. In addition, potassium was qualified as estimated in select sediment samples due to positive ICP interferences. Lead and vanadium were qualified as estimated in select sediment samples due to negative ICP interferences. Antimony was qualified as estimated in all sediment samples due to low MS recoveries. Calcium was qualified as estimated in all sediment samples due to a sample matrix suppressing effect detected in the ICP serial dilution analysis. Although specific method criteria were not met in these instances, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated reporting limits.

The project goals with respect to precision were met for the metals data set with the following exception. Chromium and lead were qualified as estimated in all sediment samples due to poor field duplicate precision. Although specific method criteria were not met in this instance, the affected positive results are usable as estimated values which may have a minor impact on data usability. In addition, calcium was qualified as estimated in select sediment samples due to poor field duplicate precision. Although specific method criteria were not met in this instance, data usability is not impacted and the affected positive and non-detected results are usable as estimated values and estimated reporting limits.

The project goals with respect to sensitivity were met for the metals data set with the following exceptions. Select metals in sample TF5-SD-918-0006 were qualified as estimated due to percent solids below 30%. Data usability may be impacted for thallium. In addition, all project quantitation limit (PQL) goals and laboratory-specific QLs listed in SAP Worksheet 15b were met by the actual laboratory QLs. All project action limits were achieved by the actual laboratory QLs (unadjusted) except for arsenic, cobalt, selenium, silver, and thallium as highlighted in the SAP. All project action limits were achieved by the actual laboratory MDLs (unadjusted). All project action limits were achieved by the actual laboratory MDLs (adjusted) for non-detected results except for thallium in sample TF5-SD-918-0006 due to high percent moisture. Data usability may be impacted for thallium in sample TF5-SD-918-0006. Also, reporting limits were raised for selenium in select sediment samples due to laboratory blank

contamination and due to ICP interferences. Data usability may be impacted for selenium in the affected samples.

The project goals with respect to completeness were met for the metals data set. Data usability is not impacted with regards to completeness.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty below quantitation limit (< QL but ≥ MDL)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006			TF4-SD-902-0006			TF4-SD-903-0006			TF4-SD-904-0006		
SDG: J0478	LAB_ID	J0478-28B			J0478-29B			J0478-30B			J0478-25B		
FRACTION: M	SAMP_DATE	3/18/2010			3/18/2010			3/18/2010			3/18/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	67.0			72.0			49.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		6470			6180			10100			6280		
ANTIMONY		0.19	UJ	DK	0.15	UJ	DK	0.28	UJ	DK	0.21	UJ	DK
ARSENIC		10.8			9.4			13.5	J	K	9.2		
BARIUM		19	J	I	16.5	J	I	63.9	J	I	17	J	I
BERYLLIUM		0.37	J	I	0.28	J	I	0.6	J	I	0.31	J	I
CADMIUM		0.24	J	P	0.27			0.68			0.34		
CALCIUM		509	J	GI	544	J	GI	1080	J	GI	614	J	GI
CHROMIUM		11.2	J	G	9.5	J	G	12.6	J	G	11.5	J	G
COBALT		9.5			8.6			33.7			10.1		
COPPER		11.9			8.9			19.4			12.3		
IRON		25000			23200			55600			21700		
LEAD		21.6	J	G	19.5	J	G	37.6	J	G	19.9	J	G
MAGNESIUM		1920			1880			1930			2280		
MANGANESE		301			279			3440			171		
MERCURY		0.047	J	P	0.029	J	P	0.07	J	P	0.055		
NICKEL		16.3			16.4			50.4			20.8		
POTASSIUM		216			157			372			187		
SELENIUM		2.7	UJ	AK	2.4	UJ	AK	6.2	UJ	K	2.2	UJ	AK
SILVER		0.083	U		0.065	U		0.12	J	P	0.094	U	
SODIUM		23.9	J	P	40.7	J	P	145			33	J	P
THALLIUM		0.85	J	P	0.5	J	P	11.5			0.29	U	
VANADIUM		13.6			11.5			22.3			11.4		
ZINC		65.5			67.8			161			69.3		

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006			TF4-SD-906-0006			TF4-SD-907-0006			TF4-SD-908-0006		
SDG: J0478	LAB_ID	J0478-26B			J0478-27B			J0478-20B			J0478-21B		
FRACTION: M	SAMP_DATE	3/18/2010			3/18/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	62.0			33.0			53.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		7790			11700			8680			8930		
ANTIMONY		0.25	UJ	ADKP	0.5	UJ	DK	0.32	UJ	DK	0.77	UJ	ADKP
ARSENIC		11.1	J	K	46.6	J	K	12.2			12.5		
BARIUM		27.3	J	I	64.7	J	I	43.1	J	I	27.3	J	I
BERYLLIUM		0.37	J	I	0.53	J	IP	0.47	J	I	0.44	J	I
CADMIUM		0.27	J	P	1.2			0.37	J	P	0.25	J	P
CALCIUM		1200	J	GI	1120	J	GI	830	J	GI	758	J	GI
CHROMIUM		12.3	J	G	23.6	J	G	19.3	J	G	12.1	J	G
COBALT		13.5			76.2			13.8			9.6		
COPPER		13.5			19.1			21.3			12.9		
IRON		29400			145000			26200			28900		
LEAD		25.3	J	G	21.6	J	GK	54.2	J	G	27.3	J	G
MAGNESIUM		2480			4160			2320			2090		
MANGANESE		736			2770			451			368		
MERCURY		0.051	J	P	0.046	J	P	0.093			0.058		
NICKEL		22.7			132			25.7			18		
POTASSIUM		241			351	J	K	208			271		
SELENIUM		3	UJ	AK	12.1	UJ	K	2.5	UJ	AKP	3.3	UJ	AK
SILVER		0.094	U		0.22	U		0.14	U		0.1	U	
SODIUM		50.6	J	P	114	J	P	32.7	J	P	54	J	P
THALLIUM		2.4			6.8			1.4	J	P	1	J	P
VANADIUM		14.4			19.3			17.7			16.5		
ZINC		79.3			199			101			67.8		

PROJ_NO: 00963	NSAMPLE	TF4-SD-909-0006			TF4-SD-910-0006			TF4-SD-911-0006			TF4-SD-912-0006		
SDG: J0478	LAB_ID	J0478-22B			J0478-23B			J0478-24B			J0478-15B		
FRACTION: M	SAMP_DATE	3/17/2010			3/17/2010			3/17/2010			3/17/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	56.0			46.0			43.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		12100			12900			9560			4730		
ANTIMONY		0.18	UJ	DK	0.28	UJ	DK	0.26	UJ	DK	0.28	UJ	DK
ARSENIC		14.7	J	K	11.7	J	K	15.6			20.3		
BARIUM		44.8	J	I	29.2	J	I	33.8	J	I	21.4	J	I
BERYLLIUM		0.56	J	I	0.68	J	I	0.49	J	I	0.21	J	IP
CADMIUM		0.42			0.25	J	P	0.53			0.13	J	P
CALCIUM		624	J	GI	590	J	GI	1290	J	GI	691	J	GI
CHROMIUM		14.9	J	G	15.2	J	G	15.9	J	G	7.3	J	G
COBALT		17.2			12			15			9.6		
COPPER		20			24.9			22.1			13.7		
IRON		39500			41100			34900			32400		
LEAD		65.5	J	G	59.2	J	G	41.3	J	G	6.3	J	GK
MAGNESIUM		2420			3040			2940			1370		
MANGANESE		676			309			440			279		
MERCURY		0.17			0.1			0.09			0.019	J	P
NICKEL		22			22.5			23.9			18.4		
POTASSIUM		272			583			473			155	J	K
SELENIUM		4.1	UJ	K	4.1	UJ	AK	3.8	UJ	AK	4.2	UJ	AK
SILVER		0.077	U		0.12	U		0.11	U		0.13	U	
SODIUM		55.7			518			603			75.8	J	P
THALLIUM		2			0.77	J	P	1.4			0.38	U	
VANADIUM		26.5			27.2			19.7			9.6		
ZINC		76.6			88			121			59		

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710			TF4-SD-DUP02-031810			TF5-SD-913-0006			TF5-SD-914-0006		
SDG: J0478	LAB_ID	J0478-16B			J0478-31B			J0478-01B			J0478-02B		
FRACTION: M	SAMP_DATE	3/17/2010			3/18/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	FD			FD			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	43.0			68.0			51.0			55.0		
	DUP_OF	TF4-SD-911-0006			TF4-SD-902-0006								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		10200			7120			9480			7350		
ANTIMONY		0.32	UJ	DK	0.16	UJ	DK	1.4	UJ	ADKP	0.68	UJ	ADKP
ARSENIC		16.4			12.9			10.5			121		
BARIUM		31.6	J	I	16.6	J	I	26.4	J	I	24.6	J	I
BERYLLIUM		0.51	J	I	0.31	J	I	0.43	J	I	1.1	J	I
CADMIUM		0.56			0.3			0.25	J	P	2		
CALCIUM		1160	J	GI	445	J	GI	1510	J	GI	6.6	UJ	GI
CHROMIUM		16.6	J	G	48.8	J	G	10.6	J	G	18.8	J	G
COBALT		16			10.2			6.5			95		
COPPER		22.8			10.7			23.5			4.9		
IRON		37500			29600			18900			166000		
LEAD		42.4	J	G	173	J	G	47.8	J	G	11.5	J	GK
MAGNESIUM		3390			2230			1860			784		
MANGANESE		423			340			121			982		
MERCURY		0.097			0.036	J	P	0.12			0.054	J	P
NICKEL		25.9			18.8			30.9			127		
POTASSIUM		440			176	J	K	271			193	J	K
SELENIUM		4.8	UJ	AK	3	UJ	K	2.7	UJ	AK	1.3	UJ	AKP
SILVER		0.14	U		0.071	U		0.14	J	P	0.079	U	
SODIUM		512			40.8	J	P	56.6	J	P	39.6	J	P
THALLIUM		0.59	J	P	0.4	J	P	0.38	U		0.24	U	
VANADIUM		21.2			13.1			23.9			6.6	J	K
ZINC		127			75.1			63.8			109		

PROJ_NO: 00963	NSAMPLE	TF5-SD-915-0006			TF5-SD-916-0006			TF5-SD-917-0006			TF5-SD-918-0006		
SDG: J0478	LAB_ID	J0478-03B			J0478-04B			J0478-05B			J0478-06B		
FRACTION: M	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	58.0			66.0			46.0			21.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		9390			6360			12600			12000		
ANTIMONY		0.18	UJ	DK	0.24	UJ	DK	0.34	UJ	DK	0.96	UJ	ADKPY
ARSENIC		12.7			11.5			14.1			12.8		
BARIUM		17.1	J	I	19.1	J	I	36.3	J	I	38.7	J	IP
BERYLLIUM		0.36	J	I	0.33	J	IP	0.56	J	I	0.65	J	IPY
CADMIUM		0.37			0.26	J	P	0.43	J	P	0.49	J	PY
CALCIUM		1580	J	GI	813	J	GI	1780	J	GI	2850	J	GI
CHROMIUM		13.5	J	G	10	J	G	16.6	J	G	16.8	J	G
COBALT		8.8			8.5			14.6			6.6	J	PY
COPPER		22.5			17.1			40.5			43		
IRON		28600			15300			24600			24500		
LEAD		39.5	J	G	27.1	J	G	71	J	G	95.8	J	G
MAGNESIUM		2740			1560			2980			2350		
MANGANESE		163			204			215			112		
MERCURY		0.063			0.038	J	P	0.12			0.19	J	Y
NICKEL		23.6			16.2			29			41		
POTASSIUM		213			275			376			450		
SELENIUM		2.3	UJ	AK	2.3	UJ	AK	3.3	UJ	AK	5.9	UJ	AKPY
SILVER		0.08	U		0.1	U		0.15	U		0.35	UJ	Y
SODIUM		113			30.2	J	P	132			252		
THALLIUM		0.24	U		0.33	J	P	0.45	U		1.1	UJ	Y
VANADIUM		19.4			12.5			23.5			27.3		
ZINC		90.7			71			123			83.6		

PROJ_NO: 00963	NSAMPLE	TF5-SD-919-0006			TF5-SD-920-0006			TF5-SD-921-0006			TF5-SD-922-0006		
SDG: J0478	LAB_ID	J0478-07B			J0478-08B			J0478-09B			J0478-10B		
FRACTION: M	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	39.0			54.0			34.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		11300			7110			10800			10200		
ANTIMONY		0.38	UJ	DK	0.18	UJ	DK	0.38	UJ	DK	0.28	UJ	DK
ARSENIC		25.9			11.4			17.1			16.6		
BARIUM		38	J	I	21.6	J	I	35.4	J	I	30.6	J	I
BERYLLIUM		0.57	J	I	0.32	J	I	0.53	J	I	0.4	J	I
CADMIUM		0.62			0.49			0.54			0.85		
CALCIUM		2710	J	GI	1410	J	GI	1630	J	GI	2330	J	GI
CHROMIUM		16.1	J	G	17.6	J	G	16.6	J	G	18.3	J	G
COBALT		9.5			8.1			10.1			10.4		
COPPER		30.2			21.1			32.1			26.8		
IRON		27400			22100			25100			33200		
LEAD		52.5	J	G	61.6	J	G	56.9	J	G	48.1	J	G
MAGNESIUM		2680			2120			2780			3050		
MANGANESE		216			252			171			350		
MERCURY		0.095	J	P	0.045	J	P	0.14			0.063		
NICKEL		25.5			20.3			30.3			22.5		
POTASSIUM		490			269			455			331		
SELENIUM		5	UJ	AK	2.3	UJ	AK	4.2	UJ	AK	3.9	UJ	AK
SILVER		0.16	U		0.077	U		0.17	U		0.12	U	
SODIUM		102			68.9			198			227		
THALLIUM		0.5	U		0.67	J	P	0.51	U		0.48	J	P
VANADIUM		22.8			13.7			21.8			19.1		
ZINC		133			112			122			168		

PROJ_NO: 00963	NSAMPLE	TF5-SD-923-0006			TF5-SD-924-0006			TF5-SD-DUP01-031610		
SDG: J0478	LAB_ID	J0478-11B			J0478-12B			J0478-13B		
FRACTION: M	SAMP_DATE	3/16/2010			3/16/2010			3/16/2010		
MEDIA: SEDIMENT	QC_TYPE	NM			NM			FD		
	UNITS	MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	59.0			34.0			67.0		
	DUP_OF							TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		4740			11200			4270		
ANTIMONY		0.2	UJ	DK	0.44	UJ	DK	0.21	UJ	DK
ARSENIC		12.3			16.7			10.7		
BARIUM		11.7	J	I	47.2	J	I	12.2	J	I
BERYLLIUM		0.24	J	IP	0.62	J	I	0.24	J	IP
CADMIUM		0.33			0.77			0.23	J	P
CALCIUM		1270	J	GI	3680	J	GI	738	J	GI
CHROMIUM		7.3	J	G	18.1	J	G	6.5	J	G
COBALT		6.2			13.3			4.9		
COPPER		11.8			41.2			9.7		
IRON		18600			26800			16000		
LEAD		16.9	J	G	70.3	J	G	15.9	J	G
MAGNESIUM		1660			2940			1510		
MANGANESE		196			525			178		
MERCURY		0.016	J	P	0.11	J	P	0.013	J	P
NICKEL		14.2			30.7			12.5		
POTASSIUM		200			546			194		
SELENIUM		1.7	UJ	AKP	4.4	UJ	AK	2.3	UJ	AK
SILVER		0.51	J	P	0.2	U		0.094	U	
SODIUM		51.1	J	P	166			42.7	J	P
THALLIUM		0.26	U		1.7	J	P	0.28	U	
VANADIUM		8.6			24.2			8		
ZINC		82.2			190			74.1		

PROJ_NO: 00963	NSAMPLE	TF4-SD-FB01-031710			TF4-SD-RB01-031710		
SDG: J0478	LAB_ID	J0478-18B			J0478-19B		
FRACTION: M	SAMP_DATE	3/17/2010			3/17/2010		
MEDIA: WATER	QC_TYPE	FB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		16.1	J	P	18.4	J	P
ANTIMONY		6.2	UJ	AP	4.2	U	
ARSENIC		4.1	UJ	AP	5.1	UJ	AP
BARIUM		2.9	U		2.9	U	
BERYLLIUM		0.092	UJ	AP	0.037	U	
CADMIUM		0.5	U		0.5	U	
CALCIUM		87	U		87	U	
CHROMIUM		0.5	U		0.5	U	
COBALT		0.67	U		0.67	U	
COPPER		4.7	U		4.7	U	
IRON		47	U		47	U	
LEAD		2.1	U		2.1	U	
MAGNESIUM		62	U		62	U	
MANGANESE		3.5	U		3.9	J	P
MERCURY		0.056	U		0.056	U	
NICKEL		0.64	U		0.64	U	
POTASSIUM		59	U		59	U	
SELENIUM		10	U		10	U	
SILVER		2.4	U		2.4	U	
SODIUM		29	U		29	U	
THALLIUM		5.7	U		5.7	U	
VANADIUM		0.64	UJ	AP	0.34	U	
ZINC		13.8	J	P	12	J	P

PROJ_NO: 00963	NSAMPLE	TF4-SD-901-0006						TF4-SD-902-0006					
SDG: J0478	LAB_ID	J0478-28B						J0478-29B					
FRACTION: MISC	SAMP_DATE	3/18/2010						3/18/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	67.0			67.0			72.0			72.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5						5.7		
TOTAL ORGANIC CARBON		22000						16000					

PROJ_NO: 00963	NSAMPLE	TF4-SD-903-0006						TF4-SD-904-0006					
SDG: J0478	LAB_ID	J0478-30B						J0478-25B					
FRACTION: MISC	SAMP_DATE	3/18/2010						3/18/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	49.0			49.0			73.0			73.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					6						5.9		
TOTAL ORGANIC CARBON		46000						18000					

PROJ_NO: 00963	NSAMPLE	TF4-SD-905-0006						TF4-SD-906-0006					
SDG: J0478	LAB_ID	J0478-26B						J0478-27B					
FRACTION: MISC	SAMP_DATE	3/18/2010						3/18/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	62.0			62.0			33.0			33.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.9						6.1		
TOTAL ORGANIC CARBON		22000						47000					

PROJ_NO: 00963	NSAMPLE	TF4-SD-907-0006						TF4-SD-908-0006					
SDG: J0478	LAB_ID	J0478-20B						J0478-21B					
FRACTION: MISC	SAMP_DATE	3/17/2010						3/17/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	53.0			53.0			65.0			65.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.7						5.9		
TOTAL ORGANIC CARBON		31000						18000					

PROJ_NO: 00963	NSAMPLE	TF4-SD-909-0006						TF4-SD-910-0006					
SDG: J0478	LAB_ID	J0478-22B						J0478-23B					
FRACTION: MISC	SAMP_DATE	3/17/2010						3/17/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	56.0			56.0			46.0			46.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					6						5.9		
TOTAL ORGANIC CARBON		26000						36000					

PROJ_NO: 00963	NSAMPLE	TF4-SD-911-0006						TF4-SD-912-0006					
SDG: J0478	LAB_ID	J0478-24B						J0478-15B					
FRACTION: MISC	SAMP_DATE	3/17/2010						3/17/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	43.0			43.0			54.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					6.7						4.9		
TOTAL ORGANIC CARBON		40000						50000					

PROJ_NO: 00963	NSAMPLE	TF4-SD-DUP01-031710						TF4-SD-DUP02-031810					
SDG: J0478	LAB_ID	J0478-16B						J0478-31B					
FRACTION: MISC	SAMP_DATE	3/17/2010						3/18/2010					
MEDIA: SEDIMENT	QC_TYPE	FD						FD					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	43.0			43.0			68.0			68.0		
	DUP_OF	TF4-SD-911-0006			TF4-SD-911-0006			TF4-SD-902-0006			TF4-SD-902-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					6.5						5.9		
TOTAL ORGANIC CARBON		39000						14000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-913-0006						TF5-SD-914-0006					
SDG: J0478	LAB_ID	J0478-01B						J0478-02B					
FRACTION: MISC	SAMP_DATE	3/16/2010						3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	51.0			51.0			55.0			55.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					4.7						5.3		
TOTAL ORGANIC CARBON		44000						32000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-915-0006						TF5-SD-916-0006					
SDG: J0478	LAB_ID	J0478-03B						J0478-04B					
FRACTION: MISC	SAMP_DATE	3/16/2010						3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	58.0			58.0			66.0			66.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.5						5.3		
TOTAL ORGANIC CARBON		37000						29000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-917-0006						TF5-SD-918-0006					
SDG: J0478	LAB_ID	J0478-05B						J0478-06B					
FRACTION: MISC	SAMP_DATE	3/16/2010						3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	46.0			46.0			21.0			21.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.7						5.4		
TOTAL ORGANIC CARBON		37000						60000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-919-0006						TF5-SD-920-0006					
SDG: J0478	LAB_ID	J0478-07B						J0478-08B					
FRACTION: MISC	SAMP_DATE	3/16/2010						3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	39.0			39.0			54.0			54.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.7						5.7		
TOTAL ORGANIC CARBON		44000						33000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-921-0006						TF5-SD-922-0006					
SDG: J0478	LAB_ID	J0478-09B						J0478-10B					
FRACTION: MISC	SAMP_DATE	3/16/2010						3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	34.0			34.0			57.0			57.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.7						6.4		
TOTAL ORGANIC CARBON		55000						37000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-923-0006						TF5-SD-924-0006					
SDG: J0478	LAB_ID	J0478-11B						J0478-12B					
FRACTION: MISC	SAMP_DATE	3/16/2010						3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	NM						NM					
	UNITS	MG/KG			S.U.			MG/KG			S.U.		
	PCT_SOLIDS	59.0			59.0			34.0			34.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					6.1						6		
TOTAL ORGANIC CARBON		22000						53000					

PROJ_NO: 00963	NSAMPLE	TF5-SD-DUP01-031610					
SDG: J0478	LAB_ID	J0478-13B					
FRACTION: MISC	SAMP_DATE	3/16/2010					
MEDIA: SEDIMENT	QC_TYPE	FD					
	UNITS	MG/KG			S.U.		
	PCT_SOLIDS	67.0			67.0		
	DUP_OF	TF5-SD-923-0006			TF5-SD-923-0006		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PH					5.9		
TOTAL ORGANIC CARBON		18000					

Guzman, Lucy

From: Guzman, Lucy
Sent: Monday, July 11, 2011 8:20 AM
To: 'Edward Lawler [Warwick]'
Cc: 'Parker, Steve'
Subject: RE: PCB in J0987-10 from last year

Hi Ed,

Thank you very much for the information. Based on the fact that sample J1001-01 was extracted the same day as our sample J0987-10 (TF4-MW-DUP02-051210), and sample J1001-01 contains high concentration of Aroclors 1248 and 1254 at the same ratio (3/1) reported for our sample, I will say there is a great chance for cross-contamination during some step in the extraction process. The fact that our sample and J1001-01 are one after the other in the preparation log, indicates that they were physically one next to the other during the sample preparation. In my sample preparation experience, the analyst might have work form left to right or from right to left (following the sample order listed in the log sheet or not) during sample spike, extraction, or concentration steps indicating cross-contamination possibilities.

Furthermore, our sample was a field duplicate of sample lab ID J0987-6 which has no positive Aroclors.

We may have to resample the well to be certain that there is no PCB in the groundwater.

Lucy B. Guzman, Senior Chemist
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lucy.guzman@tetratech.com

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From: Edward Lawler [Warwick] [mailto:elawler@mitkem.com]
Sent: Friday, July 08, 2011 12:58 PM
To: Guzman, Lucy
Subject: PCB in J0987-10 from last year

Hi Lucy—

We examined all of the typical sources of potential contamination of sample J0987-10 with PCB, and didn't find anything. However, we did find something that may be a potential cause of the contamination—the sample extracted right after this one in the same prep batch.

The attached pages show the prep log (with J0987-10 followed immediately by J1001-01), the results for this following sample J1001-01, as well as pages from the instrument analysis sequence log.

We found a number of samples in the prep batch and analysis batch that were prepped or analyzed before your sample J0987-10 that contained both Aroclors 1248 and 1254, but none were either at high enough concentration to cause cross-contamination, or they all had the wrong ratio of Ar1248/Ar1254 to be the contamination source.

However, the following sample, J1001-01 has very high concentrations of Ar1248 and Ar1254, in the same approx 3/1 ratio as found in your sample J0987-10. Although this was prepped after your sample, it is a potential (but atypical) source of contamination. This sample was analyzed several days after your sample was analyzed, so if cross-contamination occurred, it would have happened during preparation, not analysis.

We did not analyze this J1001 sample for pesticides, so we can't confirm whether it contained endrin aldehyde or not.

If you have any questions, or need anything else, just let me know.

--Ed

Edward A. Lawler
Deputy Director for Quality Services, Spectrum Analytical,
RI Division, featuring Hanibal Technology (formerly Mitkem)
401-732-3400 x315 401-732-3499 (fax)

Due to rising cost of rush shipments, Spectrum Analytical requests that you allow sufficient time for all sample bottle kit requests, 3 days notice at a minimum. If you need an expedited kit request Spectrum Analytical will provide the kit but will request that you pay for the shipping. Spectrum Analytical will continue to pay for all shipping previously agreed to, given proper notification. Thank you for your understanding and cooperation

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Extraction benchsheet

MITKEM LABORATORIES ORGANIC PREP-SAMPLE PREPARATION:PEST/PCB

Date:	Prep Method	Aq: 3510C (SepF) 3520C (Liq/Liq) Soil: 3550B (Sonc) 3540C (Soxhlet) 3570(MSE) Other:_____	Matrix: Aqueous Soil Wipe Oil Other:_____	BATCH ID:	Date/Time Started:
Analyst	Spiked By	Witness	Solvent: Lot # CONTINUED FROM PREVIOUS PAGE	GPC Batch Number	Florisil Lot #	Analysis:	Date/Time Ended:

	Lab ID	Bottle #	Sample Wt(g) / Vol(ml)	Initial pH	Emulsion?	Initial CONC Date/ Analyst TV	Extract volume (ml)	GPC Cleanup Date / Analyst	FLORISIL Cleanup Date / Analyst	ACID (PCB only) Cleanup Date / Analyst	SULFUR (Copper) Cleanup Date / Analyst	Final CONC Date/ Analyst TV	Final extract volume (ml)	Extract Transfer Date /By
O	J0987-010	5	1000	—	—					—	6/6/10 MS	6/6/10 DJ	10	6/6/10 DS
	↓ -080	1	↓	↓	↓		5121110 JC			6/6/10 MS	↓	↓	↓	
	J0987-100	1	↓	↓	↓					↓	↓	↓	↓	
X	J7001-01ARE	1	1000	—	—					6/6/10 DL	6/6/10 MS	6/6/10 DJ	10	6/6/10 DL
						21000	8400							
						Ar 48	54							

TF4-MW-DUP02-051210

other client's sample

5-17-10 RD

0555

Comments: X PCB only
O Pest only

PEST Matrix Spike Std ID:	Vol. Spiked:	
PCB Matrix Spike Std ID:	Vol. Spiked:	
PEST Surrogate Spike Std ID:	Vol. Spiked:	Sodium Sulfate lot#
PCB Surrogate Spike Std ID:	Vol. Spiked:	Hexane lot #
PEST LCS Spike Std ID:	Vol. Spiked:	Sulfuric Acid lot#
PCB LCS Spike Std ID:	Vol. Spiked:	Sulfur cleanup Copper lot #

L/L Drip Rate: na
Soxhlet Cycle/Hour: na
Sonicator Tuned? Yes/No na

Logbook ID: 50.0149-04/10-3

Reviewed By:_____

1858

Mitkem Laboratories

Date: *17-Jun-10*

Client: [redacted]
Client Sample ID:
Lab ID: J1001-01

Project: [redacted]
Collection Date: 04/08/10 10:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SW846 8082A -- PCB by GC-ECD							**SW8082_W**
Aroclor-1016	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1221	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1232	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1242	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1248	21000		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1254	7600		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1260	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1262	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Aroclor-1268	ND		2000	µg/L	2000	06/15/2010 17:58	51590
Surrogate: Tetrachloro-m-xylene	0	S	21-140	%REC	2000	06/15/2010 17:58	51590
Surrogate: Tetrachloro-m-xylene	0	S	21-140	%REC	2000	06/15/2010 17:58	51590
Surrogate: Decachlorobiphenyl	0	S	40-135	%REC	2000	06/15/2010 17:58	51590
Surrogate: Decachlorobiphenyl	0	S	40-135	%REC	2000	06/15/2010 17:58	51590

Results for the
other client's sample extracted
along the TF4-MW-DUP02-051210 sample

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

APPENDIX H

HUMAN HEALTH RISK BACKUP

APPENDIX H

SUPPORTING INFORMATION FOR HEALTH RISK ASSESSMENT

H.1 Calculation of Target Groundwater Concentrations Corresponding to Target Indoor Air Concentrations
H.2 RAGS Part D Tables
H.3 Risks for Only Site-Related COPCs
H.4 Samples Used in Calculation of EPCs
H.5 ProUCL Outputs
H.6 Sample Calculations

APPENDIX H.1

CALCULATION OF TARGET GROUNDWATER CONCENTRATIONS CORRESPONDING TO TARGET INDOOR AIR CONCENTRATIONS

CALCULATION OF TARGET GROUNDWATER CONCENTRATIONS CORRESPONDING TO TARGET INDOOR AIR CONCENTRATIONS

The target groundwater concentrations were calculated according to the methodology present in Appendix D of USEPA's *Draft Guidance for Evaluating the Vapor Intrusion into Indoor Air from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)* and Appendix A of DoD's *Vapor Intrusion Handbook*. Specifically the target groundwater concentration corresponding to a chemical's target indoor air concentration is calculated by dividing the target indoor air concentration by an appropriate attenuation factor and then converting the vapor concentration to an equivalent groundwater concentration assuming equilibrium between the aqueous and vapor phases at the water table. Diffusion resistances across the capillary fringe are assumed to be accounted for in the value of α. The equilibrium partitioning is assumed to obey Henry's Law so that:

$$C_{gw} = C_{target,ia} \times 10^{-3}\ m^3/L \times 1/H \times 1/\alpha$$

Where:

C_{gw} = target groundwater concentration, ug/L

$C_{target,ia}$ = target indoor air concentration, ug/m^3

α = attenuation factor (ratio of indoor air concentration to source vapor concentration).

H = dimensionless Henry's Law Constant at 25° C.

The residential air concentrations from the current USEPA Regional Screening Level table were used as for target indoor air concentrations. A value of 0.001 was used for the attenuation factor. Table 1 presents the target groundwater concentrations.

References:

DoD (Department of Defense), January 2009. DoD Vapor Intrusion Handbook. Prepared by the Tri-Service Environmental Risk Assessment Workgroup.

USEPA (U.S. Environmental Protection Agency), November 2002. OSWER Draft Guidance for Evaluating the Vapor Intrusion into Indoor Air from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). Office of Solid Waste and Emergency Response. EPA 530-D-02-004.

TABLE H.1
TARGET GROUNDWATER CONCENTRATION CORRESPONDING
TO TARGET INDOOR AIR CONCENTRATION
RESIDENTIAL

CAS No.	Chemical	Carcinogenic Target Risk (TR) = 1E-06	Noncancer Hazard Index (HI) = 1	Henry's Law Constants	Carcinogenic Screening Level	Noncarcinogenic Screening Level	Screenig Level
		Inhalation	Inhalation	H' (unitless)	Attenuation Factor = 0.001		
		ug/m^3	ug/m^3		ug/L	ug/L	ug/L
75-07-0	Acetaldehyde	1.1E+00	9.4E+00	2.7E-03	4.1E+02	3.5E+03	3.5E+03 N*
67-64-1	Acetone	NA	3.2E+04	1.4E-03	NA	2.3E+07	2.3E+07 N
75-86-5	Acetone Cyanohydrin	NA	6.3E+01	5.3E-04	NA	1.2E+05	1.2E+05 N
75-05-8	Acetonitrile	NA	6.3E+01	1.4E-03	NA	4.5E+04	4.5E+04 N
98-86-2	Acetophenone	NA	NA	4.3E-04	NA	NA	NA
107-02-8	Acrolein	NA	2.1E-02	5.0E-03	NA	4.2E+00	4.2E+00 N
107-13-1	Acrylonitrile	3.6E-02	2.1E+00	5.6E-03	6.4E+00	3.8E+02	6.4E+00 C
309-00-2	Aldrin	5.0E-04	NA	1.8E-03	2.8E-01	NA	2.8E-01 C
107-05-1	3-Chloropropene	4.1E-01	1.0E+00	4.5E-01	9.1E-01	2.2E+00	2.2E+00 N*
103-33-3	Azobenzene	7.8E-02	NA	5.5E-04	1.4E+02	NA	1.4E+02 C
100-52-7	Benzaldehyde	NA	NA	1.1E-03	NA	NA	NA
71-43-2	Benzene	3.1E-01	3.1E+01	2.3E-01	1.3E+00	1.3E+02	1.3E+00 C
108-98-5	Benzenethiol	NA	NA	1.4E-02	NA	NA	NA
98-07-7	Benzotrichloride	NA	NA	1.1E-02	NA	NA	NA
100-44-7	Benzyl Chloride	5.0E-02	1.0E+00	1.7E-02	2.9E+00	5.9E+01	2.9E+00 C
92-52-4	1,1-Biphenyl	NA	NA	1.3E-02	NA	NA	NA
108-60-1	2,2'-Oxybis(1-Chloropropane)	2.4E-01	NA	3.0E-03	8.0E+01	NA	8.0E+01 C
111-44-4	Bis(2-Chloroethyl)Ether	7.4E-03	NA	7.0E-04	1.1E+01	NA	1.1E+01 C
542-88-1	Bis(2-Chloromethyl)Ether	3.9E-05	NA	1.8E-01	2.2E-04	NA	2.2E-04 C
107-04-0	Bromo-2-chloroethane, 1-	4.1E-03	NA	3.7E-02	1.1E-01	NA	1.1E-01 C
108-86-1	Bromobenzene	NA	6.3E+01	1.0E-01	NA	6.3E+02	6.3E+02 N
75-27-4	Bromodichloromethane	6.6E-02	NA	8.7E-02	7.6E-01	NA	7.6E-01 C
75-25-2	Bromoform	2.2E+00	NA	2.2E-02	1.0E+02	NA	1.0E+02 C
74-83-9	Bromomethane	NA	5.2E+00	3.0E-01	NA	1.7E+01	1.7E+01 N
106-99-0	1,3-Butadiene	8.1E-02	2.1E+00	3.0E+00	2.7E-02	7.0E-01	2.7E-02 C
75-15-0	Carbon Disulfide	NA	7.3E+02	5.9E-01	NA	1.2E+03	1.2E+03 N
56-23-5	Carbon Tetrachloride	4.1E-01	1.0E+02	1.1E+00	3.7E-01	9.1E+01	3.7E-01 C
12789-03-6	Chlordane	2.4E-02	7.3E-01	2.0E-03	1.2E+01	3.7E+02	1.2E+01 C
75-68-3	1-Chloro-1,1-Difluoroethane	NA	5.2E+04	2.4E+00	NA	2.2E+04	2.2E+04 N
126-99-8	Chloroprene	NA	7.3E+00	2.3E+00	NA	3.2E+00	3.2E+00 N
108-90-7	Chlorobenzene	NA	5.2E+01	1.3E-01	NA	4.0E+02	4.0E+02 N
98-56-6	4-Chlorobenzotrifluoride	NA	3.1E+02	1.4E+00	NA	2.2E+02	2.2E+02 N
109-69-3	1-Chlorobutane	NA	NA	6.8E-01	NA	NA	NA
75-45-6	Chlorodifluoromethane	NA	5.2E+04	1.7E+00	NA	3.1E+04	3.1E+04 N
67-66-3	Chloroform	1.1E-01	1.0E+02	1.5E-01	7.3E-01	6.7E+02	7.3E-01 C
74-87-3	Chloromethane	NA	9.4E+01	3.6E-01	NA	2.6E+02	2.6E+02 N
107-30-2	Chloromethyl Methyl Ether	3.5E-03	NA	1.2E-02	2.9E-01	NA	2.9E-01 C
91-58-7	2-Chloronaphthalene	NA	NA	1.3E-02	NA	NA	NA
95-57-8	2-Chlorophenol	NA	NA	4.6E-04	NA	NA	NA
95-49-8	2-Chlorotoluene	NA	NA	1.5E-01	NA	NA	NA
106-43-4	4-Chlorotoluene	NA	NA	1.8E-01	NA	NA	NA
1319-77-3	Total Methylphenol	NA	6.3E+02	4.9E-05	NA	1.3E+07	1.3E+07 N
123-73-9	trans-Crotonaldehyde	NA	NA	7.9E-04	NA	NA	NA
98-82-8	Isopropylbenzene	NA	4.2E+02	4.7E-01	NA	8.9E+02	8.9E+02 N
57-12-5	Cyanide	NA	NA	5.4E-03	NA	NA	NA
460-19-5	Cyanogen	NA	NA	2.2E-01	NA	NA	NA
506-68-3	Cyanogen Bromide	NA	NA	1.0E+00	NA	NA	NA
506-77-4	Chlorine Cyanide	NA	NA	7.9E-02	NA	NA	NA
74-90-8	Hydrogen Cyanide	NA	3.1E+00	5.4E-03	NA	5.7E+02	5.7E+02 N
463-56-9	Thiocyanate	NA	NA	6.0E-03	NA	NA	NA

TABLE H.1
TARGET GROUNDWATER CONCENTRATION CORRESPONDING
TO TARGET INDOOR AIR CONCENTRATION
RESIDENTIAL

CAS No.	Chemical	Carcinogenic Target Risk (TR) = 1E-06	Noncancer Hazard Index (HI) = 1	Henry's Law Constants	Carcinogenic Screening Level	Noncarcinogenic Screening Level	Screenig Level
		Inhalation	Inhalation	H' (unitless)	Attenuation Factor = 0.001		
		ug/m³	ug/m³		ug/L	ug/L	ug/L
110-82-7	Cyclohexane	NA	6.3E+03	6.1E+00	NA	1.0E+03	1.0E+03 N
72-55-9	4,4'-DDE	2.5E-02	NA	1.7E-03	1.5E+01	NA	1.5E+01 C
96-12-8	1,2-Dibromo-3-Chloropropane	1.6E-04	2.1E-01	6.0E-03	2.7E-02	3.5E+01	2.7E-02 C
124-48-1	Chlorodibromomethane	9.0E-02	NA	3.2E-02	2.8E+00	NA	2.8E+00 C
106-93-4	1,2-Dibromoethane	4.1E-03	9.4E+00	2.7E-02	1.5E-01	3.5E+02	1.5E-01 C
74-95-3	Dibromomethane	NA	4.2E+00	3.4E-02	NA	1.2E+02	1.2E+02 N
764-41-0	1,4-Dichloro-2-Butene	5.8E-04	NA	2.7E-02	2.1E-02	NA	2.1E-02 C
1476-11-5	cis-1,4-Dichloro-2-Butene	5.8E-04	NA	2.7E-02	2.1E-02	NA	2.1E-02 C
110-57-6	trans-1,4-Dichloro-2-Butene	5.8E-04	NA	2.7E-02	2.1E-02	NA	2.1E-02 C
95-50-1	1,2-Dichlorobenzene	NA	2.1E+02	7.8E-02	NA	2.7E+03	2.7E+03 N
106-46-7	1,4-Dichlorobenzene	2.2E-01	8.3E+02	9.9E-02	2.2E+00	8.4E+03	2.2E+00 C
75-71-8	Dichlorodifluoromethane	NA	2.1E+02	1.4E+01	NA	1.5E+01	1.5E+01 N
75-34-3	1,1-Dichloroethane	1.5E+00	NA	2.3E-01	6.5E+00	NA	6.5E+00 C
107-06-2	1,2-Dichloroethane	9.4E-02	2.5E+03	4.8E-02	2.0E+00	5.2E+04	2.0E+00 C
75-35-4	1,1-Dichloroethene	NA	2.1E+02	1.1E+00	NA	1.9E+02	1.9E+02 N
540-59-0	Total 1,2-Dichloroethene	NA	NA	1.7E-01	NA	NA	NA
156-59-2	cis-1,2-Dichloroethene	NA	NA	1.7E-01	NA	NA	NA
156-60-5	trans-1,2-Dichloroethene	NA	6.3E+01	1.7E-01	NA	3.7E+02	3.7E+02 N
78-87-5	1,2-Dichloropropane	2.4E-01	4.2E+00	1.2E-01	2.0E+00	3.5E+01	2.0E+00 C
142-28-9	1,3-Dichloropropane	NA	NA	4.0E-02	NA	NA	NA
542-75-6	1,3-Dichloropropene	6.1E-01	2.1E+01	1.5E-01	4.1E+00	1.4E+02	4.1E+00 C
77-73-6	Dicyclopentadiene	NA	7.3E+00	2.6E+00	NA	2.8E+00	2.8E+00 N
60-57-1	Dieldrin	5.3E-04	NA	4.1E-04	1.3E+00	NA	1.3E+00 C
75-37-6	1,1-Difluoroethane	NA	4.2E+04	8.3E-01	NA	5.1E+04	5.1E+04 N
108-20-3	Diisopropyl Ether	NA	4.2E+02	1.0E-01	NA	4.2E+03	4.2E+03 N
1445-75-6	Diisopropyl Methylphosphonate (DIMP)	NA	NA	1.8E-03	NA	NA	NA
121-69-7	N-N-Dimethylaniline	NA	NA	2.3E-03	NA	NA	NA
120-61-6	Dimethyl Terephthalate	NA	NA	5.5E-03	NA	NA	NA
759-94-4	Eptc (S-Ethyl Dipropylthiocarbamate)	NA	NA	6.5E-04	NA	NA	NA
115-29-7	Endosulfan	NA	NA	2.7E-03	NA	NA	NA
106-89-8	Epichlorohydrin	2.0E+00	1.0E+00	1.2E-03	1.7E+03	8.3E+02	8.3E+02 N*
106-88-7	1,2-Epoxybutane	NA	2.1E+01	7.4E-03	NA	2.8E+03	2.8E+03 N
141-78-6	Ethyl Acetate	NA	NA	5.5E-03	NA	NA	NA
140-88-5	Ethyl Acrylate	NA	NA	1.4E-02	NA	NA	NA
75-00-3	Chloroethane	NA	1.0E+04	4.5E-01	NA	2.2E+04	2.2E+04 N
60-29-7	Diethyl Ether	NA	NA	5.0E-02	NA	NA	NA
97-63-2	Ethyl Methacrylate	NA	NA	2.3E-02	NA	NA	NA
100-41-4	Ethylbenzene	9.7E-01	1.0E+03	3.2E-01	3.0E+00	3.1E+03	3.0E+00 C
75-21-8	Ethylene Oxide	2.8E-02	3.1E+01	6.1E-03	4.6E+00	5.1E+03	4.6E+00 C
132-64-9	Dibenzofuran	NA	NA	8.7E-03	NA	NA	NA
110-00-9	Furan	NA	NA	2.2E-01	NA	NA	NA
76-44-8	Heptachlor	1.9E-03	NA	1.2E-02	1.6E-01	NA	1.6E-01 C
118-74-1	Hexachlorobenzene	5.3E-03	NA	7.0E-02	7.6E-02	NA	7.6E-02 C
319-84-6	alpha-BHC	1.4E-03	NA	2.1E-04	6.7E+00	NA	6.7E+00 C
77-47-4	Hexachlorocyclopentadiene	NA	2.1E-01	1.1E+00	NA	1.9E-01	1.9E-01 N
67-72-1	Hexachloroethane	6.1E-01	NA	1.6E-01	3.8E+00	NA	3.8E+00 C
822-06-0	1,6-Hexamethylene Diisocyanate	NA	1.0E-02	2.0E-03	NA	5.0E+00	5.0E+00 N
110-54-3	Hexane	NA	7.3E+02	7.4E+01	NA	9.9E+00	9.9E+00 N
591-78-6	2-Hexanone	NA	3.1E+01	3.8E-03	NA	8.2E+03	8.2E+03 N
78-83-1	Isobutanol	NA	NA	4.0E-04	NA	NA	NA

TABLE H.1
TARGET GROUNDWATER CONCENTRATION CORRESPONDING
TO TARGET INDOOR AIR CONCENTRATION
RESIDENTIAL

CAS No.	Chemical	Carcinogenic Target Risk (TR) = 1E-06	Noncancer Hazard Index (HI) = 1	Henry's Law Constants	Carcinogenic Screening Level	Noncarcinogenic Screening Level	Screenig Level
		Inhalation	Inhalation	H' (unitless)	Attenuation Factor = 0.001		
		ug/m^3	ug/m^3		ug/L	ug/L	ug/L
7439-97-6	Mercury	NA	3.1E-01	4.7E-01	NA	6.6E-01	6.6E-01 N
126-98-7	Methacrylonitrile	NA	7.3E-01	1.0E-02	NA	7.3E+01	7.3E+01 N
72-43-5	Methoxychlor	NA	NA	8.3E-06	NA	NA	NA
79-20-9	Methyl Acetate	NA	NA	4.7E-03	NA	NA	NA
96-33-3	Methyl Acrylate	NA	NA	8.1E-03	NA	NA	NA
78-93-3	2-Butanone	NA	5.2E+03	2.3E-03	NA	2.3E+06	2.3E+06 N
108-10-1	4-Methyl-2-Pentanone	NA	3.1E+03	5.6E-03	NA	5.5E+05	5.5E+05 N
80-62-6	Methyl Methacrylate	NA	7.3E+02	1.3E-02	NA	5.6E+04	5.6E+04 N
25013-15-4	Methyl Styrene (Mixture)	NA	4.2E+01	1.0E-01	NA	4.2E+02	4.2E+02 N
1634-04-4	Methyl Tert-Butyl Ether	9.4E+00	3.1E+03	2.4E-02	3.9E+02	1.3E+05	3.9E+02 C
75-09-2	Methylene Chloride	5.2E+00	1.1E+03	1.3E-01	4.0E+01	8.5E+03	4.0E+01 C
98-83-9	alphal Styrene (Alpha)	NA	NA	1.0E-01	NA	NA	NA
98-95-3	Nitrobenzene	6.1E-02	9.4E+00	9.8E-04	6.2E+01	9.6E+03	6.2E+01 C
79-46-9	2-Nitropropane	9.0E-04	2.1E+01	4.9E-03	1.8E-01	4.3E+03	1.8E-01 C
924-16-3	N-Nitroso-di-n-Butylamine	1.5E-03	NA	5.4E-04	2.8E+00	NA	2.8E+00 C
88-72-2	2-Nitrotoluene	NA	NA	5.1E-04	NA	NA	NA
111-84-2	Nonane	NA	2.1E+02	1.4E+02	NA	1.5E+00	1.5E+00 N
109-66-0	Pentane	NA	1.0E+03	5.1E+01	NA	2.0E+01	2.0E+01 N
75-44-5	Phosgene	NA	3.1E-01	6.8E-01	NA	4.6E-01	4.6E-01 N
83-32-9	Acenaphthene	NA	NA	7.5E-03	NA	NA	NA
120-12-7	Anthracene	NA	NA	2.3E-03	NA	NA	NA
205-99-2	Benzo(b)fluoranthene	8.7E-03	NA	2.7E-05	3.2E+02	NA	3.2E+02 C
218-01-9	Chrysene	8.7E-02	NA	2.1E-04	4.1E+02	NA	4.1E+02 C
86-73-7	Fluorene	NA	NA	3.9E-03	NA	NA	NA
90-12-0	1-Methylnaphthalene	NA	NA	2.1E-02	NA	NA	NA
91-57-6	2-Methylnaphthalene	NA	NA	2.1E-02	NA	NA	NA
91-20-3	Naphthalene	7.2E-02	3.1E+00	1.8E-02	4.0E+00	1.7E+02	4.0E+00 C
129-00-0	Pyrene	NA	NA	4.9E-04	NA	NA	NA
123-38-6	Propionaldehyde	NA	8.3E+00	3.0E-03	NA	2.8E+03	2.8E+03 N
103-65-1	N-Propylbenzene	NA	1.0E+03	4.3E-01	NA	2.3E+03	2.3E+03 N
6423-43-4	1,2-Propylene Glycol Dinitrate	NA	2.8E-01	3.9E-05	NA	7.2E+03	7.2E+03 N
75-56-9	Propylene Oxide	6.6E-01	3.1E+01	2.8E-03	2.4E+02	1.1E+04	2.4E+02 C
110-86-1	Pyridine	NA	NA	4.5E-04	NA	NA	NA
100-42-5	Styrene	NA	1.0E+03	1.1E-01	NA	9.1E+03	9.1E+03 N
630-20-6	1,1,1,2-Tetrachloroethane	3.3E-01	NA	1.0E-01	3.3E+00	NA	3.3E+00 C
79-34-5	1,1,2,2-Tetrachloroethane	4.2E-02	NA	1.5E-02	2.8E+00	NA	2.8E+00 C
127-18-4	Tetrachloroethene	4.1E-01	2.8E+02	7.2E-01	5.7E-01	3.9E+02	5.7E-01 C
811-97-2	1,1,1,2-Tetrafluoroethane	NA	8.3E+04	2.0E+00	NA	4.2E+04	4.2E+04 N
108-88-3	Toluene	NA	5.2E+03	2.7E-01	NA	1.9E+04	1.9E+04 N
76-13-1	1,1,2-Trichlorotrifluoroethane	NA	3.1E+04	2.2E+01	NA	1.4E+03	1.4E+03 N
87-61-6	1,2,3-Trichlorobenzene	NA	NA	5.1E-02	NA	NA	NA
120-82-1	1,2,4-Trichlorobenzene	NA	2.1E+00	5.8E-02	NA	3.6E+01	3.6E+01 N
71-55-6	1,1,1-Trichloroethane	NA	5.2E+03	7.0E-01	NA	7.4E+03	7.4E+03 N
79-00-5	1,1,2-Trichloroethane	1.5E-01	NA	3.4E-02	4.4E+00	NA	4.4E+00 C
79-01-6	Trichloroethene	1.2E+00	NA	4.0E-01	3.0E+00	NA	3.0E+00 C
75-69-4	Trichlorofluoromethane	NA	7.3E+02	4.0E+00	NA	1.8E+02	1.8E+02 N
598-77-6	1,1,2-Trichloropropane	NA	NA	1.3E-02	NA	NA	NA
96-18-4	1,2,3-Trichloropropane	NA	3.1E-01	1.4E-02	NA	2.2E+01	2.2E+01 N
96-19-5	1,2,3-Trichloropropene	NA	3.1E-01	7.2E-01	NA	4.3E-01	4.3E-01 N
121-44-8	Triethylamine	NA	7.3E+00	6.1E-03	NA	1.2E+03	1.2E+03 N

TABLE H.1
TARGET GROUNDWATER CONCENTRATION CORRESPONDING
TO TARGET INDOOR AIR CONCENTRATION
RESIDENTIAL

CAS No.	Chemical	Carcinogenic Target Risk (TR) = 1E-06	Noncancer Hazard Index (HI) = 1	Henry's Law Constants	Carcinogenic Screening Level	Noncarcinogenic Screening Level	Screenig Level
		Inhalation	Inhalation	H' (unitless)	Attenuation Factor = 0.001		
		ug/m^3	ug/m^3		ug/L	ug/L	ug/L
95-63-6	1,2,4-Trimethylbenzene	NA	7.3E+00	2.5E-01	NA	2.9E+01	2.9E+01 N
108-67-8	1,3,5-Trimethylbenzene	NA	NA	3.6E-01	NA	NA	NA
108-05-4	Vinyl Acetate	NA	2.1E+02	2.1E-02	NA	1.0E+04	1.0E+04 N
593-60-2	Bromoethene	7.6E-02	3.1E+00	5.0E-01	1.5E-01	6.2E+00	1.5E-01 C
75-01-4	Vinyl Chloride	1.6E-01	1.0E+02	1.1E+00	1.5E-01	9.1E+01	1.5E-01 C
1330-20-7	Total Xylenes	NA	1.0E+02	2.1E-01	NA	4.8E+02	4.8E+02 N
106-42-3	p-xylene	NA	7.3E+02	2.8E-01	NA	2.6E+03	2.6E+03 N
108-38-3	m-xylene	NA	7.3E+02	2.9E-01	NA	2.5E+03	2.5E+03 N
95-47-6	o-Xylene	NA	7.3E+02	2.1E-01	NA	3.5E+03	3.5E+03 N

Notes:
* - Ten percent of noncarcinogenic value is less than carcinogenic value.
Toxicity values and target air concentrations were obtained from the USEPA Regional Screening Level Table, May 2010.

APPENDIX H.2

RAGS-PART D TABLES

RAGS Part D Table 1

Selection of Exposure Pathways

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	Quant Quant	Industrial workers may contact surface soil during normal work activities.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Trespassers may contact surface soil while at the site.
				Recreational Users	Child	Ingestion Dermal	Quant Quant	Recreational users may contact surface soil while at the site.
					Adult	Ingestion Dermal	Quant Quant	
		Air	Tank Farms 4 & 5	Industrial Worker	Adult	Inhalation	Quant	Industrial workers may be exposed to fugitive dust and volatile emissions during work activities.
				Trespassers	Adolescents	Inhalation	Quant	Adolescent trespassers may be exposed to fugitive dust and volatile emissions while at the site.
				Recreational Users	Child	Inhalation	Quant	Recreational users may be exposed to fugitive dust and volatile emissions while at the site.
					Adult	Inhalation	Quant	
	Subsurface Soil	Subsurface Soil	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	Quant Quant	Although exposures to subsurface soil by industrial workers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Although exposures to subsurface soil by adolescent trespassers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Recreational Users	Child	Ingestion Dermal	Quant Quant	Although exposures to subsurface soil by recreational users is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	Quant Quant	
		Air	Tank Farms 4 & 5	Industrial Worker	Adult	Inhalation	Quant	Although exposures to subsurface soil by industrial workers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Trespassers	Adolescents	Inhalation	Quant	Although exposures to subsurface soil by adolescent trespassers is considered unlikely at the site this scenario is included to aid in future risk management decisions.
				Recreational Users	Child	Inhalation	Quant	Although exposures to subsurface soil by recreational users is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
	Groundwater	Groundwater	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	None None	Industrial workers are not expected to have contact with groundwater.
				Trespassers	Adolescents	Ingestion Dermal	None None	Adolescent trespassers are not expected to be exposed to groundwater.
				Recreational Users	Child	Ingestion Dermal	None None	Recreational users are not expected to be exposed to groundwater.
					Adult	Ingestion Dermal	None None	
		Air	Tank Farms 4 & 5	Industrial Worker	Adult	Inhalation	None	Industrial workers are not expected to be exposed to COPCs that have volatilized from groundwater.
				Trespassers	Adolescents	Inhalation	None	Adolescent Trespassers are not expected to be exposed to COPCs that have volatilized from groundwater.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Groundwater	Air	Tank Farms 4 & 5	Recreational Users	Child	Inhalation	None	Recreational user are not expected to be exposed to COPCs that have volatilized from groundwater.
					Adult	Inhalation	None	
			Vapor Intrusion	Industrial Worker	Adult	Inhalation	None	No COPCs were identified for migration of COPCs from groundwater through building foundations and into indoor air.
	Surface Water	Surface Water	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	None None	Industrial workers are not expected to be exposed to surface water.
				Trespassers	Adolescents	Ingestion Dermal	None Quant	Adolescent trespassers may have dermal contact with surface water.
				Recreational Users	Child	Ingestion Dermal	None Quant	Child recreational users are not expected to ingest surface water while wading. Child recreational users are expected to be exposed to surface water while wading.
					Adult	Ingestion Dermal	None Quant	Adult recreational users are not expected to ingest surface water while wading. Adult recreational users are expected to be exposed to surface water while wading.
	Sediment	Sediment	Tank Farms 4 & 5	Industrial Worker	Adult	Ingestion Dermal	None None	Industrial workers are not expected to be exposed to sediment.
				Trespassers	Adolescents	Ingestion Dermal	Quant Quant	Adolescent trespassers may contact sediment.
				Recreational Users	Child	Ingestion Dermal	Quant Quant	Recreational users may contact sediment.
					Adult	Ingestion Dermal	Quant Quant	
Future	Surface Soil	Surface Soil	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion Dermal	Quant Quant	Construction workers may have contact with surface soil during excavation activities.
				Residents	Child	Ingestion Dermal	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	Quant Quant	
		Air	Tank Farms 4 & 5	Construction Workers	Adult	Inhalation	Quant	Construction workers may be exposed to fugitive dust and volatile emissions during construction activities.
				Residents	Child	Inhalation	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
	Subsurface Soil	Subsurface Soil	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion Dermal	Quant Quant	Construction workers may have contact with subsurface soil during excavation activities.
				Residents	Child	Ingestion Dermal	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	Quant Quant	

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Subsurface Soil	Air	Tank Farms 4 & 5	Construction Workers	Adult	Inhalation	Quant	Construction workers may have contact with subsurface soil during excavation activities.
				Residents	Child	Inhalation	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
	Groundwater	Groundwater	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion Dermal	Quant Quant	Construction workers may have contact with ground water during excavation activities.
				Residents	Child	Ingestion Dermal	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	Quant Quant	
		Air	Tank Farms 4 & 5	Construction Workers	Adult	Inhalation	Quant	Construction workers may be exposed to COPCs that have volatilized from groundwater during excavation activities.
				Residents	Child	Inhalation	Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
			Vapor Intrusion	Residents	Child	Inhalation	None	No COPCs were identified for migration of COPCs from groundwater through building foundations and into indoor air.
					Adult	Inhalation	None	
	Surface Water	Surface Water	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion Dermal	None None	Construction workers are not expected to be exposed to surface water.
				Residents	Child	Ingestion Dermal	None None	Child and adult residents are not expected to be exposed to surface water at Tank Farms 4 & 5. If they are exposed to surface water then exposures are expected to be similar to those of the child and adult recreational users.
					Adult	Ingestion Dermal	None None	
	Sediment	Sediment	Tank Farms 4 & 5	Construction Workers	Adult	Ingestion Dermal	None None	Construction workers are not expected to be exposed to sediment.
				Residents	Child	Ingestion Dermal	None None	Child and adult residents are not expected to be exposed to sediment at Tank Farms 4 & 5. If they are exposed to sediment then exposures are expected to be similar to those of the child and adult recreational users.
					Adult	Ingestion Dermal	None None	

Notes:
Quant - Quantitative.

RAGS Part D Table 2

Occurrence, Distribution and Selection Of Chemicals of Potential Concern

LIST OF TABLES
RAGS PART D TABLE 2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Table No.	
2.1	Surface Soil - Direct Contact - Tank Farm 4
2.2	Surface Soil - Migration From Soil to Groundwater - Tank Farm 4
2.3	Subsurface Soil - Direct Contact - Tank Farm 4
2.4	Subsurface Soil - Migration From Soil to Groundwater - Tank Farm 4
2.5	Groundwater - Direct Contact - Tank Farm 4
2.6	Groundwater - Vapor Intrusion - Tank Farm 4
2.7	Surface Water - Tank Farm 4
2.8	Sediment - Tank Farm 4
2.9	Surface Soil - Direct Contact - Tank Farm 5
2.10	Surface Soil - Migration From Soil to Groundwater - Tank Farm 5
2.11	Subsurface Soil - Direct Contact - Tank Farm 5
2.12	Subsurface Soil - Migration From Soil to Groundwater - Tank Farm 5
2.13	Groundwater - Direct Contact - Tank Farm 5
2.14	Groundwater - Vapor Intrusion - Tank Farm 5
2.15	Surface Water - Tank Farm 5
2.16	Sediment - Tank Farm 5

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	Volatile Organic Compounds													
	78-93-3	2-Butanone	3 J	150	ug/kg	TF4-SB-927-0001	6/24	3.5 - 5.7	150	NA	2,800,000 N	10,000,000	No	BSL
	67-64-1	Acetone	3.5 J	160 J	ug/kg	TF4-SB-928-0001	15/24	3.5 - 5.7	160	NA	6,100,000 N	7,800,000	No	BSL
	- -	m+p-Xylenes	1.3 J	2.5 J	ug/kg	TF4-SB-939-0001	4/24	3.6 - 8.5	2.5	NA	63,000 N[8]	110,000 [8]	No	BSL
	108-88-3	Toluene	1.2 J	2 J	ug/kg	TF4-SB-923-0001, TF4-SB-926-0001	3/24	3.5 - 8.5	2	NA	500,000 N	190,000	No	BSL
	1330-20-7	Total Xylenes	0.87 J	2.6 J	ug/kg	TF4-SB-931-0001	7/24	3.6 - 7.7	2.6	NA	63,000 N	110,000	No	BSL
	Semivolatile Organic Compounds													
	105-67-9	2,4-Dimethylphenol	39 J	39 J	ug/kg	TF4-SB-934-0001	1/24	3.6 - 500	39	NA	120,000 N	1,400,000	No	BSL
	95-57-8	2-Chlorophenol	5.4	8	ug/kg	TF4-SB-939-0001	5/24	3.3 - 23	8	NA	39,000 N	50,000	No	BSL
	91-57-6	2-Methylnaphthalene	4.7 J	47	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	47	NA	31,000 N	123,000	No	BSL
	95-48-7	2-Methylphenol	4.5	30	ug/kg	TF4-SB-934-0001	2/24	3.3 - 500	30	NA	310,000 N	NA	No	BSL
	106-44-5	4-Methylphenol	5	81	ug/kg	TF4-SB-934-0001	3/24	3.3 - 6	81	NA	31,000 N	NA	No	BSL
	83-32-9	Acenaphthene	6.2	100	ug/kg	TF4-SB-934-0001	5/24	3.3 - 6.4	100	NA	340,000 N	43,000	No	BSL
	208-96-8	Acenaphthylene	4	2,500	ug/kg	TF4-SB-934-0001	15/24	3.3 - 4.8	2,500	NA	340,000 N[9]	23,000	No	BSL
	120-12-7	Anthracene	4.3	8,800	ug/kg	TF4-SB-934-0001	16/24	3.3 - 6.4	8,800	NA	1,700,000 N	35,000	No	BSL
	56-55-3	Benzo(a)anthracene	8.2	54,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	54,000	NA	150 C	900	Yes	ASL
	50-32-8	Benzo(a)pyrene	8.5 J	24,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	24,000	NA	15 C	400	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	4.3 J	49,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	49,000	NA	150 C	900	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	6	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	170,000 N[10]	800	Yes	ASL
	207-08-9	Benzo(k)fluoranthene	7.4 J	19,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	19,000	NA	1,500 C	900	Yes	ASL
	117-81-7	Bis(2-ethylhexyl)phthalate	36 J	320 J	ug/kg	TF4-SB-931-0001	6/24	330 - 2300	320	NA	35,000 C	46,000	No	BSL
	86-74-8	Carbazole	740 J	740 J	ug/kg	TF4-SB-934-0001	1/24	330 - 640	740	NA	NA	NA	No	NTX
	218-01-9	Chrysene	12	59,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	59,000	NA	15,000 C	400	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	3.8 J	3,900 J	ug/kg	TF4-SB-934-0001	14/24	3.3 - 6.4	3,900	NA	15 C	400	Yes	ASL
	84-74-2	di-n-Butyl Phthalate	78 J	78 J	ug/kg	TF4-SB-925-0001	1/24	330 - 2300	78	NA	610,000 N	NA	No	BSL
	206-44-0	Fluoranthene	5.1	83,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	83,000	NA	230,000 N	20,000	Yes	ASL
	86-73-7	Fluorene	6.6	470	ug/kg	TF4-SB-934-0001	9/24	3.3 - 6.4	470	NA	230,000 N	28,000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	5.7 J	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	150 C	900	Yes	ASL
	91-20-3	Naphthalene	4.5	21	ug/kg	TF4-SB-931-0001	5/24	3.3 - 23	21	NA	3,600 C	54,000	No	BSL
	85-01-8	Phenanthrene	5.6	440	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	440	NA	170,000 N[10]	40,000	No	BSL
	108-95-2	Phenol	7.1	68	ug/kg	TF4-SB-934-0001	8/24	3.6 - 6	68	NA	1,800,000 N	6,000,000	No	BSL
	129-00-0	Pyrene	4.4	86,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	86,000	NA	170,000 N	13,000	Yes	ASL
	50-32-8	Benzo(a)pyrene Equivalents	16 J	217,000 J	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	217,000	NA	15 C	NA	Yes	ASL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	6 J	49	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	49	NA	2,000 C	NA	No	BSL
	72-55-9	4,4'-DDE	5.1 J	10 J	ug/kg	TF4-SB-921-0001	3/24	3.3 - 6.4	10	NA	1,400 C	NA	No	BSL
	50-29-3	4,4'-DDT	10 J	10 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 30	10	NA	1,700 C	NA	No	BSL
	319-85-7	beta-BHC	6.1 J	14	ug/kg	TF4-SB-931-0001	2/24	1.7 - 3.3	14	NA	270 C	NA	No	BSL
	319-86-8	delta-BHC	3.9	3.9	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	3.9	NA	77 C[11]	NA	No	BSL
	959-98-8	Endosulfan I	2.5	2.5	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	2.5	NA	37,000 N[12]	NA	No	BSL
	1031-07-8	Endosulfan Sulfate	4.8 J	22 J	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	22	NA	37,000 N[12]	NA	No	BSL
	72-20-8	Endrin	7.9 J	7.9 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	7.9	NA	1,800 N	NA	No	BSL
	7421-93-4	Endrin Aldehyde	35 J	35 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	35	NA	1,800 N[13]	NA	No	BSL
	53494-70-5	Endrin Ketone	3.7 J	69	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	69	NA	1,800 N[13]	NA	No	BSL
	58-89-9	gamma-BHC (Lindane)	3.4 J	3.4 J	ug/kg	TF4-SB-931-0001	1/24	1.7 - 3.3	3.4	NA	520 C	NA	No	BSL
	8001-35-2	Toxaphene	240 J	240 J	ug/kg	TF4-SB-928-0001	1/24	170 - 330	240	NA	440 C	NA	No	BSL
	Metals													
	7429-90-5	Aluminum	4,850 J	15,200	mg/kg	TF4-SB-927-0001	24/24	-	15,200	No	7,700 N	NA	Yes	ASL,BGK
	7440-38-2	Arsenic	4.2 J	59.5	mg/kg	TF4-SB-943-0001	24/24	-	59.5	Yes	0.39 C	7	Yes	ASL
	7440-39-3	Barium	13.1 J	56.7	mg/kg	TF4-SB-927-0001	24/24	-	56.7	No	1,500 N	5,500	No	BSL, BKG
	7440-41-7	Beryllium	0.096 J	0.7 J	mg/kg	TF4-SB-941-0001	24/24	-	0.7	Yes	16 N	0.4	Yes	ASL
	7440-43-9	Cadmium	0.027 J	0.48	mg/kg	TF4-SB-931-0001	21/24	0.013 - 0.013	0.48	Yes	7 N	39	No	BSL
	7440-70-2	Calcium	101 J	1,900 J	mg/kg	TF4-SB-943-0001	21/24	5.6 - 6.6	1,900	Yes	NA	NA	No	NUT
	7440-47-3	Chromium	8.4 J	20.8	mg/kg	TF4-SB-927-0001	24/24	-	20.8	No	0.39 C[13]	390 [14]	Yes	ASL, BKG
	7440-48-4	Cobalt	4.9 J	20.5 J	mg/kg	TF4-SB-936-0001	24/24	-	20.5	Yes	2.3 N	NA	Yes	ASL
	7440-50-8	Copper	5.4 J	25.2	mg/kg	TF4-SB-923-0001	24/24	-	25.2	Yes	310 N	3,100	No	BSL
	7439-89-6	Iron	18,000	53,200	mg/kg	TF4-SB-936-0001	24/24	-	53,200	Yes	5,500 N	NA	Yes	ASL
	7439-92-1	Lead	6.9 J	63.5 J	mg/kg	TF4-SB-923-0001	24/24	-	63.5	Yes	400	150	No	BSL
	7439-95-4	Magnesium	1,110 J	3,040	mg/kg	TF4-SB-927-0001	24/24	-	3,040	Yes	NA	NA	No	NUT
	7439-96-5	Manganese	144 J	818	mg/kg	TF4-SB-943-0001	24/24	-	818	Yes	180 N	390	Yes	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	7439-97-6	Mercury	0.031 J	0.14	mg/kg	TF4-SB-923-0001	19/24	0.015 - 0.08	0.14	Yes	2.3 N[15]	23	No	BSL
	7440-02-0	Nickel	11.5 J	37.1	mg/kg	TF4-SB-943-0001	24/24	-	37.1	Yes	150 N	1,000	No	BSL
	7440-09-7	Potassium	187 J	545 J	mg/kg	TF4-SB-935-0001	24/24	-	545	Yes	NA	NA	No	NUT
	7782-49-2	Selenium	0.82 J	3.5	mg/kg	TF4-SB-935-0001	14/24	0.77 - 5.1	3.5	Yes	39 N	390	No	BSL
	7440-22-4	Silver	0.068 J	0.068 J	mg/kg	TF4-SB-935-0001	1/24	0.054 - 0.19	0.068	Yes	39 N	200	No	BSL
	7440-23-5	Sodium	21 J	137 J	mg/kg	TF4-SB-923-0001	21/24	15.5 - 23.9	137	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	2.6	5.3	mg/kg	TF4-SB-943-0001	6/24	0.16 - 0.36	5.3	Yes	NA	5.5	No	BSL
	7440-62-2	Vanadium	12.6 J	37.6	mg/kg	TF4-SB-927-0001	24/24	-	37.6	Yes	39 N	550	No	BSL
	7440-66-6	Zinc	27.8 J	125	mg/kg	TF4-SB-936-0001	24/24	-	125	Yes	2,300 N	6,000	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	721 J	21,100 J	ng/kg	TF4-SB-933-0001	24/24	-	21,100	NA	15,000 C[16]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.386 J	26.9	ng/kg	TF4-SB-942-0001	20/24	0.0641 - 3.48	26.9	NA	15,000 C[16]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	15.1	79.7	ng/kg	TF4-SB-926-0001	24/24	-	79.7	NA	450 C[16]	NA	No	BSL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	0.14 J	8.41	ng/kg	TF4-SB-942-0001	20/24	0.797 - 2.38	8.41	NA	450 C[16]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.0992 J	0.689 J	ng/kg	TF4-SB-923-0001	12/24	0.0327 - 0.456	0.689	NA	450 C[16]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.102 J	1.15 J	ng/kg	TF4-SB-926-0001	22/24	0.117 - 0.326	1.15	NA	45 C[16]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.035 J	1.09 J	ng/kg	TF4-SB-923-0001	22/24	0.038 - 0.257	1.09	NA	45 C[16]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.147 J	2.24 J	ng/kg	TF4-SB-926-0001	24/24	-	2.24	NA	45 C[16]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.0604 J	0.727 J	ng/kg	TF4-SB-923-0001	20/24	0.0273 - 0.244	0.727	NA	45 C[16]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.171 J	2.34 J	ng/kg	TF4-SB-926-0001	24/24	-	2.34	NA	45 C[16]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.116 J	0.562 J	ng/kg	TF4-SB-926-0001	14/24	0.029 - 0.486	0.562	NA	4.5 C[16]	NA	No	BSL
	57117-41-6	1,2,3,7,8-PECDF	0.0907 J	0.391 J	ng/kg	TF4-SB-923-0001	9/24	0.024 - 0.377	0.391	NA	150 C[16]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.0736 J	0.845 J	ng/kg	TF4-SB-926-0001	18/24	0.0404 - 0.32	0.845	NA	45 C[16]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.0799 J	0.435 J	ng/kg	TF4-SB-923-0001	10/24	0.0231 - 0.374	0.435	NA	15 C[16]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.0603 J	0.0603 J	ng/kg	TF4-SB-938-0001	1/24	0.0329 - 1.25	0.0603	NA	4.5 C	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.243 J	0.676 J	ng/kg	TF4-SB-926-0001	11/24	0.0572 - 0.988	0.676	NA	45 C[16]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	0.977	7.25	ng/kg	TF4-SB-933-0001	24/24	-	7.25	NA	4.5 C	NA	Yes	ASL
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	30 J	540	mg/kg	TF4-SB-921-0001	13/18	14 - 25	540	NA	NA	500	Yes	ASL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management (RIDEM), DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Value is for alpha-BHC.
12 - Value is for Endosulfan.
13 - Value is for Endrin.
14 - Value is for hexavalent chromium.
15 - Value is for mercury, inorganic salts
16 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
BKG = Less than Background Concentration
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

Associated Samples

TF4-SB-920-0001	TF4-SB-926-0001	TF4-SB-932-0001	TF4-SB-938-0001
TF4-SB-921-0001	TF4-SB-927-0001	TF4-SB-933-0001	TF4-SB-939-0001
TF4-SB-922-0001	TF4-SB-928-0001	TF4-SB-934-0001	TF4-SB-940-0001
TF4-SB-923-0001	TF4-SB-929-0001	TF4-SB-935-0001	TF4-SB-941-0001
TF4-SB-924-0001	TF4-SB-930-0001	TF4-SB-936-0001	TF4-SB-942-0001
TF4-SB-925-0001	TF4-SB-931-0001	TF4-SB-937-0001	TF4-SB-943-0001

TABLE 2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	Volatile Organic Compounds													
	78-93-3	2-Butanone	3 J	150	ug/kg	TF4-SB-927-0001	6/24	3.5 - 5.7	150	NA	1,500	NA	No	BSL
	67-64-1	Acetone	3.5 J	160 J	ug/kg	TF4-SB-928-0001	15/24	3.5 - 5.7	160	NA	4,500	NA	No	BSL
	- -	m+p-Xylenes	1.3 J	2.5 J	ug/kg	TF4-SB-939-0001	4/24	3.6 - 8.5	2.5	NA	200 [8]	540,000 [8]	No	BSL
	108-88-3	Toluene	1.2 J	2 J	ug/kg	TF4-SB-923-0001, TF4-SB-926-0001	3/24	3.5 - 8.5	2	NA	1,600	32,000	No	BSL
	1330-20-7	Total Xylenes	0.87 J	2.6 J	ug/kg	TF4-SB-931-0001	7/24	3.6 - 7.7	2.6	NA	200	540,000	No	BSL
	Semivolatile Organic Compounds													
	105-67-9	2,4-Dimethylphenol	39 J	39 J	ug/kg	TF4-SB-934-0001	1/24	3.6 - 500	39	NA	860	NA	No	BSL
	95-57-8	2-Chlorophenol	5.4	8	ug/kg	TF4-SB-939-0001	5/24	3.3 - 23	8	NA	150	NA	No	BSL
	91-57-6	2-Methylnaphthalene	4.7 J	47	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	47	NA	750	NA	No	BSL
	95-48-7	2-Methylphenol	4.5	30	ug/kg	TF4-SB-934-0001	2/24	3.3 - 500	30	NA	1,500	NA	No	BSL
	106-44-5	4-Methylphenol	5	81	ug/kg	TF4-SB-934-0001	3/24	3.3 - 6	81	NA	150	NA	No	BSL
	83-32-9	Acenaphthene	6.2	100	ug/kg	TF4-SB-934-0001	5/24	3.3 - 6.4	100	NA	22,000	NA	No	BSL
	208-96-8	Acenaphthylene	4	2,500	ug/kg	TF4-SB-934-0001	15/24	3.3 - 4.8	2,500	NA	22,000 [9]	NA	No	BSL
	120-12-7	Anthracene	4.3	8,800	ug/kg	TF4-SB-934-0001	16/24	3.3 - 6.4	8,800	NA	360,000	NA	No	BSL
	56-55-3	Benzo(a)anthracene	8.2	54,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	54,000	NA	10	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	8.5 J	24,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	24,000	NA	3.5	240,000	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	4.3 J	49,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	49,000	NA	35	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	6	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	120,000 [10]	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	7.4 J	19,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	19,000	NA	350	NA	Yes	ASL
	117-81-7	Bis(2-ethylhexyl)phthalate	36 J	320 J	ug/kg	TF4-SB-931-0001	6/24	330 - 2300	320	NA	1,100	120,000	No	BSL
	86-74-8	Carbazole	740 J	740 J	ug/kg	TF4-SB-934-0001	1/24	330 - 640	740	NA	NA	NA	No	NTX
	218-01-9	Chrysene	12	59,000	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	59,000	NA	1,100	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	3.8 J	3,900 J	ug/kg	TF4-SB-934-0001	14/24	3.3 - 6.4	3,900	NA	11	NA	Yes	ASL
	84-74-2	di-n-Butyl Phthalate	78 J	78 J	ug/kg	TF4-SB-925-0001	1/24	330 - 2300	78	NA	9,200	NA	No	BSL
	206-44-0	Fluoranthene	5.1	83,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	83,000	NA	160,000	NA	No	BSL
	86-73-7	Fluorene	6.6	470	ug/kg	TF4-SB-934-0001	9/24	3.3 - 6.4	470	NA	27,000	NA	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	5.7 J	8,500	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	8,500	NA	120	NA	Yes	ASL
	91-20-3	Naphthalene	4.5	21	ug/kg	TF4-SB-931-0001	5/24	3.3 - 23	21	NA	0.47	800	Yes	ASL
	85-01-8	Phenanthrene	5.6	440	ug/kg	TF4-SB-934-0001	21/24	3.3 - 4.2	440	NA	120,000 [10]	NA	No	BSL
	108-95-2	Phenol	7.1	68	ug/kg	TF4-SB-934-0001	8/24	3.6 - 6	68	NA	6,300	NA	No	BSL
	129-00-0	Pyrene	4.4	86,000	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	86,000	NA	120,000	NA	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	16 J	217,000 J	ug/kg	TF4-SB-934-0001	22/24	3.3 - 4.2	217,000	NA	NA	NA	No	BSL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	6 J	49	ug/kg	TF4-SB-934-0001	4/24	3.3 - 6.4	49	NA	66	NA	No	BSL
	72-55-9	4,4'-DDE	5.1 J	10 J	ug/kg	TF4-SB-921-0001	3/24	3.3 - 6.4	10	NA	47	NA	No	BSL
	50-29-3	4,4'-DDT	10 J	10 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 30	10	NA	67	NA	No	BSL
	319-85-7	beta-BHC	6.1 J	14	ug/kg	TF4-SB-931-0001	2/24	1.7 - 3.3	14	NA	0.22	NA	Yes	ASL
	319-86-8	delta-BHC	3.9	3.9	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	3.9	NA	0.062 [11]	NA	Yes	ASL
	959-98-8	Endosulfan I	2.5	2.5	ug/kg	TF4-SB-942-0001	1/24	1.7 - 3.3	2.5	NA	3,000 [12]	NA	No	BSL
	1031-07-8	Endosulfan Sulfate	4.8 J	22 J	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	22	NA	3,000 [12]	NA	No	BSL
	72-20-8	Endrin	7.9 J	7.9 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	7.9	NA	440	NA	No	BSL
	7421-93-4	Endrin Aldehyde	35 J	35 J	ug/kg	TF4-SB-934-0001	1/24	3.3 - 6.4	35	NA	440 [13]	NA	No	BSL
	53494-70-5	Endrin Ketone	3.7 J	69	ug/kg	TF4-SB-934-0001	2/24	3.3 - 6.4	69	NA	440 [13]	NA	No	BSL
	58-89-9	gamma-BHC (Lindane)	3.4 J	3.4 J	ug/kg	TF4-SB-931-0001	1/24	1.7 - 3.3	3.4	NA	0.36	NA	Yes	ASL
	8001-35-2	Toxaphene	240 J	240 J	ug/kg	TF4-SB-928-0001	1/24	170 - 330	240	NA	9.4	NA	Yes	ASL
	Metals													
	7429-90-5	Aluminum	4,850 J	15,200	mg/kg	TF4-SB-927-0001	24/24	-	15,200	No	55,000	NA	No	BSL, BKG
	7440-38-2	Arsenic	4.2 J	59.5	mg/kg	TF4-SB-943-0001	24/24	-	59.5	Yes	0.0013	NA	Yes	ASL
	7440-39-3	Barium	13.1 J	56.7	mg/kg	TF4-SB-927-0001	24/24	-	56.7	No	300	[14]	No	BSL, BKG
	7440-41-7	Beryllium	0.096 J	0.7 J	mg/kg	TF4-SB-941-0001	24/24	-	0.7	Yes	58	[14]	No	BSL
	7440-43-9	Cadmium	0.027 J	0.48	mg/kg	TF4-SB-931-0001	21/24	0.013 - 0.013	0.48	Yes	1.4	[14]	No	BSL
	7440-70-2	Calcium	101 J	1,900 J	mg/kg	TF4-SB-943-0001	21/24	5.6 - 6.6	1,900	Yes	NA	NA	No	NUT
	7440-47-3	Chromium	8.4 J	20.8	mg/kg	TF4-SB-927-0001	24/24	-	20.8	No	0.00083 [15]	[14]	Yes	ASL, BKG
	7440-48-4	Cobalt	4.9 J	20.5 J	mg/kg	TF4-SB-936-0001	24/24	-	20.5	Yes	0.49	NA	Yes	ASL
	7440-50-8	Copper	5.4 J	25.2	mg/kg	TF4-SB-923-0001	24/24	-	25.2	Yes	51	NA	No	BSL
	7439-89-6	Iron	18,000	53,200	mg/kg	TF4-SB-936-0001	24/24	-	53,200	Yes	640	NA	Yes	ASL
	7439-92-1	Lead	6.9 J	63.5 J	mg/kg	TF4-SB-923-0001	24/24	-	63.5	Yes	14 [16]	[14]	Yes	ASL
	7439-95-4	Magnesium	1,110 J	3,040	mg/kg	TF4-SB-927-0001	24/24	-	3,040	Yes	NA	NA	No	NUT

TABLE 2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	7439-96-5	Manganese	144 J	818	mg/kg	TF4-SB-943-0001	24/24	-	818	Yes	57	NA	Yes	ASL
	7439-97-6	Mercury	0.031 J	0.14	mg/kg	TF4-SB-923-0001	19/24	0.015 - 0.08	0.14	Yes	0.57 [17]	[14]	No	BSL
	7440-02-0	Nickel	11.5 J	37.1	mg/kg	TF4-SB-943-0001	24/24	-	37.1	Yes	48	[14]	No	BSL
	7440-09-7	Potassium	187 J	545 J	mg/kg	TF4-SB-935-0001	24/24	-	545	Yes	NA	NA	No	NUT
	7782-49-2	Selenium	0.82 J	3.5	mg/kg	TF4-SB-935-0001	14/24	0.77 - 5.1	3.5	Yes	0.95	[14]	Yes	ASL
	7440-22-4	Silver	0.068 J	0.068 J	mg/kg	TF4-SB-935-0001	1/24	0.054 - 0.19	0.068	Yes	1.6	NA	No	BSL
	7440-23-5	Sodium	21 J	137 J	mg/kg	TF4-SB-923-0001	21/24	15.5 - 23.9	137	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	2.6	5.3	mg/kg	TF4-SB-943-0001	6/24	0.16 - 0.36	5.3	Yes	NA	[14]	No	NTX
	7440-62-2	Vanadium	12.6 J	37.6	mg/kg	TF4-SB-927-0001	24/24	-	37.6	Yes	180	NA	No	BSL
	7440-66-6	Zinc	27.8 J	125	mg/kg	TF4-SB-936-0001	24/24	-	125	Yes	680	NA	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	721 J	21,100 J	ng/kg	TF4-SB-933-0001	24/24	-	21,100	NA	870 [18]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.386 J	26.9	ng/kg	TF4-SB-942-0001	20/24	0.0641 - 3.48	26.9	NA	870 [18]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	15.1	79.7	ng/kg	TF4-SB-926-0001	24/24	-	79.7	NA	26 [18]	NA	Yes	ASL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	0.14 J	8.41	ng/kg	TF4-SB-942-0001	20/24	0.797 - 2.38	8.41	NA	26 [18]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.0992 J	0.689 J	ng/kg	TF4-SB-923-0001	12/24	0.0327 - 0.456	0.689	NA	26 [18]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.102 J	1.15 J	ng/kg	TF4-SB-926-0001	22/24	0.117 - 0.326	1.15	NA	2.6 [18]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.035 J	1.09 J	ng/kg	TF4-SB-923-0001	22/24	0.038 - 0.257	1.09	NA	2.6 [18]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.147 J	2.24 J	ng/kg	TF4-SB-926-0001	24/24	-	2.24	NA	2.6 [18]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.0604 J	0.727 J	ng/kg	TF4-SB-923-0001	20/24	0.0273 - 0.244	0.727	NA	2.6 [18]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.171 J	2.34 J	ng/kg	TF4-SB-926-0001	24/24	-	2.34	NA	2.6 [18]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.116 J	0.562 J	ng/kg	TF4-SB-926-0001	14/24	0.029 - 0.486	0.562	NA	0.26 [18]	NA	Yes	ASL
	57117-41-6	1,2,3,7,8-PECDF	0.0907 J	0.391 J	ng/kg	TF4-SB-923-0001	9/24	0.024 - 0.377	0.391	NA	8.7 [18]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.0736 J	0.845 J	ng/kg	TF4-SB-926-0001	18/24	0.0404 - 0.32	0.845	NA	2.6 [18]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.0799 J	0.435 J	ng/kg	TF4-SB-923-0001	10/24	0.0231 - 0.374	0.435	NA	0.87 [18]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.0603 J	0.0603 J	ng/kg	TF4-SB-938-0001	1/24	0.0329 - 1.25	0.0603	NA	0.26	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.243 J	0.676 J	ng/kg	TF4-SB-926-0001	11/24	0.0572 - 0.988	0.676	NA	2.6 [18]	NA	No	BSL
	- -	2,3,7,8-TCDD TEQ	0.977	7.25	ng/kg	TF4-SB-933-0001	24/24	-	7.25	NA	NA	NA	No	NTX
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	30 J	540	mg/kg	TF4-SB-921-0001	13/18	14 - 25	540	NA	NA	500	Yes	ASL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Value is for alpha-BHC.
12 - Value is for Endosulfan.
13 - Value is for Endrin.
14 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
15 - Value is for hexavalent chromium.
16 - Value is MCL based soil screening level.
17 - Value is for mercury, inorganic salts
18 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
BKG = Less than Background Concentration
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

Associated Samples

TF4-SB-920-0001	TF4-SB-924-0001	TF4-SB-928-0001	TF4-SB-932-0001	TF4-SB-936-0001	TF4-SB-940-0001
TF4-SB-921-0001	TF4-SB-925-0001	TF4-SB-929-0001	TF4-SB-933-0001	TF4-SB-937-0001	TF4-SB-941-0001
TF4-SB-922-0001	TF4-SB-926-0001	TF4-SB-930-0001	TF4-SB-934-0001	TF4-SB-938-0001	TF4-SB-942-0001
TF4-SB-923-0001	TF4-SB-927-0001	TF4-SB-931-0001	TF4-SB-935-0001	TF4-SB-939-0001	TF4-SB-943-0001

TABLE 2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	Volatile Organic Compounds													
	78-93-3	2-Butanone	3.6 J	30	ug/kg	TF4-SB-922-0608	11/42	3.7 - 5.1	30	NA	2,800,000 N	10,000,000	No	BSL
	67-64-1	Acetone	3.5 J	180 J	ug/kg	TF4-SB-943-0204	25/42	3.9 - 5.1	180	NA	6,100,000 N	7,800,000	No	BSL
	71-43-2	Benzene	0.97 J	0.97 J	ug/kg	TF4-SB-928-0810	1/42	3.6 - 13	0.97	NA	1,100 C	2,500	No	BSL
	75-15-0	Carbon Disulfide	0.96 J	12 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 7.2	12	NA	82,000 N	NA	No	BSL
	- -	m+p-Xylenes	2.4 J	2.7 J	ug/kg	TF4-SB-939-0810	2/42	3.6 - 13	2.7	NA	63,000 N[8]	110,000 [8]	No	BSL
	1634-04-4	Methyl Tert-Butyl Ether	1 J	1.2 J	ug/kg	TF4-SB-928-0810	3/42	3.6 - 13	1.2	NA	43,000 C	390,000	No	BSL
	108-88-3	Toluene	1.8 J	5.6 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 5.8	5.6	NA	500,000 N	190,000	No	BSL
	1330-20-7	Total Xylenes	1.1 J	3.7 J	ug/kg	TF4-SB-922-0608	5/42	3.6 - 7.2	3.7	NA	63,000 N	110,000	No	BSL
	Semivolatile Organic Compounds													
	120-83-2	2,4-Dichlorophenol	5.1 J	5.1 J	ug/kg	TF4-SB-937-0204	1/42	3.3 - 6.1	5.1	NA	18,000 N	30,000	No	BSL
	95-57-8	2-Chlorophenol	3.6	7.9	ug/kg	TF4-SB-937-0204	6/42	3.3 - 6.5	7.9	NA	39,000 N	50,000	No	BSL
	91-57-6	2-Methylnaphthalene	5.7 J	15 J	ug/kg	TF4-SB-939-0204	6/42	3.3 - 6.1	15	NA	31,000 N	123,000	No	BSL
	95-48-7	2-Methylphenol	6.4	99.8 J	ug/kg	TF4-SB-941-0810-AVG	3/42	3.3 - 610	99.8	NA	310,000 N	NA	No	BSL
	106-44-5	4-Methylphenol	5.52 J	6.1	ug/kg	TF4-SB-937-0204	2/42	3.3 - 6.1	6.1	NA	31,000 N	NA	No	BSL
	83-32-9	Acenaphthene	4.5	47 J	ug/kg	TF4-SB-939-0204	3/42	3.3 - 6.1	47	NA	340,000 N	43,000	No	BSL
	208-96-8	Acenaphthylene	12	76 J	ug/kg	TF4-SB-939-0204	5/42	3.3 - 6.1	76	NA	340,000 N[9]	23,000	No	BSL
	120-12-7	Anthracene	4.55 J	99 J	ug/kg	TF4-SB-934-0204	8/42	3.3 - 6.1	99	NA	1,700,000 N	35,000	No	BSL
	56-55-3	Benzo(a)anthracene	3.9	320 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	320	NA	150 C	900	Yes	ASL
	50-32-8	Benzo(a)pyrene	3.3 J	250 J	ug/kg	TF4-SB-934-0204	14/42	3.3 - 6.1	250	NA	15 C	400	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	4.2 J	610 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	610	NA	150 C	900	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	4.2	180 J	ug/kg	TF4-SB-939-0204	12/42	3.3 - 6.1	180	NA	170,000 N[10]	800	No	BSL
	207-08-9	Benzo(k)fluoranthene	4.8	490	ug/kg	TF4-SB-934-0204	13/42	3.3 - 6.1	490	NA	1,500 C	900	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	41 J	131 J	ug/kg	TF4-SB-941-0810-AVG	9/42	330 - 480	131	NA	35,000 C	46,000	No	BSL
	85-68-7	Butyl Benzyl Phthalate	59 J	170 J	ug/kg	TF4-SB-941-0810-AVG	3/42	330 - 610	170	NA	260,000 C	NA	No	BSL
	218-01-9	Chrysene	4.3	440	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	440	NA	15,000 C	400	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	5.6 J	46	ug/kg	TF4-SB-934-0204	6/42	3.3 - 6.1	46	NA	15 C	400	Yes	ASL
	84-74-2	di-n-Butyl Phthalate	48 J	120 J	ug/kg	TF4-SB-929-0204-AVG	5/42	330 - 610	120	NA	610,000 N	NA	No	BSL
	206-44-0	Fluoranthene	3.9	310 J	ug/kg	TF4-SB-939-0204	16/42	3.3 - 6.1	310	NA	230,000 N	20,000	No	BSL
	86-73-7	Fluorene	3.35	84 J	ug/kg	TF4-SB-939-0204	7/42	3.3 - 6.1	84	NA	230,000 N	28,000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	3.3 J	140 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	140	NA	150 C	900	No	BSL
	91-20-3	Naphthalene	4.3	13 J	ug/kg	TF4-SB-939-0204	8/42	3.3 - 18	13	NA	3,600 C	54,000	No	BSL
	85-01-8	Phenanthrene	4.5 J	280 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	280	NA	170,000 N[10]	40,000	No	BSL
	108-95-2	Phenol	4.5 J	39	ug/kg	TF4-SB-937-0204	16/42	3.6 - 6.1	39	NA	1,800,000 N	6,000,000	No	BSL
	129-00-0	Pyrene	4.9 J	310 J	ug/kg	TF4-SB-939-0204	15/42	3.3 - 6.1	310	NA	170,000 N	13,000	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	15 J	2,290 J	ug/kg	TF4-SB-934-0204	16/42	3.3 - 6.1	2,290	NA	15 C	NA	Yes	ASL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	4.6	8.2	ug/kg	TF4-SB-928-0204	2/42	3.3 - 6.2	8.2	NA	2,000 C	NA	No	BSL
	50-29-3	4,4'-DDT	7.1 J	7.1 J	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	1,700 C	NA	No	BSL
	11097-69-1	Aroclor-1254	100 J	100 J	ug/kg	TF4-SB-942-0204	1/42	33 - 62	100	NA	11 N[11]	NA	Yes	ASL
	1031-07-8	Endosulfan Sulfate	7.1	7.1	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	37,000 N[12]	NA	No	BSL
	7421-93-4	Endrin Aldehyde	5.7	5.7	ug/kg	TF4-SB-925-0608	1/42	3.3 - 6.2	5.7	NA	1,800 N[13]	NA	No	BSL
	Metals													
	7429-90-5	Aluminum	697	17,200	mg/kg	TF4-SB-921-0204	42/42	-	17,200	No	7,700 N	NA	Yes	ASL,BKG
	7440-38-2	Arsenic	4.9 J	42.9 J	mg/kg	TF4-SB-932-0607	42/42	-	42.9	Yes	0.39 C	7	Yes	ASL
	7440-39-3	Barium	1.8 J	103	mg/kg	TF4-SB-930-0204	42/42	-	103	Yes	1,500 N	5,500	No	BSL
	7440-41-7	Beryllium	0.16 J	0.78	mg/kg	TF4-SB-921-0204	42/42	-	0.78	Yes	16 N	0.4	Yes	ASL
	7440-43-9	Cadmium	0.042 J	1.15	mg/kg	TF4-SB-941-0810-AVG	39/42	0.014 - 0.018	1.15	Yes	7 N	39	No	BSL
	7440-70-2	Calcium	6 J	1,750 J	mg/kg	TF4-SB-925-0204	30/42	4.5 - 8.1	1,750	No	NA	NA	No	NUT,BKG
	7440-47-3	Chromium	4.3 J	24.1	mg/kg	TF4-SB-934-0810	42/42	-	24.1	No	0.39 C[15]	390 [15]	Yes	ASL,BKG
	7440-48-4	Cobalt	5.8 J	41 J	mg/kg	TF4-SB-924-0810-AVG	42/42	-	41	Yes	2.3 N	NA	Yes	ASL
	7440-50-8	Copper	3.3 J	31.8 J	mg/kg	TF4-SB-941-0810-AVG	42/42	-	31.8	Yes	310 N	3,100	No	BSL
	7439-89-6	Iron	18,500	76,900	mg/kg	TF4-SB-925-0608	42/42	-	76,900	Yes	5,500 N	NA	Yes	ASL
	7439-92-1	Lead	3.1 J	30.3 J	mg/kg	TF4-SB-938-0810	42/42	-	30.3	Yes	400	150	No	BSL
	7439-95-4	Magnesium	136 J	5,120	mg/kg	TF4-SB-925-0204	42/42	-	5,120	No	NA	NA	No	NUT,BKG
	7439-96-5	Manganese	58.3 J	4,480	mg/kg	TF4-SB-930-0204	42/42	-	4,480	Yes	180 N	390	Yes	ASL

TABLE 2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	7439-97-6	Mercury	0.00692 J	0.16	mg/kg	TF4-SB-923-0406	18/42	0.0054 - 0.028	0.16	Yes	2.3 N[16]	23	No	BSL
	7440-02-0	Nickel	13.4 J	96.9	mg/kg	TF4-SB-943-0810	42/42	-	96.9	Yes	150 N	1,000	No	BSL
	7440-09-7	Potassium	89.5 J	934	mg/kg	TF4-SB-925-0204	42/42	-	934	No	NA	NA	No	NUT,BKG
	7782-49-2	Selenium	0.62 J	5.3	mg/kg	TF4-SB-936-0810	16/42	0.48 - 7	5.3	Yes	39 N	390	No	BSL
	7440-22-4	Silver	0.12 J	0.21 J	mg/kg	TF4-SB-936-0810	2/42	0.048 - 0.35	0.21	Yes	39 N	200	No	BSL
	7440-23-5	Sodium	11 J	664 J	mg/kg	TF4-SB-922-0608	34/42	8.4 - 22.6	664	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	1.2	11.8	mg/kg	TF4-SB-943-0204	10/42	0.15 - 0.33	11.8	Yes	NA	5.5	Yes	ASL
	7440-62-2	Vanadium	8.5 J	30.2	mg/kg	TF4-SB-921-0204	42/42	-	30.2	Yes	39 N	550	No	BSL
	7440-66-6	Zinc	35.7 J	193	mg/kg	TF4-SB-943-0810	42/42	-	193	Yes	2,300 N	6,000	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	368 J	19,100 J	ng/kg	TF4-SB-923-0406	23/23	-	19,100	NA	15,000 C[17]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.091 J	2.47 J	ng/kg	TF4-SB-924-0204	15/23	0.132 - 3.95	2.47	NA	15,000 C[17]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	5.76	292	ng/kg	TF4-SB-923-0406	23/23	-	292	NA	450 C[17]	NA	No	BSL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	0.0503 J	1.02 J	ng/kg	TF4-SB-924-0204	16/23	0.0298 - 1.36	1.02	NA	450 C[17]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.0692 J	0.883 J	ng/kg	TF4-SB-923-0406	20/23	0.0428 - 0.0883	0.883	NA	45 C[17]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.0386 J	0.345 J	ng/kg	TF4-SB-928-0204	11/23	0.0141 - 0.16	0.345	NA	45 C[17]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.0797 J	2.1 J	ng/kg	TF4-SB-923-0406	21/23	0.0376 - 0.0832	2.1	NA	45 C[17]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.0442 J	0.221 J	ng/kg	TF4-SB-928-0204	14/23	0.0208 - 0.733	0.221	NA	45 C[17]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.0666 J	4.24	ng/kg	TF4-SB-923-0406	20/23	0.0366 - 0.0881	4.24	NA	45 C[17]	NA	No	BSL
	72918-21-9	1,2,3,7,8,9-HXCDF	0.0491 J	0.0994 J	ng/kg	TF4-SB-925-0204	3/23	0.0184 - 0.204	0.0994	NA	45 C[17]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.158 J	0.224 J	ng/kg	TF4-SB-923-0406	3/23	0.0238 - 0.203	0.224	NA	4.5 C[17]	NA	No	BSL
	57117-41-6	1,2,3,7,8-PECDF	0.135 J	0.135 J	ng/kg	TF4-SB-925-0204	1/23	0.0202 - 0.151	0.135	NA	150 C[17]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.099 J	0.179 J	ng/kg	TF4-SB-928-0204	5/23	0.0153 - 0.174	0.179	NA	45 C[17]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.0908 J	0.18 J	ng/kg	TF4-SB-928-0204	2/23	0.0194 - 0.149	0.18	NA	15 C[17]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.0756 J	0.0756 J	ng/kg	TF4-SB-930-0204	1/23	0.0254 - 0.312	0.0756	NA	4.5 C	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.177 J	0.343 J	ng/kg	TF4-SB-928-0204	2/23	0.036 - 0.294	0.343	NA	45 C[17]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	0.358	9.71	ng/kg	TF4-SB-923-0406	23/23	-	9.71	NA	4.5 C	NA	Yes	ASL
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	18 J	240	mg/kg	TF4-SB-928-0204	9/30	13 - 58	240	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Ten percent of noncarcinogenic screening level is less then the carcinogenic screening level, therefore the noncarcinogenic value is presented.
12 - Value is for Endosulfan.
13 - Value is for Endrin.
14 - Value is for high risk polychlorinated biphenyls.
15 - Value is for hexavalent chromium.
16 - Value is for mercury, inorganic salts
17 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
BKG = Less than Background Concentration
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]

Associated Samples

TF4-SB-920-0204	TF4-SB-932-0607
TF4-SB-920-0810	TF4-SB-933-0204
TF4-SB-921-0204	TF4-SB-933-0608
TF4-SB-921-0810-AVG	TF4-SB-934-0204
TF4-SB-922-0204-AVG	TF4-SB-934-0810
TF4-SB-922-0608	TF4-SB-935-0204
TF4-SB-923-0204	TF4-SB-935-0810
TF4-SB-923-0406	TF4-SB-936-0204
TF4-SB-924-0204	TF4-SB-936-0810
TF4-SB-924-0810-AVG	TF4-SB-937-0204
TF4-SB-925-0204	TF4-SB-938-0204-AVG
TF4-SB-925-0608	TF4-SB-938-0810
TF4-SB-926-0204-AVG	TF4-SB-939-0204
TF4-SB-926-0406	TF4-SB-939-0810
TF4-SB-928-0204	TF4-SB-940-0204
TF4-SB-928-0810	TF4-SB-940-0810
TF4-SB-929-0204-AVG	TF4-SB-941-0204
TF4-SB-929-0608	TF4-SB-941-0810-AVG
TF4-SB-930-0204	TF4-SB-942-0204
TF4-SB-930-0608	TF4-SB-943-0204
TF4-SB-932-0204	TF4-SB-943-0810

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	Volatile Organic Compounds													
	78-93-3	2-Butanone	3.6 J	30	ug/kg	TF4-SB-922-0608	11/42	3.7 - 5.1	30	NA	1,500	NA	No	BSL
	67-64-1	Acetone	3.5 J	180 J	ug/kg	TF4-SB-943-0204	25/42	3.9 - 5.1	180	NA	4,500	NA	No	BSL
	71-43-2	Benzene	0.97 J	0.97 J	ug/kg	TF4-SB-928-0810	1/42	3.6 - 13	0.97	NA	0.21	200	Yes	ASL
	75-15-0	Carbon Disulfide	0.96 J	12 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 7.2	12	NA	310	NA	No	BSL
	--	m+p-Xylenes	2.4 J	2.7 J	ug/kg	TF4-SB-939-0810	2/42	3.6 - 13	2.7	NA	200 [8]	540,000 [8]	No	BSL
	1634-04-4	Methyl Tert-Butyl Ether	1 J	1.2 J	ug/kg	TF4-SB-928-0810	3/42	3.6 - 13	1.2	NA	2.8	900	No	BSL
	108-88-3	Toluene	1.8 J	5.6 J	ug/kg	TF4-SB-922-0608	4/42	3.6 - 5.8	5.6	NA	1,600	32,000	No	BSL
	1330-20-7	Total Xylenes	1.1 J	3.7 J	ug/kg	TF4-SB-922-0608	5/42	3.6 - 7.2	3.7	NA	200	540,000	No	BSL
	Semivolatile Organic Compounds													
	120-83-2	2,4-Dichlorophenol	5.1 J	5.1 J	ug/kg	TF4-SB-937-0204	1/42	3.3 - 6.1	5.1	NA	130	NA	No	BSL
	95-57-8	2-Chlorophenol	3.6	7.9	ug/kg	TF4-SB-937-0204	6/42	3.3 - 6.5	7.9	NA	150	NA	No	BSL
	91-57-6	2-Methylnaphthalene	5.7 J	15 J	ug/kg	TF4-SB-939-0204	6/42	3.3 - 6.1	15	NA	750	NA	No	BSL
	95-48-7	2-Methylphenol	6.4	99.8 J	ug/kg	TF4-SB-941-0810-AVG	3/42	3.3 - 610	99.8	NA	1,500	NA	No	BSL
	106-44-5	4-Methylphenol	5.52 J	6.1	ug/kg	TF4-SB-937-0204	2/42	3.3 - 6.1	6.1	NA	150	NA	No	BSL
	83-32-9	Acenaphthene	4.5	47 J	ug/kg	TF4-SB-939-0204	3/42	3.3 - 6.1	47	NA	22,000	NA	No	BSL
	208-96-8	Acenaphthylene	12	76 J	ug/kg	TF4-SB-939-0204	5/42	3.3 - 6.1	76	NA	22,000 [9]	NA	No	BSL
	120-12-7	Anthracene	4.55 J	99 J	ug/kg	TF4-SB-934-0204	8/42	3.3 - 6.1	99	NA	360,000	NA	No	BSL
	56-55-3	Benzo(a)anthracene	3.9	320 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	320	NA	10	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	3.3 J	250 J	ug/kg	TF4-SB-934-0204	14/42	3.3 - 6.1	250	NA	3.5	240,000	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	4.2 J	610 J	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	610	NA	35	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	4.2	180 J	ug/kg	TF4-SB-939-0204	12/42	3.3 - 6.1	180	NA	120,000 [10]	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	4.8	490	ug/kg	TF4-SB-934-0204	13/42	3.3 - 6.1	490	NA	350	NA	Yes	ASL
	117-81-7	Bis(2-ethylhexyl)phthalate	41 J	131 J	ug/kg	TF4-SB-941-0810-AVG	9/42	330 - 480	131	NA	1,100	120,000	No	BSL
	85-68-7	Butyl Benzyl Phthalate	59 J	170 J	ug/kg	TF4-SB-941-0810-AVG	3/42	330 - 610	170	NA	510	NA	No	BSL
	218-01-9	Chrysene	4.3	440	ug/kg	TF4-SB-934-0204	15/42	3.3 - 6.1	440	NA	1,100	NA	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	5.6 J	46	ug/kg	TF4-SB-934-0204	6/42	3.3 - 6.1	46	NA	11	NA	Yes	ASL
	84-74-2	di-n-Butyl Phthalate	48 J	120 J	ug/kg	TF4-SB-929-0204-AVG	5/42	330 - 610	120	NA	9,200	NA	No	BSL
	206-44-0	Fluoranthene	3.9	310 J	ug/kg	TF4-SB-939-0204	16/42	3.3 - 6.1	310	NA	160,000	NA	No	BSL
	86-73-7	Fluorene	3.35	84 J	ug/kg	TF4-SB-939-0204	7/42	3.3 - 6.1	84	NA	27,000	NA	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	3.3 J	140 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	140	NA	120	NA	Yes	ASL
	91-20-3	Naphthalene	4.3	13 J	ug/kg	TF4-SB-939-0204	8/42	3.3 - 18	13	NA	0.47	800	Yes	ASL
	85-01-8	Phenanthrene	4.5 J	280 J	ug/kg	TF4-SB-939-0204	11/42	3.3 - 6.1	280	NA	120,000 [10]	NA	No	BSL
	108-95-2	Phenol	4.5 J	39	ug/kg	TF4-SB-937-0204	16/42	3.6 - 6.1	39	NA	6,300	NA	No	BSL
	129-00-0	Pyrene	4.9 J	310 J	ug/kg	TF4-SB-939-0204	15/42	3.3 - 6.1	310	NA	120,000	NA	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	15 J	2,290 J	ug/kg	TF4-SB-934-0204	16/42	3.3 - 6.1	2,290	NA	NA	NA	No	BSL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	4.6	8.2	ug/kg	TF4-SB-928-0204	2/42	3.3 - 6.2	8.2	NA	66	NA	No	BSL
	50-29-3	4,4'-DDT	7.1 J	7.1 J	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	67	NA	No	BSL
	11097-69-1	Aroclor-1254	100 J	100 J	ug/kg	TF4-SB-942-0204	1/42	33 - 62	100	NA	8.8	NA	Yes	ASL
	1031-07-8	Endosulfan Sulfate	7.1	7.1	ug/kg	TF4-SB-942-0204	1/42	3.3 - 6.2	7.1	NA	3,000 [11]	NA	No	BSL
	7421-93-4	Endrin Aldehyde	5.7	5.7	ug/kg	TF4-SB-925-0608	1/42	3.3 - 6.2	5.7	NA	440 [12]	NA	No	BSL
	Metals													
	7429-90-5	Aluminum	697	17,200	mg/kg	TF4-SB-921-0204	42/42	-	17,200	No	55,000	NA	No	BSL,BKG
	7440-38-2	Arsenic	4.9 J	42.9 J	mg/kg	TF4-SB-932-0607	42/42	-	42.9	Yes	0.0013	NA	Yes	ASL
	7440-39-3	Barium	1.8 J	103	mg/kg	TF4-SB-930-0204	42/42	-	103	Yes	300	[13]	No	BSL
	7440-41-7	Beryllium	0.16 J	0.78	mg/kg	TF4-SB-921-0204	42/42	-	0.78	Yes	58	[13]	No	BSL
	7440-43-9	Cadmium	0.042 J	1.15	mg/kg	TF4-SB-941-0810-AVG	39/42	0.014 - 0.018	1.15	Yes	1.4	[13]	No	BSL
	7440-70-2	Calcium	6 J	1,750 J	mg/kg	TF4-SB-925-0204	30/42	4.5 - 8.1	1,750	No	NA	NA	No	NUT,BKG
	7440-47-3	Chromium	4.3 J	24.1	mg/kg	TF4-SB-934-0810	42/42	-	24.1	No	0.00083 [14]	[13]	Yes	ASL,BKG
	7440-48-4	Cobalt	5.8 J	41 J	mg/kg	TF4-SB-924-0810-AVG	42/42	-	41	Yes	0.49	NA	Yes	ASL
	7440-50-8	Copper	3.3 J	31.8 J	mg/kg	TF4-SB-941-0810-AVG	42/42	-	31.8	Yes	51	NA	No	BSL
	7439-89-6	Iron	18,500	76,900	mg/kg	TF4-SB-925-0608	42/42	-	76,900	Yes	640	NA	Yes	ASL
	7439-92-1	Lead	3.1 J	30.3 J	mg/kg	TF4-SB-938-0810	42/42	-	30.3	Yes	14 [15]	[13]	Yes	ASL
	7439-95-4	Magnesium	136 J	5,120	mg/kg	TF4-SB-925-0204	42/42	-	5,120	No	NA	NA	No	NUT,BKG
	7439-96-5	Manganese	58.3 J	4,480	mg/kg	TF4-SB-930-0204	42/42	-	4,480	Yes	57	NA	Yes	ASL
	7439-97-6	Mercury	0.00692 J	0.16	mg/kg	TF4-SB-923-0406	18/42	0.0054 - 0.028	0.16	Yes	0.57 [16]	[13]	No	BSL
	7440-02-0	Nickel	13.4 J	96.9	mg/kg	TF4-SB-943-0810	42/42	-	96.9	Yes	48	[13]	Yes	ASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	7440-09-7	Potassium	89.5 J	934	ng/kg	TF4-SB-925-0204	42/42	-	934	No	NA	NA	No	NUT,BKG
	7782-49-2	Selenium	0.62 J	5.3	ng/kg	TF4-SB-936-0810	16/42	0.48 - 7	5.3	Yes	0.95	[13]	Yes	ASL
	7440-22-4	Silver	0.12 J	0.21 J	ng/kg	TF4-SB-936-0810	2/42	0.048 - 0.35	0.21	Yes	1.6	NA	No	BSL
	7440-23-5	Sodium	11 J	664 J	ng/kg	TF4-SB-922-0608	34/42	8.4 - 22.6	664	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	1.2	11.8	ng/kg	TF4-SB-943-0204	10/42	0.15 - 0.33	11.8	Yes	NA	[13]	No	NTX
	7440-62-2	Vanadium	8.5 J	30.2	ng/kg	TF4-SB-921-0204	42/42	-	30.2	Yes	180	NA	No	BSL
	7440-66-6	Zinc	35.7 J	193	ng/kg	TF4-SB-943-0810	42/42	-	193	Yes	680	NA	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	368 J	19,100 J	ng/kg	TF4-SB-923-0406	23/23	-	19,100	NA	870 [17]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.091 J	2.47 J	ng/kg	TF4-SB-924-0204	15/23	0.132 - 3.95	2.47	NA	870 [17]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	5.76	292	ng/kg	TF4-SB-923-0406	23/23	-	292	NA	26 [17]	NA	Yes	ASL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	0.0503 J	1.02 J	ng/kg	TF4-SB-924-0204	16/23	0.0298 - 1.36	1.02	NA	26 [17]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.0692 J	0.883 J	ng/kg	TF4-SB-923-0406	20/23	0.0428 - 0.0883	0.883	NA	2.6 [17]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.0386 J	0.345 J	ng/kg	TF4-SB-928-0204	11/23	0.0141 - 0.16	0.345	NA	2.6 [17]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.0797 J	2.1 J	ng/kg	TF4-SB-923-0406	21/23	0.0376 - 0.0832	2.1	NA	2.6 [17]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.0442 J	0.221 J	ng/kg	TF4-SB-928-0204	14/23	0.0208 - 0.733	0.221	NA	2.6 [17]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.0666 J	4.24	ng/kg	TF4-SB-923-0406	20/23	0.0366 - 0.0881	4.24	NA	2.6 [17]	NA	Yes	ASL
	72918-21-9	1,2,3,7,8,9-HXCDF	0.0491 J	0.0994 J	ng/kg	TF4-SB-925-0204	3/23	0.0184 - 0.204	0.0994	NA	2.6 [17]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.158 J	0.224 J	ng/kg	TF4-SB-923-0406	3/23	0.0238 - 0.203	0.224	NA	0.26 [17]	NA	No	BSL
	57117-41-6	1,2,3,7,8-PECDF	0.135 J	0.135 J	ng/kg	TF4-SB-925-0204	1/23	0.0202 - 0.151	0.135	NA	8.7 [17]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.099 J	0.179 J	ng/kg	TF4-SB-928-0204	5/23	0.0153 - 0.174	0.179	NA	2.6 [17]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.0908 J	0.18 J	ng/kg	TF4-SB-928-0204	2/23	0.0194 - 0.149	0.18	NA	0.87 [17]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.0756 J	0.0756 J	ng/kg	TF4-SB-930-0204	1/23	0.0254 - 0.312	0.0756	NA	0.26	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.177 J	0.343 J	ng/kg	TF4-SB-928-0204	2/23	0.036 - 0.294	0.343	NA	2.6 [17]	NA	No	BSL
	- -	2,3,7,8-TCDD	0.358	9.71	ng/kg	TF4-SB-923-0406	23/23	-	9.71	NA	NA	NA	No	NTX
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	18 J	240	ng/kg	TF4-SB-928-0204	9/30	13 - 58	240	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants,at Superfund Sites, May 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for xylene, mixture.
9 - Value is for acenaphthene.
10 - Value is for pyrene.
11 - Value is for Endosulfan.
12 - Value is for Endrin.
13 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
14 - Value is for hexavalent chromium.
15 - Value is MCL based soil screening level.
16 - Value is for mercury, inorganic salts
17 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Definitions:
BKG = Less than Background Concentration
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available
Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:

BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Associated Samples														
TF4-SB-920-0204		TF4-SB-932-0607												
TF4-SB-920-0810		TF4-SB-933-0204												
TF4-SB-921-0204		TF4-SB-933-0608												
TF4-SB-921-0810-AVG		TF4-SB-934-0204												
TF4-SB-922-0204-AVG		TF4-SB-934-0810												
TF4-SB-922-0608		TF4-SB-935-0204												
TF4-SB-923-0204		TF4-SB-935-0810												
TF4-SB-923-0406		TF4-SB-936-0204												
TF4-SB-924-0204		TF4-SB-936-0810												
TF4-SB-924-0810-AVG		TF4-SB-937-0204												
TF4-SB-925-0204		TF4-SB-938-0204-AVG												
TF4-SB-925-0608		TF4-SB-938-0810												
TF4-SB-926-0204-AVG		TF4-SB-939-0204												
TF4-SB-926-0406		TF4-SB-939-0810												
TF4-SB-928-0204		TF4-SB-940-0204												
TF4-SB-928-0810		TF4-SB-940-0810												
TF4-SB-929-0204-AVG		TF4-SB-941-0204												
TF4-SB-929-0608		TF4-SB-941-0810-AVG												
TF4-SB-930-0204		TF4-SB-942-0204												
TF4-SB-930-0608		TF4-SB-943-0204												
TF4-SB-932-0204		TF4-SB-943-0810												

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Tank Farm 4	**Semivolatile Organic Compounds**														
	105-60-2	Caprolactam	10.5	11	ug/L	TF4-MW-919-0510	2/7	10 - 10	11	NA	1,800 N	NA NA	NA NA	No	BSL
	91-20-3	**Naphthalene**	0.19	0.19	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	0.19	NA	**0.14 C**	NA 20	NA RIDEM	**Yes**	ASL
	Pesticides/PCBs														
	7421-93-4	**Endrin Aldehyde**	6.52 J	6.52 J	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	6.52	NA	**1.1 N[8]**	NA NA	NA NA	**Yes**	ASL
	Metals														
	7429-90-5	**Aluminum**	60.4 J	253	ug/L	TF4-MW-921-0510	2/7	12 - 83.9	253	NA	3,700 N	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
	7440-38-2	**Arsenic**	1.6	6.3	ug/L	TF4-MW-914-0510	4/7	0.236 - 0.236	6.3	NA	**0.045 C**	10 NA	EPA-MCL NA	**Yes**	ASL
	7440-39-3	Barium	7.9	40.8	ug/L	TF4-MW-913-0510-AVG	7/7	-	40.8	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
	7440-41-7	Beryllium	0.049 J	0.049 J	ug/L	TF4-MW-921-0510	1/7	0.045 - 0.045	0.049	NA	7.3 N	4 4	EPA-MCL RIDEM	No	BSL
	7440-43-9	Cadmium	0.234 J	0.234 J	ug/L	TF4-MW-920-0510	1/7	0.054 - 0.19	0.234	NA	1.8 N	5 5	EPA-MCL RIDEM	No	BSL
	7440-70-2	Calcium	11,700	28,800	ug/L	TF4-MW-920-0510	7/7	-	28,800	NA	NA	NA NA	NA NA	No	NUT
	7440-48-4	**Cobalt**	1.2	12.6	ug/L	TF4-MW-912-0510	7/7	-	12.6	NA	**1.1 N**	NA NA	NA NA	**Yes**	ASL
	7440-50-8	Copper	0.428 J	1.1	ug/L	TF4-MW-920-0510, TF4-MW-921-0510	6/7	0.284 - 0.284	1.1	NA	150 N	1,300 NA	EPA-MCL[9] NA	No	BSL
	7439-89-6	**Iron**	252	17,100	ug/L	TF4-MW-919-0510	7/7	-	17,100	NA	**2,600 N**	**300** NA	**EPA-SMCL** NA	**Yes**	ASL
	7439-92-1	Lead	0.168 J	0.168 J	ug/L	TF4-MW-914-0510	1/7	0.162 - 0.385	0.168	NA	NA	15 15	EPA-MCL[9] RIDEM	No	BSL
	7439-95-4	Magnesium	8,580	17,000	ug/L	TF4-MW-913-0510-AVG	7/7	-	17,000	NA	NA	NA NA	NA NA	No	NUT
	7439-96-5	**Manganese**	321	5,030	ug/L	TF4-MW-920-0510	7/7	-	5,030	NA	**88 N**	**50** NA	**EPA-SMCL** NA	**Yes**	ASL
	7440-02-0	Nickel	9.2	67.6	ug/L	TF4-MW-921-0510	7/7	-	67.6	NA	73 N	NA 100	NA RIDEM	No	BSL
	7440-09-7	Potassium	539 J	3,300	ug/L	TF4-MW-920-0510	7/7	-	3,300	NA	NA	NA NA	NA NA	No	NUT
	7440-23-5	Sodium	10,300	29,400	ug/L	TF4-MW-920-0510	7/7	-	29,400	NA	NA	NA NA	NA NA	No	NUT
	7440-66-6	Zinc	36.8 J	143	ug/L	TF4-MW-921-0510	2/7	29.4 - 51.3	143	NA	1,100 N	5,000 NA	EPA-SMCL NA	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), November 20
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - Value is for total PCBs.
8 - Value is for Endrin.
9 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-MW-912-0510
TF4-MW-913-0510-AVG
TF4-MW-914-0510
TF4-MW-919-0510
TF4-MW-920-0510
TF4-MW-921-0510
TF4-MW-922-0510

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - VAPOR INTRUSION - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA Vapor Intrusion Criteria[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	**Semivolatile Organic Compounds**														
	105-60-2	Caprolactam	10.5	11	ug/L	TF4-MW-919-0510	2/7	10 - 10	11	NA	NA	NA	NA	No	NTX
	91-20-3	Naphthalene	0.19	0.19	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	0.19	NA	4 C	NA	NA	No	BSL
	Pesticides/PCBs														
	7421-93-4	Endrin Aldehyde	6.52 J	6.52 J	ug/L	TF4-MW-913-0510-AVG	1/7	0.1 - 0.1	6.52	NA	NA	NA	NA	No	NTX
	Metals														
	7429-90-5	Aluminum	60.4 J	253	ug/L	TF4-MW-921-0510	2/7	12 - 83.9	253	NA	NA	NA	NA	No	NTX
	7440-38-2	Arsenic	1.6	6.3	ug/L	TF4-MW-914-0510	4/7	0.236 - 0.236	6.3	NA	NA	NA	NA	No	NTX
	7440-39-3	Barium	7.9	40.8	ug/L	TF4-MW-913-0510-AVG	7/7	-	40.8	NA	NA	NA	NA	No	NTX
	7440-41-7	Beryllium	0.049 J	0.049 J	ug/L	TF4-MW-921-0510	1/7	0.045 - 0.045	0.049	NA	NA	NA	NA	No	NTX
	7440-43-9	Cadmium	0.234 J	0.234 J	ug/L	TF4-MW-920-0510	1/7	0.054 - 0.19	0.234	NA	NA	NA	NA	No	NTX
	7440-70-2	Calcium	11,700	28,800	ug/L	TF4-MW-920-0510	7/7	-	28,800	NA	NA	NA	NA	No	NUT
	7440-48-4	Cobalt	1.2	12.6	ug/L	TF4-MW-912-0510	7/7	-	12.6	NA	NA	NA	NA	No	NTX
	7440-50-8	Copper	0.428 J	1.1	ug/L	TF4-MW-920-0510, TF4-MW-921-0510	6/7	0.284 - 0.284	1.1	NA	NA	NA	NA	No	NTX
	7439-89-6	Iron	252	17,100	ug/L	TF4-MW-919-0510	7/7	-	17,100	NA	NA	NA	NA	No	NTX
	7439-92-1	Lead	0.168 J	0.168 J	ug/L	TF4-MW-914-0510	1/7	0.162 - 0.385	0.168	NA	NA	NA	NA	No	NTX
	7439-95-4	Magnesium	8,580	17,000	ug/L	TF4-MW-913-0510-AVG	7/7	-	17,000	NA	NA	NA	NA	No	NUT
	7439-96-5	Manganese	321	5,030	ug/L	TF4-MW-920-0510	7/7	-	5,030	NA	NA	NA	NA	No	NTX
	7440-02-0	Nickel	9.2	67.6	ug/L	TF4-MW-921-0510	7/7	-	67.6	NA	NA	NA	NA	No	NTX
	7440-09-7	Potassium	539 J	3,300	ug/L	TF4-MW-920-0510	7/7	-	3,300	NA	NA	NA	NA	No	NUT
	7440-23-5	Sodium	10,300	29,400	ug/L	TF4-MW-920-0510	7/7	-	29,400	NA	NA	NA	NA	No	NUT
	7440-66-6	Zinc	36.8 J	143	ug/L	TF4-MW-921-0510	2/7	29.4 - 51.3	143	NA	NA	NA	NA	No	NTX

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - Calculated using methodology presented in Appendix D of USEPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002. EPA530-F-02-052. Values correspond to a target cancer risk level of 1E-6 or HI =0.1 and an attenuation factor of 0.001.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-MW-912-0510
TF4-MW-913-0510-AVG
TF4-MW-914-0510
TF4-MW-919-0510
TF4-MW-920-0510
TF4-MW-921-0510
TF4-MW-922-0510

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Tank Farm 4	Semivolatiles Organic Compounds														
	56-55-3	Benzo(a)anthracene	0.1 J	0.17 J	ug/L	TF4-SW-903-0310	2/10	0.1 - 0.15	0.17	NA	0.029 C	NA NA	NA NA	Yes	ASL
	218-01-9	Chrysene	0.11	0.11	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.1	0.11	NA	2.9 C	NA NA	NA NA	No	BSL
	206-44-0	Fluoranthene	0.16	0.16	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.14	0.16	NA	150 N	NA NA	NA NA	No	BSL
	85-01-8	Phenanthrene	0.12	0.12	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.18	0.12	NA	110 N[7]	NA NA	NA NA	No	BSL
	108-95-2	Phenol	0.1	0.1	ug/L	TF4-SW-902-0310-AVG	1/10	0.1 - 0.1	0.1	NA	1,100 N	NA NA	NA NA	No	BSL
	129-00-0	Pyrene	0.23	0.23	ug/L	TF4-SW-903-0310	1/10	0.1 - 0.13	0.23	NA	110 N	NA NA	NA NA	No	BSL
	- -	Benzo(a)pyrene Equivalents	0.4 J	0.53 J	ug/L	TF4-SW-903-0310	2/10	0.1 - 0.107	0.53	NA	0.0029 C	0.2 NA	EPA-MCL NA	Yes	ASL
	Metals														
	7440-38-2	Arsenic	0.19 J	0.473 J	ug/L	TF4-SW-901-0310	4/10	0.236 - 0.236	0.473	NA	0.045 C	10 NA	EPA-MCL NA	Yes	ASL
	7440-39-3	Barium	5.2	10.4	ug/L	TF4-SW-906-0310	10/10	-	10.4	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
	7440-70-2	Calcium	10,400	15,800	ug/L	TF4-SW-903-0310	10/10	-	15,800	NA	NA	NA NA	NA NA	No	NUT
	7440-48-4	Cobalt	0.297 J	0.931 J	ug/L	TF4-SW-907-0310	10/10	-	0.931	NA	1.1 N	NA NA	NA NA	No	BSL
	7440-50-8	Copper	0.807 J	3.7	ug/L	TF4-SW-901-0310	10/10	-	3.7	NA	150 N	1,300 NA	EPA-MCL[8] NA	No	BSL
	7439-89-6	Iron	270	545	ug/L	TF4-SW-905-0310	10/10	-	545	NA	2,600 N	300 NA	EPA-SMCL NA	Yes	ASL
	7439-92-1	Lead	0.191 J	0.928 J	ug/L	TF4-SW-907-0310	8/10	0.162 - 0.162	0.928	NA	NA	15 15	EPA-MCL[8] RIDEM	No	BSL
	7439-95-4	Magnesium	3,480	16,900	ug/L	TF4-SW-903-0310	10/10	-	16,900	NA	NA	NA NA	NA NA	No	NUT
	7440-02-0	Nickel	1.4	3.5	ug/L	TF4-SW-907-0310	10/10	-	3.5	NA	73 N	NA 100	NA RIDEM	No	BSL
	7440-09-7	Potassium	1,440	3,070	ug/L	TF4-SW-908-0310	10/10	-	3,070	NA	NA	NA NA	NA NA	No	NUT
	7782-49-2	Selenium	0.154 J	0.231 J	ug/L	TF4-SW-908-0310	9/10	0.123 - 0.123	0.231	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
	7440-23-5	Sodium	23,400	30,600	ug/L	TF4-SW-908-0310	10/10	-	30,600	NA	NA	NA NA	NA NA	No	NUT

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for surface water.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), May 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - Value is for pyrene.
8 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF4-SW-901-0310
TF4-SW-902-0310-AVG
TF4-SW-903-0310
TF4-SW-904-0310
TF4-SW-905-0310
TF4-SW-906-0310
TF4-SW-907-0310
TF4-SW-908-0310
TF4-SW-911-0310-AVG
TF4-SW-912-0310

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004)

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	Volatile Organic Compounds													
	67-64-1	Acetone	16 J	240 J	ug/kg	TF4-SD-907-0006	9/12	4.3 - 11	240	NA	6,100,000 N	7,800,000	No	BSL
	75-15-0	Carbon Disulfide	1.9 J	15 J	ug/kg	TF4-SD-912-0006	2/12	4.3 - 11	15	NA	82,000 N	NA	No	BSL
	Semivolatile Organic Compounds													
	91-57-6	2-Methylnaphthalene	2.68 J	10	ug/kg	TF4-SD-903-0006	4/12	3.3 - 13	10	NA	31,000 N	123,000	No	BSL
	95-48-7	2-Methylphenol	10 J	12 J	ug/kg	TF4-SD-912-0006	2/12	3.3 - 13	12	NA	310,000 N	NA	No	BSL
	106-44-5	4-Methylphenol	3.68	16	ug/kg	TF4-SD-904-0006	5/12	3.3 - 13	16	NA	31,000 N	NA	No	BSL
	83-32-9	Acenaphthene	5.82 J	19	ug/kg	TF4-SD-905-0006	4/12	3.3 - 13	19	NA	340,000 N	43,000	No	BSL
	208-96-8	Acenaphthylene	4.5	28	ug/kg	TF4-SD-903-0006	8/12	3.3 - 13	28	NA	340,000 N[8]	23,000	No	BSL
	120-12-7	Anthracene	6.1	120	ug/kg	TF4-SD-903-0006	12/12	-	120	NA	1,700,000 N	35,000	No	BSL
	100-52-7	Benzaldehyde	64 J	182 J	ug/kg	TF4-SD-911-0006-AVG	4/12	330 - 1300	182	NA	780,000 N	NA	No	BSL
	56-55-3	Benzo(a)anthracene	26 J	200 J	ug/kg	TF4-SD-903-0006	12/12	-	200	NA	150 C	900	Yes	ASL
	50-32-8	Benzo(a)pyrene	23.5 J	210	ug/kg	TF4-SD-903-0006	12/12	-	210	NA	15 C	400	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	25 J	240 J	ug/kg	TF4-SD-903-0006	12/12	-	240	NA	150 C	900	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	19.5 J	150	ug/kg	TF4-SD-903-0006	12/12	-	150	NA	170,000 N[9]	800	No	BSL
	207-08-9	Benzo(k)fluoranthene	33 J	200	ug/kg	TF4-SD-903-0006, TF4-SD-907-0006	12/12	-	200	NA	1,500 C	900	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	35 J	220 J	ug/kg	TF4-SD-907-0006	8/12	330 - 1300	220	NA	35,000 C	46,000	No	BSL
	218-01-9	Chrysene	35.5 J	290 J	ug/kg	TF4-SD-903-0006	12/12	-	290	NA	15,000 C	400	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	6.6 J	53	ug/kg	TF4-SD-903-0006	12/12	-	53	NA	15 C	400	Yes	ASL
	206-44-0	Fluoranthene	49.5 J	330	ug/kg	TF4-SD-903-0006	12/12	-	330	NA	230,000 N	20,000	No	BSL
	86-73-7	Fluorene	3.9	24	ug/kg	TF4-SD-905-0006	8/12	3.3 - 13	24	NA	230,000 N	28,000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	16.5 J	120	ug/kg	TF4-SD-903-0006	12/12	-	120	NA	150 C	900	No	BSL
	91-20-3	Naphthalene	4.1	6	ug/kg	TF4-SD-903-0006	8/12	3.3 - 13	6	NA	3,600 C	54,000	No	BSL
	85-01-8	Phenanthrene	27 J	190	ug/kg	TF4-SD-905-0006	12/12	-	190	NA	170,000 N[9]	40,000	No	BSL
	108-95-2	Phenol	3.52	15	ug/kg	TF4-SD-905-0006	3/12	3.3 - 13	15	NA	1,800,000 N	6,000,000	No	BSL
	129-00-0	Pyrene	41.5	260	ug/kg	TF4-SD-903-0006	12/12	-	260	NA	170,000 N	13,000	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	168 J	1,310 J	ug/kg	TF4-SD-903-0006	12/12	-	1,310	NA	15 C	NA	Yes	ASL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	3.4	3.4	ug/kg	TF4-SD-910-0006	1/12	3.3 - 3.3	3.4	NA	2,000 C	NA	No	BSL
	72-55-9	4,4'-DDE	15 J	15 J	ug/kg	TF4-SD-910-0006	1/12	3.3 - 3.3	15	NA	1,400 C	NA	No	BSL
	50-29-3	4,4'-DDT	6.7	6.7	ug/kg	TF4-SD-910-0006	1/12	3.3 - 3.3	6.7	NA	1,700 C	NA	No	BSL
	7421-93-4	Endrin Aldehyde	2.72	2.72	ug/kg	TF4-SD-911-0006-AVG	1/12	3.3 - 3.3	2.72	NA	1,800 N[10]	NA	No	BSL
	53494-70-5	Endrin Ketone	20.8 J	20.8 J	ug/kg	TF4-SD-902-0006-AVG	1/12	3.3 - 3.3	20.8	NA	1,800 N[10]	NA	No	BSL
	Metals													
	7429-90-5	Aluminum	4,730	12,900	mg/kg	TF4-SD-910-0006	12/12	-	12,900	NA	7,700 N	NA	Yes	ASL
	7440-38-2	Arsenic	9.2	46.6 J	mg/kg	TF4-SD-906-0006	12/12	-	46.6	NA	0.39 C	7	Yes	ASL
	7440-39-3	Barium	16.6 J	64.7 J	mg/kg	TF4-SD-906-0006	12/12	-	64.7	NA	1,500 N	5,500	No	BSL
	7440-41-7	Beryllium	0.21 J	0.68 J	mg/kg	TF4-SD-910-0006	12/12	-	0.68	NA	16 N	0.4	Yes	ASL
	7440-43-9	Cadmium	0.13 J	1.2	mg/kg	TF4-SD-906-0006	12/12	-	1.2	NA	7 N	39	No	BSL
	7440-70-2	Calcium	494 J	1,220 J	mg/kg	TF4-SD-911-0006-AVG	12/12	-	1,220	NA	NA	NA	No	NUT
	7440-47-3	Chromium	7.3 J	29.2 J	mg/kg	TF4-SD-902-0006-AVG	12/12	-	29.2	NA	0.39 C[11]	390 [11]	Yes	ASL
	7440-48-4	Cobalt	9.4	76.2	mg/kg	TF4-SD-906-0006	12/12	-	76.2	NA	2.3 N	NA	Yes	ASL
	7440-50-8	Copper	9.8	24.9	mg/kg	TF4-SD-910-0006	12/12	-	24.9	NA	310 N	3,100	No	BSL
	7439-89-6	Iron	21,700	145,000	mg/kg	TF4-SD-906-0006	12/12	-	145,000	NA	5,500 N	NA	Yes	ASL
	7439-92-1	Lead	6.3 J	96.2 J	mg/kg	TF4-SD-902-0006-AVG	12/12	-	96.2	NA	400	150	No	BSL
	7439-95-4	Magnesium	1,370	4,160	mg/kg	TF4-SD-906-0006	12/12	-	4,160	NA	NA	NA	No	NUT
	7439-96-5	Manganese	171	3,440	mg/kg	TF4-SD-903-0006	12/12	-	3,440	NA	180 N	390	Yes	ASL
	7439-97-6	Mercury	0.019 J	0.17	mg/kg	TF4-SD-909-0006	12/12	-	0.17	NA	2.3 N[12]	23	No	BSL
	7440-02-0	Nickel	16.3	132	mg/kg	TF4-SD-906-0006	12/12	-	132	NA	150 N	1,000	No	BSL
	7440-09-7	Potassium	155 J	583	mg/kg	TF4-SD-910-0006	12/12	-	583	NA	NA	NA	No	NUT
	7440-22-4	Silver	0.12 J	0.12 J	mg/kg	TF4-SD-903-0006	1/12	0.068 - 0.22	0.12	NA	39 N	200	No	BSL

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 4
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 4	7440-23-5	Sodium	23.9 J	558	mg/kg	TF4-SD-911-0006-AVG	12/12	-	558	NA	NA	NA	No	NUT
	7440-28-0	Thallium	0.45 J	11.5	mg/kg	TF4-SD-903-0006	10/12	0.29 - 0.38	11.5	NA	NA	5.5	Yes	ASL
	7440-62-2	Vanadium	9.6	27.2	mg/kg	TF4-SD-910-0006	12/12	-	27.2	NA	39 N	550	No	BSL
	7440-66-6	Zinc	59	199	mg/kg	TF4-SD-906-0006	12/12	-	199	NA	2,300 N	6,000	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	502 J	8,750 J	ng/kg	TF4-SD-910-0006	12/12	-	8,750	NA	15,000 C[13]	NA	No	BSL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	3.63 J	169 J	ng/kg	TF4-SD-901-0006	10/12	4.52 - 4.97	169	NA	15,000 C[13]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	14.6 J	203 J	ng/kg	TF4-SD-901-0006	12/12	-	203	NA	450 C[13]	NA	No	BSL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	1.62 J	24.7 J	ng/kg	TF4-SD-901-0006	11/12	12.6 - 12.6	24.7	NA	450 C[13]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.941 J	2.65 J	ng/kg	TF4-SD-901-0006	5/12	0.132 - 0.383	2.65	NA	450 C[13]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.236 J	1.81 J	ng/kg	TF4-SD-911-0006-AVG	12/12	-	1.81	NA	45 C[13]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.206 J	2.15 J	ng/kg	TF4-SD-910-0006	12/12	-	2.15	NA	45 C[13]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.587 J	4.7	ng/kg	TF4-SD-901-0006	12/12	-	4.7	NA	45 C[13]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.129 J	1.69 J	ng/kg	TF4-SD-910-0006	12/12	-	1.69	NA	45 C[13]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.475 J	4.8 J	ng/kg	TF4-SD-911-0006-AVG	9/12	0.572 - 0.926	4.8	NA	45 C[13]	NA	No	BSL
	72918-21-9	1,2,3,7,8,9-HXCDF	0.0791 J	0.138 J	ng/kg	TF4-SD-911-0006-AVG	4/12	0.0336 - 0.332	0.138	NA	45 C[13]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.154 J	0.953 J	ng/kg	TF4-SD-911-0006-AVG	10/12	0.0435 - 0.0694	0.953	NA	4.5 C[13]	NA	No	BSL
	57117-41-6	1,2,3,7,8-PECDF	0.0762 J	0.853 J	ng/kg	TF4-SD-910-0006	11/12	0.0309 - 0.0309	0.853	NA	150 C[13]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.116 J	1.52 J	ng/kg	TF4-SD-910-0006	12/12	-	1.52	NA	45 C[13]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.0426 J	0.883 J	ng/kg	TF4-SD-910-0006	12/12	-	0.883	NA	15 C[13]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.0258 J	0.145 J	ng/kg	TF4-SD-910-0006	4/12	0.0234 - 0.0465	0.145	NA	4.5 C	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.202 J	1.56 J	ng/kg	TF4-SD-910-0006	9/12	0.0581 - 0.171	1.56	NA	45 C[13]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	0.622	7.06	ng/kg	TF4-SD-910-0006	12/12	-	7.06	NA	4.5 C	NA	Yes	ASL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for sediment.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Value is for Endrin.
11 - Value is for hexavalent chromium.
12 - Value is for mercury, inorganic salts
13 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples

TF4-SD-901-0006	TF4-SD-907-0006
TF4-SD-902-0006-AVG	TF4-SD-908-0006
TF4-SD-903-0006	TF4-SD-909-0006
TF4-SD-904-0006	TF4-SD-910-0006
TF4-SD-905-0006	TF4-SD-911-0006-AVG
TF4-SD-906-0006	TF4-SD-912-0006

Definitions:
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	Volatile Organic Compounds													
	67-64-1	Acetone	6 J	65 J	ug/kg	TF5-SB-968-0001	7/11	4.3 - 7.4	65	NA	6,100,000 N	7,800,000	No	BSL
	98-82-8	Isopropylbenzene	6.2	6.2	ug/kg	TF5-SB-969-0001	1/11	4.3 - 7.4	6.2	NA	210,000 N	27,000	No	BSL
	108-88-3	Toluene	1.8 J	1.8 J	ug/kg	TF5-SB-968-0001	1/11	4.3 - 7.4	1.8	NA	500,000 N	190,000	No	BSL
	Semivolatile Organic Compounds													
	83-32-9	Acenaphthene	4.2 J	7.7	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	7.7	NA	340,000 N	43,000	No	BSL
	208-96-8	Acenaphthylene	7.6	26 J	ug/kg	TF5-SB-970-0001	4/11	3.7 - 4.9	26	NA	340,000 N[8]	23,000	No	BSL
	120-12-7	Anthracene	4.5	27	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	27	NA	1,700,000 N	35,000	No	BSL
	100-52-7	Benzaldehyde	73 J	73 J	ug/kg	TF5-SB-975-0001	1/11	370 - 490	73	NA	780,000 N	NA	No	BSL
	56-55-3	Benzo(a)anthracene	5.9	230	ug/kg	TF5-SB-967-0001	11/11	-	230	NA	150 C	900	Yes	ASL
	50-32-8	Benzo(a)pyrene	6.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	15 C	400	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	10 J	530 J	ug/kg	TF5-SB-967-0001	11/11	-	530	NA	150 C	900	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	4.4	270	ug/kg	TF5-SB-967-0001	11/11	-	270	NA	170,000 N[9]	800	No	BSL
	207-08-9	Benzo(k)fluoranthene	4.6 J	200 J	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	1,500 C	900	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	58 J	58 J	ug/kg	TF5-SB-970-0001	1/11	370 - 490	58	NA	35,000 C	46,000	No	BSL
	218-01-9	Chrysene	8.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	15,000 C	400	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	4.3 J	57 J	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	57	NA	15 C	400	Yes	ASL
	206-44-0	Fluoranthene	13	600	ug/kg	TF5-SB-967-0001	11/11	-	600	NA	230,000 N	20,000	No	BSL
	86-73-7	Fluorene	5.5 J	11	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	11	NA	230,000 N	28,000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	4 J	240 J	ug/kg	TF5-SB-967-0001	11/11	-	240	NA	150 C	900	Yes	ASL
	85-01-8	Phenanthrene	4.4	200	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	170,000 N[9]	40,000	No	BSL
	129-00-0	Pyrene	11	430	ug/kg	TF5-SB-967-0001	11/11	-	430	NA	170,000 N	13,000	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	41.6 J	1,860 J	ug/kg	TF5-SB-967-0001	11/11	-	1,860	NA	15 C	NA	Yes	ASL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	5.1	5.1	ug/kg	TF5-SB-967-0001	1/11	3.8 - 4.8	5.1	NA	2,000 C	NA	No	BSL
	72-55-9	4,4'-DDE	5.5	6.6	ug/kg	TF5-SB-971-0001	2/11	3.8 - 4.8	6.6	NA	1,400 C	NA	No	BSL
	50-29-3	4,4'-DDT	5.6 J	5.6 J	ug/kg	TF5-SB-971-0001	1/11	3.8 - 4.8	5.6	NA	1,700 C	NA	No	BSL
	11097-69-1	Aroclor-1254	39	39	ug/kg	TF5-SB-973-0001	1/11	38 - 48	39	NA	11 N[10]	NA	Yes	ASL
	Metals													
	7429-90-5	Aluminum	5,460	9,740	mg/kg	TF5-SB-969-0001	11/11	-	9,740	No	7,700 N	NA	Yes	ASL,BKG
	7440-38-2	Arsenic	4.3 J	43.7	mg/kg	TF5-SB-972-0001	11/11	-	43.7	Yes	0.39 C	7	Yes	ASL
	7440-39-3	Barium	9.5 J	23.7	mg/kg	TF5-SB-967-0001	11/11	-	23.7	No	1,500 N	5,500	No	BSL,BKG
	7440-41-7	Beryllium	0.33 J	0.55 J	mg/kg	TF5-SB-975-0001	11/11	-	0.55	Yes	16 N	0.4	Yes	ASL
	7440-43-9	Cadmium	0.1 J	0.33	mg/kg	TF5-SB-974-0001	10/11	0.012 - 0.012	0.33	Yes	7 N	39	No	BSL
	7440-70-2	Calcium	166 J	1,710 J	mg/kg	TF5-SB-970-0001	11/11	-	1,710	Yes	NA	NA	No	NUT
	7440-47-3	Chromium	5.6	12.8	mg/kg	TF5-SB-969-0001	11/11	-	12.8	No	0.39 C[11]	390 [12]	Yes	ASL,BKG
	7440-48-4	Cobalt	2.2 J	13.2 J	mg/kg	TF5-SB-969-0001	11/11	-	13.2	Yes	2.3 N	NA	Yes	ASL
	7440-50-8	Copper	7.5	24.2	mg/kg	TF5-SB-967-0001	11/11	-	24.2	Yes	310 N	3,100	No	BSL
	7439-89-6	Iron	11,500	33,700	mg/kg	TF5-SB-969-0001	11/11	-	33,700	Yes	5,500 N	NA	Yes	ASL
	7439-92-1	Lead	9.3 J	33.3 J	mg/kg	TF5-SB-968-0001	11/11	-	33.3	Yes	400	150	No	BSL
	7439-95-4	Magnesium	824 J	2,320 J	mg/kg	TF5-SB-969-0001	11/11	-	2,320	Yes	NA	NA	No	NUT
	7439-96-5	Manganese	95.8 J	462	mg/kg	TF5-SB-974-0001	11/11	-	462	Yes	180 N	390	Yes	ASL
	7439-97-6	Mercury	0.019 J	0.12	mg/kg	TF5-SB-968-0001	2/11	0.025 - 0.091	0.12	Yes	2.3 N[12]	23	No	BSL
	7440-02-0	Nickel	6.8 J	22.6	mg/kg	TF5-SB-974-0001	11/11	-	22.6	Yes	150 N	1,000	No	BSL
	7440-09-7	Potassium	142 J	388 J	mg/kg	TF5-SB-966-0001	11/11	-	388	Yes	NA	NA	No	NUT
	7782-49-2	Selenium	2.9 J	4.2	mg/kg	TF5-SB-974-0001	6/11	2.1 - 3.5	4.2	Yes	39 N	390	No	BSL
	7440-22-4	Silver	0.095 J	0.21 J	mg/kg	TF5-SB-968-0001, TF5-SB-972-0001, TF5-SB-974-0001	8/11	0.1 - 0.22	0.21	Yes	39 N	200	No	BSL
	7440-23-5	Sodium	19.3 J	53.9 J	mg/kg	TF5-SB-966-0001	6/11	22.7 - 29.2	53.9	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	0.65 J	2.5	mg/kg	TF5-SB-973-0001	11/11	-	2.5	Yes	NA	5.5	No	BSL
	7440-62-2	Vanadium	10.9 J	24 J	mg/kg	TF5-SB-968-0001	11/11	-	24	No	39 N	550	No	BSL,BKG
	7440-66-6	Zinc	18.4 J	69.5	mg/kg	TF5-SB-967-0001	11/11	-	69.5	Yes	2,300 N	6,000	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	1,930 J	9,650 J	ng/kg	TF5-SB-974-0001	11/11	-	9,650	NA	15,000 C[13]	NA	No	BSL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	1.27 J	32	ng/kg	TF5-SB-970-0001	11/11	-	32	NA	15,000 C[13]	NA	No	BSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	35822-46-9	1,2,3,4,6,7,8-HPCDD	26.2	141	ng/kg	TF5-SB-970-0001	11/11	-	141	NA	450 C[13]	NA	No	BSL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	4.37	12	ng/kg	TF5-SB-970-0001	5/11	0.734 - 1.8	12	NA	450 C[13]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.111 J	0.86 J	ng/kg	TF5-SB-970-0001	6/11	0.0736 - 0.188	0.86	NA	450 C[13]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.2 J	1.62 J	ng/kg	TF5-SB-975-0001	10/11	0.194 - 0.194	1.62	NA	45 C[13]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.159 J	3.09 J	ng/kg	TF5-SB-975-0001	11/11	-	3.09	NA	45 C[13]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.478 J	3.63	ng/kg	TF5-SB-970-0001	11/11	-	3.63	NA	45 C[13]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.0997 J	1.01 J	ng/kg	TF5-SB-975-0001	10/11	0.137 - 0.137	1.01	NA	45 C[13]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.411 J	3.64	ng/kg	TF5-SB-975-0001	11/11	-	3.64	NA	45 C[13]	NA	No	BSL
	72918-21-9	1,2,3,7,8,9-HXCDF	0.07 J	0.07 J	ng/kg	TF5-SB-974-0001	1/11	0.0856 - 0.184	0.07	NA	45 C[13]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.245 J	0.813 J	ng/kg	TF5-SB-975-0001	8/11	0.0881 - 0.198	0.813	NA	4.5 C[13]	NA	No	BSL
	57117-41-6	1,2,3,7,8-PECDF	0.0955 J	0.717 J	ng/kg	TF5-SB-975-0001	7/11	0.0865 - 0.155	0.717	NA	150 C[13]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.143 J	1.35 J	ng/kg	TF5-SB-975-0001	9/11	0.079 - 0.157	1.35	NA	45 C[13]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.233 J	0.978 J	ng/kg	TF5-SB-975-0001	5/11	0.082 - 0.154	0.978	NA	15 C[13]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.107 J	0.107 J	ng/kg	TF5-SB-974-0001	1/11	0.0963 - 0.236	0.107	NA	4.5 C	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.346 J	0.842 J	ng/kg	TF5-SB-975-0001	6/11	0.0942 - 0.277	0.842	NA	45 C[13]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	1.18	6.04	ng/kg	TF5-SB-975-0001	11/11	-	6.04	NA	4.5 C	NA	Yes	ASL
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	16 J	23 J	mg/kg	TF5-SB-966-0001	3/3	-	23	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Ten percent of noncarcinogenic screening level is less then the carcinogenic screening level, therefore the noncarcinogenic value is presented.
11 - Value is for hexavalent chromium.
12 - Value is for mercury, Inorganic salts
13 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SB-966-0001
TF5-SB-967-0001
TF5-SB-968-0001
TF5-SB-969-0001
TF5-SB-970-0001
TF5-SB-971-0001
TF5-SB-972-0001
TF5-SB-973-0001
TF5-SB-974-0001
TF5-SB-975-0001
TF5-SB-976-0001

Definitions:
BKG = Less than Background Concentration
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	Volatile Organic Compounds													
	67-64-1	Acetone	6 J	65 J	ug/kg	TF5-SB-968-0001	7/11	4.3 - 7.4	65	NA	4,500	NA	No	BSL
	98-82-8	Isopropylbenzene	6.2	6.2	ug/kg	TF5-SB-969-0001	1/11	4.3 - 7.4	6.2	NA	1,100	NA	No	BSL
	108-88-3	Toluene	1.8 J	1.8 J	ug/kg	TF5-SB-968-0001	1/11	4.3 - 7.4	1.8	NA	1,600	32,000	No	BSL
	Semivolatile Organic Compounds													
	83-32-9	Acenaphthene	4.2 J	7.7	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	7.7	NA	22,000	NA	No	BSL
	208-96-8	Acenaphthylene	7.6	26 J	ug/kg	TF5-SB-970-0001	4/11	3.7 - 4.9	26	NA	22,000 [8]	NA	No	BSL
	120-12-7	Anthracene	4.5	27	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	27	NA	360,000	NA	No	BSL
	100-52-7	Benzaldehyde	73 J	73 J	ug/kg	TF5-SB-975-0001	1/11	370 - 490	73	NA	810	NA	No	BSL
	56-55-3	Benzo(a)anthracene	5.9	230	ug/kg	TF5-SB-967-0001	11/11	-	230	NA	10	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	6.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	3.5	240,000	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	10 J	530 J	ug/kg	TF5-SB-967-0001	11/11	-	530	NA	35	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	4.4	270	ug/kg	TF5-SB-967-0001	11/11	-	270	NA	120,000 [9]	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	4.6 J	200 J	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	350	NA	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	58 J	58 J	ug/kg	TF5-SB-970-0001	1/11	370 - 490	58	NA	1,100	120,000	No	BSL
	218-01-9	Chrysene	8.4	300	ug/kg	TF5-SB-967-0001	11/11	-	300	NA	1,100	NA	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	4.3 J	57 J	ug/kg	TF5-SB-967-0001	7/11	3.7 - 3.9	57	NA	11	NA	Yes	ASL
	206-44-0	Fluoranthene	13	600	ug/kg	TF5-SB-967-0001	11/11	-	600	NA	160,000	NA	No	BSL
	86-73-7	Fluorene	5.5 J	11	ug/kg	TF5-SB-967-0001	3/11	3.7 - 4.9	11	NA	27,000	NA	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	4 J	240 J	ug/kg	TF5-SB-967-0001	11/11	-	240	NA	120	NA	Yes	ASL
	85-01-8	Phenanthrene	4.4	200	ug/kg	TF5-SB-967-0001	11/11	-	200	NA	120,000 [9]	NA	No	BSL
	129-00-0	Pyrene	11	430	ug/kg	TF5-SB-967-0001	11/11	-	430	NA	120,000	NA	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	41.6 J	1,860 J	ug/kg	TF5-SB-967-0001	11/11	-	1,860	NA	NA	NA	No	NTX
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	5.1	5.1	ug/kg	TF5-SB-967-0001	1/11	3.8 - 4.8	5.1	NA	66	NA	No	BSL
	72-55-9	4,4'-DDE	5.5	6.6	ug/kg	TF5-SB-971-0001	2/11	3.8 - 4.8	6.6	NA	47	NA	No	BSL
	50-29-3	4,4'-DDT	5.6 J	5.6 J	ug/kg	TF5-SB-971-0001	1/11	3.8 - 4.8	5.6	NA	67	NA	No	BSL
	11097-69-1	Aroclor-1254	39	39	ug/kg	TF5-SB-973-0001	1/11	38 - 48	39	NA	8.8	NA	Yes	ASL
	Metals													
	7429-90-5	Aluminum	5,460	9,740	mg/kg	TF5-SB-969-0001	11/11	-	9,740	No	55,000	NA	No	BSL,BKG
	7440-38-2	Arsenic	4.3 J	43.7	mg/kg	TF5-SB-972-0001	11/11	-	43.7	Yes	0.0013	NA	Yes	ASL
	7440-39-3	Barium	9.5 J	23.7	mg/kg	TF5-SB-967-0001	11/11	-	23.7	No	300	[10]	No	BSL,BKG
	7440-41-7	Beryllium	0.33 J	0.55 J	mg/kg	TF5-SB-975-0001	11/11	-	0.55	Yes	58	[10]	No	BSL
	7440-43-9	Cadmium	0.1 J	0.33	mg/kg	TF5-SB-974-0001	10/11	0.012 - 0.012	0.33	Yes	1.4	[10]	No	BSL
	7440-70-2	Calcium	166 J	1,710 J	mg/kg	TF5-SB-970-0001	11/11	-	1,710	Yes	NA	NA	No	NUT
	7440-47-3	Chromium	5.6	12.8	mg/kg	TF5-SB-969-0001	11/11	-	12.8	No	0.00083 [11]	[10]	Yes	ASL,BKG
	7440-48-4	Cobalt	2.2 J	13.2 J	mg/kg	TF5-SB-969-0001	11/11	-	13.2	Yes	0.49	NA	Yes	ASL
	7440-50-8	Copper	7.5	24.2	mg/kg	TF5-SB-967-0001	11/11	-	24.2	Yes	51	NA	No	BSL
	7439-89-6	Iron	11,500	33,700	mg/kg	TF5-SB-969-0001	11/11	-	33,700	Yes	640	NA	Yes	ASL
	7439-92-1	Lead	9.3 J	33.3 J	mg/kg	TF5-SB-968-0001	11/11	-	33.3	Yes	14 [12]	[10]	Yes	ASL
	7439-95-4	Magnesium	824 J	2,320 J	mg/kg	TF5-SB-969-0001	11/11	-	2,320	Yes	NA	NA	No	NUT
	7439-96-5	Manganese	95.8 J	462	mg/kg	TF5-SB-974-0001	11/11	-	462	Yes	57	NA	Yes	ASL
	7439-97-6	Mercury	0.019 J	0.12	mg/kg	TF5-SB-968-0001	2/11	0.025 - 0.091	0.12	Yes	0.57 [13]	[10]	Yes	ASL
	7440-02-0	Nickel	6.8 J	22.6	mg/kg	TF5-SB-974-0001	11/11	-	22.6	Yes	48	[10]	Yes	ASL
	7440-09-7	Potassium	142 J	388 J	mg/kg	TF5-SB-966-0001	11/11	-	388	Yes	NA	NA	No	NUT
	7782-49-2	Selenium	2.9 J	4.2	mg/kg	TF5-SB-974-0001	6/11	2.1 - 3.5	4.2	Yes	0.95	[10]	Yes	ASL
	7440-22-4	Silver	0.095 J	0.21 J	mg/kg	TF5-SB-968-0001, TF5-SB-972-0001, TF5-SB-974-0001	8/11	0.1 - 0.22	0.21	Yes	1.6	NA	No	BSL
	7440-23-5	Sodium	19.3 J	53.9 J	mg/kg	TF5-SB-966-0001	6/11	22.7 - 29.2	53.9	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	0.65 J	2.5	mg/kg	TF5-SB-973-0001	11/11	-	2.5	Yes	NA	[10]	No	NTX
	7440-62-2	Vanadium	10.9 J	24 J	mg/kg	TF5-SB-968-0001	11/11	-	24	No	180	NA	No	BSL,BKG
	7440-66-6	Zinc	18.4 J	69.5	mg/kg	TF5-SB-967-0001	11/11	-	69.5	Yes	680	NA	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	1,930 J	9,650 J	ng/kg	TF5-SB-974-0001	11/11	-	9,650	NA	870 [14]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	1.27 J	32	ng/kg	TF5-SB-970-0001	11/11	-	32	NA	870 [14]	NA	No	BSL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL TO GROUNDWATER - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	35822-46-9	1,2,3,4,6,7,8-HPCDD	26.2	141	ng/kg	TF5-SB-970-0001	11/11	-	141	NA	26 [14]	NA	Yes	ASL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	4.37	12	ng/kg	TF5-SB-970-0001	5/11	0.734 - 1.8	12	NA	26 [14]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.111 J	0.86 J	ng/kg	TF5-SB-970-0001	6/11	0.0736 - 0.188	0.86	NA	26 [14]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.2 J	1.62 J	ng/kg	TF5-SB-975-0001	10/11	0.194 - 0.194	1.62	NA	2.6 [14]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.159 J	3.09 J	ng/kg	TF5-SB-975-0001	11/11	-	3.09	NA	2.6 [14]	NA	Yes	ASL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.478 J	3.63	ng/kg	TF5-SB-970-0001	11/11	-	3.63	NA	2.6 [14]	NA	Yes	ASL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.0997 J	1.01 J	ng/kg	TF5-SB-975-0001	10/11	0.137 - 0.137	1.01	NA	2.6 [14]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.411 J	3.64	ng/kg	TF5-SB-975-0001	11/11	-	3.64	NA	2.6 [14]	NA	Yes	ASL
	72918-21-9	1,2,3,7,8,9-HXCDF	0.07 J	0.07 J	ng/kg	TF5-SB-974-0001	1/11	0.0856 - 0.184	0.07	NA	2.6 [14]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.245 J	0.813 J	ng/kg	TF5-SB-975-0001	8/11	0.0881 - 0.198	0.813	NA	0.26 [14]	NA	Yes	ASL
	57117-41-6	1,2,3,7,8-PECDF	0.0955 J	0.717 J	ng/kg	TF5-SB-975-0001	7/11	0.0865 - 0.155	0.717	NA	8.7 [14]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.143 J	1.35 J	ng/kg	TF5-SB-975-0001	9/11	0.079 - 0.157	1.35	NA	2.6 [14]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.233 J	0.978 J	ng/kg	TF5-SB-975-0001	5/11	0.082 - 0.154	0.978	NA	0.87 [15]	NA	Yes	ASL
	1746-01-6	2,3,7,8-TCDD	0.107 J	0.107 J	ng/kg	TF5-SB-974-0001	1/11	0.0963 - 0.236	0.107	NA	0.26	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.346 J	0.842 J	ng/kg	TF5-SB-975-0001	6/11	0.0942 - 0.277	0.842	NA	2.6 [14]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	1.18	6.04	ng/kg	TF5-SB-975-0001	11/11	-	6.04	NA	NA	NA	No	NTX
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	16 J	23 J	mg/kg	TF5-SB-966-0001	3/3	-	23	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concantrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010.
6 - Rhode Island Department of Environmental Management, OEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening leval and is statistically determined to be greater than site background.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
11 - Value is for hexavalent chromium.
14 - Value is MCL based soil screening level.
13 - Value is for mercury, inorganic salts
14 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SB-966-0001
TF5-SB-967-0001
TF5-SB-968-0001
TF5-SB-969-0001
TF5-SB-970-0001
TF5-SB-971-0001
TF5-SB-972-0001
TF5-SB-973-0001
TF5-SB-974-0001
TF5-SB-975-0001
TF5-SB-976-0001

Definitions:
BSL = Below COPC Screening Level
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	Volatile Organic Compounds													
	67-64-1	Acetone	3.5 J	44 J	ug/kg	TF5-SB-970-0204	11/21	3.4 - 5.2	44	NA	6,100,000 N	7,800,000	No	BSL
	75-15-0	Carbon Disulfide	1.9 J	4 J	ug/kg	TF5-SB-974-0204	2/21	3.4 - 5.2	4	NA	82,000 N	NA	No	BSL
	108-88-3	Toluene	1 J	1.78 J	ug/kg	TF5-SB-973-0204-AVG	2/21	3.9 - 5.2	1.78	NA	500,000 N	190,000	No	BSL
	Semivolatile Organic Compounds													
	91-57-6	2-Methylnaphthalene	4.3 J	4.3 J	ug/kg	TF5-SB-969-0204	1/21	3.4 - 4.2	4.3	NA	31,000 N	123,000	No	BSL
	106-44-5	4-Methylphenol	4.9 J	4.9 J	ug/kg	TF5-SB-971-0204-AVG	1/21	3.4 - 4.2	4.9	NA	31,000 N	NA	No	BSL
	56-55-3	Benzo(a)anthracene	6.1	11.5	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11.5	NA	150 C	900	No	BSL
	50-32-8	Benzo(a)pyrene	5.5	11	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11	NA	15 C	400	No	BSL
	205-99-2	Benzo(b)fluoranthene	5.2 J	19	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4	19	NA	150 C	900	No	BSL
	191-24-2	Benzo(g,h,i)perylene	4.5	8.3	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	8.3	NA	170,000 N[8]	800	No	BSL
	207-08-9	Benzo(k)fluoranthene	4.65 J	9.9 J	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	9.9	NA	1,500 C	900	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	52 J	130 J	ug/kg	TF5-SB-971-0204-AVG	2/21	340 - 420	130	NA	35,000 C	46,000	No	BSL
	218-01-9	Chrysene	3.8	15.5 J	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	15.5	NA	15,000 C	400	No	BSL
	84-74-2	di-n-Butyl Phthalate	280 J	280 J	ug/kg	TF5-SB-971-0204-AVG	1/21	340 - 420	280	NA	610,000 N	NA	No	BSL
	206-44-0	Fluoranthene	5.1	21.5	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 3.9	21.5	NA	230,000 N	20,000	No	BSL
	t93-39-5	Indeno(1,2,3-cd)pyrene	3.t J	7.25	ug/kg	TF5-SB-971-0204-AVG	3/21	3.4 - 4.2	7.25	NA	150 C	900	No	BSL
	91-20-3	Naphthalene	4.7	5.9	ug/kg	TF5-SB-969-0204	3/2t	3.4 - 4.2	5.9	NA	3,600 C	54,000	No	BSL
	85-01-8	Phenanthrene	4.2	12.5	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	12.5	NA	170,000 N[8]	40,000	No	BSL
	129-00-0	Pyrene	3.6	18.5	ug/kg	TF5-SB-971-0204-AVG	8/21	3.5 - 3.9	18.5	NA	170,000 N	13,000	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	3.8 J	71.8 J	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 4	71.8	NA	15 C	400	Yes	ASL
	Metals													
	7429-90-5	Aluminum	876	14,000	mg/kg	TF5-SB-971-0810	21/21	-	14,000	No	7,700 N	NA	Yes	ASL,BKG
	7440-38-2	Arsenic	3.5 J	67.2	mg/kg	TF5-SB-970-0810	21/2t	-	67.2	Yes	0.39 C	7	Yes	ASL
	7440-39-3	Barium	1.4 J	20 J	mg/kg	TF5-SB-971-0204-AVG	21/21	-	20	No	1,500 N	5,500	No	BSL,BKG
	7440-41-7	Beryllium	0.11 J	0.525 J	mg/kg	TF5-SB-973-0204-AVG	21/21	-	0.525	No	16 N	0.4	Yes	ASL,BKG
	7440-43-9	Cadmium	0.13 J	0.86	mg/kg	TF5-SB-970-0810	21/21	-	0.86	Yes	7 N	39	No	BSL
	7440-70-2	Calcium	72.5 J	2,200 J	mg/kg	TF5-SB-974-0810-AVG	17/21	4.2 - 5.7	2,200	No	NA	NA	No	NUT,BKG
	7440-47-3	Chromium	2.3 J	21.7	mg/kg	TF5-SB-971-0810	21/21	-	21.7	No	0.39 C[9]	390 [9]	Yes	ASL,BKG
	7440-48-4	Cobalt	6.3 J	32.8	mg/kg	TF5-SB-970-0810	21/21	-	32.8	Yes	2.3 N	NA	Yes	ASL
	7440-50-8	Copper	4.9 J	35.8	mg/kg	TF5-SB-973-0810	21/21	-	35.8	Yes	310 N	3,100	No	BSL
	7439-89-6	Iron	18,500	72,100	mg/kg	TF5-SB-966-0406	21/21	-	72,100	Yes	5,500 N	NA	Yes	ASL
	7439-92-1	Lead	1.1 J	15.3 J	mg/kg	TF5-SB-974-0204	21/21	-	15.3	Yes	400	150	No	BSL
	7439-95-4	Magnesium	172 J	4,870 J	mg/kg	TF5-SB-971-0810	21/21	-	4,870	No	NA	NA	No	NUT,BKG
	7439-96-5	Manganese	114	4,220	mg/kg	TF5-SB-970-0810	21/2t	-	4,220	Yes	180 N	390	Yes	ASL
	7439-97-6	Mercury	0.012 J	0.0148 J	mg/kg	TF5-SB-971-0204-AVG	2/21	0.0053 - 0.031	0.0148	Yes	2.3 N[10]	23	No	BSL
	7440-02-0	Nickel	13.2 J	72.5	mg/kg	TF5-SB-970-0810	21/21	-	72.5	Yes	150 N	1,000	No	BSL
	7440-09-7	Potassium	43.5 J	374 J	mg/kg	TF5-SB-976-0810	21/21	-	374	No	NA	NA	No	NUT,BKG
	7782-49-2	Selenium	2.3	7	mg/kg	TF5-SB-970-0810	14/21	2.2 - 5.5	7	Yes	39 N	390	No	BSL
	7440-22-4	Silver	0.081 J	0.65 J	mg/kg	TF5-SB-970-0810	15/21	0.069 - 0.22	0.65	Yes	39 N	200	No	BSL
	7440-23-5	Sodium	20.6 J	61.4	mg/kg	TF5-SB-970-0204	8/21	10.7 - 26	61.4	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	1	7.4	mg/kg	TF5-SB-972-0810	20/21	0.18 - 0.18	7.4	Yes	NA	5.5	Yes	ASL
	7440-62-2	Vanadium	0.45 J	25 J	mg/kg	TF5-SB-971-0810	21/21	-	25	No	39 N	550	No	BSL,BKG
	7440-66-6	Zinc	30.2 J	123	mg/kg	TF5-SB-970-0810	21/21	-	123	Yes	2,300 N	6,000	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	24.9	21,200 J	ng/kg	TF5-SB-976-0204	11/11	-	21,200	NA	15,000 C[11]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.333 J	2.7 J	ng/kg	TF5-SB-969-0204	8/11	0.159 - 0.864	2.7	NA	t5,000 C[11]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	13.5	146 J	ng/kg	TF5-SB-975-0204	10/11	0.82 - 0.82	146	NA	450 C[11]	NA	No	BSL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	1.48 J	1.48 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0676 - 1.24	1.48	NA	450 C[11]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.183 J	0.183 J	ng/kg	TF5-SB-971-0204-AVG	1/1t	0.0388 - 0.142	0.183	NA	450 C[11]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.0941 J	0.484 J	ng/kg	TF5-SB-968-0204	10/t1	0.0922 - 0.0922	0.484	NA	45 C[11]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.0983 J	0.351 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0113 - 0.0815	0.351	NA	45 C[11]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.t32 J	0.888 J	ng/kg	TF5-SB-969-0204	10/11	0.0828 - 0.0828	0.888	NA	45 C[11]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCOF	0.067 J	0.15 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0108 - 0.077	0.15	NA	45 C[11]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.213 J	1.21 J	ng/kg	TF5-SB-975-0204	10/11	0.0877 - 0.0877	1.21	NA	45 C[11]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.0598 J	0.176 J	ng/kg	TF5-SB-974-0204	3/11	0.0622 - 0.t39	0.176	NA	4.5 C[11]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.051 J	0.112 J	ng/kg	TF5-SB-973-0204-AVG	3/11	0.0121 - 0.0978	0.112	NA	45 C[11]	NA	No	BSL

TABLE 2.11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	51207-31-9	2,3,7,8-TCDF	0.175 J	0.175 J	ng/kg	TF5-SB-973-0204-AVG	1/11	0.0594 - 0.224	0.175	NA	45 C[11]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	0.179	7.57	ng/kg	TF5-SB-976-0204	11/11	-	7.57	NA	4.5 C	NA	Yes	ASL
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	35 J	35 J	mg/kg	TF5-SB-967-0204	1/5	13 - 15	35	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for pyrene.
9 - Value is for hexavalent chromium.
10 - Value is for mercury, inorganic salts
11 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SB-966-0406
TF5-SB-966-0608
TF5-SB-967-0204
TF5-SB-968-0204
TF5-SB-968-0810
TF5-SB-969-0204
TF5-SB-969-0810
TF5-SB-970-0204
TF5-SB-970-0810
TF5-SB-971-0204-AVG
TF5-SB-971-0810
TF5-SB-972-0204
TF5-SB-972-0810
TF5-SB-973-0204-AVG
TF5-SB-973-0810
TF5-SB-974-0204
TF5-SB-974-0810-AVG
TF5-SB-975-0204
TF5-SB-975-0810
TF5-SB-976-0204
TF5-SB-976-0810

Definitions:
BKG = Less than Background Concentration
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:

BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	Volatile Organic Compounds													
	67-64-1	Acetone	3.5 J	44 J	ug/kg	TF5-SB-970-0204	11/21	3.4 - 5.2	44	NA	4,500	NA	No	BSL
	75-15-0	Carbon Disulfide	1.9 J	4 J	ug/kg	TF5-SB-974-0204	2/21	3.4 - 5.2	4	NA	310	NA	No	BSL
	108-88-3	Toluene	1 J	1.78 J	ug/kg	TF5-SB-973-0204-AVG	2/21	3.9 - 5.2	1.78	NA	1,600	32,000	No	BSL
	Semivolatile Organic Compounds													
	91-57-6	2-Methylnaphthalene	4.3 J	4.3 J	ug/kg	TF5-SB-969-0204	1/21	3.4 - 4.2	4.3	NA	750	NA	No	BSL
	106-44-5	4-Methylphenol	4.9 J	4.9 J	ug/kg	TF5-SB-971-0204-AVG	1/21	3.4 - 4.2	4.9	NA	150	NA	No	BSL
	56-55-3	Benzo(a)anthracene	6.1	11.5	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11.5	NA	10	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	5.5	11	ug/kg	TF5-SB-971-0204-AVG	4/21	3.4 - 4.2	11	NA	3.5	240,000	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	5.2 J	19	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4	19	NA	35	NA	No	BSL
	191-24-2	Benzo(g,h,i)perylene	4.5	8.3	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	8.3	NA	120,000 [8]	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	4.65 J	9.9 J	ug/kg	TF5-SB-967-0204	3/21	3.4 - 4.2	9.9	NA	350	NA	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	52 J	130 J	ug/kg	TF5-SB-971-0204-AVG	2/21	340 - 420	130	NA	1,100	120,000	No	BSL
	218-01-9	Chrysene	3.8	15.5 J	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	15.5	NA	1,100	NA	No	BSL
	84-74-2	di-n-Butyl Phthalate	280 J	280 J	ug/kg	TF5-SB-971-0204-AVG	1/21	340 - 420	280	NA	9,200	NA	No	BSL
	206-44-0	Fluoranthene	5.1	21.5	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 3.9	21.5	NA	160,000	NA	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	3.1 J	7.25	ug/kg	TF5-SB-971-0204-AVG	3/21	3.4 - 4.2	7.25	NA	120	NA	No	BSL
	91-20-3	Naphthalene	4.7	5.9	ug/kg	TF5-SB-969-0204	3/21	3.4 - 4.2	5.9	NA	0.47	800	Yes	ASL
	85-01-8	Phenanthrene	4.2	12.5	ug/kg	TF5-SB-971-0204-AVG	5/21	3.4 - 4.2	12.5	NA	120,000 [8]	NA	No	BSL
	129-00-0	Pyrene	3.6	18.5	ug/kg	TF5-SB-971-0204-AVG	8/21	3.5 - 3.9	18.5	NA	120,000	NA	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	3.8 J	71.8 J	ug/kg	TF5-SB-971-0204-AVG	6/21	3.4 - 4	71.8	NA	NA	NA	No	BSL
	Metals													
	7429-90-5	Aluminum	876	14,000	mg/kg	TF5-SB-971-0810	21/21	-	14,000	No	55,000	NA	No	BSL,BKG
	7440-38-2	Arsenic	3.5 J	67.2	mg/kg	TF5-SB-970-0810	21/21	-	67.2	Yes	0.0013	NA	Yes	ASL
	7440-39-3	Barium	1.4 J	20 J	mg/kg	TF5-SB-971-0204-AVG	21/21	-	20	No	300	[9]	No	BSL,BKG
	7440-41-7	Beryllium	0.11 J	0.525 J	mg/kg	TF5-SB-973-0204-AVG	21/21	-	0.525	No	58	[9]	No	BSL,BKG
	7440-43-9	Cadmium	0.13 J	0.86	mg/kg	TF5-SB-970-0810	21/21	-	0.86	Yes	1.4	[9]	No	BSL
	7440-70-2	Calcium	72.5 J	2,200 J	mg/kg	TF5-SB-974-0810-AVG	17/21	4.2 - 5.7	2,200	No	NA	NA	No	NUT,BKG
	7440-47-3	Chromium	2.3 J	21.7	mg/kg	TF5-SB-971-0810	21/21	-	21.7	No	0.00083 [10]	[16]	Yes	ASL,BKG
	7440-48-4	Cobalt	6.3 J	32.8	mg/kg	TF5-SB-970-0810	21/21	-	32.8	Yes	0.49	NA	Yes	ASL
	7440-50-8	Copper	4.9 J	35.8	mg/kg	TF5-SB-973-0810	21/21	-	35.8	Yes	51	NA	No	BSL
	7439-89-6	Iron	18,500	72,100	mg/kg	TF5-SB-966-0406	21/21	-	72,100	Yes	640	NA	Yes	ASL
	7439-92-1	Lead	1.1 J	15.3 J	mg/kg	TF5-SB-974-0204	21/21	-	15.3	Yes	14 [11]	[9]	Yes	ASL
	7439-95-4	Magnesium	172 J	4,870 J	mg/kg	TF5-SB-971-0810	21/21	-	4,870	No	NA	NA	No	NUT,BKG
	7439-96-5	Manganese	114	4,220	mg/kg	TF5-SB-970-0810	21/21	-	4,220	Yes	57	NA	Yes	ASL
	7439-97-6	Mercury	0.012 J	0.0148 J	mg/kg	TF5-SB-971-0204-AVG	2/21	0.0053 - 0.031	0.0148	Yes	0.57 [12]	[9]	Yes	ASL
	7440-02-0	Nickel	13.2 J	72.5	mg/kg	TF5-SB-970-0810	21/21	-	72.5	Yes	48	[9]	Yes	ASL
	7440-09-7	Potassium	43.5 J	374 J	mg/kg	TF5-SB-976-0810	21/21	-	374	No	NA	NA	No	NUT,BKG
	7782-49-2	Selenium	2.3	7	mg/kg	TF5-SB-970-0810	14/21	2.2 - 5.5	7	Yes	0.95	[9]	Yes	ASL
	7440-22-4	Silver	0.081 J	0.65 J	mg/kg	TF5-SB-970-0810	15/21	0.069 - 0.22	0.65	Yes	1.6	NA	No	BSL
	7440-23-5	Sodium	20.6 J	61.4	mg/kg	TF5-SB-970-0204	8/21	10.7 - 26	61.4	Yes	NA	NA	No	NUT
	7440-28-0	Thallium	1	7.4	mg/kg	TF5-SB-972-0810	20/21	0.18 - 0.18	7.4	Yes	NA	[9]	No	NTX
	7440-62-2	Vanadium	0.45 J	25 J	mg/kg	TF5-SB-971-0810	21/21	-	25	No	180	NA	No	BSL,BKG
	7440-66-6	Zinc	30.2 J	123	mg/kg	TF5-SB-970-0810	21/21	-	123	Yes	680	NA	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	24.9	21,200 J	ng/kg	TF5-SB-976-0204	11/11	-	21,200	NA	870 [13]	NA	Yes	ASL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	0.333 J	2.7 J	ng/kg	TF5-SB-969-0204	8/11	0.159 - 0.864	2.7	NA	870 [13]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	13.5	146 J	ng/kg	TF5-SB-975-0204	10/11	0.82 - 0.82	146	NA	26 [13]	NA	Yes	ASL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	1.48 J	1.48 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0676 - 1.24	1.48	NA	26 [13]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.183 J	0.183 J	ng/kg	TF5-SB-971-0204-AVG	1/11	0.0388 - 0.142	0.183	NA	26 [13]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.0941 J	0.484 J	ng/kg	TF5-SB-968-0204	10/11	0.0922 - 0.0922	0.484	NA	2.6 [13]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.0983 J	0.351 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0113 - 0.0815	0.351	NA	2.6 [13]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.132 J	0.888 J	ng/kg	TF5-SB-969-0204	10/11	0.0828 - 0.0828	0.888	NA	2.6 [13]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.067 J	0.15 J	ng/kg	TF5-SB-971-0204-AVG	5/11	0.0108 - 0.077	0.15	NA	2.6 [13]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	0.213 J	1.21 J	ng/kg	TF5-SB-975-0204	10/11	0.0877 - 0.0877	1.21	NA	2.6 [13]	NA	No	BSL

TABLE 2.12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL TO GROUNDWATER - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Above Background Concentration?[4]	USEPA RSL Migration from Soil to Groundwater[5]	RIDEM GA Leachability Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	40321-76-4	1,2,3,7,8-PECDD	0.0598 J	0.176 J	ng/kg	TF5-SB-974-0204	3/11	0.0622 - 0.139	0.176	NA	0.26 [13]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.051 J	0.112 J	ng/kg	TF5-SB-973-0204-AVG	3/11	0.0121 - 0.0978	0.112	NA	2.6 [13]	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.175 J	0.175 J	ng/kg	TF5-SB-973-0204-AVG	1/11	0.0594 - 0.224	0.175	NA	2.6 [13]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	0.179	7.57	ng/kg	TF5-SB-976-0204	11/11	-	7.57	NA	NA	NA	No	NTX
	Petroleum Hydrocarbons													
	- -	Extractable Petroleum Hydrocarbons	35 J	35 J	mg/kg	TF5-SB-967-0204	1/5	13 - 15	35	NA	NA	500	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - To determine whether chemical concentrations were within background levels, a statistical analysis was conducted using the site and background datasets.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010.
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level and is statistically determined to be greater than site background.
8 - Value is for pyrene.
9 - Leachability criteria for inorganics are based on SPLP/TCLP analysis.
10 - Value is for hexavalent chromium.
11 - Value is MCL based soil screening level.
12 - Value is for mercury, inorganic salts
13 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SB-966-0406
TF5-SB-966-0608
TF5-SB-967-0204
TF5-SB-968-0204
TF5-SB-968-0810
TF5-SB-969-0204
TF5-SB-969-0810
TF5-SB-970-0204
TF5-SB-970-0810
TF5-SB-971-0204-AVG
TF5-SB-971-0810
TF5-SB-972-0204
TF5-SB-972-0810
TF5-SB-973-0204-AVG
TF5-SB-973-0810
TF5-SB-974-0204
TF5-SB-974-0810-AVG
TF5-SB-975-0204
TF5-SB-975-0810
TF5-SB-976-0204
TF5-SB-976-0810

Definitions:
BKG = Less than Background Concentration
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.13
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Tank Farm 5	Volatile Organic Compounds														
	87-61-6	1,2,3-Trichlorobenzene	1.2 J	1.2 J	ug/L	TF5-MW-915-0510	1/4	1 - 1	1.2	NA	2.9 N	NA NA	NA NA	No	BSL
	71-43-2	Benzene	1.2	1.2	ug/L	TF5-MW-924-051810	1/4	1 - 1	1.2	NA	0.41 C	5 5	EPA-MCL RIDEM	Yes	ASL
	156-59-2	cis-1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	37 N	70 70	EPA-MCL RIDEM	No	BSL
	540-59-0	Total 1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	33 N	NA NA	NA NA	No	BSL
	Semivolatile Organic Compounds														
	105-60-2	Caprolactam	1.7 J	160 J	ug/L	TF5-MW-923-051810	4/4	-	160	NA	1,800 N	NA NA	NA NA	No	BSL
	Metals														
	7429-90-5	Aluminum	1,480	1,480	ug/L	TF5-MW-916-0510	1/4	35.7 - 53.5	1,480	NA	3,700 N	50 NA	EPA-SMCL NA	Yes	ASL
	7440-38-2	Arsenic	0.59 J	8.8	ug/L	TF5-MW-915-0510	4/4	-	8.8	NA	0.045 C	10 NA	EPA-MCL NA	Yes	ASL
	7440-39-3	Barium	6.8	69.3	ug/L	TF5-MW-916-0510	4/4	-	69.3	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
	7440-41-7	Beryllium	0.166 J	0.188 J	ug/L	TF5-MW-916-0510	2/4	0.045 - 0.045	0.188	NA	7.3 N	4 4	EPA-MCL RIDEM	No	BSL
	7440-43-9	Cadmium	0.074 J	0.183 J	ug/L	TF5-MW-916-0510	2/4	0.054 - 0.054	0.183	NA	1.8 N	5 5	EPA-MCL RIDEM	No	BSL
	7440-70-2	Calcium	11,800	28,200	ug/L	TF5-MW-924-0510	4/4	-	28,200	NA	NA	NA NA	NA NA	No	NUT
	7440-48-4	Cobalt	0.427 J	19	ug/L	TF5-MW-923-0510	4/4	-	19	NA	1.1 N	NA NA	NA NA	Yes	ASL
	7440-50-8	Copper	0.361 J	5.8	ug/L	TF5-MW-916-0510	4/4	-	5.8	NA	150 N	1,300 NA	EPA-MCL[7] NA	No	BSL
	7439-89-6	Iron	225	24,300	ug/L	TF5-MW-923-0510	4/4	-	24,300	NA	2,600 N	300 NA	EPA-SMCL NA	Yes	ASL
	7439-92-1	Lead	1.7	1.7	ug/L	TF5-MW-916-0510	1/4	0.162 - 0.162	1.7	NA	NA	15 15	EPA-MCL[7] RIDEM	No	BSL
	7439-95-4	Magnesium	7,620	19,600	ug/L	TF5-MW-924-0510	4/4	-	19,600	NA	NA	NA NA	NA NA	No	NUT
	7439-96-5	Manganese	82.4	2,510	ug/L	TF5-MW-923-0510	4/4	-	2,510	NA	88 N	50 NA	EPA-SMCL NA	Yes	ASL
	7440-02-0	Nickel	14.5	57.8	ug/L	TF5-MW-923-0510	4/4	-	57.8	NA	73 N	NA 100	NA RIDEM	No	BSL
	7440-09-7	Potassium	520 J	2,440	ug/L	TF5-MW-916-0510	4/4	-	2,440	NA	NA	NA NA	NA NA	No	NUT
	7782-49-2	Selenium	0.185 J	0.667 J	ug/L	TF5-MW-916-0510	2/4	0.123 - 0.123	0.667	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
	7440-23-5	Sodium	9,520	29,200	ug/L	TF5-MW-916-0510	4/4	-	29,200	NA	NA	NA NA	NA NA	No	NUT
	7440-62-2	Vanadium	1.2 J	1.2 J	ug/L	TF5-MW-916-0510	1/4	0.331 - 0.331	1.2	NA	18 N	NA NA	NA NA	No	BSL
	7440-66-6	Zinc	81.7 J	81.7 J	ug/L	TF5-MW-923-0510	1/4	16.6 - 45	81.7	NA	1,100 N	5,000 NA	EPA-SMCL NA	No	BSL
	Dissolved Metals														
	7429-90-5	Aluminum	446	446	ug/L	TF5-MW-916-0510	1/2	36.7 - 36.7	446	NA	3,700 N	50 NA	EPA-SMCL NA	Yes	ASL
	7440-38-2	Arsenic	0.794 J	0.794 J	ug/L	TF5-MW-923-0510	1/2	0.236 - 0.236	0.794	NA	0.045 C	10 NA	EPA-MCL NA	Yes	ASL
	7440-39-3	Barium	15.1	53.8	ug/L	TF5-MW-916-0510	2/2	-	53.8	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL

TABLE 2.13
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Tank Farm 5	7440-41-7	Beryllium	0.107 J	0.16 J	ug/L	TF5-MW-923-0510	2/2	-	0.16	NA	7.3 N	4 4	EPA-MCL RIDEM	No	BSL
	7440-43-9	Cadmium	0.084 J	0.084 J	ug/L	TF5-MW-916-0510	1/2	0.054 - 0.054	0.084	NA	1.8 N	5 5	EPA-MCL RIDEM	No	BSL
	7440-70-2	Calcium	12,700	12,900	ug/L	TF5-MW-923-0510	2/2	-	12,900	NA	NA	NA NA	NA NA	No	NUT
	7440-48-4	Cobalt	9.3	18.3	ug/L	TF5-MW-923-0510	2/2	-	18.3	NA	1.1 N	NA NA	NA NA	Yes	ASL
	7440-50-8	Copper	0.45 J	3.7	ug/L	TF5-MW-916-0510	2/2	-	3.7	NA	150 N	1,300 NA	EPA-MCL[7] NA	No	BSL
	7439-89-6	Iron	128 J	23,500	ug/L	TF5-MW-923-0510	2/2	-	23,500	NA	2,600 N	300 NA	EPA-SMCL NA	Yes	ASL
	7439-95-4	Magnesium	8,720	16,800	ug/L	TF5-MW-923-0510	2/2	-	16,800	NA	NA	NA NA	NA NA	No	NUT
	7439-96-5	Manganese	333	2,520	ug/L	TF5-MW-923-0510	2/2	-	2,520	NA	88 N	50 NA	EPA-SMCL NA	Yes	ASL
	7440-02-0	Nickel	32.3	55.5	ug/L	TF5-MW-923-0510	2/2	-	55.5	NA	73 N	NA 100	NA RIDEM	No	BSL
	7440-09-7	Potassium	1,130	2,250	ug/L	TF5-MW-916-0510	2/2	-	2,250	NA	NA	NA NA	NA NA	No	NUT
	7782-49-2	Selenium	0.573 J	0.573 J	ug/L	TF5-MW-916-0510	1/2	0.123 - 0.123	0.573	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
	7440-23-5	Sodium	11,400	26,700	ug/L	TF5-MW-916-0510	2/2	-	26,700	NA	NA	NA NA	NA NA	No	NUT
	7440-66-6	Zinc	78.7	78.7	ug/L	TF5-MW-923-0510	1/2	19.6 - 19.6	78.7	NA	1,100 N	5,000 NA	EPA-SMCL NA	No	BSL

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), May 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-MW-915-0510
TF5-MW-916-0510
TF5-MW-923-0510
TF5-MW-923-051810
TF5-MW-924-0510
TF5-MW-924-051810

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.14
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - VAPOR INTRUSION - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA Vapor Intrusion Criteria[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	Volatile Organic Compounds														
	87-61-6	1,2,3-Trichlorobenzene	1.2 J	1.2 J	ug/L	TF5-MW-915-0510	1/4	1 - 1	1.2	NA	NA	NA	NA	No	NTX
	71-43-2	Benzene	1.2	1.2	ug/L	TF5-MW-924-051810	1/4	1 - 1	1.2	NA	1.3 C	NA	NA	No	BSL
	156-59-2	cis-1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	NA	NA	NA	No	NTX
	540-59-0	Total 1,2-Dichloroethene	2	2	ug/L	TF5-MW-924-051810	1/4	1 - 1	2	NA	NA	NA	NA	No	NTX
	Semivolatile Organic Compounds														
	105-60-2	Caprolactam	1.7 J	160 J	ug/L	TF5-MW-923-051810	4/4	-	160	NA	NA	NA	NA	No	NTX
	Metals														
	7429-90-5	Aluminum	1,480	1,480	ug/L	TF5-MW-916-0510	1/4	35.7 - 53.5	1,480	NA	NA	NA	NA	No	NTX
	7440-38-2	Arsenic	0.59 J	8.8	ug/L	TF5-MW-915-0510	4/4	-	8.8	NA	NA	NA	NA	No	NTX
	7440-39-3	Barium	6.8	69.3	ug/L	TF5-MW-916-0510	4/4	-	69.3	NA	NA	NA	NA	No	NTX
	7440-41-7	Beryllium	0.166 J	0.188 J	ug/L	TF5-MW-916-0510	2/4	0.045 - 0.045	0.188	NA	NA	NA	NA	No	NTX
	7440-43-9	Cadmium	0.074 J	0.183 J	ug/L	TF5-MW-916-0510	2/4	0.054 - 0.054	0.183	NA	NA	NA	NA	No	NTX
	7440-70-2	Calcium	11,800	28,200	ug/L	TF5-MW-924-0510	4/4	-	28,200	NA	NA	NA	NA	No	NUT
	7440-48-4	Cobalt	0.427 J	19	ug/L	TF5-MW-923-0510	4/4	-	19	NA	NA	NA	NA	No	NTX
	7440-50-8	Copper	0.361 J	5.8	ug/L	TF5-MW-916-0510	4/4	-	5.8	NA	NA	NA	NA	No	NTX
	7439-89-6	Iron	225	24,300	ug/L	TF5-MW-923-0510	4/4	-	24,300	NA	NA	NA	NA	No	NTX
	7439-92-1	Lead	1.7	1.7	ug/L	TF5-MW-916-0510	1/4	0.162 - 0.162	1.7	NA	NA	NA	NA	No	NTX
	7439-95-4	Magnesium	7,620	19,600	ug/L	TF5-MW-924-0510	4/4	-	19,600	NA	NA	NA	NA	No	NUT
	7439-96-5	Manganese	82.4	2,510	ug/L	TF5-MW-923-0510	4/4	-	2,510	NA	NA	NA	NA	No	NTX
	7440-02-0	Nickel	14.5	57.8	ug/L	TF5-MW-923-0510	4/4	-	57.8	NA	NA	NA	NA	No	NTX
	7440-09-7	Potassium	520 J	2,440	ug/L	TF5-MW-916-0510	4/4	-	2,440	NA	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.185 J	0.667 J	ug/L	TF5-MW-916-0510	2/4	0.123 - 0.123	0.667	NA	NA	NA	NA	No	NTX
	7440-23-5	Sodium	9,520	29,200	ug/L	TF5-MW-916-0510	4/4	-	29,200	NA	NA	NA	NA	No	NUT
	7440-62-2	Vanadium	1.2 J	1.2 J	ug/L	TF5-MW-916-0510	1/4	0.331 - 0.331	1.2	NA	NA	NA	NA	No	NTX
	7440-66-6	Zinc	81.7 J	81.7 J	ug/L	TF5-MW-923-0510	1/4	16.6 - 45	81.7	NA	NA	NA	NA	No	NTX
	Dissolved Metals														
	7429-90-5	Aluminum	446	446	ug/L	TF5-MW-916-0510	1/2	36.7 - 36.7	446	NA	NA	NA	NA	No	NTX
	7440-38-2	Arsenic	0.794 J	0.794 J	ug/L	TF5-MW-923-0510	1/2	0.236 - 0.236	0.794	NA	NA	NA	NA	No	NTX
	7440-39-3	Barium	15.1	53.8	ug/L	TF5-MW-916-0510	2/2	-	53.8	NA	NA	NA	NA	No	NTX
	7440-41-7	Beryllium	0.107 J	0.16 J	ug/L	TF5-MW-923-0510	2/2	-	0.16	NA	NA	NA	NA	No	NTX
	7440-43-9	Cadmium	0.084 J	0.084 J	ug/L	TF5-MW-916-0510	1/2	0.054 - 0.054	0.084	NA	NA	NA	NA	No	NTX
	7440-70-2	Calcium	12,700	12,900	ug/L	TF5-MW-923-0510	2/2	-	12,900	NA	NA	NA	NA	No	NUT
	7440-48-4	Cobalt	9.3	18.3	ug/L	TF5-MW-923-0510	2/2	-	18.3	NA	NA	NA	NA	No	NTX
	7440-50-8	Copper	0.45 J	3.7	ug/L	TF5-MW-916-0510	2/2	-	3.7	NA	NA	NA	NA	No	NTX
	7439-89-6	Iron	128 J	23,500	ug/L	TF5-MW-923-0510	2/2	-	23,500	NA	NA	NA	NA	No	NTX
	7439-95-4	Magnesium	8,720	16,800	ug/L	TF5-MW-923-0510	2/2	-	16,800	NA	NA	NA	NA	No	NUT
	7439-96-5	Manganese	333	2,520	ug/L	TF5-MW-923-0510	2/2	-	2,520	NA	NA	NA	NA	No	NTX
	7440-02-0	Nickel	32.3	55.5	ug/L	TF5-MW-923-0510	2/2	-	55.5	NA	NA	NA	NA	No	NTX
	7440-09-7	Potassium	1,130	2,250	ug/L	TF5-MW-916-0510	2/2	-	2,250	NA	NA	NA	NA	No	NUT
	7782-49-2	Selenium	0.573 J	0.573 J	ug/L	TF5-MW-916-0510	1/2	0.123 - 0.123	0.573	NA	NA	NA	NA	No	NTX
	7440-23-5	Sodium	11,400	26,700	ug/L	TF5-MW-916-0510	2/2	-	26,700	NA	NA	NA	NA	No	NUT
	7440-66-6	Zinc	78.7	78.7	ug/L	TF5-MW-923-0510	1/2	19.6 - 19.6	78.7	NA	NA	NA	NA	No	NTX

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for groundwater.
5 - Calculated using methodology presented in Appendix D of USEPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, November 2002. EPA530-F-02-052. Values correspond to a target cancer risk level of 1E-6 or HI =0.1 and an attenuation factor of 0.001.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-MW-915-0510
TF5-MW-916-0510
TF5-MW-923-0510
TF5-MW-923-051810
TF5-MW-924-0510
TF5-MW-924-051810

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.15
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection[6]
Tank Farm 5	Volatile Organic Compounds														
	67-66-3	Chloroform	1	1	ug/L	TF5-SW-918-0310	1/11	1 - 1	1	NA	0.19 C	80 NA	EPA-MCL NA	Yes	ASL
	Semivolatile Organic Compounds														
	91-57-6	2-Methylnaphthalene	0.25	3.3	ug/L	TF5-SW-919-0310	2/11	0.1 - 0.1	3.3	NA	15 N	NA NA	NA NA	No	BSL
	83-32-9	Acenaphthene	0.36	0.36	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	0.36	NA	220 N	NA NA	NA NA	No	BSL
	208-96-8	Acenaphthylene	0.82	0.82	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	0.82	NA	220 N[7]	NA NA	NA NA	No	BSL
	120-12-7	Anthracene	0.11	0.11	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	0.11	NA	1,100 N	NA NA	NA NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.11 J	0.2 J	ug/L	TF5-SW-917-0310	6/11	0.1 - 0.1	0.2	NA	0.029 C	NA NA	NA NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.13	0.16	ug/L	TF5-SW-918-0310	2/11	0.1 - 0.1	0.16	NA	0.0029 C	0.2 0.2	EPA-MCL RIDEM	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.11	0.25	ug/L	TF5-SW-918-0310	4/11	0.1 - 0.1	0.25	NA	0.029 C	NA NA	NA NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.13	0.13	ug/L	TF5-SW-918-0310	1/11	0.1 - 0.1	0.13	NA	110 N[8]	NA NA	NA NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.15	0.15	ug/L	TF5-SW-918-0310	1/11	0.1 - 0.1	0.15	NA	0.29 C	NA NA	NA NA	No	BSL
	218-01-9	Chrysene	0.11	0.18	ug/L	TF5-SW-918-0310	4/11	0.1 - 0.1	0.18	NA	2.9 C	NA NA	NA NA	No	BSL
	206-44-0	Fluoranthene	0.12	0.36	ug/L	TF5-SW-918-0310	6/11	0.1 - 0.1	0.36	NA	150 N	NA NA	NA NA	No	BSL
	86-73-7	Fluorene	1.3	1.3	ug/L	TF5-SW-919-0310	1/11	0.1 - 0.1	1.3	NA	150 N	NA NA	NA NA	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.11	0.11	ug/L	TF5-SW-918-0310	1/11	0.1 - 0.1	0.11	NA	0.029 C	NA NA	NA NA	Yes	ASL
	91-20-3	Naphthalene	0.59	1.5	ug/L	TF5-SW-919-0310	2/11	0.1 - 0.1	1.5	NA	0.14 C	NA 20	NA RIDEM	Yes	ASL
	85-01-8	Phenanthrene	0.075	1.1	ug/L	TF5-SW-919-0310	10/11	0.1 - 0.1	1.1	NA	110 N[8]	NA NA	NA NA	No	BSL
	129-00-0	Pyrene	0.13	0.3	ug/L	TF5-SW-917-0310	5/11	0.1 - 0.1	0.3	NA	110 N	NA NA	NA NA	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	0.41 J	1.08 J	ug/L	TF5-SW-918-0310	6/11	0.1 - 0.1	1.08	NA	0.0029 C	0.2 NA	EPA-MCL NA	Yes	ASL
	Metals														
	7429-90-5	Aluminum	852	852	ug/L	TF5-SW-918-0310	1/11	55.9 - 281	852	NA	3,700 N	50 NA	EPA-SMCL NA	Yes	ASL
	7440-38-2	Arsenic	0.244 J	0.299 J	ug/L	TF5-SW-919-0310	5/11	0.236 - 0.236	0.299	NA	0.045 C	10 NA	EPA-MCL NA	Yes	ASL
	7440-39-3	Barium	7.9	11	ug/L	TF5-SW-918-0310	11/11	-	11	NA	730 N	2,000 2,000	EPA-MCL RIDEM	No	BSL
	7440-70-2	Calcium	11,400	17,700	ug/L	TF5-SW-915-0310	11/11	-	17,700	NA	NA	NA NA	NA NA	No	NUT
	7440-48-4	Cobalt	0.274 J	0.564 J	ug/L	TF5-SW-919-0310	11/11	-	0.564	NA	1.1 N	NA NA	NA NA	No	BSL
	7440-50-8	Copper	0.9 J	3.3	ug/L	TF5-SW-915-0310	11/11	-	3.3	NA	150 N	1,300 NA	EPA-MCL[9] NA	No	BSL
	7439-89-6	Iron	215	2,930	ug/L	TF5-SW-918-0310	7/11	174 - 227	2,930	NA	2,600 N	300 NA	EPA-SMCL NA	Yes	ASL
	7439-92-1	Lead	0.193 J	0.533 J	ug/L	TF5-SW-915-0310	11/11	-	0.533	NA	NA	15 15	EPA-MCL[9] RIDEM	No	BSL

TABLE 2.15
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	Screening Toxicity Value[5]	Potential ARAR/TBC	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant - Deletion or Selection[6]
Tank Farm 5	7439-95-4	Magnesium	5,250	8,250	ug/L	TF5-SW-915-0310	11/11	-	8,250	NA	NA	NA NA	NA NA	No	NUT
	7440-02-0	Nickel	1.6	5.4	ug/L	TF5-SW-918-0310	11/11	-	5.4	NA	73 N	NA 100	NA RIDEM	No	BSL
	7440-09-7	Potassium	1,170	2,760	ug/L	TF5-SW-918-0310	11/11	-	2,760	NA	NA	NA NA	NA NA	No	NUT
	7782-49-2	Selenium	0.168 J	0.256 J	ug/L	TF5-SW-917-0310	11/11	-	0.256	NA	18 N	50 50	EPA-MCL RIDEM	No	BSL
	7440-23-5	Sodium	22,500	39,600	ug/L	TF5-SW-915-0310	11/11	-	39,600	NA	NA	NA NA	NA NA	No	NUT

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for surface water.
5 - USEPA Regional Screening Level (RSL). The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag), May 2010.
6 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
7 - Value is for acenaphthene.
8 - Value is for pyrene.
9 - The MCL for this parameter is actually a treatment technique. The SDWA action level (at the tap) has been presented.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SW-914-0310
TF5-SW-915-0310
TF5-SW-916-0310
TF5-SW-917-0310
TF5-SW-918-0310
TF5-SW-919-0310
TF5-SW-920-0310
TF5-SW-921-0006
TF5-SW-922-0006
TF5-SW-923-0006-AVG
TF5-SW-924-0006

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
EPA-MCL = US Environmental Protection Agency Maximum Contaminant Level (USEPA, 2009)
EPA-SMCL = US Environmental Protection Agency Secondary Maximum Contaminant Level (USEPA, 2009)
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available
RIDEM = Rhode Island Department of Environmental Management GA Groundwater Objective (February, 2004).

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level/ARAR/TBC

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

TABLE 2.16
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	Volatile Organic Compounds													
	95-50-1	1,2-Dichlorobenzene	1.6 J	1.6 J	ug/kg	TF5-SD-913-0006	1/12	4.3 - 19	1.6	NA	190,000 N	510,000	No	BSL
	67-64-1	Acetone	13.4 J	200 J	ug/kg	TF5-SD-918-0006	11/12	6.1 - 6.1	200	NA	6,100,000 N	7,800,000	No	BSL
	75-15-0	Carbon Disulfide	3.9 J	3.9 J	ug/kg	TF5-SD-921-0006	1/12	4.3 - 19	3.9	NA	82,000 N	NA	No	BSL
	Semivolatile Organic Compounds													
	105-67-9	2,4-Dimethylphenol	3.5	3.5	ug/kg	TF5-SD-919-0006	1/12	3.3 - 3.3	3.5	NA	120,000 N	1,400,000	No	BSL
	91-57-6	2-Methylnaphthalene	3.6	210	ug/kg	TF5-SD-913-0006	10/12	3.3 - 3.3	210	NA	31,000 N	123,000	No	BSL
	95-48-7	2-Methylphenol	3.5	12	ug/kg	TF5-SD-918-0006	2/12	3.3 - 3.3	12	NA	310,000 N	NA	No	BSL
	106-44-5	4-Methylphenol	3.8	21	ug/kg	TF5-SD-921-0006	9/12	3.3 - 3.3	21	NA	31,000 N	NA	No	BSL
	83-32-9	Acenaphthene	7.2	48	ug/kg	TF5-SD-913-0006	12/12	-	48	NA	340,000 N	43,000	No	BSL
	208-96-8	Acenaphthylene	6.6	110	ug/kg	TF5-SD-913-0006	12/12	-	110	NA	340,000 N[8]	23,000	No	BSL
	120-12-7	Anthracene	29	150	ug/kg	TF5-SD-922-0006	12/12	-	150	NA	1,700,000 N	35,000	No	BSL
	1912-24-9	Atrazine	4.6 J	4.6 J	ug/kg	TF5-SD-918-0006	1/12	3.3 - 3.3	4.6	NA	2,100 C	NA	No	BSL
	56-55-3	Benzo(a)anthracene	33 J	650	ug/kg	TF5-SD-921-0006	12/12	-	650	NA	150 C	900	Yes	ASL
	50-32-8	Benzo(a)pyrene	42	780	ug/kg	TF5-SD-921-0006	12/12	-	780	NA	15 C	400	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	72 J	1,000	ug/kg	TF5-SD-924-0006	12/12	-	1,000	NA	150 C	900	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	32	630	ug/kg	TF5-SD-924-0006	12/12	-	630	NA	170,000 N[9]	800	No	BSL
	207-08-9	Benzo(k)fluoranthene	29 J	860	ug/kg	TF5-SD-921-0006	12/12	-	860	NA	1,500 C	900	No	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	41 J	410	ug/kg	TF5-SD-921-0006	11/12	330 - 330	410	NA	35,000 C	46,000	No	BSL
	86-74-8	Carbazole	36 J	100 J	ug/kg	TF5-SD-921-0006, TF5-SD-924-0006	7/12	330 - 330	100	NA	NA	NA	No	NTX
	218-01-9	Chrysene	51	890	ug/kg	TF5-SD-924-0006	12/12	-	890	NA	15,000 C	400	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	8.7	180	ug/kg	TF5-SD-921-0006	12/12	-	180	NA	15 C	400	Yes	ASL
	206-44-0	Fluoranthene	100	1,800	ug/kg	TF5-SD-921-0006, TF5-SD-924-0006	12/12	-	1,800	NA	230,000 N	20,000	No	BSL
	86-73-7	Fluorene	14	120	ug/kg	TF5-SD-913-0006	12/12	-	120	NA	230,000 N	28,000	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	29	660	ug/kg	TF5-SD-924-0006	12/12	-	660	NA	150 C	900	Yes	ASL
	91-20-3	Naphthalene	3.92	130	ug/kg	TF5-SD-913-0006	11/12	3.3 - 3.3	130	NA	3,600 C	54,000	No	BSL
	87-86-5	Pentachlorophenol	34	34	ug/kg	TF5-SD-919-0006	1/12	33 - 33	34	NA	3,000 C	5,300	No	BSL
	85-01-8	Phenanthrene	130	690	ug/kg	TF5-SD-921-0006	12/12	-	690	NA	170,000 N[9]	40,000	No	BSL
	108-95-2	Phenol	2.52	8.7	ug/kg	TF5-SD-921-0006	6/12	3.3 - 3.3	8.7	NA	1,800,000 N	6,000,000	No	BSL
	129-00-0	Pyrene	85	1,300	ug/kg	TF5-SD-921-0006, TF5-SD-924-0006	12/12	-	1,300	NA	170,000 N	13,000	No	BSL
	50-32-8	Benzo(a)pyrene Equivalents	265 J	4,790	ug/kg	TF5-SD-924-0006	12/12	-	4,790	NA	15 C	NA	Yes	ASL
	Pesticides/PCBs													
	72-54-8	4,4'-DDD	3.4 J	3.62 J	ug/kg	TF5-SD-923-0006-AVG	2/12	3.3 - 51	3.62	NA	2,000 C	NA	No	BSL
	72-55-9	4,4'-DDE	3.9	5.4	ug/kg	TF5-SD-922-0006	4/12	3.3 - 3.3	5.4	NA	1,400 C	NA	No	BSL
	50-29-3	4,4'-DDT	3.4	15	ug/kg	TF5-SD-922-0006	3/12	3.3 - 3.3	15	NA	1,700 C	NA	No	BSL
	309-00-2	Aldrin	2.6	2.6	ug/kg	TF5-SD-922-0006	1/12	1.7 - 1.7	2.6	NA	29 C	NA	No	BSL
	319-84-6	alpha-BHC	2.1	2.1	ug/kg	TF5-SD-922-0006	1/12	1.7 - 1.7	2.1	NA	77 C	NA	No	BSL
	11096-82-5	Aroclor-1260	40 J	78 J	ug/kg	TF5-SD-922-0006	5/12	33 - 33	78	NA	220 C	NA	No	BSL
	7421-93-4	Endrin Aldehyde	2.92 J	3.5	ug/kg	TF5-SD-924-0006	2/12	3.3 - 3.3	3.5	NA	1,800 N[10]	NA	No	BSL
	53494-70-5	Endrin Ketone	2.82	11	ug/kg	TF5-SD-922-0006	3/12	3.3 - 3.3	11	NA	1,800 N[10]	NA	No	BSL
	5103-74-2	gamma-Chlordane	4.9 J	4.9 J	ug/kg	TF5-SD-922-0006	1/12	1.7 - 1.7	4.9	NA	1,600 C[11]	NA	No	BSL
	Metals													
	7429-90-5	Aluminum	4,500	12,600	mg/kg	TF5-SD-917-0006	12/12	-	12,600	NA	7,700 N	NA	Yes	ASL
	7440-38-2	Arsenic	10.5	121	mg/kg	TF5-SD-914-0006	12/12	-	121	NA	0.39 C	7	Yes	ASL
	7440-39-3	Barium	12 J	47.2 J	mg/kg	TF5-SD-924-0006	12/12	-	47.2	NA	1,500 N	5,500	No	BSL
	7440-41-7	Beryllium	0.24 J	1.1 J	mg/kg	TF5-SD-914-0006	12/12	-	1.1	NA	16 N	0.4	Yes	ASL
	7440-43-9	Cadmium	0.25 J	2	mg/kg	TF5-SD-914-0006	12/12	-	2	NA	7 N	39	No	BSL
	7440-70-2	Calcium	813 J	3,680 J	mg/kg	TF5-SD-924-0006	11/12	6.6 - 6.6	3,680	NA	NA	NA	No	NUT
	7440-47-3	Chromium	6.9 J	18.8 J	mg/kg	TF5-SD-914-0006	12/12	-	18.8	NA	0.39 C[12]	390 [12]	Yes	ASL

TABLE 2.16
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]
Tank Farm 5	7440-48-4	Cobalt	5.55	95	mg/kg	TF5-SD-914-0006	12/12	-	95	NA	2.3 N	NA	Yes	ASL
	7440-50-8	Copper	4.9	43	mg/kg	TF5-SD-918-0006	12/12	-	43	NA	310 N	3,100	No	BSL
	7439-89-6	Iron	15,300	166,000	mg/kg	TF5-SD-914-0006	12/12	-	166,000	NA	5,500 N	NA	Yes	ASL
	7439-92-1	Lead	11.5 J	95.8 J	mg/kg	TF5-SD-918-0006	12/12	-	95.8	NA	400	150	No	BSL
	7439-95-4	Magnesium	784	3,050	mg/kg	TF5-SD-922-0006	12/12	-	3,050	NA	NA	NA	No	NUT
	7439-96-5	Manganese	112	982	mg/kg	TF5-SD-914-0006	12/12	-	982	NA	180 N	390	Yes	ASL
	7439-97-6	Mercury	0.0145 J	0.19 J	mg/kg	TF5-SD-918-0006	12/12	-	0.19	NA	2.3 N[13]	23	No	BSL
	7440-02-0	Nickel	13.4	127	mg/kg	TF5-SD-914-0006	12/12	-	127	NA	150 N	1,000	No	BSL
	7440-09-7	Potassium	193 J	546	mg/kg	TF5-SD-924-0006	12/12	-	546	NA	NA	NA	No	NUT
	7440-22-4	Silver	0.14 J	0.278 J	mg/kg	TF5-SD-923-0006-AVG	2/12	0.077 - 0.35	0.278	NA	39 N	200	No	BSL
	7440-23-5	Sodium	30.2 J	252	mg/kg	TF5-SD-918-0006	12/12	-	252	NA	NA	NA	No	NUT
	7440-28-0	Thallium	0.33 J	1.7 J	mg/kg	TF5-SD-924-0006	4/12	0.24 - 1.1	1.7	NA	NA	5.5	No	BSL
	7440-62-2	Vanadium	6.6 J	27.3	mg/kg	TF5-SD-918-0006	12/12	-	27.3	NA	39 N	550	No	BSL
	7440-66-6	Zinc	63.8	190	mg/kg	TF5-SD-924-0006	12/12	-	190	NA	2,300 N	6,000	No	BSL
	Dioxins/Furans													
	3268-87-9	1,2,3,4,6,7,8,9-OCDD	951 J	9,160 J	ng/kg	TF5-SD-917-0006	12/12	-	9,160	NA	15,000 C[14]	NA	No	BSL
	39001-02-0	1,2,3,4,6,7,8,9-OCDF	5.52 J	147	ng/kg	TF5-SD-924-0006	12/12	-	147	NA	15,000 C[14]	NA	No	BSL
	35822-46-9	1,2,3,4,6,7,8-HPCDD	25.3	327	ng/kg	TF5-SD-919-0006	12/12	-	327	NA	450 C[14]	NA	No	BSL
	67562-39-4	1,2,3,4,6,7,8-HPCDF	3.23 J	69.6	ng/kg	TF5-SD-924-0006	12/12	-	69.6	NA	450 C[14]	NA	No	BSL
	55673-89-7	1,2,3,4,7,8,9-HPCDF	0.736 J	5.32 J	ng/kg	TF5-SD-924-0006	8/12	0.233 - 1.19	5.32	NA	450 C[14]	NA	No	BSL
	39227-28-6	1,2,3,4,7,8-HXCDD	0.332 J	5.76 J	ng/kg	TF5-SD-924-0006	12/12	-	5.76	NA	45 C[14]	NA	No	BSL
	70648-26-9	1,2,3,4,7,8-HXCDF	0.368 J	8.63	ng/kg	TF5-SD-917-0006	12/12	-	8.63	NA	45 C[14]	NA	No	BSL
	57653-85-7	1,2,3,6,7,8-HXCDD	0.739 J	12.1	ng/kg	TF5-SD-919-0006	12/12	-	12.1	NA	45 C[14]	NA	No	BSL
	57117-44-9	1,2,3,6,7,8-HXCDF	0.268 J	4.49 J	ng/kg	TF5-SD-924-0006	12/12	-	4.49	NA	45 C[14]	NA	No	BSL
	19408-74-3	1,2,3,7,8,9-HXCDD	1.09 J	14.4	ng/kg	TF5-SD-924-0006	12/12	-	14.4	NA	45 C[14]	NA	No	BSL
	72918-21-9	1,2,3,7,8,9-HXCDF	0.138 J	0.575 J	ng/kg	TF5-SD-924-0006	3/12	0.0671 - 0.438	0.575	NA	45 C[14]	NA	No	BSL
	40321-76-4	1,2,3,7,8-PECDD	0.291 J	3.06 J	ng/kg	TF5-SD-924-0006	11/12	0.0503 - 0.0503	3.06	NA	4.5 C[14]	NA	No	BSL
	57117-41-6	1,2,3,7,8-PECDF	0.0971 J	1.5 J	ng/kg	TF5-SD-917-0006	12/12	-	1.5	NA	150 C[14]	NA	No	BSL
	60851-34-5	2,3,4,6,7,8-HXCDF	0.322 J	5.96	ng/kg	TF5-SD-917-0006	12/12	-	5.96	NA	45 C[14]	NA	No	BSL
	57117-31-4	2,3,4,7,8-PECDF	0.139 J	2.1 J	ng/kg	TF5-SD-917-0006	12/12	-	2.1	NA	15 C[14]	NA	No	BSL
	1746-01-6	2,3,7,8-TCDD	0.0846 J	0.48 J	ng/kg	TF5-SD-924-0006	9/12	0.0183 - 0.117	0.48	NA	4.5 C	NA	No	BSL
	51207-31-9	2,3,7,8-TCDF	0.178 J	2.02 J	ng/kg	TF5-SD-917-0006	12/12	-	2.02	NA	45 C[14]	NA	No	BSL
	- -	2,3,7,8-TCDD Equivalents	1.03	14.7	ng/kg	TF5-SD-924-0006	12/12	-	14.7	NA	4.5 C	NA	Yes	ASL

TABLE 2.16
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - TANK FARM 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration[1]	Maximum Concentration[1]	Units	Sample of Maximum Concentration	Frequency of Detection	Range of Nondetects[2]	Concentration Used for Screening[3]	Range of Background Concentrations[4]	USEPA RSL Residential Soil[5]	RIDEM Residential Direct Exposure Criteria[6]	COPC Flag	Rationale for Contaminant Deletion or Selection[7]

Footnotes:
1 - Sample and duplicate are considered as two separate samples when determining the minimum and maximum concentrations.
2 - Values presented are sample-specific quantitation limits.
3 - The maximum detected concentration is used for screening purposes.
4 - No background data is available for sediment.
5 - USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites, May 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
6 - Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.
7 - The chemical is selected as a COPC if the maximum detected concentration exceeds the risk-based COPC screening level.
8 - Value is for acenaphthene.
9 - Value is for pyrene.
10 - Value is for Endrin.
11- Value is for Chlordane.
12 - Value is for hexavalent chromium.
13 - Value is for mercury, inorganic salts
14 - Value is derived by multiplying criteria for 2,3,7,8-TCDD by World Health Organization Toxicity Equivalent Factor.
Shaded criterion indicates that the maximum detected concentration exceeds one or more screening criteria. Shaded chemical name indicates that the chemical was retained as a COPC.

Associated Samples
TF5-SD-913-0006
TF5-SD-914-0006
TF5-SD-915-0006
TF5-SD-916-0006
TF5-SD-917-0006
TF5-SD-918-0006
TF5-SD-919-0006
TF5-SD-920-0006
TF5-SD-921-0006
TF5-SD-922-0006
TF5-SD-923-0006-AVG
TF5-SD-924-0006

Definitions:
ARAR/TBC = Applicable or Relevant and Appropriate Requirements To Be Considered
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical Of Potential Concern
J = Estimated value
N = Noncarcinogen
NA = Not Applicable/Not Available

Rationale Codes:
For selection as a COPC:
ASL = Above Screening Level and site background.

For elimination as a COPC:
BSL = Below COPC Screening Level
NUT = Essential nutrient
NTX = No toxicity criteria

RAGS Part D Table 3

Medium-Specific Exposure Point Concentration Summary

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RAGS PART D TABLE 3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Table No.

3.1.RME	Surface Soil (0 - 1 Feet) - Tank Farm 4
3.2.RME	Surface/Subsurface Soil (0 - 10 Feet) Tank Farm 4
3.3.RME	Groundwater - Tank Farm 4
3.3.CTE	Groundwater - Tank Farm 4
3.4.RME	Surface Water - Tank Farm 4
3.5.RME	Sediment - Tank Farm 4
3.6.RME	Surface Soil (0 - 1 Feet) - Tank Farm 5
3.7.RME	Surface/Subsurface Soil (0 - 10 Feet) Tank Farm 5
3.8.RME	Groundwater - Tank Farm 5
3.8.CTE	Groundwater - Tank Farm 5
3.9.RME	Surface Water - Tank Farm 5
3.10.RME	Sediment - Tank Farm 5

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil (0 - 1 feet)
Exposure Medium: Surface Soil (0 - 1 feet)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 4	Benzo(a)anthracene	mg/kg	2.3	24.7 (NP)	54	24.7	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Benzo(a)pyrene	mg/kg	1.1	11.0 (NP)	24	11	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Benzo(b)fluoranthene	mg/kg	2.1	22.4 (NP)	49	22.4	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Benzo(g,h,i)perylene	mg/kg	0.399	3.9 (NP)	8.5	3.9	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Benzo(k)fluoranthene	mg/kg	0.853	8.7 (NP)	19	8.7	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Chrysene	mg/kg	2.53	2.7 (NP)	59	2.7	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Dibenzo(a,h)anthracene	mg/kg	0.176	1.8 (NP)	3.9	1.8	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Fluoranthene	mg/kg	3.564	38.0 (NP)	83	38	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Indeno(1,2,3-cd)pyrene	mg/kg	0.394	3.9 (NP)	85	3.9	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	Pyrene	mg/kg	3.672	39.4 (NP)	86	39.4	mg/kg	99% KM (Chebyshev)	ProUCL 4.00.05
	2,3,7,8-TCDD Equivalents	mg/kg	0.0000026	0.0000031(G)	0.0000073	0.0000031	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Aluminum	mg/kg	9664	10539 (N)	15200	10539	mg/kg	95% Student's t	ProUCL 4.00.05
	Arsenic	mg/kg	11.8	15.8 (NP)	59.5	15.8	mg/kg	95% Modified t	ProUCL 4.00.05
	Beryllium	mg/kg	0.361	0.42 (N)	0.7	0.42	mg/kg	95% Student's t	ProUCL 4.00.05
	Chromium	mg/kg	12.1	13.1 (G)	20.8	13.1	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Cobalt	mg/kg	11.8	13.3 (N)	20.5	13.3	mg/kg	95% Student's t	ProUCL 4.00.05
	Iron	mg/kg	30150	33452 (N)	53200	33452	mg/kg	95% Student's t	ProUCL 4.00.05
	Manganese	mg/kg	391	453 (N)	818	453	mg/kg	95% Student's t	ProUCL 4.00.05

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: All Soil (0 - 10 feet)
Exposure Medium: All Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 4	Benzo(a)anthracene	mg/kg	0.85	6.0 (NP)	54	6	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.05
	Benzo(a)pyrene	mg/kg	0.396	2.7 (NP)	24	2.7	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.06
	Benzo(b)fluoranthene	mg/kg	0.797	5.5 (NP)	49	5.5	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.07
	Benzo(g,h,i)perylene	mg/kg	0.153	0.96 (NP)	8.5	0.96	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.08
	Benzo(k)fluoranthene	mg/kg	0.323	2.1 (NP)	19	2.1	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.09
	Chrysene	mg/kg	0.934	6.6 (NP)	59	6.6	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.10
	Dibenzo(a,h)anthracene	mg/kg	0.067	0.19 (NP)	3.9	0.19	mg/kg	95% KM (BCA)	ProUCL 4.00.11
	Fluoranthene	mg/kg	1.311	9.2 (NP)	83	9.2	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.12
	Indeno(1,2,3-cd)pyrene	mg/kg	0.151	0.72 (NP)	8.5	0.72	mg/kg	95% KM (Chebyshev)	ProUCL 4.00.13
	Pyrene	mg/kg	1.35	9.5(NP)	86	9.5	mg/kg	97.5% KM (Chebyshev)	ProUCL 4.00.14
	Aroclor-1254	mg/kg	(1)	(1)	0.1	0.1	mg/kg	Maximum Detected Concentration	(1)
	2,3,7,8-TCDD Equivalents	mg/kg	0.0	0.0000027 (G)	0.0000097	0.0000027	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Aluminum	mg/kg	8023.0	8781 (N)	17200	8781	mg/kg	95% Student's t	ProUCL 4.00.05
	Arsenic	mg/kg	13.9	19.2 (NP)	59.5	19.2	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Beryllium	mg/kg	0.36	0.39 (G)	0.78	0.39	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Chromium	mg/kg	12.1	12.9 (NP)	24.1	12.9	mg/kg	95% Modified t	ProUCL 4.00.05
	Cobalt	mg/kg	17.10	19.1 (G)	41	19.1	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Iron	mg/kg	38129	41025 (N)	76900	41025	mg/kg	95% Student's t	ProUCL 4.00.05
	Manganese	mg/kg	649	1065 (NP)	4480	1065	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Thallium	mg/kg	1	2.2 (G)	11.8	2.2	mg/kg	95% KM (t)	ProUCL 4.00.05

G = Gamma
N = Normal
NP = Non-parametric

1 - Only one detected concentration meaningfull statistics cannot be computed.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.3.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 4	Naphthalene	ug/L	(1)	(1)	0.19	0.19	ug/L	Maximum Detected Concentration	(2)
	Endrin Aldehyde	ug/L	(1)	(1)	6.52	6.52	ug/L	Maximum Detected Concentration	(2)
	Aluminum	ug/L	(1)	(1)	253	253	ug/L	Maximum Detected Concentration	(2)
	Arsenic	ug/L	2.4	4.5 (N)	6.3	6.3	ug/L	Maximum Detected Concentration	(2)
	Cobalt	ug/L	9	16.6 (NP)	12.6	12.6	ug/L	Maximum Detected Concentration	(2)
	Iron	ug/L	9133	13743 (N)	17100	17100	ug/L	Maximum Detected Concentration	(2)
	Manganese	ug/L	1512	4320 (L)	5030	5030	ug/L	Maximum Detected Concentration	(2)

G - Gamma distribution.
N - Normal distribution.
NP = Nonparametric distribution.
1 = Less than three detected concentration meaningfull statistics cannot be computed.
2 - The maximum detected concentration is used as the exposure point concentration for groundwater for reasonable maximum exposures.

TABLE 3.3.CTE
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 4	Naphthalene	ug/L	(1)	(1)	0.19	0.19	ug/L	Maximum Detected Concentration	(1)
	Aroclor-1248	ug/L	(1)	(1)	7.25	7.25	ug/L	Maximum Detected Concentration	(1)
	Aroclor-1254	ug/L	(1)	(1)	3.05	3.05	ug/L	Maximum Detected Concentration	(1)
	Endrin Aldehyde	ug/L	(1)	(1)	6.52	6.52	ug/L	Maximum Detected Concentration	(2)
	Aluminum	ug/L	(1)	(1)	253	253	ug/L	Maximum Detected Concentration	(1)
	Arsenic	ug/L	2.4	4.5 (N)	6.3	2.4	ug/L	Average Concentration	(2)
	Cobalt	ug/L	9	16.6 (NP)	12.6	9	ug/L	Average Concentration	(2)
	Iron	ug/L	9133	13743 (N)	17100	9133	ug/L	Average Concentration	(2)
	Manganese (water)	ug/L	1512	4320 (L)	5030	1512	ug/L	Average Concentration	(2)

G - Gamma distribution.
N - Normal distribution.
NP = Nonparametric distribution.
1 = Less than three detected concentration meaningfull statistics cannot be computed.
2 - The average concentration is used as the exposure point concentration for groundwater for central tendency exposures.

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 4	Benzo(a)anthracene	ug/L	(1)	(1)	0.17	0.17	ug/L	Maximum Detected Concentration	(1)
	Arsenic	ug/L	0.230	0.36 (NP)	0.473	0.360	ng/L	95% KM (t)	ProUCL 4.00.05
	Iron	ug/L	372	426 (N)	545	426	ug/L	95% Student's t	ProUCL 4.00.05

1 - Less than three detected concentration meaningfull statistics cannot be computed.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.5.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 4	Benzo(a)anthracene	mg/kg	0.068	0.010 (G)	0.2	0.01	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Benzo(a)pyrene	mg/kg	0.078	0.110 (G)	0.21	0.11	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Benzo(b)fluoranthene	mg/kg	0.089	0.127 (G)	0.24	0.127	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Dibenzo(a,h)anthracene	mg/kg	0.019	0.028 (G)	0.053	0.028	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	2,3,7,8-TCDD Equivalents	mg/kg	0.0000029	0.0000041 (N)	0.0000071	0.0000041	mg/kg	95% Student's t	ProUCL 4.00.05
	Aluminum	mg/kg	8851	10190 (N)	12900	10190	mg/kg	95% Student's t	ProUCL 4.00.05
	Arsenic	mg/kg	15.82	21.5 (NP)	46.6	21.5	mg/kg	95% Modified t	ProUCL 4.00.05
	Beryllium	mg/kg	0.45	0.52 (N)	0.68	0.52	mg/kg	95% Student's t	ProUCL 4.00.05
	Chromium	mg/kg	15.5	18.6 (N)	29.2	18.6	mg/kg	95% Student's t	ProUCL 4.00.05
	Cobalt	mg/kg	19.2	43.3 (NP)	16.2	43.3	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Iron	mg/kg	42283	84620 (NP)	145000	84620	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Manganese (soil)	mg/kg	854	2204 (NP)	3440	2204	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Thallium	mg/kg	2.4	6.7 (G)	11.5	6.7	mg/kg	95% KM (Chebyshev)	ProUCL 4.00.05

G - Gamma distribution.
N - Normal distribution.
NP - Non-parmetric distribution.
J - Estimated value.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil (0 - 1 feet)
Exposure Medium: Surface Soil (0 - 1 feet)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 5	Benzo(a)anthracene	mg/kg	0.047	0.097 (G)	0.23	0.097	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Benzo(a)pyrene	mg/kg	0.05580	0.119 (G)	0.3	0.119	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Benzo(b)fluoranthene	mg/kg	0.0927	0.204 (G)	0.53	0.204	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Dibenzo(a,h)anthracene	mg/kg	0.0118	0.022 (G)	0.057	0.022	mg/kg	95% KM (BCA)	ProUCL 4.00.05
	Indeno(1,2,3-cd)pyrene	mg/kg	0.0413	0.089 (G)	0.24	0.089	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Aroclor-1254	mg/kg	NA	NA	0.039	0.039	mg/kg	Maximum Detected Concentration	(1)
	2,3,7,8-TCDD Equivalents	mg/kg	0.0000032	0.0000041 (N)	0.000006	0.0000041	mg/kg	95% Student's t	ProUCL 4.00.05
	Aluminum	mg/kg	7803	8500 (N)	9740	8500	mg/kg	95% Student's t	ProUCL 4.00.05
	Arsenic	mg/kg	16.5	26.4 (G)	46.7	26.4	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Beryllium	mg/kg	0.45	0.495 (N)	0.55	0.495	mg/kg	95% Student's t	ProUCL 4.00.05
	Chromium	mg/kg	9.4	10.7 (N)	12.8	10.7	mg/kg	95% Student's t	ProUCL 4.00.05
	Cobalt	mg/kg	8.1	10.3 (N)	13.2	10.3	mg/kg	95% Student's t	ProUCL 4.00.05
	Iron	mg/kg	21818	25700 (N)	33700	25700	mg/kg	95% Student's t	ProUCL 4.00.05
	Manganese (soil)	mg/kg	274	343 (N)	462	343	mg/kg	95% Student's t	ProUCL 4.00.05

G = Gamma
N = Normal
NP = Non-parametric
1 = Only one detected concentration meaningfull statistics cannot be computed.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.7.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: All Soil (0 - 10 feet)
Exposure Medium: All Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 5	Benzo(a)anthracene	mg/kg	0.181	0.036 (NP)	0.23	0.036	mg/kg	95% KM (BCA)	ProUCL 4.00.05
	Benzo(a)pyrene	mg/kg	0.021	0.046 (L)	0.3	0.046	mg/kg	95% KM (BCA)	ProUCL 4.00.05
	Benzo(b)fluoranthene	mg/kg	0.34500	0.073 (L)	0.53	0.073	mg/kg	95% KM (BCA)	ProUCL 4.00.05
	Dibenzo(a,h)anthracene	mg/kg	0.0053	0.010 (G)	0.057	0.01	mg/kg	95% KM (t)	ProUCL 4.00.05
	Indeno(1,2,3-cd)pyrene	mg/kg	0.0	0.030 (G)	0.24	0.03	mg/kg	95% KM (t)	ProUCL 4.00.05
	Aroclor-1254	mg/kg	NA	NA	0.039	0.039	mg/kg	Maximum Detected Concentration	(1)
	2,3,7,8-TCDD Equivalents	mg/kg	0.0	0.0000042 (N)	0.0000076	0.0000042	mg/kg	95% Student's t	ProUCL 4.00.05
	Aluminum	mg/kg	6683.0	7516 (N)	1400	7516	mg/kg	95% Student's t	ProUCL 4.00.05
	Arsenic	mg/kg	23.5	29.8 (G)	67.2	29.8	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Beryllium	mg/kg	0.4	0.414 (N)	0.55	0.414	mg/kg	95% Student's t	ProUCL 4.00.05
	Chromium	mg/kg	9.90	11.1 (N)	21.7	11.1	mg/kg	95% Student's t	ProUCL 4.00.05
	Cobalt	mg/kg	13.2	15.4 (N)	32.8	15.4	mg/kg	95% Student's t	ProUCL 4.00.05
	Iron	mg/kg	32853.0	37930 (L)	72100	37930	mg/kg	95% MODIFIED T	ProUCL 4.00.05
	Manganese (soil)	mg/kg	486	1053 (NP)	4220	1053	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Thallium	mg/kg	2.1	2.6 (G)	7.4	2.6	mg/kg	95% Approximate Gamma	ProUCL 4.00.05

G = Gamma
N = Normal
NP = Non-parametric

1 = Only one detected concentration meaningfull statistics cannot be computed.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.8.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 5	Benzene	ug/L	NA	NA	1.2	1.2	ug/L	Maximum Detected Concentration	(2)
	Aluminum	ug/L	NA	NA	1480	1480	ug/L	Maximum Detected Concentration	(2)
	Arsenic	ug/L	2.9	NA	8.8	8.8	ug/L	Maximum Detected Concentration	(2)
	Cobalt	ug/L	11.1	NA	19	19	ug/L	Maximum Detected Concentration	(2)
	Iron	ug/L	11071	NA	24300	24300	ug/L	Maximum Detected Concentration	(2)
	Manganese (water)	ug/L	1168	NA	2510	2510	ug/L	Maximum Detected Concentration	(2)

G - Gamma distribution.
N - Normal distribution.
NP = Nonparametric distribution.
1 = Less than five samples or less than three detected samles meaningful statistics cannot be computed.
2 - The maximum detected concentration is used as the exposure point concentration for groundwater.

TABLE 3.8.CTE
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 5	Benzene	ug/L	(1)	(1)	1.2	1.2	ug/L	Maximum Detected Concentration	(1)
	Aluminum	ug/L	(1)	(1)	1480	1480	ug/L	Maximum Detected Concentration	(1)
	Arsenic	ug/L	2.9	(1)	8.8	2.9	ug/L	Average Concentration	(2)
	Cobalt	ug/L	11.1	(1)	19	11.1	ug/L	Average Concentration	(2)
	Iron	ug/L	11071	(1)	24300	11071	ug/L	Average Concentration	(2)
	Manganese (water)	ug/L	1168	(1)	2510	1168	ug/L	Average Concentration	(2)

G - Gamma distribution.
N - Normal distribution.
NP = Nonparametric distribution.
1 = Less than five detected concentration meaningfull statistics cannot be computed.
2 - The average concentration is used as the exposure point concentration for groundwater for central tendency exposures.

TABLE 3.9.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 5	Chloroform	ug/L	(1)	(1)	1	1	ug/L	Maximum Detected Concentration	(1)
	Benzo(a)anthracene	ug/L	0.105	0.151 (N)	0.2	0.151	ug/L	95% KM (t)	ProUCL 4.00.05
	Benzo(a)pyrene	ug/L	(1)	(1)	0.16	0.16	ug/L	Maximum Detected Concentration	(1)
	Benzo(b)fluoranthene	ug/L	0.089	0.15 (N)	0.25	0.15	ug/L	95% KM (t)	ProUCL 4.00.05
	Indeno(1,2,3-cd)pyrene	ug/L	(1)	(1)	0.11	0.11	ug/L	Maximum Detected Concentration	(1)
	Naphthalene	ug/L	(1)	(1)	1.5	1.5	ug/L	Maximum Detected Concentration	(1)
	Aluminum	ug/L	(1)	(1)	852	852	ug/L	Maximum Detected Concentration	(1)
	Arsenic	ug/L	0.192	0.275 (N)	0.299	0.275	ng/L	95% KM (T)	ProUCL 4.00.05
	Iron	ug/L	499	1068 (L)	2930	1068	ug/L	95% KM(BCA)	ProUCL 4.00.05

1 - Less than three detected concentration meaningfull statistics cannot be computed.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.10.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Tank Farm 5	Benzo(a)anthracene	mg/kg	0.28	0.44 (G)	0.65	0.44	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Benzo(a)pyrene	mg/kg	0.35	0.54 (G)	0.78	0.54	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Benzo(b)fluoranthene	mg/kg	0.43	0.57 (G)	1	0.57	mg/kg	95% Student's t	ProUCL 4.00.05
	Chrysene	mg/kg	0.41	0.64 (G)	0.89	0.64	mg/kg	95% Approximate Gamma	ProUCL 4.00.05
	Dibenzo(a,h)anthracene	mg/kg	0.091	0.12 (N)	0.18	0.12	mg/kg	95% Student's t	ProUCL 4.00.05
	Indeno(1,2,3-cd)pyrene	mg/kg	0.28	0.38 (N)	0.66	0.38	mg/kg	95% Student's t	ProUCL 4.00.05
	2,3,7,8-TCDD Equivalents	mg/kg	0.0000066	0.000009 (N)	0.000015	0.000009	mg/kg	95% Student's t	ProUCL 4.00.05
	Aluminum	mg/kg	9360	10660 (N)	12600	10660	mg/kg	95% Student's t	ProUCL 4.00.05
	Arsenic	mg/kg	23.5	62.5 (NP)	121	62.5	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Beryllium	mg/kg	0.51	0.63 (N)	1.1	0.63	mg/kg	95% Student's t	ProUCL 4.00.05
	Chromium	mg/kg	115	17.0 (NP)	18.8	17	mg/kg	95% Student's t	ProUCL 4.00.05
	Cobalt	mg/kg	16.4	47.7 (NP)	95	47.7	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Iron	mg/kg	35800	87800 (NP)	166000	87800	mg/kg	95% Chebyshev(Mean, Sd)	ProUCL 4.00.05
	Manganese (soil)	mg/kg	292	437 (L)	982	437	mg/kg	95% H-UCL	ProUCL 4.00.05

G - Gamma distribution.
N - Normal distribution.
NP - Non-parmetric distribution.
J - Estimated value.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

RAGS Part D Table 4

Values Used For Daily Intake Calculations

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TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS- SOILS

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	330	mg/day	USEPA, 2002b	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2002b	BW x AT
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 2.40E-08 Cancer Dermal Intake = 7.20E-08

Noncancer Ingestion Intake = 1.68E-06 Noncancer Dermal Intake = 5.04E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.40E+06	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 1.70E-03 Noncancer Inhalation Intake = 1.19E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - GROUNDWATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Workers	Adult	Tank Farms 4 & 5	CGW	Chemical Concentration in Groundwater	Maximum	ug/L	USEPA Region I, 1999	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	0.05	L/day	(1)	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	130	days/year	(1)	BW x AT
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	Tank Farms 4 & 5	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm^3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	8	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi)
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	130	days/year	(1)	For organics if tevent > t*
				ED	Exposure Duration	1	years	USEPA, 2002	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				BW	Body Weight	70	kg	USEPA, 1997	2 x τ +(1 + 3B + 3B^2)/(1+B^2)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA Region I, 1999. Risk Updates, Number 5.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Dermal Intake = 2.40E-01 Noncancer Dermal Intake = 1.68E+01

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - GROUNDWATER TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	VDEQ, 2004	Exposure Concentration (mg/m^3) =
				CW	Chemical concentration in water.	Average	ug/L	--	
				CF	Conversion Factor	0.001	mg/ug	--	CA x ET x EF x ED
				ET	Exposure Time	8	hours/day	(1)	AT x 24 hours/day
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002	CA = CW x CF x VF
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				VF	Volatilization Factor	Calculated	(mg/m3)/(mg/L)	VDEQ, 2004	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

VDEQ, 2004: Virginia Department of Environmental Quality (VDEQ, online- http://www.deq.state.va.us/vrprisk/homepage.html).

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 1.70E-03 Noncancer Inhalation Intake = 1.19E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - SOIL

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2004	BW x AT
				EF	Exposure Frequency	250	days/year	USEPA, 2004; RIDEM, 2004	
				ED	Exposure Duration	25	years	USEPA, 1997; RIDEM, 2004	
				BW	Body Weight	70	kg	USEPA, 1997; RIDEM, 2004	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989; RIDEM, 2004	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989; RIDEM, 2004	
Dermal	Industrial Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	250	days/year	USEPA, 2004	
				ED	Exposure Duration	25	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

RIDEM, 2004: Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 3.49E-07

Noncancer Ingestion Intake = 9.78E-07

Cancer Dermal Intake = 2.31E-06

Noncancer Dermal Intake = 6.46E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - SOIL TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Industrial Workers	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	250	days/year	USEPA, 1997	
				ED	Exposure Duration	25	years		
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Length of typical work day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 8.15E-02 Noncancer Inhalation Intake = 2.28E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADOLESCENT TRESPASSERS - SOILS

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1997	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	12	years	(2)	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	4380	days	USEPA, 1989	
Dermal	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	4050	cm2	(3)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.4	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	12	years	(2)	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	4380	days	USEPA, 1989	

Notes:

1 - Assumes four days a week for 12 weeks.

2 - Older child from age 7 to 18.

3 - Assumes 31 percent of the average total surface area of 1.31 m2 for females and males, ages 7 through 17 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 4.51E-08 Cancer Dermal Intake = 7.30E-07

Noncancer Ingestion Intake = 2.63E-07 Noncancer Dermal Intake = 4.26E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADOLESCENT TRESPASSERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Trespassers	Adolescent	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	CA x ET x EF x ED
				EF	Exposure Frequency	48	days/year	(1)	AT x 24 hours/day
				ED	Exposure Duration	12	years	(2)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	4,380	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Assumes 8 hours a day, 4 days a week for 12 weeks.

2 - Older child from age 7 to 18.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 7.51E-03 Noncancer Inhalation Intake = 4.38E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.9.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADOLESCENT TRESPASSERS - SURFACE WATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Trespassers	Adolescent	Tank Farms 4 & 5	DAevent	Absorbed dose per event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Water	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm^3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	1	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	4,050	cm2	(2)	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	48	days/year	(1)	For organics if tevent > t*
				ED	Exposure Duration	12	years	(3)	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	4,380	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes one hour a day for four days a week over 12 weeks.

2 - Assumes 31 percent of the average total surface area of 1.31 m^2 for females and males, ages 7 through 17 years.

3 - Older child from age 7 to 18.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Dermal Intake = 1.83E+00

Noncancer Dermal Intake = 1.07E+01

Cancer risk from dermal contact = Surface Water concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Surface Water concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.10.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADOLESCENT TRESPASSERS - SEDIMENT

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CSx IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1997	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	12	years	(2)	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	4,380	days	USEPA, 1989	
Dermal	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	4,050	cm2	(3)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	1	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	(1)	
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	12	years	(2)	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	4,380	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes four days a week for 12 weeks.

2 - Older child from age 7 to 18.

3 - Assumes 31 percent of the average total surface area of 1.31 m^2 for females and males, ages 7 through 17 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 4.51E-08 Cancer Dermal Intake = 1.83E-06

Noncancer Ingestion Intake = 2.63E-07 Noncancer Dermal Intake = 1.07E-05

Cancer risk from ingestion = Sediment concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Sediment concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Sediment concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Sediment concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.11.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RECREATIONAL USERS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	200	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
Dermal	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Darmally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Aga 0 - 2)	2	yaars	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	

Notes:

1 - Assumes four days for twelve weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 1.50E-07 Cancer Dermal Intake (Age 0 - 6) = 4.21E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 5.01E-08 Cancer Dermal Intake (Age 0 - 2) = 1.40E-07

Cancer Ingestion Intake (Age 2 - 6) = 1.00E-07 Cancer Dermal Intake (Age 2 - 6) = 2.81E-07

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.75E-06 Noncancer Dermal Intake = 4.91E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingastion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.12.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RECREATIONAL USERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Recreational User	Child	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA 2010	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Assumes 8 hours a day, 4 days for twelve weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 6) = 3.76E-03 Noncancer Inhalation Intake = 4.38E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 2) = 1.25E-03

Cancer Inhalation Intake (Age 2 - 6) = 2.50E-03

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.13.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RECREATIONAL USERS - SURFACE WATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water/Seeps
Exposure Medium: Surface Water/Seeps

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Recreational User	Child	Tank Farms 4 & 5	DAevent	Absorbed dose per event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Water	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA / BW x AT
				CF	Conversion factor	0.001	L/cm3	- -	
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	1	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi)
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	48	days/year	(1)	For organics if tevent > t*
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	2 x τ +(1 + 3B + 3B²)/(1+B²)
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes one hour a day for four days a week over 12 weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Dermal Intake (Age 0 - 6) = 2.10E+00

Mutagenic Chemicals

Cancer Dermal Intake (Age 0 - 2) = 7.01E-01

Cancer Dermal Intake (Age 2 - 6) = 1.40E+00

Noncarcinogenic Chemicals

Noncancer Dermal Intake = 2.45E+01

Cancer risk from dermal contact = Surface Water concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Surface Water concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.14.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RECREATIONAL USERS - SEDIMENT
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	200	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes four days a week over 12 weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund, Vol 1: Human Health Evaluation Manual, Part A, EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook, EPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 1.50E-07 Cancer Dermal Intake (Age 0 - 6) = 4.21E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 5.01E-08 Cancer Dermal Intake (Age 0 - 2) = 1.40E-07

Cancer Ingestion Intake (Age 2 - 6) = 1.00E-07 Cancer Dermal Intake (Age 2 - 6) = 2.81E-07

Noncarcinoganic Chemicals

Noncancer Ingestion Intake = 1.75E-06 Noncancer Dermal Intake = 4.91E-06

Cancer risk from ingestion = Sediment concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Sediment concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Sediment concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Sediment concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.15.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1987	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1987	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Assumes four days for twelve weeks.

2 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Suscaptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 6.44E-08 Cancer Dermal Intake (Age 6 - 30) = 2.57E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 2.68E-08 Cancer Dermal Intake (Age 6 - 16) = 1.07E-07

Cancer Ingestion Intake Age 16 - 30) = 3.76E-08 Cancer Dermal Intake (Age 16 - 30) = 1.50E-07

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.88E-07 Noncancer Dermal Intake = 7.50E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.16.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Recreational User	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	CA x ET x EF x ED
				EF	Exposure Frequency	48	days/year	(1)	AT x 24 hours/day
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8760	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Assumes 8 hours a day 4 days for twelve weeks.

2 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 30) = 1.50E-02

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 4.38E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 6.26E-03

Cancer Inhalation Intake (Age 16 - 30) = 8.77E-03

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.17.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SURFACE WATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water/Seeps
Exposure Medium: Surface Water/Seeps

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Recreational User	Adult	Tank Farms 4 & 5	DAevent	Absorbed dose per event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Water	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	1	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	6,880	cm2	(2)	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	48	days/year	(1)	For organics if tevent > t*
				ED1	Exposure Duration (Age 6 - 16)	10	years	(3), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				ED2	Exposure Duration (Age 16 - 30)	14	years	(3), USEPA, 1989, 2005	2 x τ +(1 + 3B + 3B²)/(1+B²)
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Assumes one hour a day for four days over twelve weeks.

2 - Assumes 38 percent of the total body surface area.

3 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Parf A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 0.00E+00 Cancer Dermal Intake (Age 6 - 30) = 4.43E+00

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 0.00E+00 Cancer Dermal Intake (Age 6 - 16) = 1.85E+00

Cancer Ingestion Intake (Age 16 - 30) = 0.00E+00 Cancer Dermal Intake (Age 16 - 30) = 2.59E+00

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 0.00E+00 Noncancer Dermal Intake = 1.29E+01

Cancer risk from ingestion = Surface Water concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Surface Water concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Surface Water concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Surface Water concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.18.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SEDIMENT
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CSx IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	6,880	cm2	(3)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Assumes four days for twelve weeks.

2 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

3 - Assumes 38 percent of total body surface area.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10. December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 6.44E-08 Cancer Dermal Intake (Age 6 - 30) = 3.10E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 2.68E-08 Cancer Dermal Intake (Age 6 - 16) = 1.29E-07

Cancer Ingestion Intake (Age 16 - 30) = 3.76E-08 Cancer Dermal Intake (Age 16 - 30) = 1.81E-07

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.88E-07 Noncancer Dermal Intake = 9.05E-07

Cancer risk from ingestion = Sediment concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Sediment concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Sediment concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Sediment concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.19.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	200	mg/day	USEPA, 1997;RIDEM, 2004	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 2004;RIDEM, 2004	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997;RIDEM, 2004	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989;RIDEM, 2004	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Resident	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

RIDEM, 2004: Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 1.10E-06 Cancer Dermal Intake (Age 0 - 6) = 3.07E-06

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 3.65E-07 Cancer Dermal Intake (Age 0 - 2) = 1.02E-06

Cancer Ingestion Intake (Age 2 - 6) = 7.31E-07 Cancer Dermal Intake (Age 2 - 6) = 2.05E-06

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.28E-05 Noncancer Dermal Intake = 3.58E-05

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.20.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	24	hours/day	USEPA, 2002a	CA x ET x EF x ED
				EF	Exposure Frequency	350	days/year	USEPA, 2002a;RIDEM, 2004	AT x 24 hours/day
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

RIDEM, 2004: Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 6) = 8.22E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 2) = 2.74E-02

Cancer Inhalation Intake (Age 2 - 6) = 5.48E-02

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 9.59E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.21 RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS - GROUNDWATER
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Residents	Child	Tank Farms 4 & 5	CGW	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	1.4	L/day	USEPA, 1997	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	350	days/year	USEPA, 2004	BW x AT
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1987	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Residents	Child	Tank Farms 4 & 5	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	1	hr/event	USEPA, 2004	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	6,600	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt((6 x τ x tevent)/pi)
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x (tevent/(1+B) +
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x CF x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 7.67E-06 Cancer Dermal Intake Time (Age 0 - 6) = 3.62E+01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 2.56E-06 Cancer Dermal Intake (Age 0 - 2) = 1.21E+01

Cancer Ingestion Intake (Age 2 - 6) = 5.11E-06 Cancer Dermal Intake (Age 2 - 6) = 2.41E+01

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 8.95E-05 Noncancer Dermal Intake = 4.22E+02

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.22.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997; RIDEM, 2004	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997; RIDEM, 2004	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989; RIDEM, 2004	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Resident	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1. Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

RIDEM, 2004: Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x EO)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 4.70E-07 Cancer Dermal Intake (Age 6 - 30) = 1.87E-06

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 1.96E-07 Cancer Dermal Intake (Age 6 - 16) = 7.81E-07

Cancer Ingestion Intake (Age 16 - 30) = 2.74E-07 Cancer Dermal Intake (Age 16 - 30) = 1.09E-06

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.37E-06 Noncancer Dermal Intake = 5.47E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.23.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	24	hours/day	USEPA, 2002a	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	350	days/year	USEPA, 2002a; RIDEM, 2004	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	$CA = (1/PEF + 1/VF) \times Cs$
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8760	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	$PEF = \frac{Q / C \times 3600}{0.036 \times (1 - V) \times (U_m / U_t)^3 \times F(x)}$
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	$F(x) = 0.18 * (8x^3 + 12x) * \exp(-x^2)$
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	$x = 0.886 * Ut / Um$
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

RIDEM, 2004: Rhode Island Department of Environmental Management, DEM-DSR-01-93, February 2004.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 30) = 3.29E-01

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 1.37E-01

Cancer Inhalation Intake (Age 16 - 30) = 1.92E-01

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 9.59E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.24.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - GROUNDWATER
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Residents	Adult	Tank Farms 4 & 5	CGW	Chemical Concentration in Groundwater	95% UCL or Max	ug/L	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	2	L/day	USEPA, 1997	CGW x CF x IR-GW x EF x ED / BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Residents	Adult	Tank Farms 4 & 5	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	DAevent x EV x EF x ED x SA / BW x AT
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	
				CF	Conversion factor	0.001	L/cm3	- -	
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	For inorganics
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				t^*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	
				tevent	Duration of event	0.58	hr/event	(1)	For organics if tevent <= t*
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				SA	Skin Surface Available for Contact	18,000	cm2	USEPA, 2004	
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	For organics if tevent > t*
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x {tevent/(1+B) +
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)}
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x CF x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 9.39E-06 Cancer Dermal Intake (Age 6 - 30) = 8.45E+01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 3.91E-06 Cancer Dermal Intake (Age 6 - 16) = 3.52E+01

Cancer Ingestion Intake (Age 16 - 30) = 5.48E-06 Cancer Dermal Intake (Age 16 - 30) = 4.93E+01

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 2.74E-05 Noncancer Dermal Intake = 2.47E+02

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.1.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CONSTRUCTION WORKERS - SOILS

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	330	mg/day	USEPA, 2002b	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2002b	BW x AT
				EF	Exposure Frequency	52	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2002b	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.1	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	52	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes 2 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 9.59E-09 Cancer Dermal Intake = 9.59E-09

Noncancer Ingestion Intake = 6.72E-07 Noncancer Dermal Intake = 6.72E-07

Cancer risk from Ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.2.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CONSTRUCTION WORKERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	CA x ET x EF x ED
				EF	Exposure Frequency	52	days/year	(1)	AT x 24 hours/day
				ED	Exposure Duration	1	years	USEPA, 2002b	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.40E+06	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	

Notes:

1 - Professional judgment. Assumes 2 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 6.78E-04 Noncancer Inhalation Intake = 4.75E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.3.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CONSTRUCTION WORKERS - GROUNDWATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Workers	Adult	Tank Farms 4 & 5	CGW	Chemical Concentration in Groundwater	Average	ug/L	USEPA Region I, 1999	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	0.025	L/day	(1)	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	52	days/year	(1)	BW x AT
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	Tank Farms 4 & 5	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration In Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002a	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t^*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	4	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t^*
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	52	days/year	(1)	For organics il tevent > t^*
				ED	Exposure Duration	1	years	USEPA, 2002	DAevent =FA x Kp x Cw x CF x]tevent/(1+B) +
				BW	Body Weight	70	kg	USEPA, 1989	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes 2 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA Region I, 1999. Risk Updates, Number 5.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Dermal Intake = 9.59E-02 Noncancer Dermal Intake = 6.72E+00

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.4.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CONSTRUCTION WORKERS - GROUNDWATER TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	VDEQ, 2004	Exposure Concentration (mg/m^3) =
				CW	Chemical concentration in water.	Average	ug/L	--	
				CF	Conversion Factor	0.001	mg/ug	--	CA x ET x EF x ED / AT x 24 hours/day
				ET	Exposure Time	4	hours/day	(1)	
				EF	Exposure Frequency	52	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002	CA = CW x CF x VF
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				VF	Volatilization Factor	Calculated	(mg/m3)/(mg/L)	VDEQ, 2004	

Notes:

1 - Professional judgment. Assumes 2 days a week over six months.

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

VDEQ, 2004: Virginia Department of Environmental Quality (VDEQ, online- http://www.deq.state.va.us/vrprisk/homepage.html).

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 3.39E-04 Noncancer Inhalation Intake = 2.37E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.5.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - INDUSTRIAL WORKERS - SOIL

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	50	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.00000t	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	t	unitless	USEPA, 1993	BW x AT
				EF	Exposure Frequency	219	days/year	USEPA, 1993	
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3285	days	USEPA, 1989	
Dermal	Industrial Workers	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.00000t	kg/mg	--	
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	t	events/day	USEPA, 2004	
				EF	Exposure Frequency	219	days/year	USEPA, 1993	
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3285	days	USEPA, 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 5.51E-08 Cancer Dermal Intake = 7.27E-08

Noncancer Ingestion Intake = 4.29E-07 Noncancer Dermal Intake = 5.66E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.6.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - INDUSTRIAL WORKERS - SOIL TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Industrial Workers	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	CA x ET x EF x ED / AT x 24 hours/day
				EF	Exposure Frequency	219	days/year	USEPA, 1997	
				ED	Exposure Duration	9	years	USEPA, 1993	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	3285	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Length of typical work day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 2.57E-02 Noncancer Inhalation Intake = 2.00E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from Ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.7.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADOLESCENT TRESPASSERS - SOILS

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	50	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CSs x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1997	BW x AT
				EF	Exposure Frequency	24	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1997	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
Dermal	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	4050	cm2	(2)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	24	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1997	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	

Notes:

1 - Assumes two days a week for 12 weeks.

2 - Assumes 31 percent of the average total surface area of 1.31 m^2 for females and males, ages 7 through 17 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 5.64E-09 Cancer Dermal Intake = 1.83E-08

Noncancer Ingestion Intake = 6.58E-08 Noncancer Dermal Intake = 2.13E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.8.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADOLESCENT TRESPASSERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Trespassers	Adolescent	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	4	hours/day	(1)	CA x ET x EF x ED
				EF	Exposure Frequency	24	days/year	(1)	AT x 24 hours/day
				ED	Exposure Duration	12	years	(2)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	4,380	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Assumes 4 hours a day, 2 days a week for 12 weeks.

2 - Older child from age 7 to 18.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 1.88E-03 Noncancer Inhalation Intake = 1.10E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.9.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADOLESCENT TRESPASSERS - SURFACE WATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Trespassers	Adolescent	Tank Farms 4 & 5	DAevent	Absorbed dose per event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Water	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	0.5	hours/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	4,050	cm2	(2)	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi)
				EV	Event Frequency	t	events/day	(1)	
				EF	Exposure Frequency	24	days/year	(1)	For organics if tevent > t*
				ED	Exposure Duration	6	years	USEPA, 1997	DAevent =FA x Kp x Cw x CF x (tevent/(1+B) +
				BW	Body Weight	50	kg	USEPA, 1997	2 x τ +(1 + 3B + 3B^2)/(1+B^2)
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes half an hour a day for two days a week over 12 weeks.

2 - Assumes 31 percent of the average total surface area of 13,000 m^2 for females and males, ages 7 through 17 years.

Sources:

U.S. EPA, 1988: Superfund Exposure Assessment Manual. EPA/540/1-99/001.

U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calcutations

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Dermal Intake = 4.57E-01

Noncancer Dermal Intake = 5.33E+00

Cancer risk from dermal contact = Surface Water concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Surface Water concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.10.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADOLESCENT TRESPASSERS - SEDIMENT

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	50	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1997	BW x AT
				EF	Exposure Frequency	24	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1997	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Trespassers	Adolescent	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	4,050	cm2	(2)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	1	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	(1)	
				EF	Exposure Frequency	24	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1997	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Profession judgment. Assumes two days a week for 12 weeks.

2 - Assumes 31 percent of the average total surface area of 1.31 m^2 for females and males, ages 7 through 17 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 5.64E-09 Cancer Dermal Intake = 4.57E-07

Noncancer Ingestion Intake = 6.58E-08 Noncancer Dermal Intake = 5.33E-06

Cancer risk from ingestion = Sediment concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Sediment concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Sediment concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Sediment concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.11.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - CHILD RECREATIONAL USERS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CSs x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1		(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	
Dermal	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1		(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	

Notes:

1 - Assumes two days for twelve weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 1.25E-08 Cancer Dermal Intake = 1.40E-08

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 6.26E-09 Cancer Dermal Intake (Age 0 - 2) = 7.01E-09

Cancer Ingestion Intake (Age 2 - 6) = 6.26E-09 Cancer Dermal Intake (Age 2 - 6) = 7.01E-09

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.38E-07 Noncancer Dermal Intake = 4.91E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.12.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CHILD RECREATIONAL USERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Recreational User	Child	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	4	hours/day	(1)	CA x ET x EF x ED / AT x 24 hours/day
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(2), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Assumes 4 hours a day, 2 days for twelve weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake = 3.13E-04 Noncancer Inhalation Intake = 1.10E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 2) = 1.57E-04

Cancer Inhalation Intake (Age 2 - 6) = 1.57E-04

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.13.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CHILD RECREATIONAL USERS - SURFACE WATER/SEEPS

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water/Seeps
Exposure Medium: Surface Water/Seeps

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Recreational User	Child	Tank Farms 4 & 5	DAevent	Absorbed dose per event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Water	Max or 95% UCL	mg/kg	USEPA, 2002a	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	0.5	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	24	days/year	(1)	For organics if tevent > t*
				ED1	Exposure Duration (Age 0 - 2)	1	years	(2), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				ED2	Exposure Duration (Age 2 - 6)	1	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	$2 \times \tau + (1 + 3B + 3B^2)/(1+B^2)$
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes halt an hour a day for two days a week over 12 weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1988: Superfund Exposure Assessment Manual. EPA/540/1-99/001.

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Dermal Intake = 3.51E-01

Mutagenic Chemicals

Cancer Dermal Intake (Age 0 - 2) = 1.75E-01

Cancer Dermal Intake (Age 2 - 6) = 1.75E-01

Noncarcinogenic Chemicals

Noncancer Dermal Intake = 1.23E+01

Cancer risk from dermal contact = Surface Water concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Surface Water concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.14.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - CHILD RECREATIONAL USERS - SEDIMENT
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	
Dermal	Recreational User	Child	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes two days a week over 12 weeks.

2 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989. Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997. Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004. Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 1.25E-08 Cancer Dermal Intake = 1.40E-08

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 6.26E-09 Cancer Dermal Intake (Age 0 - 2) = 7.01E-09

Cancer Ingestion Intake (Age 2 - 6) = 6.26E-09 Cancer Dermal Intake (Age 2 - 6) = 7.01E-09

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.38E-07 Noncancer Dermal Intake = 4.91E-07

Cancer risk from ingestion = Sediment concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Sediment concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Sediment concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Sediment concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.15.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - ADULT RECREATIONAL USERS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	50	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1997	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	
Dermal	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherance Factor	0.01	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	

Notes:

1 - Assumes two days for twelve weeks.

2 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 4.70E-09 Cancer Dermal Intake = 5.35E-09

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 1.34E-09 Cancer Dermal Intake (Age 6 - 16) = 1.53E-09

Cancer Ingestion Intake Age 16 - 30) = 3.35E-09 Cancer Dermal Intake (Age 16 - 30) = 3.82E-09

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.70E-08 Noncancer Dermal Intake = 5.35E-08

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.16.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADULT RECREATIONAL USERS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Recreational User	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	4	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(2), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	2555	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Assumes 4 hours a day 2 days for twelve weeks.

2 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake = 1.10E-03

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 1.10E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 3.13E-04

Cancer Inhalation Intake (Age 16 - 30) = 7.83E-04

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.17 CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADULT RECREATIONAL USERS - SURFACE WATER

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Water/Seeps
Exposure Medium: Surface Water/Seeps

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Recreational User	Adult	Tank Farms 4 & 5	DAevent	Absorbed dose per event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Water	Max or 95% UCL	mg/kg	USEPA, 2002a	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	0.5	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	6,880	cm2	(2)	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	24	days/year	(1)	For organics if tevent > t*
				ED1	Exposure Duration (Age 6 - 16)	2	years	USEPA, 1997	DAevent =FA x Kp x Cw x CF x (tevent/(1+B) +
				ED2	Exposure Duration (Age 16 - 30)	5	years	(3), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	(3), USEPA, 1989, 2005	$2 \times \tau + (1 + 3B + 3B^2)/(1+B^2)$
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	

Notes:

1 - Assumes half an hour a day for two days over twelve weeks.

2 - Assumes 38 percent of the total body surface area.

3 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285 6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Parf E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 0.00E+00 Cancer Dermal Intake = 1.85E-01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 0.00E+00 Cancer Dermal Intake (Age 6 - 16) = 1.85E-01

Cancer Ingestion Intake (Age 16 - 30) = 0.00E+00 Cancer Dermal Intake (Age 16 - 30) = 4.62E-01

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 0.00E+00 Noncancer Dermal Intake = 6.46E+00

Cancer risk from ingestion = Surface Water concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Surface Water concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Surface Water concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Surface Water concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.18.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - ADULT RECREATIONAL USERS - SEDIMENT
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	Tank Farms 4 & 5	CS	Chemical concentration in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	50	mg/day	USEPA, 1993	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	
Dermal	Recreationel User	Adult	Tank Farms 4 & 5	CS	Chemical concentretion in sediment	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	6,880	cm2	(3)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	24	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1993	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	

Notes:

1 - Assumes 2 days a week for 12 weeks.

2 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

3 - Assumes 38 percent of total body surface area.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 4.70E-09 Cancer Dermal Intake = 2.59E-08

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 1.34E-09 Cancer Dermal Intake (Age 6 - 16) = 7.39E-09

Cancer Ingestion Intake (Age 16 - 30) = 3.35E-09 Cancer Dermal Intake (Age 16 - 30) = 1.85E-08

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.70E-08 Noncancer Dermal Intake = 2.59E-07

Cancer risk from ingestion = Sediment concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Sediment concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Sediment concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Sediment concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.19.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - CHILD RESIDENTS - SOILS
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	234	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Avereging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	
Dermal	Resident	Child	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	234	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 0 - 2)	1	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Avereging Time (Non-Cancer)	730	days	USEPA, 1989	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 1.22E-07 Cancer Dermal Intake = 1.37E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 6.11E-08 Cancer Dermal Intake (Age 0 - 2) = 6.84E-08

Cancer Ingestion Intake (Age 2 - 6) = 6.11E-08 Cancer Dermal Intake (Age 2 - 6) = 6.84E-08

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.27E-06 Noncancer Dermal Intake = 4.79E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.20.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - CHILD RESIDENTS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	24	hours/day	USEPA, 2002a	CA x ET x EF x ED
				EF	Exposure Frequency	234	days/year	USEPA, 2002a	AT x 24 hours/day
				ED1	Exposure Duration (Age 0 - 2)	1	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(1), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake = 1.83E-02

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 6.41E-01

Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 2) = 9.16E-03

Cancer Inhalation Intake (Age 2 - 6) = 9.16E-03

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.21.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - CHILD RESIDENTS - GROUNDWATER
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Residents	Child	Tank Farms 4 & 5	CGW	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	0.74	L/day	USEPA, 1997	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	350	days/year	USEPA, 2004	BW x AT
				ED1	Exposure Duration (Age 0 - 2)	1	years	USEPA, 1997	
				ED2	Exposure Duration (Age 2 - 6)	1	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	years	(1), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	
Dermal	Residents	Child	Tank Farms 4 & 5	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t^*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	0.33	hr/event	USEPA, 1987	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	6,600	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi)
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	For organics if tevent > t*
				ED1	Exposure Duration (Age 0 - 2)	1	years	(1), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x (tevent/(1+B) +
				ED2	Exposure Duration (Age 2 - 6)	1	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	$2 \times \tau + (1 + 3B + 3B^2)/(1+B^2)$
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	USEPA, 1989	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x CF x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 1.35E-06 Cancer Dermal Intake = 1.21E+01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 6.76E-07 Cancer Dermal Intake (Age 0 - 2) = 6.03E+00

Cancer Ingestion Intake (Age 2 - 6) = 6.76E-07 Cancer Dermal Intake (Age 2 - 6) = 6.03E+00

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.73E-05 Noncancer Dermal Intake = 4.22E+02

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4 22.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADULT RESIDENTS - SOILS

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	50	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	234	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	
Dermal	Resident	Adult	Tank Farms 4 & 5	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	234	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 4.58E-08 Cancer Dermal Intake = 5.22E-08

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 1.31E-08 Cancer Dermal Intake (Age 6 - 16) = 1.49E-08

Cancer Ingestion Intake (Age 16 - 30) = 3.27E-08 Cancer Dermal Intake (Age 16 - 30) = 3.73E-08

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 4.58E-07 Noncancer Dermal Intake = 5.22E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.23.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY EXPOSURES - ADULT RESIDENTS - SOILS TO AIR

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Tank Farms 4 & 5	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	24	hours/day	USEPA, 2002a	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	234	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(1), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	2555	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	$PEF = \frac{Q / C \times 3600}{0.036 \times (1 - V) \times (U_m / U_t)^3 \times F(x)}$
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA 2010	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	x = 0.886 * Ut / Um
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake = 6.41E-02

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 6.41E-01

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 1.83E-02

Cancer Inhalation Intake (Age 16 - 30) = 4.58E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.24.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURES - ADULT RESIDENTS - GROUNDWATER
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Residents	Adult	Tank Farms 4 & 5	CGW	Chemical Concentration in Groundwater	95% UCL or Max	ug/L	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	1.29	L/day	USEPA, 1997	CGW x CF x IR-GW x EF x ED / BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 6 - 16)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	5	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	
Dermal	Residents	Adult	Tank Farms 4 & 5	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002a	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA / BW x AT
				CF	Conversion factor	0.001	L/cm3	--	
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	0.25	hr/event	USEPA, 1997	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	18,000	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt((6 x τ x tevent)/pi)
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 6 - 18)	2	years	(1), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x (tevent/(1+B) +
				ED2	Exposure Duration (Age 16 - 30)	5	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	$2 \times \tau + (1 + 3B + 3B^2)/(1+B^2)$
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	USEPA, 1989	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund, Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x CF x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake = 1.77E-06 Cancer Dermal Intake = 2.47E+01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 5.05E-07 Cancer Dermal Intake (Age 6 - 16) = 7.05E+00

Cancer Ingestion Intake (Age 16 - 30) = 1.26E-06 Cancer Dermal Intake (Age 16 - 30) = 1.76E+01

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.77E-05 Noncancer Dermal Intake = 2.47E+02

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

RAGS Part D Table 5

Non-Cancer Toxicity Data

LIST OF TABLES
RAGS PART D TABLE 5
NON-CANCER TOXICITY DATA

Table No.

5-1 Non-Cancer Toxicity Data - Oral/Dermal
5-2 Non-Cancer Toxicity Data - Inhalation

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal[2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds										
Benzene	Chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	Blood	300/1	IRIS	1/14/2011
Chloroform	Chronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	Liver	100/1	IRS	1/14/2011
Semivolatile Organic Compounds										
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene[3]	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	1/14/2011
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	Chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	Liver	3000/1	IRIS	1/14/2011
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Body Weight	3000/1	IRIS	1/14/2011
Pyrene	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	1/14/2011
Pesticides/PCBs										
Aroclor-1254	Chronic	2.0E-05	mg/kg/day	1	2.0E-05	mg/kg/day	Autoimmune	300/1	IRIS	1/14/2011
Endrin Aldehyde[4]	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Liver	100/1	IRIS	1/14/2011
Dioxins/Furans										
2,3,7,8-TCDD	Chronic	1.0E-09	mg/kg/day	1	1.0E-09	mg/kg/day	Developmental	NA	ATSDR	12/1998
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	CNS	100	PPRTV	10/23/2006
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IRIS	1/14/2011
Beryllium	Chronic	2.0E-03	mg/kg/day	0.007	1.4E-05	mg/kg/day	GS	300/1	IRIS	1/14/2011
Hexavalent Chromium	Chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	Fetotoxicity, GS, Bone	300/3	IRIS	1/14/2011
Cobalt	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Blood	NA	PPRTV	8/25/2008
Iron	Chronic	7.0E-01	mg/kg/day	1	7.0E-01	mg/kg/day	GS	1.5	PPRTV	9/11/2006
Manganese (soil)[3]	Chronic	7.0E-02	mg/kg/day	0.04	2.8E-03	mg/kg/day	CNS	1/1	IRIS	1/14/2011
Manganese (water)[3]	Chronic	2.4E-02	mg/kg/day	0.04	9.6E-04	mg/kg/day	CNS	1/3	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1 - U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.
3 - Adjusted IRIS value in accordance with USEPA Region I Risk Update Number 4, November 1996.
4 - Values are for Enrdin.

Definitions:
ATSDR = Agency for Toxic Substances and Disease Registry.
CNS = Central Nervous System
CVS = Cardiovascular system
GS = Gastrointestinal
IRIS = Integrated Risk Information System
NA = Not Available.
PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD[1]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds									
Benzene	Chronic	3.0E-02	mg/m^3	8.6E-03	(mg/kg/day)	Blood	300/1	IRIS	1/14/2011
Chloroform	Chronic	9.8E-02	mg/m^3	2.8E-02	(mg/kg/day)	Liver	NA	ATSDR	9/1997
Semivolatile Organic Compounds									
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	Chronic	3.0E-03	mg/m^3	8.6E-04	(mg/kg/day)	Nasal	3000/1	IRIS	1/14/2011
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/PCBs									
Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans									
2,3,7,8-TCDD	Chronic	4.0E-08	mg/m3	1.1E-08	(mg/kg/day)	Liver, Respiratory, Developmental	NA	Cal EPA	9/2009
Inorganics									
Aluminum	Chronic	5.0E-03	mg/m3	1.4E-03	(mg/kg/day)	CNS	300	PPRTV	10/23/2006
Arsenic	Chronic	1.5E-05	mg/m3	4.3E-06	(mg/kg/day)	NA	NA	Cal EPA	9/2009
Beryllium	Chronic	2.0E-05	mg/m3	5.7E-06	(mg/kg/day)	Lungs	10/1	IRIS	1/14/2011
Hexavalent Chromium	Chronic	1.0E-04	mg/m^3	2.9E-05	(mg/kg/day)	Lungs	300/1	IRIS	1/14/2011
Cobalt	Chronic	6.0E-06	mg/m^3	1.7E-06	(mg/kg/day)	Lungs	NA	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	(mg/kg/day)	CNS	1000/1	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Notes:
1 - Extrapolated RfD = RfC *20m^3/day / 70 kg

Definitions:

CNS = Central Nervous System

IRIS = Integrated Risk Information System

NA = Not Applicable

ATSDR = Agency for Toxic Substances and Disease Registry.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

PPRTV = Provisional Peer Reviewed Toxicity Value.

RAGS Part D Table 6

Cancer Toxicity Data

LIST OF TABLES
RAGS PART D TABLE 6
CANCER TOXICITY DATA

Table No.

6-1 Cancer Toxicity Data - Oral/Dermal
6-2 Cancer Toxicity Data - Inhalation

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds								
Benzene	5.5E-02	$(mg/kg/day)^{-1}$	1	5.5E-02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Chloroform	3.1E-02	$(mg/kg/day)^{-1}$	1	3.1E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	Cal EPA	9/2009
Semivolatile Organic Compounds								
Benzo(a)anthracene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(a)pyrene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	1/14/2011
Benzo(b)fluoranthene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Benzo(k)fluoranthene[3]	7.3E-02	$(mg/kg/day)^{-1}$	1	7.3E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Chrysene[3]	7.3E-03	$(mg/kg/day)^{-1}$	1	7.3E-03	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Dibenzo(a,h)anthracene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Fluoranthene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Indeno(1,2,3-cd)pyrene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Naphthalene	NA	NA	NA	NA	NA	C / Inadequate data of carcinogenicity in humans	IRIS	1/14/2011
Pyrene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Pesticides/PCBs								
Aroclor-1254	2.0E+00	$(mg/kg/day)^{-1}$	1	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans								
2,3,7,8-TCDD	1.3E+05	$(mg/kg/day)^{-1}$	1	1.3E+05	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	Cal EPA	9/2009
Inorganics								
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	$(mg/kg/day)^{-1}$	1	1.5E+00	$(mg/kg/day)^{-1}$	A	IRIS	1/14/2011
Beryllium	NA	NA	NA	NA	NA	Carcinogenic potential cannot be determined	IRIS	1/14/2011
Hexavalent Chromium[3]	5.0E-01	$(mg/kg/day)^{-1}$	0.025	2.0E+01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	NJDEP	4/8/2009
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	NA	Inadequate information to assess carcinogenic potential	IRIS	1/14/2011

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Notes:
1 - USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted cancer slope factor for dermal = Oral cancer slope factor / Oral Absorption Efficiency for Dermal.
3 - The carcinogenic PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

NJDEP = New Jersey Department of Environmental Protection, Derivation of Ingestion-Based Soil Remediation Criterion for Cr^{+6} Based on the NTP Chronic Bioassay Data for Sodium Dichromate Dihydrate, April 8, 2009.

USEPA(1) = OSWER Directive No.9285.7-75.

USEPA(2) = USEPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor[1]		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds							
Benzene	7.8E-06	$(ug/m^3)^{-1}$	2.7E-02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Chloroform	2.3E-05	$(ug/m^3)^{-1}$	8.1E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	1/14/2011
Semivolatile Organic Compounds							
Benzo(a)anthracene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Benzo(a)pyrene[2]	1.1E-03	$(ug/m^3)^{-1}$	3.9E+00	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Benzo(b)fluoranthene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Benzo(g,h,i)perylene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Benzo(k)fluoranthene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Chrysene[2]	1.1E-05	$(ug/m^3)^{-1}$	3.9E-02	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Dibenzo(a,h)anthracene[2]	1.2E-03	$(ug/m^3)^{-1}$	4.2E+00	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Fluoranthene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Indeno(1,2,3-cd)pyrene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA(1)	9/2009
Naphthalene	3.4E-05	$(ug/m3)^{-1}$	1.2E-01	$(mg/kg/day)^{-1}$	C/ Possible Human Carcinogen	Cal EPA(2)	8/2004
Pyrene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Pesticides/PCBs							
Aroclor-1254	5.7E-04	$(ug/m^3)^{-1}$	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(2)	9/1996
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA
Dioxins/Furans							
2,3,7,8-TCDD	3.8E+01	$(ug/m^3)^{-1}$	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	Cal EPA(1)	9/2009
Inorganics							
Aluminum	NA	NA	NA	NA	NA	NA	NA
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	1.5E+01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Beryllium	2.4E-03	$(ug/m^3)^{-1}$	8.4E+00	$(mg/kg/day)^{-1}$	B1 / Probable human carcinogen	IRIS	1/14/2011
Hexavalent Chromium[2]	8.4E-02	$(ug/m^3)^{-1}$	2.9E+02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	1/14/2011
Cobalt	9.0E-03	$(ug/m^3)^{-1}$	3.2E+01	$(mg/kg/day)^{-1}$	NA	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
TANK FARMS 4 AND 5
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor[1]		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Inorganics (Continued)							
Manganese	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	1/14/2011
Thallium	NA	NA	NA	NA	Inadequate information to assess carcinogenic potential	IRIS	1/14/2011

Notes:
1 - Inhalation CSF = Unit Risk * 70 kg / 20m^3/day.
2 - The carcinogenic PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Definitions:
Cal EPA = California Environmental Protection Agency.
IRIS = Integrated Risk Information System.
NA = Not Available.
USEPA(1) = OSWER Directive No.9285.7-75.
USEPA(2) = USEPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.
Cal EPA(1) = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.
Cal EPA(2) = Adoption of Unit Risk Values for Naphthalene, August 2004.
PPRTV = Provisional Peer Reviewed Toxicity Value.

RAGS Part D Table 7

Calculation of Cancer Risks and Non-Cancer Hazards

Tank Farm 4

LIST OF TABLES
RAGS PART D TABLE 7 - TANK FARM 4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

Table No.

Reasonable Maximum Exposures

7.1.RME Construction Workers - Tank Farm 4
7.2.RME Industrial Workers - Tank Farm 4
7.3.RME Adolescent Trespassers - Tank Farm 4
7.4.RME Child Recreational Users - Tank Farm 4
7.5.RME Adult Recreational Users - Tank Farm 4
7.6.RME Child Residents - Tank Farm 4
7.7.RME Adult Residents - Tank Farm 4

Central Tendency Exposures

7.1.CTE Construction Workers - Tank Farm 4
7.2.CTE Industrial Workers - Tank Farm 4
7.3.CTE Adolescent Trespassers - Tank Farm 4
7.4.CTE Child Recreational Users - Tank Farm 4
7.5.CTE Adult Recreational Users - Tank Farm 4
7.6.CTE Child Residents - Tank Farm 4
7.7.CTE Adult Residents - Tank Farm 4

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	5.9E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.3E-07	4.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	2.6E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.9E-06	1.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	5.4E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.9E-07	3.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	9.4E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.5E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Benzo(k)fluoranthene	8.70	mg/kg	2.1E-07	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.5E-08	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	6.5E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	4.7E-10	4.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	4.3E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	3.2E-07	3.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	9.1E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.4E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.002
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	9.4E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.8E-08	6.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	9.5E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.6E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	7.4E-14	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	9.7E-09	5.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.005
				Arsenic	15.8	mg/kg	3.8E-07	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	5.7E-07	2.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Beryllium	0.420	mg/kg	1.0E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	7.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0004
				Cobalt	13.3	mg/kg	3.2E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Iron	33,452	mg/kg	8.0E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.6E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.08
				Manganese (soil)	453	mg/kg	1.1E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	7.6E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.005
			Exp. Route Total								3.7E-06					0.3
			Dermal	Benzo(a)anthracene	24.7	mg/kg	2.3E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.7E-07	1.6E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.0E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	7.5E-07	7.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.5E-07	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	3.6E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00009
				Benzo(k)fluoranthene	8.70	mg/kg	8.1E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	5.9E-09	5.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.5E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.8E-10	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.7E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.2E-07	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	3.6E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.5E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.6E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.7E-08	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	3.7E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	6.7E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	8.7E-10	4.7E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Arsenic	15.8	mg/kg	3.4E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	5.1E-08	2.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.008
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.3E-06					0.010
		Exposure Point Total									5.0E-06					0.3
	Exposure Medium Total										5.0E-06					0.3

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	1.8E-5	mg/m^3	3.0E-08	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.3E-09	2.1E-06	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	7.9E-6	mg/m^3	1.3E-08	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.5E-08	9.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.6E-5	mg/m^3	2.7E-08	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.0E-09	1.9E-06	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	2.8E-6	mg/m^3	4.7E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	6.2E-6	mg/m^3	1.1E-08	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-09	7.4E-07	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	1.9E-6	mg/m^3	3.3E-09	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	3.6E-11	2.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.3E-6	mg/m^3	2.2E-09	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.6E-09	1.5E-07	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	2.7E-5	mg/m^3	4.6E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.2E-06	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.8E-6	mg/m^3	4.7E-09	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.2E-10	3.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	2.8E-5	mg/m^3	4.8E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.3E-06	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.2E-12	mg/m^3	3.8E-15	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.4E-10	2.6E-13	(mg/m^3)	4.0E-08	(mg/m^3)	0.000007
				Arsenic	1.1E-5	mg/m^3	1.9E-08	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	8.2E-08	1.3E-06	(mg/m^3)	1.5E-05	(mg/m^3)	0.09
				Beryllium	3.0E-7	mg/m^3	5.1E-10	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.2E-09	3.6E-08	(mg/m^3)	2.0E-05	(mg/m^3)	0.002
				Cobalt	9.5E-6	mg/m^3	1.6E-08	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.5E-07	1.1E-06	(mg/m^3)	6.0E-06	(mg/m^3)	0.2
				Iron	0.024	mg/m^3	4.1E-05	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.8E-03	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.2E-4	mg/m^3	5.5E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.8E-05	(mg/m^3)	5.0E-05	(mg/m^3)	0.8
			Exp. Route Total								2.5E-07					1.0
		Exposure Point Total									2.5E-07					1.0
	Exposure Medium Total										2.5E-07					1.0
Medium Total											5.3E-06					1.3
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	1.4E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-07	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	6.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.7E-07	4.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	1.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.6E-08	9.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.6E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00005
				Benzo(k)fluoranthene	2.10	mg/kg	5.0E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	3.7E-09	3.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	1.6E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.2E-09	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	4.6E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.3E-08	3.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	2.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.5E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0004
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	1.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-08	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	2.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.6E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0005
				Aroclor-1254	0.100	mg/kg	2.4E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	4.8E-09	1.7E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.008
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	6.5E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	8.4E-09	4.5E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.005
				Arsenic	19.2	mg/kg	4.6E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	6.9E-07	3.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.390	mg/kg	9.4E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.5E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Cobalt	19.1	mg/kg	4.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Iron	41,025	mg/kg	9.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.9E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.10
				Manganese (soil)	1,065	mg/kg	2.6E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
				Thallium	2.20	mg/kg	5.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.4E-06					0.3

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	5.6E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.1E-08	3.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.5E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.8E-07	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	5.1E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.8E-08	3.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	9.0E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.3E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	2.10	mg/kg	2.0E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.4E-09	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	6.2E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	4.5E-10	4.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.8E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.3E-08	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	8.6E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.0E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	6.7E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.9E-09	4.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	8.9E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.2E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Aroclor-1254	0.100	mg/kg	1.0E-09	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	2.0E-09	7.1E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.004
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	5.8E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	7.6E-10	4.1E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Arsenic	19.2	mg/kg	4.1E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	6.2E-08	2.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.010
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.5E-07					0.01
		Exposure Point Total									1.8E-06					0.4
	Exposure Medium Total										1.8E-06					0.4
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	4.3E-6	mg/m^3	7.3E-09	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	8.0E-10	5.1E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.9E-6	mg/m^3	3.3E-09	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	3.6E-09	2.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	3.9E-6	mg/m^3	6.7E-09	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	7.3E-10	4.7E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	6.9E-7	mg/m^3	1.2E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.1E-08	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.5E-6	mg/m^3	2.5E-09	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.8E-10	1.8E-07	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	4.7E-6	mg/m^3	8.0E-09	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	8.8E-11	5.6E-07	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.4E-7	mg/m^3	2.3E-10	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	2.8E-10	1.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	6.6E-6	mg/m^3	1.1E-08	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	7.8E-07	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	5.1E-7	mg/m^3	8.7E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	9.6E-11	6.1E-08	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	6.8E-6	mg/m^3	1.2E-08	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.1E-07	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	7.1E-8	mg/m^3	1.2E-10	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	6.9E-11	8.5E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	1.9E-12	mg/m^3	3.3E-15	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	1.2E-10	2.3E-13	(mg/m^3)	4.0E-08	(mg/m^3)	0.000006
				Arsenic	1.4E-5	mg/m^3	2.3E-08	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	1.0E-07	1.6E-06	(mg/m^3)	1.5E-05	(mg/m^3)	0.1
				Beryllium	2.8E-7	mg/m^3	4.7E-10	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	1.1E-09	3.3E-08	(mg/m^3)	2.0E-05	(mg/m^3)	0.002
				Cobalt	1.4E-5	mg/m^3	2.3E-08	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	2.1E-07	1.6E-06	(mg/m^3)	6.0E-06	(mg/m^3)	0.3
				Iron	0.029	mg/m^3	5.0E-05	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	3.5E-03	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	7.6E-4	mg/m^3	1.3E-06	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	9.0E-05	(mg/m^3)	5.0E-05	(mg/m^3)	1.8
				Thallium	1.6E-6	mg/m^3	2.7E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.9E-07	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								3.2E-07					2.2
		Exposure Point Total									3.2E-07					2.2
	Exposure Medium Total										3.2E-07					2.2
Medium Total											2.1E-06					2.5

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Tank Farm 4	Ingestion	Naphthalene	0.190	ug/L	6.9E-10	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.8E-08	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.000002
				Endrin Aldehyde	6.52	ug/L	2.4E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Aluminum	253.0	ug/L	9.2E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.4E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00006
				Arsenic	6.30	ug/L	2.3E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	3.4E-08	1.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.005
				Cobalt	12.6	ug/L	4.6E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	17,100	ug/L	6.2E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.4E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.006
				Manganese (water)	5,030	ug/L	1.8E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.3E-03	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.05
			Exp. Route Total								3.4E-08					0.08
			Dermal	Naphthalene	0.190	ug/L	1.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.2E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00006
				Endrin Aldehyde	6.52	ug/L	1.9E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Aluminum	253.0	ug/L	4.9E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.4E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00003
				Arsenic	6.30	ug/L	1.2E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.8E-08	8.5E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Cobalt	12.6	ug/L	2.4E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Iron	17,100	ug/L	3.3E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.3E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese (water)	5,030	ug/L	9.7E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.8E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.7
			Exp. Route Total								1.8E-08					0.8
		Exposure Point Total									5.2E-08					0.8
	Exposure Medium Total										5.2E-08					0.8
	Air	Tank Farm 4	Inhalation	Naphthalene	5.5E-6	mg/m^3	9.4E-09	(mg/m^3)	3.4E-05	$(ug/m^3)^{-1}$	3.2E-10	6.6E-07	(mg/m^3)	3.0E-03	(mg/m^3)	0.0002
				Endrin Aldehyde	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
				Aluminum	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	5.0E-03	(mg/m^3)	--
				Arsenic	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	1.5E-05	(mg/m^3)	--
				Cobalt	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	6.0E-06	(mg/m^3)	--
				Iron	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (water)	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								3.2E-10					0.0002
		Exposure Point Total									3.2E-10					0.0002
	Exposure Medium Total										3.2E-10					0.0002
Medium Total											5.3E-08					0.8
Total of Receptor Risks - Surface Soil and Groundwater											5.3E-06	Total of Receptor Hazards - Surface Soil and Groundwater				2.2
Total of Receptor Risks - Subsurface Soil and Groundwater											2.1E-06	Total of Receptor Hazards - Subsurface Soil and Groundwater				3.4

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	8.6E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.3E-06	2.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	3.8E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.8E-05	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	7.8E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.7E-06	2.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Benzo(k)fluoranthene	8.70	mg/kg	3.0E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	2.2E-07	8.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	9.4E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	6.9E-09	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	6.3E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.6E-06	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.3E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.7E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0009
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	1.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.9E-07	3.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.4E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.9E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.1E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.4E-07	3.0E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Aluminum	10,539	mg/kg	3.7E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	15.8	mg/kg	5.5E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	8.3E-06	1.5E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
				Beryllium	0.420	mg/kg	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0002
				Chromium	13.1	mg/kg	4.6E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.3E-06	1.3E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.004
				Cobalt	13.3	mg/kg	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Iron	33,452	mg/kg	1.2E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.3E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.05
				Manganese (soil)	453	mg/kg	1.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.4E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
			Exp. Route Total								5.7E-05					0.2
			Dermal	Benzo(a)anthracene	24.7	mg/kg	7.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.4E-06	2.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Banzo(a)pyrene	11.0	mg/kg	3.3E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.4E-05	9.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	6.7E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.9E-06	1.9E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.3E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Benzo(k)fluoranthene	8.70	mg/kg	2.6E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.9E-07	7.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	8.1E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.9E-09	2.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	5.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.9E-06	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.2E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0008
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	1.2E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.5E-07	3.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.3E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	2.1E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.8E-08	6.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	1.1E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.6E-06	3.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								4.1E-05					0.01
		Exposure Point Total									9.8E-05					0.2
	Exposure Medium Total										9.8E-05					0.2

TABLE 7.2 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	1.8E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.0E-11	5.1E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	8.2E-11	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	9.0E-11	2.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	1.7E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.8E-11	4.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	2.9E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	6.4E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	7.1E-12	1.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	2.0E-11	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	2.2E-13	5.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	1.3E-11	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.6E-11	3.7E-11	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	2.8E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	7.9E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	2.9E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.2E-12	8.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	2.9E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	2.3E-17	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	8.7E-13	6.4E-17	(mg/m^3)	4.0E-08	(mg/m^3)	1.60855E-09
				Aluminum	9.6E-7	mg/m^3	7.8E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.2E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00004
				Arsenic	1.4E-9	mg/m^3	1.2E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	5.0E-10	3.3E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.00002
				Beryllium	3.8E-11	mg/m^3	3.1E-12	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	7.5E-12	8.7E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.0000004
				Chromium	1.2E-9	mg/m^3	9.7E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	8.2E-09	2.7E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000003
				Cobalt	1.2E-9	mg/m^3	9.9E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	8.9E-10	2.8E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.00005
				Iron	3.0E-6	mg/m^3	2.5E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	6.9E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	3.4E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.4E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.0002
			Exp. Route Total								9.7E-09					0.0003
		Exposure Point Total									9.7E-09					0.0003
	Exposure Medium Total										9.7E-09					0.0003
Medium Total											9.8E-05					0.2
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	2.1E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.5E-06	5.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	9.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.9E-06	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	1.9E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.4E-06	5.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.4E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00003
				Benzo(k)fluoranthene	2.10	mg/kg	7.3E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	5.4E-08	2.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	2.3E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.7E-08	6.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	6.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.8E-07	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	3.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.0E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	2.5E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.8E-07	7.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	3.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.3E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0003
				Aroclor-1254	0.100	mg/kg	3.5E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	7.0E-08	9.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.005
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	9.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.2E-07	2.6E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Aluminum	8.781	mg/kg	3.1E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.6E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.009
				Arsenic	19.2	mg/kg	6.7E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.0E-05	1.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Beryllium	0.390	mg/kg	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0002
				Chromium	12.9	mg/kg	4.5E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.3E-06	1.3E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.004
				Cobalt	19.1	mg/kg	6.7E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Iron	41.025	mg/kg	1.4E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.0E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.06
				Manganese (soil)	1.065	mg/kg	3.7E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.007
				Thallium	2.20	mg/kg	7.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.3E-05					0.2

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	1.8E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.3E-06	5.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	8.1E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	5.9E-06	2.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	1.6E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.2E-06	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	2.9E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	8.1E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00003
				Benzo(k)fluoranthene	2.10	mg/kg	6.3E-07	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	4.6E-08	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	2.0E-06	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.4E-08	5.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	5.7E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	4.2E-07	1.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	2.8E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	7.7E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	2.2E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.6E-07	6.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	2.8E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	8.0E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0003
				Aroclor-1254	0.100	mg/kg	3.2E-08	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	6.5E-08	9.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.005
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.9E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.4E-08	5.2E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	1.3E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.0E-06	3.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.1E-05					0.02
		Exposure Point Total									3.4E-05					0.2
	Exposure Medium Total										3.4E-05					0.2
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	4.4E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	4.9E-12	1.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	2.0E-11	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	2.2E-11	5.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	4.1E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	4.5E-12	1.1E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	7.1E-12	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	2.0E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	1.6E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.7E-12	4.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	4.9E-11	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	5.4E-13	1.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	1.4E-12	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	1.7E-12	3.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	6.8E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	1.9E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	5.3E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	5.9E-13	1.5E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	7.0E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	2.0E-10	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	7.4E-13	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	4.2E-13	2.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	2.0E-17	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	7.6E-13	5.6E-17	(mg/m^3)	4.0E-08	(mg/m^3)	1.401E-09
				Aluminum	8.0E-7	mg/m^3	6.5E-08	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	1.8E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00004
				Arsenic	1.7E-9	mg/m^3	1.4E-10	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	6.1E-10	4.0E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.00003
				Beryllium	3.5E-11	mg/m^3	2.9E-12	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	6.9E-12	8.1E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.0000004
				Chromium	1.2E-9	mg/m^3	9.6E-11	(mg/m^3)	8.4E-02	$(ug/m^3)^{-1}$	8.0E-09	2.7E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000003
				Cobalt	1.7E-9	mg/m^3	1.4E-10	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	1.3E-09	4.0E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.00007
				Iron	3.7E-6	mg/m^3	3.0E-07	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	8.5E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	7.9E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	2.2E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0004
				Thallium	2.0E-10	mg/m^3	1.6E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	--	4.6E-11	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.0E-08					0.0006
		Exposure Point Total									1.0E-08					0.0006
	Exposure Medium Total										1.0E-08					0.0006
Medium Total											3.4E-05					0.2
										Total of Receptor Risks - Surface Soil	9.8E-05				Total of Receptor Hazards - Surface Soil	0.2

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	3.3E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.4E-06	6.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.5E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-05	2.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	3.0E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.2E-06	5.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00003
				Benzo(k)fluoranthene	8.70	mg/kg	1.2E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	8.6E-08	2.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	3.7E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	2.7E-09	7.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	2.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.8E-06	4.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	5.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.9E-07	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0003
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.8E-08	8.2E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0008
				Aluminum	10,539	mg/kg	4.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.8E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.003
				Arsenic	15.8	mg/kg	7.1E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.1E-06	4.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.420	mg/kg	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00006
				Chromium	13.1	mg/kg	5.9E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.0E-07	3.4E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.001
				Cobalt	13.3	mg/kg	6.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	33,452	mg/kg	1.5E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.8E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
				Manganese (soil)	453	mg/kg	2.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.2E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0009
			Exp. Route Total								1.9E-05					0.04
			Dermal	Benzo(a)anthracene	24.7	mg/kg	7.0E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.1E-06	1.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	3.1E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.3E-05	6.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	6.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.7E-06	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	3.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00007
				Benzo(k)fluoranthene	8.70	mg/kg	2.5E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.8E-07	4.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	7.7E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.6E-09	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	5.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.7E-06	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	3.6E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0005
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	1.1E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.1E-07	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0007
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	6.8E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	8.8E-09	4.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	3.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.2E-07	2.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.007
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.8E-05					0.008
		Exposure Point Total									5.7E-05					0.05
	Exposure Medium Total										5.7E-05					0.05

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	5.1E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.6E-12	9.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	2.3E-11	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	2.5E-11	4.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	4.6E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.0E-12	8.9E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	2.7E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	1.8E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.0E-12	3.5E-11	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	5.5E-12	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	6.1E-14	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	3.7E-12	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	4.4E-12	7.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	2.6E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	8.0E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.8E-13	1.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	2.7E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	2.1E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	8.0E-14	1.2E-17	(mg/m^3)	4.0E-08	(mg/m^3)	3.08842E-10
				Aluminum	9.6E-7	mg/m^3	7.2E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000008
				Arsenic	1.4E-9	mg/m^3	1.1E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	4.6E-11	6.3E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000004
				Beryllium	3.8E-11	mg/m^3	2.9E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	6.9E-13	1.7E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.2E-9	mg/m^3	8.9E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	7.5E-10	5.2E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000005
				Cobalt	1.2E-9	mg/m^3	9.1E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	8.2E-11	5.3E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000009
				Iron	3.0E-6	mg/m^3	2.3E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	3.1E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.8E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00004
			Exp. Route Total								9.2E-10					0.00006
		Exposure Point Total									9.2E-10					0.00006
	Exposure Medium Total										9.2E-10					0.00006
Medium Total											5.7E-05					0.05
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	8.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.9E-07	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	3.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.7E-06	7.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	7.4E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.4E-07	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	4.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000008
				Benzo(k)fluoranthene	2.10	mg/kg	2.8E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	2.1E-08	5.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	8.9E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	6.5E-09	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.9E-07	5.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.4E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00006
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	9.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.1E-08	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	4.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00008
				Aroclor-1254	0.100	mg/kg	4.5E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	9.0E-09	2.6E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.2E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.6E-08	7.1E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0007
				Aluminum	8,781	mg/kg	4.0E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.3E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	19.2	mg/kg	8.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-06	5.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.390	mg/kg	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00005
				Chromium	12.9	mg/kg	5.8E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.9E-07	3.4E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.001
				Cobalt	19.1	mg/kg	8.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	41,025	mg/kg	1.8E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	1,065	mg/kg	4.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.8E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.002
				Thallium	2.20	mg/kg	9.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								5.7E-06					0.06

TABLE 7.3 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	1.7E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-06	3.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	7.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.6E-06	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	1.6E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-06	3.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	9.1E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.3E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	2.10	mg/kg	6.0E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	4.4E-08	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	1.9E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.4E-08	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	5.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.0E-07	1.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	8.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.1E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.5E-07	4.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	9.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.3E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Aroclor-1254	0.100	mg/kg	1.0E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.0E-08	6.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	5.9E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	7.7E-09	3.5E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0003
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	4.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	6.3E-07	2.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.008
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								9.3E-06					0.01
		Exposure Point Total									1.5E-05					0.07
	Exposure Medium Total										1.5E-05					0.07
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	1.2E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.4E-12	2.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	5.5E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	6.1E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluorenthene	5.0E-10	mg/m^3	1.1E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-12	2.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	6.6E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluorenthene	1.9E-10	mg/m^3	4.3E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.7E-13	8.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	1.4E-11	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.5E-13	2.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	3.9E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	4.7E-13	7.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	6.3E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.7E-11	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	1.5E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.6E-13	2.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	6.5E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	6.8E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	3.9E-14	4.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	1.8E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	7.0E-14	1.1E-17	(mg/m^3)	4.0E-08	(mg/m^3)	2.68991E-10
				Aluminum	8.0E-7	mg/m^3	6.0E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.5E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000007
				Arsenic	1.7E-9	mg/m^3	1.3E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	5.6E-11	7.7E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000005
				Beryllium	3.5E-11	mg/m^3	2.7E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	6.4E-13	1.6E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.2E-9	mg/m^3	8.8E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	7.4E-10	5.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000005
				Cobalt	1.7E-9	mg/m^3	1.3E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.2E-10	7.6E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.00001
				Iron	3.7E-6	mg/m^3	2.8E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	7.3E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00008
				Thallium	2.0E-10	mg/m^3	1.5E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.8E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								9.2E-10					0.0001
		Exposure Point Total									9.2E-10					0.0001
	Exposure Medium Total										9.2E-10					0.0001
Medium Total											1.5E-05					0.07

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	426	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	6.6E-10	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	9.9E-10	3.8E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00001
				Iron	426	ug/L	7.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.5E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000006
			Exp. Route Total								9.9E-10					0.00002
		Exposure Point Total									9.9E-10					0.00002
	Exposure Medium Total										9.9E-10					0.00002
Medium Total											9.9E-10					0.00002
Sediment	Sediment	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.010	mg/kg	1.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.9E-10	2.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	1.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-07	2.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	1.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-08	3.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	3.8E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.8E-08	7.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.8E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.4E-08	1.1E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	10,190	mg/kg	4.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.003
				Arsenic	21.5	mg/kg	9.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.5E-06	5.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.520	mg/kg	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.4E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00007
				Chromium	18.6	mg/kg	8.4E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	4.2E-07	4.9E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	43.3	mg/kg	2.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Iron	84,620	mg/kg	3.8E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.03
				Manganese (soil)	2,204	mg/kg	9.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.8E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.004
				Thallium	6.70	mg/kg	3.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.0E-06					0.10
			Dermal	Benzo(a)anthracene	0.010	mg/kg	7.1E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.2E-09	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	7.8E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.7E-07	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	9.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.6E-08	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	2.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-07	3.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.2E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.9E-08	1.3E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	10,190	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	21.5	mg/kg	1.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.8E-06	6.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.520	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	18.6	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	43.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	84,620	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	2,204	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	6.70	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.6E-06					0.02
		Exposure Point Total									4.6E-06					0.1
	Exposure Medium Total										4.6E-06					0.1
Medium Total											4.6E-06					0.1
Total of Receptor Risks - Surface Soil, Surface Water, Sediment											6.2E-05	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.2
Total of Receptor Risks - All Soil, Surface Water, Sediment											2.0E-05	Total of Receptor Hazards - All Soil, Surface Water, and Sediment				0.19

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Inteke/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	2.0E-05	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.4E-05	4.3E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	8.8E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.4E-05	1.9E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.8E-05	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-05	3.9E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	5.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Benzo(k)fluoranthene	8.70	mg/kg	7.0E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	5.1E-07	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.2E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.6E-08	4.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.4E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-05	3.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	5.7E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.7E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.002
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.1E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-06	6.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	5.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.9E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	4.7E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.1E-08	5.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.005
				Aluminum	10,539	mg/kg	1.6E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.02
				Arsenic	15.8	mg/kg	2.4E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.6E-06	2.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Beryllium	0.420	mg/kg	6.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.4E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0004
				Chromium	13.1	mg/kg	2.0E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	9.8E-07	2.3E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.008
				Cobalt	13.3	mg/kg	2.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
				Iron	33,452	mg/kg	5.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.9E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.08
				Manganese (soil)	453	mg/kg	6.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.9E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.006
			Exp. Route Total								1.1E-04					0.3
			Dermal	Benzo(a)anthracene	24.7	mg/kg	7.2E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.3E-06	1.6E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	3.2E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.3E-05	7.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	6.5E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.8E-06	1.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	2.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00008
				Benzo(k)fluoranthene	8.70	mg/kg	2.5E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.9E-07	5.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	7.9E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.8E-09	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	5.3E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.8E-06	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	2.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.4E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	1.1E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.3E-07	2.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0008
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	3.9E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.1E-09	4.6E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	2.0E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.0E-07	2.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.008
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.9E-05					0.010
		Exposure Point Total									1.5E-04					0.3
	Exposure Medium Total										1.5E-04					0.3

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	4.5E-11	(mg/m^3)	1.1E-04	(ug/m3)-1	4.9E-12	9.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	2.0E-11	(mg/m^3)	1.1E-03	(ug/m3)-1	2.2E-11	4.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	4.1E-11	(mg/m^3)	1.1E-04	(ug/m3)-1	4.5E-12	8.9E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	1.3E-12	(mg/m^3)	NA	(ug/m3)-1	--	1.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	1.6E-11	(mg/m^3)	1.1E-04	(ug/m3)-1	1.7E-12	3.5E-11	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	4.9E-12	(mg/m^3)	1.1E-05	(ug/m3)-1	5.4E-14	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	3.3E-12	(mg/m^3)	1.2E-03	(ug/m3)-1	3.9E-12	7.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	1.3E-11	(mg/m^3)	NA	(ug/m3)-1	--	1.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	7.1E-12	(mg/m^3)	1.1E-04	(ug/m3)-1	7.8E-13	1.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	1.3E-11	(mg/m^3)	NA	(ug/m3)-1	--	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	1.1E-18	(mg/m^3)	3.8E+01	(ug/m3)-1	4.0E-14	1.2E-17	(mg/m^3)	4.0E-08	(mg/m^3)	3.08842E-10
				Aluminum	9.6E-7	mg/m^3	3.6E-09	(mg/m^3)	NA	(ug/m3)-1	--	4.2E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000008
				Arsenic	1.4E-9	mg/m^3	5.4E-12	(mg/m^3)	4.3E-03	(ug/m3)-1	2.3E-11	6.3E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000004
				Beryllium	3.8E-11	mg/m^3	1.4E-13	(mg/m^3)	2.4E-03	(ug/m3)-1	3.4E-13	1.7E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.2E-9	mg/m^3	4.5E-12	(mg/m^3)	8.4E-02	(ug/m3)-1	3.8E-10	5.2E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000005
				Cobalt	1.2E-9	mg/m^3	4.5E-12	(mg/m^3)	9.0E-03	(ug/m3)-1	4.1E-11	5.3E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000009
				Iron	3.0E-6	mg/m^3	1.1E-08	(mg/m^3)	NA	(ug/m3)-1	--	1.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	1.5E-10	(mg/m^3)	NA	(ug/m3)-1	--	1.8E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00004
			Exp. Route Total								4.8E-10					0.00006
		Exposure Point Total									4.8E-10					0.00006
	Exposure Medium Total										4.8E-10					0.00006
Medium Total											1.5E-04					0.3
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	4.8E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.5E-06	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.2E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-05	4.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	4.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.2E-06	9.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00006
				Benzo(k)fluoranthene	2.10	mg/kg	1.7E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.2E-07	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	5.3E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.9E-08	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.5E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-06	3.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.6E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0004
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	5.8E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.2E-07	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0006
				Aroclor-1254	0.100	mg/kg	1.5E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	3.0E-08	1.8E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.009
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	4.1E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.3E-08	4.7E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.005
				Aluminum	8,781	mg/kg	1.3E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.02
				Arsenic	19.2	mg/kg	2.9E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.3E-06	3.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.390	mg/kg	5.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Chromium	12.9	mg/kg	1.9E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	9.7E-07	2.3E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.008
				Cobalt	19.1	mg/kg	2.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Iron	41,025	mg/kg	6.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.2E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.1
				Manganese (soil)	1,065	mg/kg	1.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
				Thallium	2.20	mg/kg	3.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.0E-05					0.4

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	1.8E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-06	3.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	7.9E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.8E-06	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	1.6E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-06	3.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	5.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.1E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	2.10	mg/kg	6.1E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	4.5E-08	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	1.9E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.4E-08	4.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	5.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.0E-07	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	5.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.9E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.5E-07	4.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	5.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.1E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Aroclor-1254	0.100	mg/kg	5.9E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.2E-08	6.9E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	3.4E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	4.4E-09	4.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	2.4E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.6E-07	2.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								9.2E-06					0.01
		Exposure Point Total									3.9E-05					0.4
	Exposure Medium Total										3.9E-05					0.4
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	1.1E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-12	2.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	4.9E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	5.4E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	1.0E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.1E-12	2.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	3.3E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	3.8E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.2E-13	8.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	1.2E-11	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.3E-13	2.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	3.5E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	4.2E-13	7.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	3.1E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.7E-11	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	1.3E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.4E-13	2.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	3.2E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	3.4E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	1.9E-14	4.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	9.2E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	3.5E-14	1.1E-17	(mg/m^3)	4.0E-08	(mg/m^3)	2.68991E-10
				Aluminum	8.0E-7	mg/m^3	3.0E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.5E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000007
				Arsenic	1.7E-9	mg/m^3	6.6E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	2.8E-11	7.7E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000005
				Beryllium	3.5E-11	mg/m^3	1.3E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	3.2E-13	1.6E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.2E-9	mg/m^3	4.4E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	3.7E-10	5.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000005
				Cobalt	1.7E-9	mg/m^3	6.5E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	5.9E-11	7.6E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.00001
				Iron	3.7E-6	mg/m^3	1.4E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	3.6E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00008
				Thallium	2.0E-10	mg/m^3	7.5E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.8E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								4.7E-10					0.0001
		Exposure Point Total									4.7E-10					0.0001
	Exposure Medium Total										4.7E-10					0.0001
Medium Total											3.9E-05					0.4

TABLE 7.4.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units	-	Value	Units	Value	Units	
Surface Water	Surface Water	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	426	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								- -					--
			Dermal	Benzo(a)anthracana	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	7.6E-10	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.1E-09	8.8E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00003
				Iron	426	ug/L	9.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.0E-05	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00001
			Exp. Route Total								1.1E-09					0.00004
		Exposure Point Total									1.1E-09					0.00004
	Exposure Medium Total										1.1E-09					0.00004
Medium Total											1.1E-09					0.00004
Sediment	Sediment	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.010	mg/kg	8.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.9E-09	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrena	0.110	mg/kg	8.8E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.4E-07	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluorenthene	0.127	mg/kg	1.0E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.4E-08	2.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	2.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-07	4.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	6.2E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	8.0E-08	7.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.007
				Aluminum	10,190	mg/kg	1.5E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.02
				Arsenic	21.5	mg/kg	3.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.8E-06	3.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.520	mg/kg	7.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	9.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0005
				Chromium	18.6	mg/kg	2.8E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.4E-06	3.3E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.01
				Cobalt	43.3	mg/kg	6.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.3
				Iron	84,620	mg/kg	1.3E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.5E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese (soil)	2,204	mg/kg	3.3E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.9E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.03
				Thallium	6.70	mg/kg	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								7.2E-06					0.7
			Dermal	Benzo(a)anthracene	0.010	mg/kg	2.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-09	6.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	3.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.3E-07	7.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	3.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.7E-08	8.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	8.2E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.0E-08	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	5.2E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.7E-09	6.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	10,190	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	21.5	mg/kg	2.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.1E-07	3.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.520	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	18.6	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	43.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	84,620	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	2.204	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	6.70	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								7.4E-07					0.01
		Exposure Point Total									7.9E-06					0.7
	Exposure Medium Total										7.9E-06					0.7
Medium Total											7.9E-06					0.7
Total of Receptor Risks - Surface Soil, Surface Water, Sediment											1.6E-04	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				1.0
Total of Receptor Risks - All Soil, Surface Water, Sediment											4.7E-05	Total of Receptor Hazards - All Soil, Surface Water, and Sediment				1.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	2.9E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-06	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.3E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.5E-06	2.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.6E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-06	4.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.3E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	8.70	mg/kg	1.0E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	7.5E-08	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	3.2E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	2.3E-09	5.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	2.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-06	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.1E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	4.6E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.4E-07	7.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	2.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.4E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	2.0E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.6E-08	5.8E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	10,539	mg/kg	6.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	15.8	mg/kg	1.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.5E-06	3.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.010
				Beryllium	0.420	mg/kg	2.7E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.9E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00004
				Chromium	13.1	mg/kg	8.4E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	4.2E-07	2.5E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0008
				Cobalt	13.3	mg/kg	8.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.008
				Iron	33,452	mg/kg	2.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.3E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.009
				Manganese (soil)	453	mg/kg	2.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.5E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0006
			Exp. Route Total								1.7E-05					0.03
			Dermal	Benzo(a)anthracene	24.7	mg/kg	1.5E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-06	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	6.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.9E-06	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.0E-06	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.8E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00001
				Benzo(k)fluoranthene	8.70	mg/kg	5.3E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	3.9E-08	8.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	1.7E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.2E-09	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.0E-07	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.7E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00009
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	2.4E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.7E-07	3.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	2.4E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.1E-09	7.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00007
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	1.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.8E-07	3.6E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								8.2E-06					0.001
		Exposure Point Total									2.6E-05					0.03
	Exposure Medium Total										2.6E-05					0.03

TABLE 7 5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	6.2E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.8E-12	9.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	2.8E-11	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	3.0E-11	4.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	5.6E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.2E-12	8.9E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	5.3E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	2.2E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.4E-12	3.5E-11	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	6.8E-12	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	7.4E-14	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	4.5E-12	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	5.4E-12	7.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	5.2E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	9.8E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.1E-12	1.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	5.4E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	4.2E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.6E-13	1.2E-17	(mg/m^3)	4.0E-08	(mg/m^3)	3.08842E-10
				Aluminum	9.6E-7	mg/m^3	1.4E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000008
				Arsenic	1.4E-9	mg/m^3	2.2E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	9.3E-11	6.3E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000004
				Beryllium	3.8E-11	mg/m^3	5.7E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.4E-12	1.7E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.2E-9	mg/m^3	1.8E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.5E-09	5.2E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000005
				Cobalt	1.2E-9	mg/m^3	1.8E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.6E-10	5.3E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000009
				Iron	3.0E-6	mg/m^3	4.6E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.3E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	6.2E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.8E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00004
			Exp. Route Total								1.8E-09					0.00006
		Exposure Point Total									1.8E-09					0.00006
	Exposure Medium Total										1.8E-09					0.00006
Medium Total											2.6E-05					0.03
Alt Soil	Alt Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	7.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.2E-07	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	3.2E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.3E-06	5.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	6.5E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.7E-07	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	6.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000006
				Benzo(k)fluoranthene	2.10	mg/kg	2.5E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.8E-08	3.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	7.8E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.7E-09	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-07	3.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	5.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00004
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	8.5E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.2E-08	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	6.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00006
				Aroclor-1254	0.100	mg/kg	6.4E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.3E-08	1.9E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.7E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.3E-08	5.1E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Aluminum	8,781	mg/kg	5.7E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.6E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	19.2	mg/kg	1.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.9E-06	3.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.390	mg/kg	2.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.3E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00004
				Chromium	12.9	mg/kg	8.3E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	4.2E-07	2.4E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0008
				Cobalt	19.1	mg/kg	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	41,025	mg/kg	2.6E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.7E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
				Manganese (soil)	1,065	mg/kg	6.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
				Thallium	2.20	mg/kg	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								5.9E-06					0.04

TABLE 7.5.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	3.7E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.7E-07	5.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	1.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-06	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	3.4E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.5E-07	5.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	3.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.4E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000003
				Benzo(k)fluoranthene	2.10	mg/kg	1.3E-07	(mg/kg/dey)	7.3E-02	(mg/kg/day)$^{-1}$	9.4E-09	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	4.0E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.0E-09	6.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.5E-08	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	3.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.0E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	4.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.2E-08	7.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	3.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.3E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00003
				Aroclor-1254	0.100	mg/kg	3.6E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	7.2E-09	1.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0005
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	2.1E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.7E-09	6.1E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00006
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/dey)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	1.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.2E-07	4.3E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.1E-06					0.002
		Exposure Point Total									8.0E-06					0.04
	Exposure Medium Total										8.0E-06					0.04
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	1.5E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.7E-12	2.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	6.8E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	7.4E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	1.4E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.5E-12	2.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	1.3E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	5.3E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.8E-13	8.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	1.7E-11	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.8E-13	2.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	4.8E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	5.7E-13	7.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	1.3E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.7E-11	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	1.8E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.0E-13	2.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	1.3E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	1.4E-13	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	7.8E-14	4.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivelents	2.5E-16	mg/m^3	3.7E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.4E-13	1.1E-17	(mg/m^3)	4.0E-08	(mg/m^3)	2.68991E-10
				Aluminum	8.0E-7	mg/m^3	1.2E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.5E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000007
				Arsenic	1.7E-9	mg/m^3	2.6E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.1E-10	7.7E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000005
				Beryllium	3.5E-11	mg/m^3	5.3E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.3E-12	1.6E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.2E-9	mg/m^3	1.8E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.5E-09	5.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000005
				Cobalt	1.7E-9	mg/m^3	2.6E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.3E-10	7.6E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.00001
				Iron	3.7E-6	mg/m^3	5.6E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.6E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	1.5E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00008
				Thallium	2.0E-10	mg/m^3	3.0E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.8E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.8E-09					0.0001
		Exposure Point Total									1.8E-09					0.0001
	Exposure Medium Total										1.8E-09					0.0001
Medium Total											8.0E-06					0.04

TABLE 7.5 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	426	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	1.6E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.4E-09	4.7E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00002
				Iron	426	ug/L	1.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.5E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000008
			Exp. Route Total								2.4E-09					0.00002
		Exposure Point Total									2.4E-09					0.00002
	Exposure Medium Total										2.4E-09					0.00002
Medium Total											2.4E-09					0.00002
Sediment	Sediment	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.010	mg/kg	1.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.6E-10	1.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	1.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.5E-08	2.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	1.5E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-08	2.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	3.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.4E-08	5.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.6E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.4E-08	7.7E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0008
				Aluminum	10,190	mg/kg	6.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	21.5	mg/kg	1.4E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.1E-06	4.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.520	mg/kg	3.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.8E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00005
				Chromium	18.6	mg/kg	1.2E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	6.0E-07	3.5E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.001
				Cobalt	43.3	mg/kg	2.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	84,620	mg/kg	5.5E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.6E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	2,204	mg/kg	1.4E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	6.70	mg/kg	4.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.8E-06					0.07
			Dermal	Benzo(a)anthracene	0.010	mg/kg	7.4E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.4E-10	1.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(e)pyrene	0.110	mg/kg	8.1E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.9E-08	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	9.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.9E-09	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibanzo(a,h)anthracene	0.028	mg/kg	2.1E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-08	3.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	3.8E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.0E-09	1.1E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0001
				Aluminum	10,190	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	21.5	mg/kg	2.0E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.0E-07	5.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.520	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	18.6	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	43.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	84,620	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	2,204	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	6.70	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.9E-07					0.002
		Exposure Point Total									3.2E-06					0.07
	Exposure Medium Total										3.2E-06					0.07
Medium Total											3.2E-06					0.07
Total of Receptor Risks - Surface Soil, Surface Water, Sediment											2.9E-05	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.1
Total of Receptor Risks - All Soil, Surface Water, Sediment											1.1E-05	Total of Receptor Hazards - All Soil, Surface Water, and Sediment				0.1

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.6.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	1.4E-04	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.1E-04	3.2E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	6.4E-05	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	4.7E-04	1.4E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.3E-04	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	9.6E-05	2.9E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	4.3E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.0E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.002
				Benzo(k)fluoranthene	8.70	mg/kg	5.1E-05	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	3.7E-06	1.1E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	1.6E-05	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.2E-07	3.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.1E-05	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	7.7E-05	2.3E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	4.2E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.9E-04	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.01
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	2.3E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.7E-05	5.0E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	4.3E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.0E-04	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.02
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	3.4E-12	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	4.4E-07	4.0E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.04
				Arsenic	15.8	mg/kg	1.7E-05	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.6E-05	2.0E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
				Beryllium	0.420	mg/kg	4.6E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.4E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.003
				Cobalt	13.3	mg/kg	1.5E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.7E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.6
				Iron	33,452	mg/kg	3.7E-02	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.3E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.6
				Manganese (soil)	453	mg/kg	5.0E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.8E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.04
			Exp. Route Total								7.9E-04					2.0
			Dermal	Benzo(a)anthracene	24.7	mg/kg	5.3E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.8E-05	1.1E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	2.3E-05	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.7E-04	5.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	4.8E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.5E-05	1.0E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0006
				Benzo(k)fluoranthene	8.70	mg/kg	1.9E-05	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.4E-06	4.0E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	5.7E-06	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	4.2E-08	1.3E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	3.8E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	2.8E-05	8.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.5E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-04	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.004
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	8.3E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.1E-06	1.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.6E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-04	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.006
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	2.9E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	3.7E-08	3.3E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Arsenic	15.8	mg/kg	1.5E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.2E-06	1.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								2.8E-04					0.07
		Exposure Point Total									1.1E-03					2.0
	Exposure Medium Total										1.1E-03					2.0

TABLE 7.6.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	9.8E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.1E-10	2.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	4.4E-10	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	4.8E-10	9.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	8.9E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	9.8E-11	2.0E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	2.9E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	3.5E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.8E-11	7.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	1.1E-10	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.2E-12	2.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	7.2E-11	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	8.6E-11	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	2.8E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	1.6E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.7E-11	3.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	2.9E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.4E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	2.3E-17	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	8.8E-13	2.7E-16	(mg/m^3)	4.0E-08	(mg/m^3)	6.75592E-09
				Arsenic	1.4E-9	mg/m^3	1.2E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	5.1E-10	1.4E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.00009
				Beryllium	3.8E-11	mg/m^3	3.1E-12	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	7.5E-12	3.7E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Cobalt	1.2E-9	mg/m^3	9.9E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	8.9E-10	1.2E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0002
				Iron	3.0E-6	mg/m^3	2.5E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.9E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	3.4E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.9E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0008
			Exp. Route Total								2.2E-09					0.001
		Exposure Point Total									2.2E-09					0.001
	Exposure Medium Total										2.2E-09					0.001
Medium Total											1.1E-03					2.0
Subsurface Soil	Subsurface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	3.5E-05	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.6E-05	7.7E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	1.6E-05	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-04	3.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	3.2E-05	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-05	7.0E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0004
				Benzo(k)fluoranthene	2.10	mg/kg	1.2E-05	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	9.0E-07	2.7E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	3.9E-05	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	2.8E-07	8.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.1E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.1E-06	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-04	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.003
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	4.2E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-06	9.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-04	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.004
				Aroclor-1254	0.100	mg/kg	1.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.2E-07	1.3E-06	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.06
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	3.0E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.8E-07	3.5E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.03
				Arsenic	19.2	mg/kg	2.1E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.2E-05	2.5E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.8
				Beryllium	0.390	mg/kg	4.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.0E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.002
				Cobalt	19.1	mg/kg	2.1E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.8
				Iron	41,025	mg/kg	4.5E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.2E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.7
				Manganese (soil)	1,065	mg/kg	1.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-02	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.10
				Thallium	2.20	mg/kg	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.1E-04					2.6

TABLE 7.6.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	1.3E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	9.3E-06	2.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	5.7E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	4.2E-05	1.3E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	1.2E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	8.5E-06	2.6E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	3.8E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.5E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Benzo(k)fluoranthene	2.10	mg/kg	4.5E-06	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	3.3E-07	9.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	1.4E-05	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.0E-07	3.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	4.0E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	3.0E-06	8.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	3.7E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.3E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	1.5E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.1E-06	3.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	3.8E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.4E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.001
				Aroclor-1254	0.100	mg/kg	4.3E-08	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	8.6E-08	5.0E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.03
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	2.5E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	3.2E-08	2.9E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Arsenic	19.2	mg/kg	1.8E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.7E-06	2.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								6.7E-05					0.10
		Exposure Point Total									2.8E-04					2.7
	Exposure Medium Total										2.8E-04					2.7
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	2.4E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.6E-11	5.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	1.1E-10	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	1.2E-10	2.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	2.2E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.4E-11	4.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	7.2E-12	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	8.4E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	9.2E-12	1.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	2.6E-10	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	2.9E-12	5.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	7.6E-12	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	9.1E-12	1.7E-11	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	6.9E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.0E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	2.9E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	3.2E-12	6.3E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	7.1E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	7.5E-13	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	4.3E-13	8.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	2.0E-17	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	7.7E-13	2.4E-16	(mg/m^3)	4.0E-08	(mg/m^3)	5.88418E-09
				Arsenic	1.7E-9	mg/m^3	1.4E-10	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	6.2E-10	1.7E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0001
				Beryllium	3.5E-11	mg/m^3	2.9E-12	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	7.0E-12	3.4E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Cobalt	1.7E-9	mg/m^3	1.4E-10	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	1.3E-09	1.7E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0003
				Iron	3.7E-6	mg/m^3	3.1E-07	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	3.6E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	8.0E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	9.3E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.002
				Thallium	2.0E-10	mg/m^3	1.6E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.9E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								2.1E-09					0.002
		Exposure Point Total									2.1E-09					0.002
	Exposure Medium Total										2.1E-09					0.002
Medium Total											2.8E-04					2.7

TABLE 7.6.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Tank Farm 4	Ingestion	Naphthalene	0.190	ug/L	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.7E-05	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0009
				Endrin Aldehyde	6.52	ug/L	5.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.8E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.9
				Aluminum	253.0	ug/L	1.9E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.3E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.02
				Arsenic	6.30	ug/L	4.8E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	7.2E-05	5.6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.9
				Cobalt	12.6	ug/L	9.7E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.1E-03	(mg/kg/day)	3.0E-04	(mg/kg/day)	3.8
				Iron	17,100	ug/L	1.3E-01	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.5E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	2.2
				Manganese (water)	5,030	ug/L	3.9E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.5E-01	(mg/kg/day)	2.4E-02	(mg/kg/day)	19
			Exp. Route Total								7.2E-05					29
			Dermal	Naphthalene	0.190	ug/L	6.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.7E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0004
				Endrin Aldehyde	6.52	ug/L	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Aluminum	253	ug/L	9.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.1E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0001
				Arsenic	6.30	ug/L	2.3E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.4E-07	2.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Cobalt	12.6	ug/L	4.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	17,100	ug/L	6.2E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.2E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
				Manganese (water)	5,030	ug/L	1.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.1E-03	(mg/kg/day)	9.6E-04	(mg/kg/day)	2.2
			Exp. Route Total								3.4E-07					2.6
		Exposure Point Total									7.3E-05					31
	Exposure Medium Total										7.3E-05					31
	Air	Tank Farm 4	Inhalation	Naphthalene	0.190	ug/L	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)-1	- -	1.7E-05	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0009
				Endrin Aldehyde	6.52	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Aluminum	253	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	6.30	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	12.6	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	17,100	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	5,030	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								- -					0.0009
		Exposure Point Total									- -					0.0009
	Exposure Medium Total										- -					0.0009
Medium Total											7.3E-05					31
Total of Receptor Risks - Surface Soil and Groundwater											1.1E-03	Total of Receptor Hazards - Surface Soil and Groundwater				33
Total of Receptor Risks - Subsurface Soil and Groundwater											3.5E-04	Total of Receptor Hazards - Subsurface Soil and Groundwater				34

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	2.1E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.6E-05	3.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	9.5E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	6.9E-05	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.9E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.4E-05	3.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.8E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.3E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Benzo(k)fluoranthene	8.70	mg/kg	7.5E-06	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	5.5E-07	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.3E-06	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.7E-08	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.5E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.1E-05	2.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.8E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.2E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.001
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.4E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.5E-06	5.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.9E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.4E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.5E-12	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.9E-07	4.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.004
				Arsenic	15.8	mg/kg	7.4E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.1E-05	2.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Beryllium	0.420	mg/kg	2.0E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Cobalt	13.3	mg/kg	6.2E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Iron	33,452	mg/kg	1.6E-02	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.6E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.07
				Manganese (soil)	453	mg/kg	2.1E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.2E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.004
			Exp. Route Total								1.2E-04					0.2
			Dermal	Benzo(a)anthracene	24.7	mg/kg	1.1E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	8.1E-06	1.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	4.9E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	3.6E-05	7.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.0E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	7.3E-06	1.6E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	9.5E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00009
				Benzo(k)fluoranthene	8.70	mg/kg	3.9E-06	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	2.8E-07	6.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	1.2E-06	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	8.8E-09	1.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	8.0E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	5.9E-06	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	9.3E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.7E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0007
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	1.7E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.3E-06	2.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	9.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.8E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.7E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.3E-08	5.1E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Arsenic	15.8	mg/kg	8.9E-07	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.3E-06	2.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								6.0E-05					0.01
		Exposure Point Total									1.8E-04					0.2
	Exposure Medium Total										1.8E-04					0.2

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	1.4E-09	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.5E-10	2.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	6.0E-10	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	6.6E-10	9.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	1.2E-09	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.4E-10	2.0E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	1.2E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	4.8E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.2E-11	7.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	1.5E-10	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.6E-12	2.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	9.9E-11	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.2E-10	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	1.1E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	2.1E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.4E-11	3.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	1.2E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.4E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	9.3E-17	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	3.5E-12	2.7E-16	(mg/m^3)	4.0E-08	(mg/m^3)	6.75592E-09
				Arsenic	1.4E-9	mg/m^3	4.7E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	2.0E-09	1.4E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.00009
				Beryllium	3.8E-11	mg/m^3	1.3E-11	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	3.0E-11	3.7E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Cobalt	1.2E-9	mg/m^3	4.0E-10	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	3.6E-09	1.2E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0002
				Iron	3.0E-6	mg/m^3	1.0E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.9E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	1.4E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.9E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0008
			Exp. Route Total								6.8E-09					0.001
		Exposure Point Total									6.8E-09					0.001
	Exposure Medium Total										6.8E-09					0.001
Medium Total											1.8E-04					0.2
Subsurface Soil	Subsurface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	5.2E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-06	8.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.3E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.7E-05	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	4.7E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.5E-06	7.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	4.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00004
				Benzo(k)fluoranthene	2.10	mg/kg	1.8E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.3E-07	2.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	5.7E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	4.1E-08	9.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.6E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-06	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	4.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0003
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	6.2E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.5E-07	9.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	4.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0004
				Aroclor-1254	0.100	mg/kg	4.7E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	9.4E-08	1.4E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.007
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.3E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.6E-07	3.7E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.004
				Arsenic	19.2	mg/kg	9.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.4E-05	2.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Beryllium	0.390	mg/kg	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Cobalt	19.1	mg/kg	9.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Iron	41,025	mg/kg	1.9E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.6E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.08
				Manganese (soil)	1,065	mg/kg	5.0E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.5E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
				Thallium	2.20	mg/kg	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								4.0E-05					0.3

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	2.7E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.0E-06	4.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	1.2E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	8.8E-06	1.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	2.5E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.8E-06	3.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	2.3E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.8E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	2.10	mg/kg	9.4E-07	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	6.8E-08	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	2.9E-06	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	2.2E-08	4.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	8.5E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	6.2E-07	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	2.2E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.5E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	3.2E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.3E-07	5.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	2.3E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Aroclor-1254	0.100	mg/kg	2.6E-08	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	5.2E-08	7.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.004
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.5E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.0E-08	4.4E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Arsenic	19.2	mg/kg	1.1E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.6E-06	3.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.5E-05					0.02
		Exposure Point Total									5.5E-05					0.3
	Exposure Medium Total										5.5E-05					0.3
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	3.3E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	3.6E-11	5.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	1.5E-10	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	1.6E-10	2.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	3.0E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	3.3E-11	4.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	2.9E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.4E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	1.2E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.3E-11	1.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	3.6E-10	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	4.0E-12	5.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	1.0E-11	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	1.2E-11	1.7E-11	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	2.7E-10	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.0E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	3.9E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	4.3E-12	6.3E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	2.8E-10	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	3.0E-12	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	1.7E-12	8.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	8.1E-17	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	3.1E-12	2.4E-16	(mg/m^3)	4.0E-08	(mg/m^3)	5.88418E-09
				Arsenic	1.7E-9	mg/m^3	5.7E-10	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	2.5E-09	1.7E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0001
				Beryllium	3.5E-11	mg/m^3	1.2E-11	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	2.8E-11	3.4E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Cobalt	1.7E-9	mg/m^3	5.7E-10	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	5.1E-09	1.7E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0003
				Iron	3.7E-6	mg/m^3	1.2E-06	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	3.6E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	3.2E-08	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	9.3E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.002
				Thallium	2.0E-10	mg/m^3	6.6E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.9E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								7.9E-09					0.002
		Exposure Point Total									7.9E-09					0.002
	Exposure Medium Total										7.9E-09					0.002
Medium Total											5.5E-05					0.3

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Tank Farm 4	Ingestion	Naphthalene	0.190	ug/L	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.2E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0003
				Endrin Aldehyde	6.52	ug/L	6.1E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.6
				Aluminum	253.0	ug/L	2.4E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.9E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.007
				Arsenic	6.30	ug/L	5.9E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	8.9E-05	1.7E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.6
				Cobalt	12.6	ug/L	1.2E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.5E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.2
				Iron	17,100	ug/L	1.6E-01	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.7E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.7
				Manganese (water)	5,030	ug/L	4.7E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-01	(mg/kg/day)	2.4E-02	(mg/kg/day)	5.7
			Exp. Route Total								8.9E-05					8.7
			Dermal	Naphthalene	0.190	ug/L	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.4E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0002
				Endrin Aldehyde	6.52	ug/L	1.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Aluminum	253	ug/L	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.6E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00004
				Arsenic	6.30	ug/L	3.1E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.6E-07	9.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Cobalt	12.6	ug/L	6.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Iron	17,100	ug/L	8.4E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.4E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese (water)	5,030	ug/L	2.5E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.2E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.7
			Exp. Route Total								4.6E-07					0.9
		Exposure Point Total									8.9E-05					9.7
	Exposure Medium Total										8.9E-05					9.7
	Air	Tank Farm 4	Inhalation	Naphthalene	0.190	ug/L	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)-1	- -	5.2E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0003
				Endrin Aldehyde	6.52	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Aluminum	253	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	6.30	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	12.6	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	17,100	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	5,030	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								- -					0.0003
		Exposure Point Total									- -					0.0003
	Exposure Medium Total										- -					0.0003
Medium Total											8.9E-05					9.7
Total of Receptor Risks - Surface Soil and Groundwater											2.7E-04	Total of Receptor Hazards - Surface Soil and Groundwater				9.9
Total of Receptor Risks - Subsurface Soil and Groundwater											1.4E-04	Total of Receptor Hazards - Subsurface Soil and Groundwater				10

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 7.1.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	2.4E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.7E-07	1.7E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.1E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	7.7E-07	7.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.6E-07	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	3.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00009
				Benzo(k)fluoranthene	8.70	mg/kg	8.3E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	6.1E-09	5.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.6E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.9E-10	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.7E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.3E-07	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	3.6E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.7E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.7E-08	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	3.8E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	3.0E-14	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	3.9E-09	2.1E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Arsenic	15.8	mg/kg	1.5E-07	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.3E-07	1.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.420	mg/kg	4.0E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Cobalt	13.3	mg/kg	1.3E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	8.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	33,452	mg/kg	3.2E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.2E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.03
				Manganese (soil)	453	mg/kg	4.3E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.0E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.002
			Exp. Route Total								1.5E-06					0.1
			Dermal	Benzo(a)anthracene	24.7	mg/kg	3.1E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.2E-08	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.4E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.0E-07	9.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.8E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.0E-08	2.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	4.9E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.4E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00001
				Benzo(k)fluoranthene	8.70	mg/kg	1.1E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	7.9E-10	7.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	3.4E-09	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	2.5E-11	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	2.2E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.6E-08	1.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	4.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.3E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00008
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	4.9E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.6E-09	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	4.9E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.4E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	8.9E-16	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.2E-10	6.2E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00006
				Arsenic	15.8	mg/kg	4.5E-09	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	6.8E-09	3.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.7E-07					0.001
		Exposure Point Total									1.7E-06					0.1
	Exposure Medium Total										1.7E-06					0.1

TABLE 7.1.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	1.8E-5	mg/m^3	6.0E-09	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.6E-10	4.2E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	7.9E-6	mg/m^3	2.7E-09	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	2.9E-09	1.9E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.6E-5	mg/m^3	5.4E-09	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.0E-10	3.8E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	2.8E-6	mg/m^3	9.4E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	6.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	6.2E-6	mg/m^3	2.1E-09	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.3E-10	1.5E-07	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	1.9E-6	mg/m^3	6.5E-10	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	7.2E-12	4.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.3E-6	mg/m^3	4.4E-10	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	5.2E-10	3.1E-08	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	2.7E-5	mg/m^3	9.2E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	6.4E-07	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.8E-6	mg/m^3	9.4E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.0E-10	6.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	2.8E-5	mg/m^3	9.5E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	6.7E-07	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.2E-12	mg/m^3	7.5E-16	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.9E-11	5.3E-14	(mg/m^3)	4.0E-08	(mg/m^3)	0.000001
				Arsenic	1.1E-5	mg/m^3	3.8E-09	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.6E-08	2.7E-07	(mg/m^3)	1.5E-05	(mg/m^3)	0.02
				Beryllium	3.0E-7	mg/m^3	1.0E-10	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	2.4E-10	7.1E-09	(mg/m^3)	2.0E-05	(mg/m^3)	0.0004
				Cobalt	9.5E-6	mg/m^3	3.2E-09	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.9E-08	2.3E-07	(mg/m^3)	6.0E-06	(mg/m^3)	0.04
				Iron	0.024	mg/m^3	8.1E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	5.7E-04	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.2E-4	mg/m^3	1.1E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	7.7E-06	(mg/m^3)	5.0E-05	(mg/m^3)	0.2
			Exp. Route Total								5.1E-08					0.2
		Exposure Point Total									5.1E-08					0.2
	Exposure Medium Total										5.1E-08					0.2
Medium Total											1.7E-06					0.3
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	5.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.2E-08	4.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.9E-07	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	5.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.9E-08	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	9.2E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.4E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	2.10	mg/kg	2.0E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.5E-09	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	6.3E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	4.6E-10	4.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.8E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.3E-08	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	8.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.2E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	6.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.0E-09	4.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	9.1E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.4E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Aroclor-1254	0.100	mg/kg	9.6E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.9E-09	6.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	2.6E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.4E-09	1.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Arsenic	19.2	mg/kg	1.8E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.8E-07	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.390	mg/kg	3.7E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.6E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Cobalt	19.1	mg/kg	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Iron	41,025	mg/kg	3.9E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.8E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.04
				Manganese (soil)	1,065	mg/kg	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.2E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.005
				Thallium	2.20	mg/kg	2.1E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								5.7E-07					0.1

TABLE 7.1.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	7.5E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.5E-09	5.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	3.4E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	2.5E-08	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	6.9E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.0E-09	4.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.2E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	8.4E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000003
				Benzo(k)fluoranthene	2.10	mg/kg	2.6E-09	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.9E-10	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	8.2E-09	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	6.0E-11	5.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.4E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.7E-09	1.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.1E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	8.0E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	9.0E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.6E-10	6.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.2E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	8.3E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00003
				Aroclor-1254	0.100	mg/kg	1.3E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	2.7E-10	9.4E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0005
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	7.8E-16	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.0E-10	5.4E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00005
				Arsenic	19.2	mg/kg	5.5E-09	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	8.3E-09	3.9E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								4.6E-08					0.002
		Exposure Point Total									6.2E-07					0.1
	Exposure Medium Total										6.2E-07					0.1
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	4.3E-6	mg/m^3	1.5E-09	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.6E-10	1.0E-07	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.9E-6	mg/m^3	6.5E-10	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	7.2E-10	4.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	3.9E-6	mg/m^3	1.3E-09	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.5E-10	9.3E-08	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	6.9E-7	mg/m^3	2.3E-10	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.5E-6	mg/m^3	5.1E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	5.6E-11	3.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	4.7E-6	mg/m^3	1.6E-09	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	1.8E-11	1.1E-07	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.4E-7	mg/m^3	4.6E-11	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	5.5E-11	3.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	6.6E-6	mg/m^3	2.2E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.6E-07	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	5.1E-7	mg/m^3	1.7E-10	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.9E-11	1.2E-08	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	6.8E-6	mg/m^3	2.3E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.6E-07	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	7.1E-8	mg/m^3	2.4E-11	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	1.4E-11	1.7E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	1.9E-12	mg/m^3	6.5E-16	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	2.5E-11	4.6E-14	(mg/m^3)	4.0E-08	(mg/m^3)	0.000001
				Arsenic	1.4E-5	mg/m^3	4.7E-09	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	2.0E-08	3.3E-07	(mg/m^3)	1.5E-05	(mg/m^3)	0.02
				Beryllium	2.8E-7	mg/m^3	9.4E-11	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	2.3E-10	6.6E-09	(mg/m^3)	2.0E-05	(mg/m^3)	0.0003
				Cobalt	1.4E-5	mg/m^3	4.6E-09	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	4.2E-08	3.2E-07	(mg/m^3)	6.0E-06	(mg/m^3)	0.05
				Iron	0.029	mg/m^3	9.9E-06	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	7.0E-04	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	7.6E-4	mg/m^3	2.6E-07	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.8E-05	(mg/m^3)	5.0E-05	(mg/m^3)	0.4
				Thallium	1.6E-6	mg/m^3	5.3E-10	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	3.7E-08	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								6.3E-08					0.4
		Exposure Point Total									6.3E-08					0.4
	Exposure Medium Total										6.3E-08					0.4
Medium Total											6.8E-07					0.6

TABLE 7.1.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Tank Farm 4	Ingestion	Naphthalene	0.190	ug/L	1.4E-10	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	9.7E-09	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0000005
				Endrin Aldehyde	6.52	ug/L	4.7E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.3E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Aluminum	253.0	ug/L	1.8E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.3E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00001
				Arsenic	2.40	ug/L	1.7E-09	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.6E-09	1.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0004
				Cobalt	9.00	ug/L	6.5E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.6E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	9,133	ug/L	6.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.6E-04	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.0007
				Manganese (water)	1,512	ug/L	1.1E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	7.7E-05	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.003
			Exp. Route Total								2.6E-09					0.007
			Dermal	Naphthalene	0.190	ug/L	4.0E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.8E-07	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00001
				Endrin Aldehyde	6.52	ug/L	5.3E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Aluminum	253.0	ug/L	9.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.8E-06	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.000007
				Arsenic	2.40	ug/L	2.4E-09	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	3.6E-09	1.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0006
				Cobalt	9.00	ug/L	4.8E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	3.4E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Iron	9,133	ug/L	6.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	4.6E-04	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.0007
				Manganese (water)	1,512	ug/L	1.9E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.4E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.1
			Exp. Route Total								3.6E-09					0.2
		Exposure Point Total									6.2E-09					0.2
	Exposure Medium Total										6.2E-09					0.2
	Air	Tank Farm 4	Inhalation	Naphthalene	5.5E-6	mg/m^3	1.9E-09	(mg/m^3)	3.4E-05	$(ug/m^3)^{-1}$	6.4E-11	1.3E-07	(mg/m^3)	3.0E-03	(mg/m^3)	0.00004
				Endrin Aldehyde	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
				Aluminum	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	5.0E-03	(mg/m^3)	--
				Arsenic	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	1.5E-05	(mg/m^3)	--
				Cobalt	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	6.0E-06	(mg/m^3)	--
				Iron	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (water)	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								6.4E-11					0.00004
		Exposure Point Total									6.4E-11					0.00004
	Exposure Medium Total										6.4E-11					0.00004
Medium Total											6.3E-09					0.2
Total of Receptor Risks - Surface Soil and Groundwater											1.7E-06	Total of Receptor Hazards - Surface Soil and Groundwater				0.5
Total of Receptor Risks - Subsurface Soil and Groundwater											6.9E-07	Total of Receptor Hazards - Subsurface Soil and Groundwater				0.7

TABLE 7.2.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	1.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	9.9E-07	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	6.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)-1	4.4E-06	4.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.2E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	9.0E-07	9.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	2.1E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.7E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00006
				Benzo(k)fluoranthene	8.70	mg/kg	4.8E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)-1	3.5E-08	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	1.5E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)-1	1.1E-09	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	9.9E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)-1	7.2E-07	7.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	2.1E-06	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.6E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0004
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	1.6E-07	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.7E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0006
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.7E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)-1	2.2E-08	1.3E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	10,539	mg/kg	5.8E-04	(mg/kg/day)	NA	(mg/kg/day)-1	--	4.5E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.005
				Arsenic	15.8	mg/kg	8.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	1.3E-06	6.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.420	mg/kg	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Chromium	13.1	mg/kg	7.2E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)-1	3.6E-07	5.6E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	13.3	mg/kg	7.3E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	5.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	33,452	mg/kg	1.8E-03	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.4E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	453	mg/kg	2.5E-05	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.9E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								8.9E-06					0.07
			Dermal	Benzo(a)anthracene	24.7	mg/kg	2.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	1.7E-07	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)-1	7.6E-07	8.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	1.5E-07	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	3.7E-08	(mg/kg/day)	NA	(mg/kg/day)-1	--	2.9E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000010
				Benzo(k)fluoranthene	8.70	mg/kg	8.2E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)-1	6.0E-09	6.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.6E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)-1	1.9E-10	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthrecene	1.80	mg/kg	1.7E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)-1	1.2E-07	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	3.6E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	2.8E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00007
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	2.7E-08	2.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	3.7E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	2.9E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00010
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	6.8E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)-1	8.8E-10	5.3E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00005
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	3.4E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	5.2E-08	2.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0009
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)-1	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.3E-06					0.001
		Exposure Point Total									1.0E-05					0.07
	Exposure Medium Total										1.0E-05					0.07

TABLE 7.2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m³	5.8E-11	(mg/m³)	1.1E-04	(ug/m³)⁻¹	6.4E-12	4.5E-10	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	1.0E-9	mg/m³	2.6E-11	(mg/m³)	1.1E-03	(ug/m³)⁻¹	2.8E-11	2.0E-10	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m³	5.2E-11	(mg/m³)	1.1E-04	(ug/m³)⁻¹	5.8E-12	4.1E-10	(mg/m³)	NA	(mg/m³)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m³	9.1E-12	(mg/m³)	NA	(ug/m³)⁻¹	--	7.1E-11	(mg/m³)	NA	(mg/m³)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m³	2.0E-11	(mg/m³)	1.1E-04	(ug/m³)⁻¹	2.2E-12	1.6E-10	(mg/m³)	NA	(mg/m³)	--
				Chrysene	2.5E-10	mg/m³	6.3E-12	(mg/m³)	1.1E-05	(ug/m³)⁻¹	6.9E-14	4.9E-11	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m³	4.2E-12	(mg/m³)	1.2E-03	(ug/m³)⁻¹	5.0E-12	3.3E-11	(mg/m³)	NA	(mg/m³)	--
				Fluoranthene	3.5E-9	mg/m³	8.9E-11	(mg/m³)	NA	(ug/m³)⁻¹	--	6.9E-10	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m³	9.1E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	1.0E-12	7.1E-11	(mg/m³)	NA	(mg/m³)	--
				Pyrene	3.6E-9	mg/m³	9.2E-11	(mg/m³)	NA	(ug/m³)⁻¹	--	7.2E-10	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m³	7.2E-18	(mg/m³)	3.8E+01	(ug/m³)⁻¹	2.8E-13	5.6E-17	(mg/m³)	4.0E-08	(mg/m³)	1.40909E-09
				Aluminum	9.6E-7	mg/m³	2.5E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	1.9E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00004
				Arsenic	1.4E-9	mg/m³	3.7E-11	(mg/m³)	4.3E-03	(ug/m³)⁻¹	1.6E-10	2.9E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00002
				Beryllium	3.8E-11	mg/m³	9.8E-13	(mg/m³)	2.4E-03	(ug/m³)⁻¹	2.4E-12	7.6E-12	(mg/m³)	2.0E-05	(mg/m³)	0.0000004
				Chromium	1.2E-9	mg/m³	3.1E-11	(mg/m³)	8.4E-02	(ug/m³)⁻¹	2.6E-09	2.4E-10	(mg/m³)	1.0E-04	(mg/m³)	0.000002
				Cobalt	1.2E-9	mg/m³	3.1E-11	(mg/m³)	9.0E-03	(ug/m³)⁻¹	2.8E-10	2.4E-10	(mg/m³)	6.0E-06	(mg/m³)	0.00004
				Iron	3.0E-6	mg/m³	7.8E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	6.1E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	4.1E-8	mg/m³	1.1E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	8.2E-09	(mg/m³)	5.0E-05	(mg/m³)	0.0002
			Exp. Route Total								3.1E-09					0.0003
		Exposure Point Total									3.1E-09					0.0003
	Exposure Medium Total										3.1E-09					0.0003
Medium Total											1.0E-05					0.07
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(e)anthracene	6.00	mg/kg	3.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	2.4E-07	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	1.5E-07	(mg/kg/day)	7.3E+00	(mg/kg/dey)-1	1.1E-06	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	3.0E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	2.2E-07	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	5.3E-08	(mg/kg/day)	NA	(mg/kg/day)-1	--	4.1E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00001
				Benzo(k)fluoranthene	2.10	mg/kg	1.2E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)-1	8.4E-09	9.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	3.6E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)-1	2.7E-09	2.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthrecene	0.190	mg/kg	1.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)-1	7.6E-08	8.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	5.1E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	3.9E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00010
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	4.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	2.9E-08	3.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	5.2E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	4.1E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Aroclor-1254	0.100	mg/kg	5.5E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)-1	1.1E-08	4.3E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.5E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)-1	1.9E-08	1.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	8,781	mg/kg	4.8E-04	(mg/kg/day)	NA	(mg/kg/day)-1	--	3.8E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	19.2	mg/kg	1.1E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	1.6E-06	8.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.390	mg/kg	2.1E-08	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.7E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00008
				Chromium	12.9	mg/kg	7.1E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)-1	3.6E-07	5.5E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	19.1	mg/kg	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)-1	--	8.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	41,025	mg/kg	2.3E-03	(mg/kg/day)	NA	(mg/kg/day)-1	--	1.8E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.03
				Manganese (soil)	1,065	mg/kg	5.9E-05	(mg/kg/day)	NA	(mg/kg/day)-1	--	4.6E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	2.20	mg/kg	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)-1	--	9.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.6E-06					0.09

TABLE 7.2.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	5.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	4.1E-08	4.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)-1	1.9E-07	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	5.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	3.8E-08	4.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	9.1E-09	(mg/kg/day)	NA	(mg/kg/day)-1	- -	7.1E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000002
				Benzo(k)fluoranthene	2.10	mg/kg	2.0E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)-1	1.4E-09	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	6.2E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)-1	4.6E-10	4.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.8E-09	(mg/kg/dey)	7.3E+00	(mg/kg/day)-1	1.3E-08	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	8.7E-08	(mg/kg/day)	NA	(mg/kg/day)-1	- -	6.8E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	6.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)-1	5.0E-09	5.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	9.0E-08	(mg/kg/day)	NA	(mg/kg/day)-1	- -	7.0E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Aroclor-1254	0.100	mg/kg	1.0E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)-1	2.0E-09	7.9E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0004
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	5.9E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)-1	7.7E-10	4.6E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00005
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	4.2E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	6.3E-08	3.3E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.5E-07					0.002
		Exposure Point Total									4.0E-06					0.09
	Exposure Medium Total										4.0E-06					0.09
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m³	1.4E-11	(mg/m³)	1.1E-04	(ug/m³)-1	1.5E-12	1.1E-10	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	2.5E-10	mg/m³	6.3E-12	(mg/m³)	1.1E-03	(ug/m³)-1	6.9E-12	4.9E-11	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m³	1.3E-11	(mg/m³)	1.1E-04	(ug/m³)-1	1.4E-12	1.0E-10	(mg/m³)	NA	(mg/m³)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m³	2.2E-12	(mg/m³)	NA	(ug/m³)-1	- -	1.7E-11	(mg/m³)	NA	(mg/m³)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m³	4.9E-12	(mg/m³)	1.1E-04	(ug/m³)-1	5.4E-13	3.8E-11	(mg/m³)	NA	(mg/m³)	--
				Chrysene	6.0E-10	mg/m³	1.5E-11	(mg/m³)	1.1E-05	(ug/m³)-1	1.7E-13	1.2E-10	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m³	4.4E-13	(mg/m³)	1.2E-03	(ug/m³)-1	5.3E-13	3.5E-12	(mg/m³)	NA	(mg/m³)	--
				Fluoranthene	8.4E-10	mg/m³	2.2E-11	(mg/m³)	NA	(ug/m³)-1	- -	1.7E-10	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m³	1.7E-12	(mg/m³)	1.1E-04	(ug/m³)-1	1.9E-13	1.3E-11	(mg/m³)	NA	(mg/m³)	--
				Pyrene	8.6E-10	mg/m³	2.2E-11	(mg/m³)	NA	(ug/m³)-1	- -	1.7E-10	(mg/m³)	NA	(mg/m³)	--
				Aroclor-1254	9.1E-12	mg/m³	2.3E-13	(mg/m³)	5.7E-04	(ug/m³)-1	1.3E-13	1.8E-12	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m³	6.3E-18	(mg/m³)	3.8E+01	(ug/m³)-1	2.4E-13	4.9E-17	(mg/m³)	4.0E-08	(mg/m³)	1.22727E-09
				Aluminum	8.0E-7	mg/m³	2.1E-08	(mg/m³)	NA	(ug/m³)-1	- -	1.6E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00003
				Arsenic	1.7E-9	mg/m³	4.5E-11	(mg/m³)	4.3E-03	(ug/m³)-1	1.9E-10	3.5E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00002
				Beryllium	3.5E-11	mg/m³	9.1E-13	(mg/m³)	2.4E-03	(ug/m³)-1	2.2E-12	7.1E-12	(mg/m³)	2.0E-05	(mg/m³)	0.0000004
				Chromium	1.2E-9	mg/m³	3.0E-11	(mg/m³)	8.4E-02	(ug/m³)-1	2.5E-09	2.3E-10	(mg/m³)	1.0E-04	(mg/m³)	0.000002
				Cobalt	1.7E-9	mg/m³	4.5E-11	(mg/m³)	9.0E-03	(ug/m³)-1	4.0E-10	3.5E-10	(mg/m³)	6.0E-06	(mg/m³)	0.00006
				Iron	3.7E-6	mg/m³	9.6E-08	(mg/m³)	NA	(ug/m³)-1	- -	7.5E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	9.7E-8	mg/m³	2.5E-09	(mg/m³)	NA	(ug/m³)-1	- -	1.9E-08	(mg/m³)	5.0E-05	(mg/m³)	0.0004
				Thallium	2.0E-10	mg/m³	5.1E-12	(mg/m³)	NA	(ug/m³)-1	- -	4.0E-11	(mg/m³)	NA	(mg/m³)	--
			Exp. Route Total								3.1E-09					0.0005
		Exposure Point Total									3.1E-09					0.0005
	Exposure Medium Total										3.1E-09					0.0005
Medium Total											4.0E-06					0.09
										Total of Receptor Risks - Surface Soil	1.0E-05				Total of Receptor Hazards - Surface Soil	0.07

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	4.2E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.0E-07	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.9E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-06	7.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	3.8E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.8E-07	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000009
				Benzo(k)fluoranthene	8.70	mg/kg	1.5E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.1E-08	5.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	4.6E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.3E-10	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	3.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.2E-07	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	2.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	6.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.8E-08	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	2.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00009
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.7E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.3E-09	2.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0002
				Aluminum	10,539	mg/kg	5.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.9E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0007
				Arsenic	15.8	mg/kg	8.9E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-07	1.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Beryllium	0.420	mg/kg	2.4E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.8E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00001
				Chromium	13.1	mg/kg	7.4E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.7E-08	8.6E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0003
				Cobalt	13.3	mg/kg	7.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Iron	33,452	mg/kg	1.9E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese (soil)	453	mg/kg	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.0E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0002
			Exp. Route Total								2.4E-06					0.01
			Dermal	Benzo(a)anthracene	24.7	mg/kg	1.8E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-07	6.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	7.8E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.7E-07	3.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.6E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-07	6.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	9.3E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000004
				Benzo(k)fluoranthene	8.70	mg/kg	6.2E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	4.5E-09	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	1.9E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.4E-10	7.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.4E-08	5.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	9.0E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00003
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	2.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-08	1.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	9.4E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00004
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.7E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.2E-10	2.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00002
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	8.7E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-08	1.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0003
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								9.5E-07					0.0004
		Exposure Point Total									3.3E-06					0.01
	Exposure Medium Total										3.3E-06					0.01

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	1.3E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.4E-12	2.5E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	5.6E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	6.2E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	1.1E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.3E-12	2.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	6.7E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	4.5E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.9E-13	8.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	1.4E-12	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.5E-14	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	9.2E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.1E-12	1.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	6.5E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	2.0E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.2E-13	3.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	6.7E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.9E-11	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	5.3E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.0E-14	3.1E-18	(mg/m^3)	4.0E-08	(mg/m^3)	7.72105E-11
				Aluminum	9.6E-7	mg/m^3	1.8E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.0E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	1.4E-9	mg/m^3	2.7E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.2E-11	1.6E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000001
				Beryllium	3.8E-11	mg/m^3	7.2E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.7E-13	4.2E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.2E-9	mg/m^3	2.2E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.9E-10	1.3E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.2E-9	mg/m^3	2.3E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.0E-11	1.3E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000002
				Iron	3.0E-6	mg/m^3	5.7E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.3E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	7.7E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	4.5E-10	(mg/m^3)	5.0E-05	(mg/m^3)	0.000009
			Exp. Route Total								2.3E-10					0.00001
		Exposure Point Total									2.3E-10					0.00001
	Exposure Medium Total										2.3E-10					0.00001
Medium Total											3.3E-06					0.01
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	1.0E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.4E-08	3.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	4.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.3E-07	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	9.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.8E-08	3.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	5.4E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.3E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000002
				Benzo(k)fluoranthene	2.10	mg/kg	3.6E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	2.6E-09	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	1.1E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	8.1E-10	4.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	3.2E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.3E-08	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	5.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.0E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	1.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.9E-09	4.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	5.4E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.2E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Aroclor-1254	0.100	mg/kg	5.6E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.1E-09	6.6E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0003
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.5E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.0E-09	1.8E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0002
				Aluminum	8,781	mg/kg	4.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.8E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0006
				Arsenic	19.2	mg/kg	1.1E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.6E-07	1.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Beryllium	0.390	mg/kg	2.2E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.6E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00001
				Chromium	12.9	mg/kg	7.3E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.6E-08	8.5E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0003
				Cobalt	19.1	mg/kg	1.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Iron	41,025	mg/kg	2.3E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.7E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.004
				Manganese (soil)	1,065	mg/kg	6.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.0E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0005
				Thallium	2.20	mg/kg	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								7.1E-07					0.01

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	4.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-08	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	1.9E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-07	7.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	3.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.9E-08	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	2.3E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0000009
				Benzo(k)fluoranthene	2.10	mg/kg	1.5E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.1E-09	5.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	4.7E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.4E-10	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.9E-09	5.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.000006
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	5.1E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.7E-09	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000009
				Aroclor-1254	0.100	mg/kg	2.6E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	5.1E-10	3.0E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.5E-15	(mg/kg/dey)	1.3E+05	(mg/kg/day)$^{-1}$	1.9E-10	1.7E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00002
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	1.1E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.6E-08	1.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0004
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Mangenese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.3E-07					0.0006
		Exposure Point Total									9.4E-07					0.01
	Exposure Medium Total										9.4E-07					0.01
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	3.1E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.4E-13	6.0E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	1.4E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.5E-12	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	2.8E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.1E-13	5.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	1.6E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	1.1E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-13	2.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	3.4E-12	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	3.7E-14	6.6E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	9.7E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.2E-13	1.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	1.6E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	3.7E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.1E-14	7.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	1.6E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	1.7E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	9.7E-15	1.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	4.6E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.8E-14	2.7E-18	(mg/m^3)	4.0E-08	(mg/m^3)	6.72478E-11
				Aluminum	8.0E-7	mg/m^3	1.5E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.7E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	1.7E-9	mg/m^3	3.3E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.4E-11	1.9E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000001
				Beryllium	3.5E-11	mg/m^3	6.7E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.6E-13	3.9E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.2E-9	mg/m^3	2.2E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.9E-10	1.3E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.7E-9	mg/m^3	3.3E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.9E-11	1.9E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000003
				Iron	3.7E-6	mg/m^3	7.0E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.1E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	1.8E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.1E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00002
				Thallium	2.0E-10	mg/m^3	3.8E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.2E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								2.3E-10					0.00003
		Exposure Point Total									2.3E-10					0.00003
	Exposure Medium Total										2.3E-10					0.00003
Medium Total											9.4E-07					0.01

TABLE 7.3.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	426	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								- -					--
			Dermal	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	8.2E-11	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.2E-10	9.6E-10	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000003
				Iron	426	ug/L	9.7E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.1E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000002
			Exp. Route Total								1.2E-10					0.000005
		Exposure Point Total									1.2E-10					0.000005
	Exposure Medium Total										1.2E-10					0.000005
Medium Total											1.2E-10					0.000005
Sediment	Sediment	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.010	mg/kg	1.7E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-10	6.6E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	1.9E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-08	7.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	2.1E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.6E-09	8.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	4.7E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.5E-09	1.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.3E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.0E-09	2.7E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0003
				Aluminum	10,190	mg/kg	5.7E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.7E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0007
				Arsenic	21.5	mg/kg	1.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.8E-07	1.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.005
				Beryllium	0.520	mg/kg	2.9E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.4E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00002
				Chromium	18.6	mg/kg	1.0E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	5.2E-08	1.2E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0004
				Cobalt	43.3	mg/kg	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Iron	84,620	mg/kg	4.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.6E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.008
				Manganese (soil)	2,204	mg/kg	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
				Thallium	6.70	mg/kg	3.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.6E-07					0.02
			Dermal	Benzo(a)anthracene	0.010	mg/kg	1.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-09	8.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	2.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-07	7.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	2.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.7E-08	8.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	5.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.6E-08	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	5.6E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	7.3E-09	6.6E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0007
				Aluminum	10,190	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	21.5	mg/kg	2.9E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.4E-07	3.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.520	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	18.6	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	43.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	84,620	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	2,204	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	6.70	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								6.5E-07					0.01
		Exposure Point Total									9.0E-07					0.04
	Exposure Medium Total										9.0E-07					0.04
Medium Total											9.0E-07					0.04
Total of Receptor Risks - Surface Soil, Surface Water, Sediment											4.2E-06	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.05
Total of Receptor Risks - All Soil, Surface Water, Sediment											1.8E-06	Total of Receptor Hazards - All Soil, Surface Water, and Sediment				0.05

Notes:

1 - Mutagenic chamicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	2.0E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.5E-06	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	9.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.5E-06	4.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.8E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-06	9.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	4.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00006
				Benzo(k)fluoranthene	8.70	mg/kg	7.1E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	5.2E-08	3.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.2E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.6E-09	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.5E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-06	7.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	4.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0004
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.2E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-07	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	4.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0006
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	3.9E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.0E-09	1.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	10,539	mg/kg	1.3E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.6E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.005
				Arsenic	15.8	mg/kg	2.0E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.0E-07	6.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.420	mg/kg	5.3E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Chromium	13.1	mg/kg	1.6E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	8.2E-08	5.7E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	13.3	mg/kg	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	33,452	mg/kg	4.2E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	453	mg/kg	5.7E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								1.1E-05					0.07
			Dermal	Benzo(a)anthracene	24.7	mg/kg	2.9E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-07	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.3E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.5E-07	7.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.7E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-07	1.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	7.1E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000008
				Benzo(k)fluoranthene	8.70	mg/kg	1.0E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	7.5E-09	5.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	3.2E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	2.3E-10	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	2.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-07	1.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	6.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.4E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	4.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.4E-08	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	7.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00008
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.3E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.7E-10	4.6E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00005
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	6.6E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.0E-08	2.3E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0008
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.6E-06					0.0010
		Exposure Point Total									1.3E-05					0.07
	Exposure Medium Total										1.3E-05					0.07

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m³	4.6E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	5.0E-13	2.5E-11	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	1.0E-9	mg/m³	2.0E-12	(mg/m³)	1.1E-03	(ug/m³)⁻¹	2.2E-12	1.1E-11	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m³	4.1E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	4.6E-13	2.2E-11	(mg/m³)	NA	(mg/m³)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m³	1.1E-13	(mg/m³)	NA	(ug/m³)⁻¹	--	3.9E-12	(mg/m³)	NA	(mg/m³)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m³	1.6E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	1.8E-13	8.7E-12	(mg/m³)	NA	(mg/m³)	--
				Chrysene	2.5E-10	mg/m³	5.0E-13	(mg/m³)	1.1E-05	(ug/m³)⁻¹	5.5E-15	2.7E-12	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m³	3.3E-13	(mg/m³)	1.2E-03	(ug/m³)⁻¹	4.0E-13	1.8E-12	(mg/m³)	NA	(mg/m³)	--
				Fluoranthene	3.5E-9	mg/m³	1.1E-12	(mg/m³)	NA	(ug/m³)⁻¹	--	3.8E-11	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m³	7.2E-13	(mg/m³)	1.1E-04	(ug/m³)⁻¹	7.9E-14	3.9E-12	(mg/m³)	NA	(mg/m³)	--
				Pyrene	3.6E-9	mg/m³	1.1E-12	(mg/m³)	NA	(ug/m³)⁻¹	--	3.9E-11	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m³	8.8E-20	(mg/m³)	3.8E+01	(ug/m³)⁻¹	3.4E-15	3.1E-18	(mg/m³)	4.0E-08	(mg/m³)	7.72105E-11
				Aluminum	9.6E-7	mg/m³	3.0E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	1.0E-08	(mg/m³)	5.0E-03	(mg/m³)	0.000002
				Arsenic	1.4E-9	mg/m³	4.5E-13	(mg/m³)	4.3E-03	(ug/m³)⁻¹	1.9E-12	1.6E-11	(mg/m³)	1.5E-05	(mg/m³)	0.000001
				Beryllium	3.8E-11	mg/m³	1.2E-14	(mg/m³)	2.4E-03	(ug/m³)⁻¹	2.9E-14	4.2E-13	(mg/m³)	2.0E-05	(mg/m³)	0.00000002
				Chromium	1.2E-9	mg/m³	3.7E-13	(mg/m³)	8.4E-02	(ug/m³)⁻¹	3.1E-11	1.3E-11	(mg/m³)	1.0E-04	(mg/m³)	0.0000001
				Cobalt	1.2E-9	mg/m³	3.8E-13	(mg/m³)	9.0E-03	(ug/m³)⁻¹	3.4E-12	1.3E-11	(mg/m³)	6.0E-06	(mg/m³)	0.000002
				Iron	3.0E-6	mg/m³	9.5E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	3.3E-08	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	4.1E-8	mg/m³	1.3E-11	(mg/m³)	NA	(ug/m³)⁻¹	--	4.5E-10	(mg/m³)	5.0E-05	(mg/m³)	0.000009
			Exp. Route Total								4.1E-11					0.00001
		Exposure Point Total									4.1E-11					0.00001
	Exposure Medium Total										4.1E-11					0.00001
Medium Total											1.3E-05					0.07
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	4.9E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	3.6E-07	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.2E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	1.6E-06	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	4.5E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	3.3E-07	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.2E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00001
				Benzo(k)fluoranthene	2.10	mg/kg	1.7E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)⁻¹	1.2E-08	9.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	5.4E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)⁻¹	3.9E-09	2.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	1.1E-07	8.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.0E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	5.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	4.3E-08	3.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.2E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Aroclor-1254	0.100	mg/kg	1.3E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	2.5E-09	4.4E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	3.4E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	4.4E-09	1.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	8.781	mg/kg	1.1E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.8E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	19.2	mg/kg	2.4E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	3.6E-07	8.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.390	mg/kg	4.9E-09	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.7E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Chromium	12.9	mg/kg	1.6E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	8.1E-08	5.7E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	19.1	mg/kg	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	8.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	41.025	mg/kg	5.1E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.8E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.03
				Manganese (soil)	1.065	mg/kg	1.3E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.7E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	2.20	mg/kg	2.8E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	9.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.9E-06					0.09

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	7.1E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.2E-08	3.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	3.2E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	2.3E-07	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	6.5E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.8E-08	3.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.8E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.1E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000002
				Benzo(k)fluoranthene	2.10	mg/kg	2.5E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.8E-09	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	7.8E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	5.7E-10	4.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.3E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.6E-08	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.9E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	8.5E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.2E-09	4.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.1E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Aroclor-1254	0.100	mg/kg	2.0E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	3.9E-10	6.9E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0003
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.1E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.5E-10	4.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00004
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	8.1E-09	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.2E-08	2.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0009
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.7E-07					0.001
		Exposure Point Total									3.3E-06					0.10
	Exposure Medium Total										3.3E-06					0.10
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	1.1E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.2E-13	6.0E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	5.0E-13	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	5.5E-13	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	1.0E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.1E-13	5.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	2.7E-14	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	9.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	3.9E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	4.3E-14	2.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	1.2E-12	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	1.3E-14	6.6E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	3.5E-14	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	4.2E-14	1.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	2.6E-13	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	9.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	1.3E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.5E-14	7.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	2.7E-13	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	9.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	2.8E-15	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	1.6E-15	1.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	7.7E-20	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	2.9E-15	2.7E-18	(mg/m^3)	4.0E-08	(mg/m^3)	6.72478E-11
				Aluminum	8.0E-7	mg/m^3	2.5E-10	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	8.7E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	1.7E-9	mg/m^3	5.5E-13	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	2.4E-12	1.9E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000001
				Beryllium	3.5E-11	mg/m^3	1.1E-14	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	2.7E-14	3.9E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.2E-9	mg/m^3	3.7E-13	(mg/m^3)	8.4E-02	$(ug/m^3)^{-1}$	3.1E-11	1.3E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.7E-9	mg/m^3	5.4E-13	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	4.9E-12	1.9E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000003
				Iron	3.7E-6	mg/m^3	1.2E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	4.1E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	3.0E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.1E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00002
				Thallium	2.0E-10	mg/m^3	6.3E-14	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	2.2E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								3.9E-11					0.00003
		Exposure Point Total									3.9E-11					0.00003
	Exposure Medium Total										3.9E-11					0.00003
Medium Total											3.3E-06					0.10

TABLE 7.4.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	426	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	6.3E-11	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	9.5E-11	2.2E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000007
				Iron	426	ug/L	7.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-08	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000004
			Exp. Route Total								9.5E-11					0.00001
		Exposure Point Total									9.5E-11					0.00001
	Exposure Medium Total										9.5E-11					0.00001
Medium Total											9.5E-11					0.00001
Sediment	Sediment	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.010	mg/kg	8.1E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.9E-10	4.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	9.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.5E-08	4.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	1.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.5E-09	5.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	2.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.7E-08	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	5.1E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.7E-09	1.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	10,190	mg/kg	1.3E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.5E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	21.5	mg/kg	2.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.0E-07	9.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.520	mg/kg	6.5E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Chromium	18.6	mg/kg	2.3E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.2E-07	8.2E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.003
				Cobalt	43.3	mg/kg	5.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Iron	84,620	mg/kg	1.1E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.7E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.05
				Manganese (soil)	2,204	mg/kg	2.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.7E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.007
				Thallium	6.70	mg/kg	8.4E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.9E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								6.2E-07					0.2
			Dermal	Benzo(a)anthracene	0.010	mg/kg	1.2E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.7E-11	6.4E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	1.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.5E-09	7.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	1.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-09	8.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	3.3E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.4E-09	1.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.7E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.2E-10	6.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00006
				Aluminum	10,190	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	21.5	mg/kg	9.0E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.4E-08	3.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.520	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	18.6	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	43.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	84,620	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	2,204	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	6.70	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.7E-08					0.001
		Exposure Point Total									6.4E-07					0.2
	Exposure Medium Total										6.4E-07					0.2
Medium Total											6.4E-07					0.2
Total of Receptor Risks - Surface Soil, Surface Water, Sediment											1.3E-05	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.2
Total of Receptor Risks - All Soil, Surface Water, Sediment											3.9E-06	Total of Receptor Hazards - All Soil, Surface Water, and Sediment				0.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005)

TABLE 7 5.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	1.8E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-07	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	8.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.9E-07	5.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.7E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-07	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000006
				Benzo(k)fluoranthene	8.70	mg/kg	6.4E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	4.7E-09	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.0E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.5E-10	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.7E-08	8.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00004
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	2.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-08	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00006
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.5E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.9E-09	1.5E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0001
				Aluminum	10,539	mg/kg	4.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.9E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0005
				Arsenic	15.8	mg/kg	7.4E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.1E-07	7.4E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.420	mg/kg	2.0E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.000010
				Chromium	13.1	mg/kg	6.2E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.1E-08	6.2E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0002
				Cobalt	13.3	mg/kg	6.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	33,452	mg/kg	1.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.6E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.002
				Manganese (soil)	453	mg/kg	2.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0002
			Exp. Route Total								1.1E-06					0.008
			Dermal	Benzo(a)anthracene	24.7	mg/kg	2.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-08	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.8E-08	7.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.5E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.8E-08	1.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	2.7E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0000009
				Benzo(k)fluoranthene	8.70	mg/kg	9.5E-09	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	6.9E-10	6.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	3.0E-09	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	2.2E-11	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	2.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-08	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	2.6E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.000007
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	4.3E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-09	2.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	2.7E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000009
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	5.0E-16	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.5E-11	5.0E-15	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.000005
				Aluminum	10,539	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	15.8	mg/kg	2.5E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.8E-09	2.5E-08	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00008
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	13.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.8E-03	(mg/kg/day)	--
			Exp. Route Total								1.5E-07					0.0001
		Exposure Point Total									1.3E-06					0.008
	Exposure Medium Total										1.3E-06					0.008

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	3.9E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.3E-13	2.5E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	1.7E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.9E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	3.5E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.9E-13	2.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	3.9E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	1.4E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.5E-13	8.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	4.2E-13	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	4.6E-15	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	2.8E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	3.4E-13	1.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	3.8E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	6.1E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.7E-14	3.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	3.9E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.9E-11	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	3.1E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.2E-14	3.1E-18	(mg/m^3)	4.0E-08	(mg/m^3)	7.72105E-11
				Aluminum	9.6E-7	mg/m^3	1.0E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.0E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	1.4E-9	mg/m^3	1.6E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	6.8E-12	1.6E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000001
				Beryllium	3.8E-11	mg/m^3	4.2E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.0E-13	4.2E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.2E-9	mg/m^3	1.3E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.1E-10	1.3E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.2E-9	mg/m^3	1.3E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.2E-11	1.3E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000002
				Iron	3.0E-6	mg/m^3	3.3E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.3E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	4.5E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.5E-10	(mg/m^3)	5.0E-05	(mg/m^3)	0.000009
			Exp. Route Total								1.3E-10					0.00001
		Exposure Point Total									1.3E-10					0.00001
	Exposure Medium Total										1.3E-10					0.00001
Medium Total											1.3E-06					0.008
All Soil	All Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	4.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.2E-08	2.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-07	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	4.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.0E-08	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	4.5E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.5E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000002
				Benzo(k)fluoranthene	2.10	mg/kg	1.5E-08	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.1E-09	9.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	4.9E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.6E-10	3.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.0E-08	8.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	4.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.3E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	5.3E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.9E-09	3.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	4.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.5E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00001
				Aroclor-1254	0.100	mg/kg	4.7E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	9.4E-10	4.7E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.3E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.6E-09	1.3E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0001
				Aluminum	8,781	mg/kg	4.1E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0004
				Arsenic	19.2	mg/kg	9.0E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.4E-07	9.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Beryllium	0.390	mg/kg	1.8E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.000009
				Chromium	12.9	mg/kg	6.1E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.0E-08	6.1E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0002
				Cobalt	19.1	mg/kg	9.0E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Iron	41,025	mg/kg	1.9E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese (soil)	1,065	mg/kg	5.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.0E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0004
				Thallium	2.20	mg/kg	1.0E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.9E-07					0.01

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	All Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	6.6E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.8E-09	4.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	3.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.2E-08	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	6.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.4E-09	3.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	6.7E-10	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.7E-09	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0000002
				Benzo(k)fluoranthene	2.10	mg/kg	2.3E-09	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.7E-10	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	7.2E-09	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.3E-11	4.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-09	1.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	6.4E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.4E-08	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.000002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	7.9E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.7E-10	5.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	6.6E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.6E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000002
				Aroclor-1254	0.100	mg/kg	7.5E-11	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.5E-10	7.5E-10	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00004
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	4.3E-16	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.6E-11	4.3E-15	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.000004
				Aluminum	8,781	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	19.2	mg/kg	3.1E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.6E-09	3.1E-08	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0001
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	12.9	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.8E-08					0.0001
		Exposure Point Total									4.3E-07					0.01
	Exposure Medium Total										4.3E-07					0.01
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	9.4E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.0E-13	6.0E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	4.2E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	4.6E-13	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	8.6E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	9.5E-14	5.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	9.6E-14	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	3.3E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.6E-14	2.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	1.0E-12	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	1.1E-14	6.6E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	3.0E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	3.6E-14	1.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	9.2E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	1.1E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-14	7.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	9.5E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	1.0E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	5.7E-15	1.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	2.7E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.0E-14	2.7E-18	(mg/m^3)	4.0E-08	(mg/m^3)	6.72478E-11
				Aluminum	8.0E-7	mg/m^3	8.7E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.7E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	1.7E-9	mg/m^3	1.9E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	8.2E-12	1.9E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000001
				Beryllium	3.5E-11	mg/m^3	3.9E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	9.3E-14	3.9E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.2E-9	mg/m^3	1.3E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.1E-10	1.3E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.7E-9	mg/m^3	1.9E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.7E-11	1.9E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000003
				Iron	3.7E-6	mg/m^3	4.1E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.1E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	1.1E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.1E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00002
				Thallium	2.0E-10	mg/m^3	2.2E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.2E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.3E-10					0.00003
		Exposure Point Total									1.3E-10					0.00003
	Exposure Medium Total										1.3E-10					0.00003
Medium Total											4.3E-07					0.01

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreationat User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	426	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								- -					--
			Dermal	Benzo(a)anthracene	0.170	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Arsenic	0.360	ng/L	1.2E-10	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.7E-10	1.2E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000004
				Iron	426	ug/L	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000002
			Exp. Route Total								1.7E-10					0.000006
		Exposure Point Total									1.7E-10					0.000006
	Exposure Medium Total										1.7E-10					0.000006
Medium Total											1.7E-10					0.000006
Sediment	Sediment	Tank Farm 4	Ingestion	Benzo(a)anthracene	0.010	mg/kg	7.4E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.4E-11	4.7E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	8.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.9E-09	5.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	9.4E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.8E-10	6.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	2.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-09	1.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.9E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.5E-09	1.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0002
				Aluminum	10,190	mg/kg	4.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.8E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0005
				Arsenic	21.5	mg/kg	1.0E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.5E-07	1.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Beryllium	0.520	mg/kg	2.4E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.4E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00001
				Chromium	18.6	mg/kg	8.7E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	4.4E-08	8.7E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0003
				Cobalt	43.3	mg/kg	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.007
				Iron	84,620	mg/kg	4.0E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.0E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.006
				Manganese (soil)	2,204	mg/kg	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.0E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0007
				Thallium	6.70	mg/kg	3.1E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.1E-07					0.02
			Dermal	Benzo(a)anthracene	0.010	mg/kg	5.3E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.9E-11	3.4E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.110	mg/kg	5.8E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.2E-09	3.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.127	mg/kg	6.7E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.9E-10	4.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.028	mg/kg	1.5E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-09	9.4E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	3.2E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	4.1E-10	3.2E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00003
				Aluminum	10,190	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	21.5	mg/kg	1.7E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.5E-08	1.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0006
				Beryllium	0.520	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	18.6	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	43.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	84,620	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	2,204	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	6.70	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.1E-08					0.0006
		Exposure Point Total									2.4E-07					0.02
	Exposure Medium Total										2.4E-07					0.02
Medium Total											2.4E-07					0.02
										Total of Receptor Risks - Surface Soil, Surface Water, Sediment	1.5E-06	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.03
										Total of Receptor Risks - All Soil, Surface Water, Sediment	6.7E-07	Total of Receptor Hazards - All Soil, Surface Water, and Sediment				0.03

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.6.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	2.0E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.4E-05	1.1E-04	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	8.7E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	6.4E-05	4.7E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.8E-05	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.3E-05	9.6E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	4.8E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.7E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0006
				Benzo(k)fluoranthene	8.70	mg/kg	6.9E-06	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	5.0E-07	3.7E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.1E-06	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.6E-08	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.4E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.0E-05	7.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	4.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.6E-04	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.004
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	3.1E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.3E-06	1.7E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	4.8E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.7E-04	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.006
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	3.8E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	4.9E-08	1.3E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
				Arsenic	15.8	mg/kg	1.9E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.9E-06	6.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Beryllium	0.420	mg/kg	5.1E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0009
				Cobalt	13.3	mg/kg	1.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Iron	33,452	mg/kg	4.1E-03	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.4E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese (soil)	453	mg/kg	5.5E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.9E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
			Exp. Route Total								1.1E-04					0.7
			Dermal	Benzo(a)anthracene	24.7	mg/kg	2.9E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.1E-06	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.3E-06	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	9.3E-06	6.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.6E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.9E-06	1.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	6.9E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.4E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00008
				Benzo(k)fluoranthene	8.70	mg/kg	1.0E-06	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	7.3E-08	5.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	3.1E-07	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	2.3E-09	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	2.1E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.5E-06	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	6.8E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.4E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	4.5E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.3E-07	2.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	7.0E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.5E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0008
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.3E-14	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.7E-09	4.5E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Arsenic	15.8	mg/kg	6.5E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	9.7E-08	2.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.008
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.5E-05					0.009
		Exposure Point Total									1.2E-04					0.7
	Exposure Medium Total										1.2E-04					0.7

TABLE 7.6.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	2.7E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.9E-11	1.4E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	1.2E-10	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.3E-10	6.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	2.4E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.7E-11	1.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	6.5E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	9.4E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.0E-11	5.1E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	2.9E-11	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	3.2E-13	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	1.9E-11	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.3E-11	1.0E-10	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	6.3E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	4.2E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.6E-12	2.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	6.6E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	5.2E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.0E-13	1.8E-16	(mg/m^3)	4.0E-08	(mg/m^3)	4.51681E-09
				Arsenic	1.4E-9	mg/m^3	2.6E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.1E-10	9.2E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.00006
				Beryllium	3.8E-11	mg/m^3	7.0E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.7E-12	2.4E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Cobalt	1.2E-9	mg/m^3	2.2E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.0E-10	7.8E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	3.0E-6	mg/m^3	5.6E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.9E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	7.5E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.6E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0005
			Exp. Route Total								5.4E-10					0.0007
		Exposure Point Total									5.4E-10					0.0007
	Exposure Medium Total										5.4E-10					0.0007
Medium Total											1.2E-04					0.7
Subsurface Soil	Subsurface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	4.8E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.5E-06	2.6E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.1E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-05	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	4.4E-06	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.2E-06	2.4E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.1E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Benzo(k)fluoranthene	2.10	mg/kg	1.7E-06	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.2E-07	9.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	5.2E-06	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.8E-08	2.8E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.5E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-06	8.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.9E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0010
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	5.7E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.2E-07	3.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.1E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.001
				Aroclor-1254	0.100	mg/kg	1.2E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.4E-08	4.3E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.02
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	3.3E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	4.3E-08	1.2E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
				Arsenic	19.2	mg/kg	2.3E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.5E-06	8.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.3
				Beryllium	0.390	mg/kg	4.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.7E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0008
				Cobalt	19.1	mg/kg	2.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	8.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.3
				Iron	41,025	mg/kg	5.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.3
				Manganese (soil)	1,065	mg/kg	1.3E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.6E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.03
				Thallium	2.20	mg/kg	2.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	9.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.8E-05					0.9

TABLE 7.6.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	6.9E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.1E-07	3.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	3.1E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	2.3E-06	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	6.4E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.6E-07	3.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	1.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.0E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Benzo(k)fluoranthene	2.10	mg/kg	2.4E-07	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.8E-08	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	7.6E-07	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	5.6E-09	4.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.2E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.6E-07	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	1.6E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.7E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	8.3E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.1E-08	4.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	1.7E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	5.9E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0002
				Aroclor-1254	0.100	mg/kg	1.9E-09	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	3.8E-09	6.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.1E-14	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.4E-09	3.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Arsenic	19.2	mg/kg	7.9E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.2E-07	2.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.6E-06					0.01
		Exposure Point Total									3.1E-05					0.9
	Exposure Medium Total										3.1E-05					0.9
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	6.5E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	7.1E-12	3.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	2.9E-11	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	3.2E-11	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	6.0E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	6.5E-12	3.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	1.6E-12	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	5.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	2.3E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.5E-12	1.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	7.1E-11	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	7.9E-13	3.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	2.1E-12	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	2.5E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	1.5E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	5.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	7.8E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	8.6E-13	4.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	1.6E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	5.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	1.7E-13	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	9.5E-14	5.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	4.5E-18	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	1.7E-13	1.6E-16	(mg/m^3)	4.0E-08	(mg/m^3)	3.934E-09
				Arsenic	1.7E-9	mg/m^3	3.2E-11	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	1.4E-10	1.1E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.00007
				Beryllium	3.5E-11	mg/m^3	6.5E-13	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	1.6E-12	2.3E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Cobalt	1.7E-9	mg/m^3	3.2E-11	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	2.9E-10	1.1E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0002
				Iron	3.7E-6	mg/m^3	6.8E-08	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	2.4E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	1.8E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	6.2E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.001
				Thallium	2.0E-10	mg/m^3	3.7E-12	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.3E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								4.8E-10					0.002
		Exposure Point Total									4.8E-10					0.002
	Exposure Medium Total										4.8E-10					0.002
Medium Total											3.1E-05					0.9

TABLE 7.6.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Tank Farm 4	Ingestion	Naphthalene	0.190	ug/L	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	9.0E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0004
				Endrin Aldehyde	6.52	ug/L	8.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.0
				Aluminum	253.0	ug/L	3.4E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	2.40	ug/L	3.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.9E-06	1.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Cobalt	9.00	ug/L	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.3E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.4
				Iron	9,133	ug/L	1.2E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.3E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.6
				Manganese (water)	1,512	ug/L	2.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.2E-02	(mg/kg/day)	2.4E-02	(mg/kg/day)	3.0
			Exp. Route Total								4.9E-06					6.4
			Dermal	Naphthalene	0.190	ug/L	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.4E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0002
				Endrin Aldehyde	6.52	ug/L	1.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Aluminum	253	ug/L	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.5E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00004
				Arsenic	2.40	ug/L	2.5E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.8E-08	8.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Cobalt	9.00	ug/L	5.0E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Iron	9,133	ug/L	6.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.4E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese (water)	1,512	ug/L	2.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.0E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.7
			Exp. Route Total								3.8E-08					1.0
		Exposure Point Total									4.9E-06					7.4
	Exposure Medium Total										4.9E-06					7.4
	Air	Tank Farm 4	Inhalation	Naphthalene	0.190	ug/L	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)-1	- -	9.0E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0004
				Endrin Aldehyde	6.52	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Aluminum	253	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	2.40	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	9.00	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	9,133	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	1,512	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	0.0E+00	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								- -					0.0004
		Exposure Point Total									- -					0.0004
	Exposure Medium Total										- -					0.0004
Medium Total											4.9E-06					7.4
Total of Receptor Risks - Surface Soil and Groundwater											1.3E-04	Total of Receptor Hazards - Surface Soil and Groundwater				8.1
Total of Receptor Risks - Subsurface Soil and Groundwater											3.6E-05	Total of Receptor Hazards - Subsurface Soil and Groundwater				8

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 7.7.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	24.7	mg/kg	1.8E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.3E-06	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	7.9E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	5.8E-06	5.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	1.6E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.2E-06	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	1.8E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00006
				Benzo(k)fluoranthene	8.70	mg/kg	6.3E-07	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	4.6E-08	4.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	1.9E-07	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	1.4E-09	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.3E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	9.5E-07	8.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	1.7E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.7E-05	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0004
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	2.8E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	2.0E-07	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	1.8E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.8E-05	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0006
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	1.4E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.8E-08	1.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Arsenic	15.8	mg/kg	7.2E-07	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.1E-06	7.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.420	mg/kg	1.9E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.9E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00010
				Cobalt	13.3	mg/kg	6.1E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	33,452	mg/kg	1.5E-03	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	1.5E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	453	mg/kg	2.1E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.1E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								1.1E-05					0.07
			Dermal	Benzo(a)anthracene	24.7	mg/kg	2.6E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.9E-07	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	11.0	mg/kg	1.2E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	8.6E-07	7.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	22.4	mg/kg	2.4E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.7E-07	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	3.90	mg/kg	2.6E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000009
				Benzo(k)fluoranthene	8.70	mg/kg	9.3E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	6.8E-09	5.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	2.70	mg/kg	2.9E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	2.1E-10	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	1.80	mg/kg	1.9E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.4E-07	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	38.0	mg/kg	2.6E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.6E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00006
				Indeno(1,2,3-cd)pyrene	3.90	mg/kg	4.2E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.0E-08	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	39.4	mg/kg	2.7E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	2.7E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00009
				2,3,7,8-TCDD Equivalents	3.1E-6	mg/kg	4.9E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	6.3E-10	4.9E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00005
				Arsenic	15.8	mg/kg	2.5E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	3.7E-08	2.5E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0008
				Beryllium	0.420	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	13.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	33,452	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	453	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.4E-06					0.001
		Exposure Point Total									1.2E-05					0.07
	Exposure Medium Total										1.2E-05					0.07

TABLE 7.7.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	2.2E-9	mg/m^3	2.3E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.5E-11	1.4E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.0E-9	mg/m^3	1.0E-10	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.1E-10	6.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	2.0E-9	mg/m^3	2.1E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.3E-11	1.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	3.5E-10	mg/m^3	2.3E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	7.9E-10	mg/m^3	8.0E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.8E-12	5.1E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	2.5E-10	mg/m^3	2.5E-11	(mg/m^3)	1.1E-05	(ug/m^3)$^{-1}$	2.7E-13	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-10	mg/m^3	1.6E-11	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.0E-11	1.0E-10	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	3.5E-9	mg/m^3	2.2E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	3.5E-10	mg/m^3	3.6E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.9E-12	2.3E-10	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	3.6E-9	mg/m^3	2.3E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.8E-16	mg/m^3	1.8E-17	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	6.9E-13	1.8E-16	(mg/m^3)	4.0E-08	(mg/m^3)	4.51681E-09
				Arsenic	1.4E-9	mg/m^3	9.2E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	4.0E-10	9.2E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.00006
				Beryllium	3.8E-11	mg/m^3	2.4E-12	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	5.9E-12	2.4E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Cobalt	1.2E-9	mg/m^3	7.8E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	7.0E-10	7.8E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	3.0E-6	mg/m^3	1.9E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.9E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	4.1E-8	mg/m^3	2.6E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.6E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0005
			Exp. Route Total								1.3E-09					0.0007
		Exposure Point Total									1.3E-09					0.0007
	Exposure Medium Total										1.3E-09					0.0007
Medium Total											1.2E-05					0.07
Subsurface Soil	Subsurface Soil	Tank Farm 4	Ingestion	Benzo(a)anthracene	6.00	mg/kg	4.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.2E-07	2.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	1.9E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-06	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	4.0E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.9E-07	2.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	4.4E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.4E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00001
				Benzo(k)fluoranthene	2.10	mg/kg	1.5E-07	(mg/kg/day)	7.3E-02	(mg/kg/day)$^{-1}$	1.1E-08	9.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	4.7E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.5E-09	3.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	1.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.0E-07	8.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	4.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.2E-06	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.0001
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	5.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-08	3.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	4.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.4E-06	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.0001
				Aroclor-1254	0.100	mg/kg	4.6E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	9.2E-09	4.6E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	1.2E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.6E-08	1.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Arsenic	19.2	mg/kg	8.8E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-06	8.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.390	mg/kg	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Cobalt	19.1	mg/kg	8.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	8.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	41,025	mg/kg	1.9E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.9E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.03
				Manganese (soil)	1,065	mg/kg	4.9E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.9E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	2.20	mg/kg	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.5E-06					0.09

TABLE 7.7.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	Tank Farm 4	Dermal	Benzo(a)anthracene	6.00	mg/kg	6.4E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.7E-08	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	2.70	mg/kg	2.9E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	2.1E-07	1.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	5.50	mg/kg	5.9E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.3E-08	3.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(g,h,i)perylene	0.960	mg/kg	6.5E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.5E-08	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.000002
				Benzo(k)fluoranthene	2.10	mg/kg	2.2E-08	(mg/kg/day)	7.3E-02	$(mg/kg/day)^{-1}$	1.6E-09	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	6.60	mg/kg	7.0E-08	(mg/kg/day)	7.3E-03	$(mg/kg/day)^{-1}$	5.1E-10	4.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.190	mg/kg	2.0E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.5E-08	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Fluoranthene	9.20	mg/kg	6.2E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.2E-07	(mg/kg/day)	4.0E-02	(mg/kg/day)	0.00002
				Indeno(1,2,3-cd)pyrene	0.720	mg/kg	7.7E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.6E-09	4.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Pyrene	9.50	mg/kg	6.4E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	6.4E-07	(mg/kg/day)	3.0E-02	(mg/kg/day)	0.00002
				Aroclor-1254	0.100	mg/kg	7.3E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	1.5E-09	7.3E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0004
				2,3,7,8-TCDD Equivalents	2.7E-6	mg/kg	4.2E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	5.5E-10	4.2E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00004
				Arsenic	19.2	mg/kg	3.0E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	4.5E-08	3.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.390	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Cobalt	19.1	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	41,025	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,065	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.20	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.7E-07					0.001
		Exposure Point Total									3.9E-06					0.09
	Exposure Medium Total										3.9E-06					0.09
	Air	Tank Farm 4	Inhalation	Benzo(a)anthracene	5.5E-10	mg/m^3	5.5E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	6.0E-12	3.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	2.5E-10	mg/m^3	2.5E-11	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	2.7E-11	1.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.0E-10	mg/m^3	5.0E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	5.5E-12	3.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(g,h,i)perylene	8.7E-11	mg/m^3	5.6E-12	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	5.6E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(k)fluoranthene	1.9E-10	mg/m^3	1.9E-11	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.1E-12	1.2E-10	(mg/m^3)	NA	(mg/m^3)	--
				Chrysene	6.0E-10	mg/m^3	6.0E-11	(mg/m^3)	1.1E-05	$(ug/m^3)^{-1}$	6.6E-13	3.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.7E-11	mg/m^3	1.7E-12	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	2.1E-12	1.1E-11	(mg/m^3)	NA	(mg/m^3)	--
				Fluoranthene	8.4E-10	mg/m^3	5.4E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	5.4E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.5E-11	mg/m^3	6.6E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	7.3E-13	4.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Pyrene	8.6E-10	mg/m^3	5.5E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	5.5E-10	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	9.1E-12	mg/m^3	5.8E-13	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	3.3E-13	5.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.5E-16	mg/m^3	1.6E-17	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	6.0E-13	1.6E-16	(mg/m^3)	4.0E-08	(mg/m^3)	3.934E-09
				Arsenic	1.7E-9	mg/m^3	1.1E-10	(mg/m^3)	4.3E-03	$(ug/m^3)^{-1}$	4.8E-10	1.1E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.00007
				Beryllium	3.5E-11	mg/m^3	2.3E-12	(mg/m^3)	2.4E-03	$(ug/m^3)^{-1}$	5.5E-12	2.3E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Cobalt	1.7E-9	mg/m^3	1.1E-10	(mg/m^3)	9.0E-03	$(ug/m^3)^{-1}$	1.0E-09	1.1E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0002
				Iron	3.7E-6	mg/m^3	2.4E-07	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	2.4E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.7E-8	mg/m^3	6.2E-09	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	6.2E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.001
				Thallium	2.0E-10	mg/m^3	1.3E-11	(mg/m^3)	NA	$(ug/m^3)^{-1}$	- -	1.3E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.5E-09					0.002
		Exposure Point Total									1.5E-09					0.002
	Exposure Medium Total										1.5E-09					0.002
Medium Total											3.9E-06					0.10

TABLE 7.7.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Tank Farm 4	Ingestion	Naphthalene	0.190	ug/L	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.4E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0002
				Endrin Aldehyde	6.52	ug/L	1.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Aluminum	253.0	ug/L	4.5E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.5E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	2.40	ug/L	4.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	6.4E-06	4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Cobalt	9.00	ug/L	1.6E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.5
				Iron	9,133	ug/L	1.6E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.6E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese (water)	1,512	ug/L	2.7E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.7E-02	(mg/kg/day)	2.4E-02	(mg/kg/day)	1.1
			Exp. Route Total								6.4E-06					2.4
			Dermal	Naphthalene	0.190	ug/L	2.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.3E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0001
				Endrin Aldehyde	6.52	ug/L	3.4E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Aluminum	253	ug/L	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.6E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00002
				Arsenic	2.40	ug/L	3.9E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.8E-08	3.9E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Cobalt	9.00	ug/L	7.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Iron	9,133	ug/L	1.1E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.1E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.002
				Manganese (water)	1,512	ug/L	3.1E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.1E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.3
			Exp. Route Total								5.8E-08					0.4
		Exposure Point Total									6.4E-06					2.8
	Exposure Medium Total										6.4E-06					2.8
	Air	Tank Farm 4	Inhalation	Naphthalene	0.190	ug/L	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)-1	- -	3.4E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0002
				Endrin Aldehyde	6.52	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	1.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Aluminum	253	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	4.5E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	2.40	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)-1	- -	4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	9.00	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	1.6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	9,133	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	1.6E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	1,512	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)-1	- -	2.7E-02	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								- -					0.0002
		Exposure Point Total									- -					0.0002
	Exposure Medium Total										- -					0.0002
Medium Total											6.4E-06					2.8
Total of Receptor Risks - Surface Soil and Groundwater											1.8E-05	Total of Receptor Hazards - Surface Soil and Groundwater				2.9
Total of Receptor Risks - Subsurface Soil and Groundwater											1.0E-05	Total of Receptor Hazards - Subsurface Soil and Groundwater				3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Tank Farm 5

LIST OF TABLES
RAGS PART D TABLE 7 - TANK FARM 5
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

Table No.

Reasonable Maximum Exposures

7.1.RME Construction Workers - Tank Farm 5
7.2.RME Industrial Workers - Tank Farm 5
7.3.RME Adolescent Trespassers - Tank Farm 5
7.4.RME Child Recreational Users - Tank Farm 5
7.5.RME Adult Recreational Users - Tank Farm 5
7.6.RME Child Residents - Tank Farm 5
7.7.RME Adult Residents - Tank Farm 5

Central Tendency Exposures

7.1.CTE Construction Workers - Tank Farm 5
7.2.CTE Industrial Workers - Tank Farm 5
7.3.CTE Adolescent Trespassers - Tank Farm 5
7.4.CTE Child Recreational Users - Tank Farm 5
7.5.CTE Adult Recreational Users - Tank Farm 5
7.6.CTE Child Residents - Tank Farm 5
7.7.CTE Adult Residents - Tank Farm 5

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	2.3E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.7E-09	1.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	2.9E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.1E-08	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	4.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.6E-09	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	5.3E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.9E-09	3.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	2.1E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.6E-09	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	9.4E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.9E-09	6.5E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	9.8E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.3E-08	6.9E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.007
				Aluminum	8,500	mg/kg	2.0E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.4E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	26.4	mg/kg	6.3E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	9.5E-07	4.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.495	mg/kg	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0004
				Chromium	10.7	mg/kg	2.6E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.3E-07	1.8E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.006
				Cobalt	10.3	mg/kg	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Iron	25,700	mg/kg	6.2E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.3E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.06
				Manganese (soil)	343	mg/kg	8.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.8E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.004
			Exp. Route Total								1.1E-06					0.3
			Dermal	Benzo(a)anthracene	0.097	mg/kg	9.1E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.6E-10	6.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.1E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.1E-09	7.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.4E-09	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-09	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	8.3E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.1E-10	5.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	3.9E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	7.9E-10	2.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	8.9E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.2E-09	6.2E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	5.7E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	8.5E-08	4.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.0E-07					0.02
		Exposure Point Total									1.2E-06					0.3
	Exposure Medium Total										1.2E-06					0.3
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	6.9E-8	mg/m^3	1.2E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.3E-11	8.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	8.5E-8	mg/m^3	1.4E-10	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.6E-10	1.0E-08	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.5E-7	mg/m^3	2.5E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.7E-11	1.7E-08	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-8	mg/m^3	2.7E-11	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	3.2E-11	1.9E-09	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.4E-8	mg/m^3	1.1E-10	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-11	7.5E-09	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	2.8E-8	mg/m^3	4.7E-11	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	2.7E-11	3.3E-09	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.9E-12	mg/m^3	5.0E-15	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.9E-10	3.5E-13	(mg/m^3)	4.0E-08	(mg/m^3)	0.000009

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	0.006	mg/m^3	1.0E-05	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	7.2E-04	(mg/m^3)	5.0E-03	(mg/m^3)	0.1
				Arsenic	1.9E-5	mg/m^3	3.2E-08	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.4E-07	2.2E-06	(mg/m^3)	1.5E-05	(mg/m^3)	0.1
				Beryllium	3.5E-7	mg/m^3	6.0E-10	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.4E-09	4.2E-08	(mg/m^3)	2.0E-05	(mg/m^3)	0.002
				Chromium	7.6E-6	mg/m^3	1.3E-08	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.1E-06	9.1E-07	(mg/m^3)	1.0E-04	(mg/m^3)	0.009
				Cobalt	7.4E-6	mg/m^3	1.2E-08	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.1E-07	8.7E-07	(mg/m^3)	6.0E-06	(mg/m^3)	0.1
				Iron	0.018	mg/m^3	3.1E-05	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.2E-03	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	2.5E-4	mg/m^3	4.2E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.9E-05	(mg/m^3)	5.0E-05	(mg/m^3)	0.6
			Exp. Route Total								1.3E-06					1.0
		Exposure Point Total									1.3E-06					1.0
	Exposure Medium Total										1.3E-06					1.0
Medium Total											2.6E-06					1.3
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	8.6E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.3E-10	6.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	1.1E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.1E-09	7.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	1.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-09	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	2.4E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.8E-09	1.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	7.2E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.3E-10	5.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	9.4E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.9E-09	6.5E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.0E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.3E-08	7.1E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.007
				Aluminum	7,516	mg/kg	1.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	29.8	mg/kg	7.1E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.1E-06	5.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Beryllium	0.414	mg/kg	9.9E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.0E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Chromium	11.1	mg/kg	2.7E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.3E-07	1.9E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.006
				Cobalt	15.4	mg/kg	3.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Iron	37,930	mg/kg	9.1E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.4E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.09
				Manganese (soil)	1053	mg/kg	2.5E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.013
				Thallium	2.60	mg/kg	6.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.4E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.2E-06					0.4
			Dermal	Benzo(a)anthracene	0.036	mg/kg	3.4E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.5E-10	2.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	4.3E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.1E-09	3.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	6.8E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.0E-10	4.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	9.4E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.8E-10	6.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.8E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-10	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	3.9E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	7.9E-10	2.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	9.1E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.2E-09	6.3E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	6.4E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	9.6E-08	4.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.0E-07					0.02
		Exposure Point Total									1.3E-06					0.4
	Exposure Medium Total										1.3E-06					0.4

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	2.6E-8	mg/m³	4.4E-11	(mg/m³)	1.1E-04	(ug/m³)⁻¹	4.8E-12	3.1E-09	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	3.3E-8	mg/m³	5.6E-11	(mg/m³)	1.1E-03	(ug/m³)⁻¹	6.1E-11	3.9E-09	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	5.2E-8	mg/m³	8.8E-11	(mg/m³)	1.1E-04	(ug/m³)⁻¹	9.7E-12	6.2E-09	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(a,h)anthracene	7.1E-9	mg/m³	1.2E-11	(mg/m³)	1.2E-03	(ug/m³)⁻¹	1.5E-11	8.5E-10	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	2.1E-8	mg/m³	3.6E-11	(mg/m³)	1.1E-04	(ug/m³)⁻¹	4.0E-12	2.5E-09	(mg/m³)	NA	(mg/m³)	--
				Aroclor-1254	2.8E-8	mg/m³	4.7E-11	(mg/m³)	5.7E-04	(ug/m³)⁻¹	2.7E-11	3.3E-09	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCDD Equivalents	3.0E-12	mg/m³	5.1E-15	(mg/m³)	3.8E+01	(ug/m³)⁻¹	1.9E-10	3.6E-13	(mg/m³)	4.0E-08	(mg/m³)	0.000009
				Aluminum	0.005	mg/m³	9.1E-06	(mg/m³)	NA	(ug/m³)⁻¹	--	6.4E-04	(mg/m³)	5.0E-03	(mg/m³)	0.1
				Arsenic	2.1E-5	mg/m³	3.6E-08	(mg/m³)	4.3E-03	(ug/m³)⁻¹	1.6E-07	2.5E-06	(mg/m³)	1.5E-05	(mg/m³)	0.2
				Beryllium	3.0E-7	mg/m³	5.0E-10	(mg/m³)	2.4E-03	(ug/m³)⁻¹	1.2E-09	3.5E-08	(mg/m³)	2.0E-05	(mg/m³)	0.002
				Chromium	7.9E-6	mg/m³	1.3E-08	(mg/m³)	8.4E-02	(ug/m³)⁻¹	1.1E-06	9.4E-07	(mg/m³)	1.0E-04	(mg/m³)	0.009
				Cobalt	1.1E-5	mg/m³	1.9E-08	(mg/m³)	9.0E-03	(ug/m³)⁻¹	1.7E-07	1.3E-06	(mg/m³)	6.0E-06	(mg/m³)	0.2
				Iron	0.027	mg/m³	4.6E-05	(mg/m³)	NA	(ug/m³)⁻¹	--	3.2E-03	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	7.5E-4	mg/m³	1.3E-06	(mg/m³)	NA	(ug/m³)⁻¹	--	8.9E-05	(mg/m³)	5.0E-05	(mg/m³)	1.8
				Thallium	1.9E-6	mg/m³	3.1E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	2.2E-07	(mg/m³)	NA	(mg/m³)	--
			Exp. Route Total								1.5E-06					2.3
		Exposure Point Total									1.5E-06					2.3
	Exposure Medium Total										1.5E-06					2.3
Medium Total											2.8E-06					2.7
Groundwater	Groundwater	Tank Farm 5	Ingestion	Benzene	1.20	ug/L	4.4E-09	(mg/kg/day)	5.5E-02	(mg/kg/day)⁻¹	2.4E-10	3.1E-07	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.00008
				Aluminum	1,480	ug/L	5.4E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.8E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0004
				Arsenic	8.80	ug/L	3.2E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	4.8E-08	2.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.007
				Cobalt	19.0	ug/L	6.9E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	24,300	ug/L	8.8E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	6.2E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.009
				Manganese (water)	2,510	ug/L	9.1E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	6.4E-04	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.03
			Exp. Route Total								4.8E-08					0.06
			Dermal	Benzene	1.20	ug/L	3.5E-08	(mg/kg/day)	5.5E-02	(mg/kg/day)⁻¹	1.9E-09	2.5E-06	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.0006
				Aluminum	1,480	ug/L	2.8E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.0E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0002
				Arsenic	8.80	ug/L	1.7E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	2.5E-08	1.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Cobalt	19.0	ug/L	3.6E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Iron	24,300	ug/L	4.7E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.3E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.005
				Manganese (water)	2,510	ug/L	4.8E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.4E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.4
			Exp. Route Total								2.7E-08					0.4
		Exposure Point Total									7.5E-08					0.4
	Exposure Medium Total										7.5E-08					0.4
	Air	Tank Farm 5	Inhalation	Benzene	5.0E-5	mg/m³	8.5E-08	(mg/m³)	7.8E-06	(ug/m³)⁻¹	6.6E-10	5.9E-06	(mg/m³)	3.0E-02	(mg/m³)	0.0002
				Aluminum	0.0E+0	mg/m³	0.0E+00	(mg/m³)	NA	(ug/m³)⁻¹	--	0.0E+00	(mg/m³)	5.0E-03	(mg/m³)	--
				Arsenic	0.0E+0	mg/m³	0.0E+00	(mg/m³)	4.3E-03	(ug/m³)⁻¹	--	0.0E+00	(mg/m³)	1.5E-05	(mg/m³)	--
				Cobalt	0.0E+0	mg/m³	0.0E+00	(mg/m³)	9.0E-03	(ug/m³)⁻¹	--	0.0E+00	(mg/m³)	6.0E-06	(mg/m³)	--
				Iron	0.0E+0	mg/m³	0.0E+00	(mg/m³)	NA	(ug/m³)⁻¹	--	0.0E+00	(mg/m³)	NA	(mg/m³)	--
				Manganese (water)	0.0E+0	mg/m³	0.0E+00	(mg/m³)	NA	(ug/m³)⁻¹	--	0.0E+00	(mg/m³)	NA	(mg/m³)	--
			Exp. Route Total								6.6E-10					0.0002
		Exposure Point Total									6.6E-10					0.0002
	Exposure Medium Total										6.6E-10					0.0002
Medium Total											7.6E-08					0.4
										Total of Receptor Risks - Surface Soil and Groundwater	2.6E-06				Total of Receptor Hazards - Surface Soil and Groundwater	1.8

TABLE 7.2 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	3.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.5E-08	9.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	4.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.0E-07	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	7.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.2E-08	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	7.7E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.6E-08	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	3.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-08	8.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.4E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.7E-08	3.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.4E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.9E-07	4.0E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.004
				Aluminum	8,500	mg/kg	3.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.3E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.008
				Arsenic	26.4	mg/kg	9.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.4E-05	2.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Beryllium	0.495	mg/kg	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0002
				Chromium	10.7	mg/kg	3.7E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.9E-06	1.0E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.003
				Cobalt	10.3	mg/kg	3.6E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	25,700	mg/kg	9.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.04
				Manganese (soil)	343	mg/kg	1.2E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.4E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.002
			Exp. Route Total								1.6E-05					0.2
			Dermal	Benzo(a)anthracene	0.097	mg/kg	2.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-08	8.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	3.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.6E-07	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	6.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.5E-08	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	6.6E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.8E-08	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	2.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-08	7.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.3E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.5E-08	3.5E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.8E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.7E-08	7.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0008
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	1.8E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.7E-06	5.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.2E-06					0.02
		Exposure Point Total									2.0E-05					0.2
	Exposure Medium Total										2.0E-05					0.2
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	7.2E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	7.9E-14	2.0E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	8.8E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	9.7E-13	2.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	1.5E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.7E-13	4.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	1.6E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.0E-13	4.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	6.6E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	7.3E-14	1.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.9E-13	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	1.6E-13	8.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	3.0E-17	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.2E-12	8.5E-17	(mg/m^3)	4.0E-08	(mg/m^3)	2.12744E-09

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m³	6.3E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	1.8E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00004
				Arsenic	2.4E-9	mg/m³	2.0E-10	(mg/m³)	4.3E-03	(ug/m³)⁻¹	8.4E-10	5.5E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00004
				Beryllium	4.5E-11	mg/m³	3.7E-12	(mg/m³)	2.4E-03	(ug/m³)⁻¹	8.8E-12	1.0E-11	(mg/m³)	2.0E-05	(mg/m³)	0.0000005
				Chromium	9.7E-10	mg/m³	7.9E-11	(mg/m³)	8.4E-02	(ug/m³)⁻¹	6.7E-09	2.2E-10	(mg/m³)	1.0E-04	(mg/m³)	0.000002
				Cobalt	9.4E-10	mg/m³	7.6E-11	(mg/m³)	9.0E-03	(ug/m³)⁻¹	6.9E-10	2.1E-10	(mg/m³)	6.0E-06	(mg/m³)	0.00004
				Iron	2.3E-6	mg/m³	1.9E-07	(mg/m³)	NA	(ug/m³)⁻¹	--	5.3E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	3.1E-8	mg/m³	2.5E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	7.1E-09	(mg/m³)	5.0E-05	(mg/m³)	0.0001
			Exp. Route Total								8.2E-09					0.0003
		Exposure Point Total									8.2E-09					0.0003
	Exposure Medium Total										8.2E-09					0.0003
Medium Total											2.0E-05					0.2
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	1.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	9.2E-09	3.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	1.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	1.2E-07	4.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	2.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.9E-08	7.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	3.5E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.6E-08	9.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	1.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	7.7E-09	2.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.4E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	2.7E-08	3.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.5E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	1.9E-07	4.1E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.004
				Aluminum	7,516	mg/kg	2.6E-03	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	7.4E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.007
				Arsenic	29.8	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	1.6E-05	2.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.10
				Beryllium	0.414	mg/kg	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0002
				Chromium	11.1	mg/kg	3.9E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	1.9E-06	1.1E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.004
				Cobalt	15.4	mg/kg	5.4E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.5E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
				Iron	37,930	mg/kg	1.3E-02	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.7E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.05
				Manganese (soil)	1,053	mg/kg	3.7E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.0E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.007
				Thallium	2.60	mg/kg	9.1E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.8E-05					0.2
			Dermal	Benzo(a)anthracene	0.036	mg/kg	1.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	7.9E-09	3.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	1.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	1.0E-07	3.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	2.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.6E-08	6.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	3.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.2E-08	8.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	9.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	6.6E-09	2.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.3E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	2.5E-08	3.5E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.002
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.9E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	3.8E-08	8.1E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0008
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	2.1E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	3.1E-06	5.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.80	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.3E-06					0.02
		Exposure Point Totet									2.1E-05					0.2
	Exposure Medium Total										2.1E-05					0.2

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	2.7E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.9E-14	7.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	3.4E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	3.8E-13	9.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	5.4E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.0E-14	1.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	7.4E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	8.9E-14	2.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	2.2E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.4E-14	6.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.9E-13	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	1.6E-13	8.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	3.1E-17	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.2E-12	8.7E-17	(mg/m^3)	4.0E-08	(mg/m^3)	2.17933E-09
				Aluminum	6.8E-7	mg/m^3	5.6E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.6E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00003
				Arsenic	2.7E-9	mg/m^3	2.2E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	9.5E-10	6.2E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.00004
				Beryllium	3.8E-11	mg/m^3	3.1E-12	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	7.4E-12	8.6E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.0000004
				Chromium	1.0E-9	mg/m^3	8.2E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	6.9E-09	2.3E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000002
				Cobalt	1.4E-9	mg/m^3	1.1E-10	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.0E-09	3.2E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.00005
				Iron	3.4E-6	mg/m^3	2.8E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	7.9E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	7.8E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.2E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0004
				Thallium	2.4E-10	mg/m^3	1.9E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	5.4E-11	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								8.9E-09					0.0006
		Exposure Point Total									8.9E-09					0.0006
	Exposure Medium Total										8.9E-09					0.0006
Medium Total											2.1E-05					0.2
										Total of Receptor Risks - Surface Soil	2.0E-05				Total of Receptor Hazards - Surface Soil	0.2

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	1.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.6E-09	2.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-07	3.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-08	5.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	3.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.2E-08	5.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.8E-09	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	3.5E-09	1.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0005
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.8E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.4E-08	1.1E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	8,500	mg/kg	3.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	26.4	mg/kg	1.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.8E-06	6.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.495	mg/kg	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00007
				Chromium	10.7	mg/kg	4.8E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.4E-07	2.8E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0009
				Cobalt	10.3	mg/kg	4.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Iron	25,700	mg/kg	1.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.8E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.010
				Manganese (soil)	343	mg/kg	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.0E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0006
			Exp. Route Total								2.2E-06					0.05
			Dermal	Benzo(a)anthracene	0.097	mg/kg	2.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-08	5.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	3.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.5E-07	6.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	5.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.2E-08	1.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	6.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.6E-08	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	2.5E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-08	4.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.0E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	8.0E-09	2.3E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	9.0E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.2E-08	5.2E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	5.8E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	8.7E-07	3.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.3E-06					0.01
		Exposure Point Total									3.5E-06					0.06
	Exposure Medium Total										3.5E-06					0.06
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	2.0E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.2E-14	3.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	2.4E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	2.7E-13	4.7E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	4.2E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.6E-14	8.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	4.5E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	5.4E-14	8.8E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	1.8E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.0E-14	3.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.7E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	1.5E-14	1.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	2.8E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.1E-13	1.6E-17	(mg/m^3)	4.0E-08	(mg/m^3)	4.1E-10

TABLE 7 3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m³	5.8E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	3.4E-08	(mg/m³)	5.0E-03	(mg/m³)	0.000007
				Arsenic	2.4E-9	mg/m³	1.8E-11	(mg/m³)	4.3E-03	(ug/m³)⁻¹	7.8E-11	1.1E-10	(mg/m³)	1.5E-05	(mg/m³)	0.000007
				Beryllium	4.5E-11	mg/m³	3.4E-13	(mg/m³)	2.4E-03	(ug/m³)⁻¹	8.1E-13	2.0E-12	(mg/m³)	2.0E-05	(mg/m³)	0.00000010
				Chromium	9.7E-10	mg/m³	7.3E-12	(mg/m³)	8.4E-02	(ug/m³)⁻¹	6.1E-10	4.3E-11	(mg/m³)	1.0E-04	(mg/m³)	0.0000004
				Cobalt	9.4E-10	mg/m³	7.0E-12	(mg/m³)	9.0E-03	(ug/m³)⁻¹	6.3E-11	4.1E-11	(mg/m³)	6.0E-06	(mg/m³)	0.000007
				Iron	2.3E-6	mg/m³	1.8E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	1.0E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	3.1E-8	mg/m³	2.3E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	1.4E-09	(mg/m³)	5.0E-05	(mg/m³)	0.00003
			Exp. Route Total								7.6E-10					0.00005
		Exposure Point Total									7.6E-10					0.00005
	Exposure Medium Total										7.6E-10					0.00005
Medium Total											3.5E-06					0.06
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	4.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	3.6E-09	9.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	6.2E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	4.5E-08	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	9.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	7.2E-09	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	9.9E-09	2.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	4.1E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	3.0E-09	7.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	3.5E-09	1.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0005
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.9E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	2.5E-08	1.1E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	7,516	mg/kg	3.4E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.0E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	29.8	mg/kg	1.3E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	2.0E-06	7.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.414	mg/kg	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00005
				Chromium	11.1	mg/kg	5.0E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	2.5E-07	2.9E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0010
				Cobalt	15.4	mg/kg	6.9E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	37,930	mg/kg	1.7E-03	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.0E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
				Manganese (soil)	1,053	mg/kg	4.7E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.8E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.002
				Thallium	2.60	mg/kg	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	6.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.4E-06					0.06
			Dermal	Benzo(e)anthracene	0.036	mg/kg	1.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	7.5E-09	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	1.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	9.6E-08	2.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	2.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.5E-08	4.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	2.8E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.1E-08	5.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	8.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	6.2E-09	1.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.0E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	8.0E-09	2.3E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	9.2E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	1.2E-08	5.4E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0005
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	6.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	9.8E-07	3.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.1E-06					0.01
		Exposure Point Total									3.5E-06					0.07
	Exposure Medium Total										3.5E-06					0.07

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	7.4E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.1E-15	1.4E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	9.4E-14	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.0E-13	1.8E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	1.5E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.6E-14	2.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	2.0E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.5E-14	4.0E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	6.1E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.8E-15	1.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.7E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	1.5E-14	1.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	2.9E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.1E-13	1.7E-17	(mg/m^3)	4.0E-08	(mg/m^3)	4.2E-10
				Aluminum	6.8E-7	mg/m^3	5.1E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.0E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000006
				Arsenic	2.7E-9	mg/m^3	2.0E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	8.8E-11	1.2E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.000008
				Beryllium	3.8E-11	mg/m^3	2.8E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	6.8E-13	1.6E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.0E-9	mg/m^3	7.6E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	6.4E-10	4.4E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000004
				Cobalt	1.4E-9	mg/m^3	1.1E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	9.5E-11	6.1E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.00001
				Iron	3.4E-6	mg/m^3	2.6E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.5E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	7.2E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00008
				Thallium	2.4E-10	mg/m^3	1.8E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.0E-11	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								8.2E-10					0.0001
		Exposure Point Total									8.2E-10					0.0001
	Exposure Medium Total										8.2E-10					0.0001
Medium Total											3.5E-06					0.07
Surface Water	Surface Water	Tank Farm 5	Ingestion	Chloroform	1.00	ug/L	0.0E+00	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E-02	(mg/kg/day)	--
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.0E-02	(mg/kg/day)	--
				Aluminum	852	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	0.275	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	1,068	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Chloroform	1.00	ug/L	2.4E-08	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	7.5E-10	1.4E-07	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.00001
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00008
				Aluminum	852	ug/L	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.1E-06	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.000009
				Arsenic	0.275	ng/L	5.0E-10	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	7.5E-10	2.9E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000010
				Iron	1,068	ug/L	2.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-05	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00002
			Exp. Route Total								1.5E-09					0.0001
		Exposure Point Total									1.5E-09					0.0001
	Exposure Medium Total										1.5E-09					0.0001
Medium Total											1.5E-09					0.0001

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.440	mg/kg	6.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.3E-08	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	7.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.3E-07	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	7.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.6E-08	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	8.7E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	6.3E-10	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	1.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-07	3.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	5.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-08	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	4.1E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.3E-08	2.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	10,660	mg/kg	4.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.8E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.003
				Arsenic	62.5	mg/kg	2.8E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.2E-06	1.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
				Beryllium	0.630	mg/kg	2.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00008
				Chromium	17.0	mg/kg	7.7E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.8E-07	4.5E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.001
				Cobalt	47.7	mg/kg	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Iron	87,800	mg/kg	4.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.3E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.03
				Manganese (soil)	437	mg/kg	2.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0008
			Exp. Route Total								5.5E-06					0.1
			Dermal	Benzo(a)anthracene	0.440	mg/kg	3.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-07	6.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	3.8E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.8E-06	7.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	4.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.0E-07	7.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	4.6E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.3E-09	8.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	8.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.2E-07	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	2.7E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-07	5.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	4.9E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.4E-08	2.9E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Aluminum	10,660	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	62.5	mg/kg	3.4E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.1E-06	2.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Beryllium	0.630	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	17.0	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	47.7	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	87,800	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	437	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								9.4E-06					0.07
		Exposure Point Total									1.5E-05					0.2
	Exposure Medium Total										1.5E-05					0.2
Medium Total											1.5E-05					0.2
										Total of Receptor Risks - Surface Soil, Surface Water, Sediment	1.8E-05	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.3
										Total of Receptor Risks - Subsurface Soil, Surface Water, Sediment	1.8E-05	Total of Receptor Hazards - Subsurface Soil, Surface Water, and Sediment				0.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	7.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.7E-08	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	9.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.0E-07	2.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.6E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-07	3.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.8E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.3E-07	3.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	7.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.2E-08	1.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	5.9E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.2E-08	6.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	6.2E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	8.0E-08	7.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.007
				Aluminum	8,500	mg/kg	1.3E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	26.4	mg/kg	4.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	6.0E-06	4.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Beryllium	0.495	mg/kg	7.4E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.7E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0004
				Chromium	10.7	mg/kg	1.6E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	8.0E-07	1.9E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.006
				Cobalt	10.3	mg/kg	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Iron	25,700	mg/kg	3.9E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.5E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.06
				Manganese (soil)	343	mg/kg	5.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.0E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.004
			Exp. Route Total								7.9E-06					0.3
			Dermal	Benzo(a)anthracene	0.097	mg/kg	2.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-08	6.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	3.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.5E-07	7.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	6.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.3E-08	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	6.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.7E-08	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	2.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-08	5.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.3E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	4.6E-09	2.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	5.2E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.7E-09	6.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	3.3E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.0E-07	3.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								8.9E-07					0.01
		Exposure Point Total									8.8E-06					0.3
	Exposure Medium Total										8.8E-06					0.3
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	1.8E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.9E-14	3.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	2.2E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	2.4E-13	4.7E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	3.7E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.1E-14	8.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	4.0E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	4.8E-14	8.8E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	1.6E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.8E-14	3.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	1.3E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	7.6E-15	1.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	1.4E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	5.3E-14	1.6E-17	(mg/m^3)	4.0E-08	(mg/m^3)	4.1E-10

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m³	2.9E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	3.4E-08	(mg/m³)	5.0E-03	(mg/m³)	0.000007
				Arsenic	2.4E-9	mg/m³	9.0E-12	(mg/m³)	4.3E-03	(ug/m³)⁻¹	3.9E-11	1.1E-10	(mg/m³)	1.5E-05	(mg/m³)	0.000007
				Beryllium	4.5E-11	mg/m³	1.7E-13	(mg/m³)	2.4E-03	(ug/m³)⁻¹	4.1E-13	2.0E-12	(mg/m³)	2.0E-05	(mg/m³)	0.0000010
				Chromium	9.7E-10	mg/m³	3.7E-12	(mg/m³)	8.4E-02	(ug/m³)⁻¹	3.1E-10	4.3E-11	(mg/m³)	1.0E-04	(mg/m³)	0.0000004
				Cobalt	9.4E-10	mg/m³	3.5E-12	(mg/m³)	9.0E-03	(ug/m³)⁻¹	3.2E-11	4.1E-11	(mg/m³)	6.0E-06	(mg/m³)	0.000007
				Iron	2.3E-6	mg/m³	8.8E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	1.0E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	3.1E-8	mg/m³	1.2E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	1.4E-09	(mg/m³)	5.0E-05	(mg/m³)	0.00003
			Exp. Route Total								3.8E-10					0.00005
		Exposure Point Total									3.8E-10					0.00005
	Exposure Medium Total										3.8E-10					0.00005
Medium Total											8.8E-06					0.3
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	2.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.1E-08	6.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	3.7E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.7E-07	8.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	5.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	4.3E-08	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	8.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	5.9E-08	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.8E-08	5.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	5.9E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	1.2E-08	6.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	6.3E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	8.2E-08	7.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.007
				Aluminum	7,516	mg/kg	1.1E-03	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.3E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	29.8	mg/kg	4.5E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	6.7E-06	5.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Beryllium	0.414	mg/kg	6.2E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	7.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0004
				Chromium	11.1	mg/kg	1.7E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	8.3E-07	1.9E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.006
				Cobalt	15.4	mg/kg	2.3E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Iron	37,930	mg/kg	5.7E-03	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	6.7E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.10
				Manganese (soil)	1,053	mg/kg	1.6E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.8E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
				Thallium	2.60	mg/kg	3.9E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								8.1E-06					0.4
			Dermal	Benzo(a)anthracene	0.036	mg/kg	1.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	7.7E-09	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	1.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	9.8E-08	2.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthena	0.073	mg/kg	2.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.6E-08	4.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	2.9E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.1E-08	6.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	8.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	6.4E-09	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.3E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	4.6E-09	2.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	5.3E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	6.9E-09	6.2E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	3.8E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	5.6E-07	4.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								7.2E-07					0.02
		Exposure Point Total									8.8E-06					0.4
	Exposure Medium Total										8.8E-06					0.4

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m³	6.6E-14	(mg/m³)	1.1E-04	(ug/m³)⁻¹	7.2E-15	1.4E-13	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	4.2E-12	mg/m³	8.4E-14	(mg/m³)	1.1E-03	(ug/m³)⁻¹	9.2E-14	1.8E-13	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m³	1.3E-13	(mg/m³)	1.1E-04	(ug/m³)⁻¹	1.5E-14	2.9E-13	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m³	1.8E-14	(mg/m³)	1.2E-03	(ug/m³)⁻¹	2.2E-14	4.0E-14	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m³	5.5E-14	(mg/m³)	1.1E-04	(ug/m³)⁻¹	6.0E-15	1.2E-13	(mg/m³)	NA	(mg/m³)	--
				Aroclor-1254	3.5E-12	mg/m³	1.3E-14	(mg/m³)	5.7E-04	(ug/m³)⁻¹	7.6E-15	1.6E-13	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCOO Equivalents	3.8E-16	mg/m³	1.4E-18	(mg/m³)	3.8E+01	(ug/m³)⁻¹	5.5E-14	1.7E-17	(mg/m³)	4.0E-08	(mg/m³)	4.18431E-10
				Aluminum	6.8E-7	mg/m³	2.6E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	3.0E-08	(mg/m³)	5.0E-03	(mg/m³)	0.000006
				Arsenic	2.7E-9	mg/m³	1.0E-11	(mg/m³)	4.3E-03	(ug/m³)⁻¹	4.4E-11	1.2E-10	(mg/m³)	1.5E-05	(mg/m³)	0.000008
				Beryllium	3.8E-11	mg/m³	1.4E-13	(mg/m³)	2.4E-03	(ug/m³)⁻¹	3.4E-13	1.6E-12	(mg/m³)	2.0E-05	(mg/m³)	0.00000008
				Chromium	1.0E-9	mg/m³	3.8E-12	(mg/m³)	8.4E-02	(ug/m³)⁻¹	3.2E-10	4.4E-11	(mg/m³)	1.0E-04	(mg/m³)	0.0000004
				Cobalt	1.4E-9	mg/m³	5.3E-12	(mg/m³)	9.0E-03	(ug/m³)⁻¹	4.7E-11	6.1E-11	(mg/m³)	6.0E-06	(mg/m³)	0.00001
				Iron	3.4E-6	mg/m³	1.3E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	1.5E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	9.6E-8	mg/m³	3.6E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	4.2E-09	(mg/m³)	5.0E-05	(mg/m³)	0.00008
				Thallium	2.4E-10	mg/m³	8.9E-13	(mg/m³)	NA	(ug/m³)⁻¹	--	1.0E-11	(mg/m³)	NA	(mg/m³)	--
			Exp. Route Total								4.1E-10					0.0001
		Exposure Point Total									4.1E-10					0.0001
	Exposure Medium Total										4.1E-10					0.0001
Medium Total											8.8E-06					0.4
Surface Water	Surface Water	Tank Farm 5	Ingestion	Chloroform	1.00	ug/L	0.0E+00	(mg/kg/day)	3.1E-02	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E-02	(mg/kg/day)	--
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	2.0E-02	(mg/kg/day)	--
				Aluminum	852	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	0.275	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	1.068	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Chloroform	1.00	ug/L	2.8E-08	(mg/kg/day)	3.1E-02	(mg/kg/day)⁻¹	8.7E-10	3.3E-07	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.00003
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	3.0E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.5E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.0002
				Aluminum	852	ug/L	1.8E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.1E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00002
				Arsenic	0.275	ng/L	5.8E-10	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	8.7E-10	6.8E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00002
				Iron	1.068	ug/L	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.6E-05	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00004
			Exp. Route Total								1.7E-09					0.0003
		Exposure Point Total									1.7E-09					0.0003
	Exposure Medium Total										1.7E-09					0.0003
Medium Total											1.7E-09					0.0003

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.440	mg/kg	3.5E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.6E-07	7.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	4.3E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.2E-06	9.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	4.6E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.3E-07	1.0E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	5.1E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.7E-09	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	9.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.0E-07	2.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	3.0E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.2E-07	6.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	1.4E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.8E-07	1.6E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
				Aluminum	10,660	mg/kg	1.6E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.02
				Arsenic	62.5	mg/kg	9.4E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.4E-05	1.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Beryllium	0.630	mg/kg	9.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0006
				Chromium	17.0	mg/kg	2.6E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.3E-06	3.0E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.010
				Cobalt	47.7	mg/kg	7.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.3
				Iron	87,800	mg/kg	1.3E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese (soil)	437	mg/kg	6.6E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.7E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.005
			Exp. Route Total								2.0E-05					0.9
			Dermal	Benzo(a)anthracene	0.440	mg/kg	1.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.4E-08	2.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	1.6E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-06	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	1.7E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-07	3.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	1.9E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	1.4E-09	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	3.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.6E-07	7.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	1.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.1E-08	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	1.1E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.5E-08	1.3E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	10,660	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	62.5	mg/kg	7.9E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.2E-06	9.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.630	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	17.0	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	47.7	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	87,800	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	437	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								2.9E-06					0.03
		Exposure Point Total									2.3E-05					0.9
	Exposure Medium Total										2.3E-05					0.9
Medium Total											2.3E-05					0.9
										Total of Receptor Risks - Surface Soil, Surface Water, Sediment	3.2E-05	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				1.3
										Total of Receptor Risks - Subsurface Soil, Surface Water, Sediment	3.2E-05	Total of Receptor Hazards - Subsurface Soil, Surface Water, and Sediment				1.4

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005)

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	1.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.4E-09	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.0E-07	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.8E-08	3.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.6E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.9E-08	4.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.7E-09	1.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.5E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	5.0E-09	7.3E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0004
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.6E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.4E-08	7.7E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0008
				Aluminum	8,500	mg/kg	5.5E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.6E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	26.4	mg/kg	1.7E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.6E-06	5.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.495	mg/kg	3.2E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.3E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00005
				Chromium	10.7	mg/kg	6.9E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.4E-07	2.0E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0007
				Cobalt	10.3	mg/kg	6.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Iron	25,700	mg/kg	1.7E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.8E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.007
				Manganese (soil)	343	mg/kg	2.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.4E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0005
			Exp. Route Total								3.1E-06					0.03
			Dermal	Benzo(a)anthracene	0.097	mg/kg	5.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.3E-09	9.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	7.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.3E-08	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.1E-09	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.8E-09	2.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	5.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.0E-09	8.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.4E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.8E-09	4.1E-09	(mg/kg/day)	2.0E-05	(mg/kg/dey)	0.0002
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	3.2E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	4.1E-09	9.2E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00009
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	2.0E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.1E-07	5.9E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.9E-07					0.002
		Exposure Point Total									3.5E-06					0.04
	Exposure Medium Total										3.5E-06					0.04
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	2.4E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.7E-14	3.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	3.0E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	3.3E-13	4.7E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	5.1E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.6E-14	8.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	5.5E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	6.6E-14	8.8E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	2.2E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.5E-14	3.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	5.3E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	3.0E-14	1.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	5.6E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.1E-13	1.6E-17	(mg/m^3)	4.0E-08	(mg/m^3)	4.1E-10

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m^3	1.2E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.4E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000007
				Arsenic	2.4E-9	mg/m^3	3.6E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.6E-10	1.1E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.000007
				Beryllium	4.5E-11	mg/m^3	6.8E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.6E-12	2.0E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000010
				Chromium	9.7E-10	mg/m^3	1.5E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.2E-09	4.3E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000004
				Cobalt	9.4E-10	mg/m^3	1.4E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.3E-10	4.1E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000007
				Iron	2.3E-6	mg/m^3	3.5E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.0E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.1E-8	mg/m^3	4.7E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.4E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00003
			Exp. Route Total								1.5E-09					0.00005
		Exposure Point Total									1.5E-09					0.00005
	Exposure Medium Total										1.5E-09					0.00005
Medium Total											3.5E-06					0.04
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	4.3E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-09	6.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	5.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.0E-08	8.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	8.6E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.3E-09	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.2E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.6E-09	1.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	3.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.6E-09	5.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.5E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	5.0E-09	7.3E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0004
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.7E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.5E-08	7.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0008
				Aluminum	7,516	mg/kg	4.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.001
				Arsenic	29.8	mg/kg	1.9E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.9E-06	5.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.414	mg/kg	2.7E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.8E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00004
				Chromium	11.1	mg/kg	7.1E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.6E-07	2.1E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0007
				Cobalt	15.4	mg/kg	9.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.010
				Iron	37,930	mg/kg	2.4E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.1E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
				Manganese (soil)	1,053	mg/kg	6.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.0E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
				Thallium	2.60	mg/kg	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.3E-06					0.04
			Dermal	Benzo(a)anthracene	0.036	mg/kg	2.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.6E-09	3.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	2.8E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.1E-08	4.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	4.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.3E-09	7.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	6.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.5E-09	9.7E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	1.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-09	2.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.4E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.8E-09	4.1E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	3.2E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	4.2E-09	9.4E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00009
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	2.3E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.4E-07	6.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.8E-07					0.003
		Exposure Point Total									3.7E-06					0.05
	Exposure Medium Total										3.7E-06					0.05

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	9.0E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	9.9E-15	1.4E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	1.2E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.3E-13	1.8E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	1.8E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.0E-14	2.9E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	2.5E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	3.0E-14	4.0E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	7.5E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.3E-15	1.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	5.3E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	3.0E-14	1.6E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	5.7E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.2E-13	1.7E-17	(mg/m^3)	4.0E-08	(mg/m^3)	4.18431E-10
				Aluminum	6.8E-7	mg/m^3	1.0E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.0E-08	(mg/m^3)	5.0E-03	(mg/m^3)	0.000006
				Arsenic	2.7E-9	mg/m^3	4.1E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.8E-10	1.2E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.000008
				Beryllium	3.8E-11	mg/m^3	5.7E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.4E-12	1.6E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000008
				Chromium	1.0E-9	mg/m^3	1.5E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.3E-09	4.4E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000004
				Cobalt	1.4E-9	mg/m^3	2.1E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.9E-10	6.1E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.00001
				Iron	3.4E-6	mg/m^3	5.2E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.5E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	1.4E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.2E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00008
				Thallium	2.4E-10	mg/m^3	3.6E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.0E-11	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.6E-09					0.0001
		Exposure Point Total									1.6E-09					0.0001
	Exposure Medium Total										1.6E-09					0.0001
Medium Total											3.7E-06					0.05
Surface Water	Surface Water	Tank Farm 5	Ingestion	Chloroform	1.00	ug/L	0.0E+00	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E-02	(mg/kg/day)	--
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.0E-02	(mg/kg/day)	--
				Aluminum	852	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	0.275	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	1,068	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Chloroform	1.00	ug/L	5.9E-08	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	1.8E-09	1.7E-07	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.00002
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	6.4E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00009
				Aluminum	852	ug/L	3.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00001
				Arsenic	0.275	ng/L	1.2E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.8E-09	3.6E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00001
				Iron	1,068	ug/L	4.7E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.4E-05	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00002
			Exp. Route Total								3.7E-09					0.0002
		Exposure Point Total									3.7E-09					0.0002
	Exposure Medium Total										3.7E-09					0.0002
Medium Total											3.7E-09					0.0002

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.440	mg/kg	5.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-08	8.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	6.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.7E-07	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	6.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.9E-08	1.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	7.6E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.5E-10	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	1.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.0E-07	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	4.5E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.3E-08	7.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	5.8E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	7.5E-08	1.7E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	10,660	mg/kg	6.9E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.002
				Arsenic	62.5	mg/kg	4.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	6.0E-06	1.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.630	mg/kg	4.1E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.2E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00006
				Chromium	17.0	mg/kg	1.1E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	5.5E-07	3.2E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.001
				Cobalt	47.7	mg/kg	3.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	87,800	mg/kg	5.7E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.6E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	437	mg/kg	2.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	8.2E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0006
			Exp. Route Total								7.4E-06					0.10
			Dermal	Benzo(a)anthracene	0.440	mg/kg	3.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.4E-08	5.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	4.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.9E-07	6.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	4.2E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-08	6.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	4.7E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.5E-10	7.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	8.9E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.5E-08	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	2.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-08	4.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	8.4E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.1E-08	2.4E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0002
				Aluminum	10,660	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	62.5	mg/kg	5.8E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	8.7E-07	1.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Beryllium	0.630	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	17.0	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	47.7	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	87,800	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	437	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.3E-06					0.006
		Exposure Point Total									8.7E-06					0.1
	Exposure Medium Total										8.7E-06					0.1
Medium Total											8.7E-06					0.1
Total of Receptor Risks - Surface Soil, Surface Water, Sediment											1.2E-05	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.1
Total of Receptor Risks - Subsurface Soil, Surface Water, Sediment											1.2E-05	Total of Receptor Hazards - Subsurface Soil, Surface Water, and Sediment				0.1

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.6 RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	5.7E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.1E-07	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	7.0E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	5.1E-06	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.2E-06	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	8.7E-07	2.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.3E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	9.4E-07	2.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	5.2E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.8E-07	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.3E-08	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	8.5E-08	5.0E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.02
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	4.5E-12	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	5.8E-07	5.2E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.05
				Aluminum	8,500	mg/kg	9.3E-03	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.1E-01	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.1
				Arsenic	26.4	mg/kg	2.9E-05	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	4.3E-05	3.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.1
				Beryllium	0.495	mg/kg	5.4E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	6.3E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.003
				Chromium	10.7	mg/kg	1.2E-05	(mg/kg/day)	5.0E-01	$(mg/kg/day)^{-1}$	5.9E-06	1.4E-04	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.05
				Cobalt	10.3	mg/kg	1.1E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.3E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Iron	25,700	mg/kg	2.8E-02	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	3.3E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.5
				Manganese (soil)	343	mg/kg	3.8E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	4.4E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.03
			Exp. Route Total								5.8E-05					2.3
			Dermal	Benzo(a)anthracene	0.097	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.5E-07	4.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	2.5E-07	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.8E-06	5.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	4.3E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.2E-07	9.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	4.7E-08	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	3.4E-07	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.9E-07	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.4E-07	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.7E-08	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	3.4E-08	2.0E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.010
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	3.8E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	4.9E-08	4.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.004
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	2.4E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	3.6E-06	2.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								6.5E-06					0.1
		Exposure Point Total									6.4E-05					2.4
	Exposure Medium Total										6.4E-05					2.4
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	3.9E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	4.3E-13	8.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	4.7E-12	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	5.2E-12	1.0E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	8.1E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	8.9E-13	1.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	8.8E-13	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	1.1E-12	1.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrana	8.1E-12	mg/m^3	3.5E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	3.9E-13	7.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.9E-13	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	1.7E-13	3.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	3.1E-17	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	1.2E-12	3.6E-16	(mg/m^3)	4.0E-08	(mg/m^3)	8.9E-09

TABLE 7.6 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m^3	6.4E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	7.4E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.0001
				Arsenic	2.4E-9	mg/m^3	2.0E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	8.5E-10	2.3E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0002
				Beryllium	4.5E-11	mg/m^3	3.7E-12	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	8.9E-12	4.3E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Chromium	9.7E-10	mg/m^3	8.0E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	6.7E-09	9.3E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000009
				Cobalt	9.4E-10	mg/m^3	7.7E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	6.9E-10	9.0E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	2.3E-6	mg/m^3	1.9E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.2E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.1E-8	mg/m^3	2.6E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.0E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0006
			Exp. Route Total								8.3E-09					0.001
		Exposure Point Total									8.3E-09					0.001
	Exposure Medium Total										8.3E-09					0.001
Medium Total											6.4E-05					2.4
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	2.1E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.5E-07	4.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	2.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.0E-06	5.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	4.3E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-07	9.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	5.8E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.3E-07	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	1.8E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-07	3.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.3E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	8.5E-08	5.0E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.02
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	4.6E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.0E-07	5.4E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.05
				Aluminum	7,516	mg/kg	8.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	9.6E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.10
				Arsenic	29.8	mg/kg	3.3E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.9E-05	3.8E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.3
				Beryllium	0.414	mg/kg	4.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.3E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.003
				Chromium	11.1	mg/kg	1.2E-05	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	6.1E-06	1.4E-04	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.05
				Cobalt	15.4	mg/kg	1.7E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.0E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
				Iron	37,930	mg/kg	4.2E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.8E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.7
				Manganese (soil)	1,053	mg/kg	1.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.3E-02	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.10
				Thallium	2.60	mg/kg	2.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.3E-05	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								5.9E-05					2.9
			Dermal	Benzo(a)anthracene	0.036	mg/kg	7.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.6E-08	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	9.8E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.1E-07	2.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	1.6E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-07	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	2.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-07	4.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	6.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.7E-08	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.7E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	3.4E-08	2.0E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.010
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	3.9E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.0E-08	4.5E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.005
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	2.7E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.1E-06	3.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								5.3E-06					0.1
		Exposure Point Total									6.4E-05					3.1
	Exposure Medium Total										6.4E-05					3.1

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m³	1.4E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	1.6E-13	3.1E-12	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	4.2E-12	mg/m³	1.8E-12	(mg/m³)	1.1E-03	(ug/m³)⁻¹	2.0E-12	4.0E-12	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m³	2.9E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	3.2E-13	6.4E-12	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m³	4.0E-13	(mg/m³)	1.2E-03	(ug/m³)⁻¹	4.8E-13	8.7E-13	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m³	1.2E-12	(mg/m³)	1.1E-04	(ug/m³)⁻¹	1.3E-13	2.6E-12	(mg/m³)	NA	(mg/m³)	--
				Aroclor-1254	3.5E-12	mg/m³	2.9E-13	(mg/m³)	5.7E-04	(ug/m³)⁻¹	1.7E-13	3.4E-12	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m³	3.1E-17	(mg/m³)	3.8E+01	(ug/m³)⁻¹	1.2E-12	3.7E-16	(mg/m³)	4.0E-08	(mg/m³)	9.2E-09
				Aluminum	6.8E-7	mg/m³	5.6E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	6.6E-07	(mg/m³)	5.0E-03	(mg/m³)	0.0001
				Arsenic	2.7E-9	mg/m³	2.2E-10	(mg/m³)	4.3E-03	(ug/m³)⁻¹	9.6E-10	2.6E-09	(mg/m³)	1.5E-05	(mg/m³)	0.0002
				Beryllium	3.8E-11	mg/m³	3.1E-12	(mg/m³)	2.4E-03	(ug/m³)⁻¹	7.4E-12	3.6E-11	(mg/m³)	2.0E-05	(mg/m³)	0.000002
				Chromium	1.0E-9	mg/m³	8.3E-11	(mg/m³)	8.4E-02	(ug/m³)⁻¹	7.0E-09	9.7E-10	(mg/m³)	1.0E-04	(mg/m³)	0.000010
				Cobalt	1.4E-9	mg/m³	1.2E-10	(mg/m³)	9.0E-03	(ug/m³)⁻¹	1.0E-09	1.3E-09	(mg/m³)	6.0E-06	(mg/m³)	0.0002
				Iron	3.4E-6	mg/m³	2.8E-07	(mg/m³)	NA	(ug/m³)⁻¹	--	3.3E-06	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	9.6E-8	mg/m³	7.9E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	9.2E-08	(mg/m³)	5.0E-05	(mg/m³)	0.002
				Thallium	2.4E-10	mg/m³	1.9E-11	(mg/m³)	NA	(ug/m³)⁻¹	--	2.3E-10	(mg/m³)	NA	(mg/m³)	--
			Exp. Route Total								9.0E-09					0.002
		Exposure Point Total									9.0E-09					0.002
	Exposure Medium Total										9.0E-09					0.002
Medium Total											6.4E-05					3.1
Groundwater	Groundwater	Tank Farm 5	Ingestion	Benzene	1.20	ug/L	9.2E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)⁻¹	5.1E-07	1.1E-04	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.03
				Aluminum	1,480	ug/L	1.1E-02	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.3E-01	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.1
				Arsenic	8.80	ug/L	6.8E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	1.0E-04	7.9E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	2.6
				Cobalt	19.0	ug/L	1.5E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.7E-03	(mg/kg/day)	3.0E-04	(mg/kg/day)	5.7
				Iron	24,300	ug/L	1.9E-01	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.2E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	3.1
				Manganese (water)	2,510	ug/L	1.9E-02	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.2E-01	(mg/kg/day)	2.4E-02	(mg/kg/day)	9.4
			Exp. Route Total								1.0E-04					21
			Dermal	Benzene	1.20	ug/L	1.0E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)⁻¹	5.6E-08	1.2E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.003
				Aluminum	1,480	ug/L	5.4E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	6.2E-04	(mg/kg/dey)	1.0E+00	(mg/kg/day)	0.0006
				Arsenic	8.80	ug/L	3.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	4.8E-07	3.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Cobalt	19.0	ug/L	6.9E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	8.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	24,300	ug/L	8.8E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.0E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
				Manganese (water)	2,510	ug/L	9.1E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.1E-03	(mg/kg/day)	9.6E-04	(mg/kg/day)	1.1
			Exp. Route Total								5.3E-07					1.2
		Exposure Point Total									1.0E-04					22
	Exposure Medium Total										1.0E-04					22
	Air	Tank Farm 5	Inhalation	Benzene	1.20	ug/L	9.2E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)⁻¹	5.1E-07	1.1E-04	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.03
				Aluminum	1,480	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.3E-01	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	8.80	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	--	7.9E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	19.0	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.7E-03	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	24,300	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.2E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	2,510	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.2E-01	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								5.1E-07					0.03
		Exposure Point Total									5.1E-07					0.03
	Exposure Medium Total										5.1E-07					0.03
Medium Total											1.0E-04					22
										Total of Receptor Risks - Surface Soil and Groundwater	1.7E-04	Total of Receptor Hazards - Surface Soil and Groundwater				25
										Total of Receptor Risks - All Soil and Groundwater	1.7E-04	Total of Receptor Hazards - All Soil and Groundwater				25

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).
Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	8.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.1E-08	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.5E-07	1.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.8E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.3E-07	2.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.9E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.4E-07	3.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	7.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.6E-08	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	3.7E-08	5.3E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.9E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.5E-07	5.6E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.006
				Aluminum	8,500	mg/kg	4.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.2E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	26.4	mg/kg	1.2E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.9E-05	3.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.495	mg/kg	2.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Chromium	10.7	mg/kg	5.0E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.5E-06	1.5E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.005
				Cobalt	10.3	mg/kg	4.8E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
				Iron	25,700	mg/kg	1.2E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.5E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.05
				Manganese (soil)	343	mg/kg	1.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.7E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
			Exp. Route Total								2.3E-05					0.2
			Dermal	Benzo(a)anthracene	0.097	mg/kg	4.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.2E-08	6.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	5.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.9E-07	8.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	9.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.7E-08	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	9.8E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.2E-08	1.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	4.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.9E-08	6.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.0E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.0E-08	3.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.3E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.0E-08	6.7E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0007
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	1.5E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.2E-06	4.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/dey)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								2.9E-06					0.02
		Exposure Point Total									2.5E-05					0.3
	Exposure Medium Total										2.5E-05					0.3
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	5.3E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.8E-13	8.5E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	6.5E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	7.2E-12	1.0E-11	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	1.1E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-12	1.8E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	1.2E-12	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.4E-12	1.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	4.9E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.4E-13	7.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	1.2E-12	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	6.6E-13	3.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	1.2E-16	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	4.7E-12	3.6E-16	(mg/m^3)	4.0E-08	(mg/m^3)	8.9E-09

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Aluminum	7.7E-7	mg/m^3	2.5E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	7.4E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.0001
				Arsenic	2.4E-9	mg/m^3	7.9E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	3.4E-09	2.3E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0002
				Beryllium	4.5E-11	mg/m^3	1.5E-11	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	3.6E-11	4.3E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Chromium	9.7E-10	mg/m^3	3.2E-10	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.7E-08	9.3E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000009
				Cobalt	9.4E-10	mg/m^3	3.1E-10	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.8E-09	9.0E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	2.3E-6	mg/m^3	7.7E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.2E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.1E-8	mg/m^3	1.0E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.0E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0006
			Exp. Route Total								3.3E-08					0.001
		Exposure Point Total									3.3E-08					0.001
	Exposure Medium Total										3.3E-08					0.001
Medium Total											2.5E-05					0.3
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	3.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-08	4.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	4.0E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.9E-07	6.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	6.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.6E-08	1.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	8.6E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.3E-08	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-08	4.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	3.7E-08	5.3E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.003
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.0E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.6E-07	5.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.006
				Aluminum	7,516	mg/kg	3.5E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.0E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.01
				Arsenic	29.8	mg/kg	1.4E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.1E-05	4.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Beryllium	0.414	mg/kg	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.7E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0003
				Chromium	11.1	mg/kg	5.2E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.6E-06	1.5E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.005
				Cobalt	15.4	mg/kg	7.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Iron	37,930	mg/kg	1.8E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.2E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.07
				Manganese (soil)	1,053	mg/kg	4.9E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.4E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
				Thallium	2.60	mg/kg	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.6E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.4E-05					0.3
			Dermal	Benzo(a)anthracene	0.036	mg/kg	1.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-08	2.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	2.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-07	3.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	3.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.4E-08	5.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthrecene	0.010	mg/kg	4.5E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.3E-08	7.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	1.3E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.8E-09	2.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.0E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.0E-08	3.0E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.1E-08	6.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0007
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	1.7E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.5E-06	4.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.8E-06					0.02
		Exposure Point Total									2.7E-05					0.3
	Exposure Medium Total										2.7E-05					0.3

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	2.0E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.2E-13	3.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	2.5E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	2.8E-12	4.0E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	4.0E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.4E-13	6.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	5.5E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	6.6E-13	8.7E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	1.6E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.8E-13	2.6E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	1.2E-12	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	6.6E-13	3.4E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	1.3E-16	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	4.8E-12	3.7E-16	(mg/m^3)	4.0E-08	(mg/m^3)	9.2E-09
				Aluminum	6.8E-7	mg/m^3	2.2E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	6.6E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.0001
				Arsenic	2.7E-9	mg/m^3	8.9E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	3.8E-09	2.6E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0002
				Beryllium	3.8E-11	mg/m^3	1.2E-11	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	3.0E-11	3.6E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000002
				Chromium	1.0E-9	mg/m^3	3.3E-10	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.8E-08	9.7E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000010
				Cobalt	1.4E-9	mg/m^3	4.6E-10	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	4.1E-09	1.3E-09	(mg/m^3)	6.0E-06	(mg/m^3)	0.0002
				Iron	3.4E-6	mg/m^3	1.1E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.3E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	3.1E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	9.2E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.002
				Thallium	2.4E-10	mg/m^3	7.8E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.3E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								3.6E-08					0.002
		Exposure Point Total									3.6E-08					0.002
	Exposure Medium Total										3.6E-08					0.002
Medium Total											2.7E-05					0.3
Groundwater	Groundwater	Tank Farm 5	Ingestion	Benzene	1.20	ug/L	1.1E-05	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	6.2E-07	3.3E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.008
				Aluminum	1,480	ug/L	1.4E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.04
				Arsenic	8.80	ug/L	8.3E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.2E-04	2.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.8
				Cobalt	19.0	ug/L	1.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.7
				Iron	24,300	ug/L	2.3E-01	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.7E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	1.0
				Manganese (water)	2,510	ug/L	2.4E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.9E-02	(mg/kg/day)	2.4E-02	(mg/kg/day)	2.9
			Exp. Route Total								1.2E-04					6.4
			Dermal	Benzene	1.20	ug/L	1.7E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	9.4E-08	5.0E-06	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.001
				Aluminum	1,480	ug/L	7.3E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0002
				Arsenic	8.80	ug/L	4.3E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	6.5E-07	1.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Cobalt	19.0	ug/L	9.3E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Iron	24,300	ug/L	1.2E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.5E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.005
				Manganese (water)	2,510	ug/L	1.2E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.6E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.4
			Exp. Route Total								7.4E-07					0.4
		Exposure Point Total									1.3E-04					6.8
	Exposure Medium Total										1.3E-04					6.8
	Air	Tank Farm 5	Inhalation	Benzene	1.20	ug/L	1.1E-05	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	6.2E-07	3.3E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.008
				Aluminum	1,480	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	8.80	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	19.0	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	24,300	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	2,510	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								6.2E-07					0.008
		Exposure Point Total									6.2E-07					0.008
	Exposure Medium Total										6.2E-07					0.008
Medium Total											1.3E-04					6.8
Total of Receptor Risks - Surface Soil and Groundwater											1.5E-04	Total of Receptor Hazards - Surface Soil and Groundwater				7.1
Total of Receptor Risks - All Soil and Groundwater											1.5E-04	Total of Receptor Hazards - All Soil and Groundwater				7.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 7.1.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	9.3E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.8E-10	6.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.1E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.3E-09	8.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.4E-09	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracena	0.022	mg/kg	2.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-09	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	8.5E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.2E-10	6.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	3.7E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	7.5E-10	2.6E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	3.9E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.1E-09	2.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Aluminum	8,500	mg/kg	8.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.7E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.006
				Arsenic	26.4	mg/kg	2.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.8E-07	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Beryllium	0.495	mg/kg	4.7E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0002
				Chromium	10.7	mg/kg	1.0E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	5.1E-08	7.2E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	10.3	mg/kg	9.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	25,700	mg/kg	2.5E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	343	mg/kg	3.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.3E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.002
			Exp. Route Total								4.5E-07					0.1
			Dermal	Benzo(a)anthracene	0.097	mg/kg	1.2E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.8E-11	8.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.5E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-09	1.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.5E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-10	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.7E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.0E-10	1.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.1E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.1E-11	7.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	5.2E-11	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.0E-10	3.7E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.2E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.5E-10	8.3E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00008
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	7.6E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.1E-08	5.3E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.3E-08					0.002
		Exposure Point Total									4.6E-07					0.1
	Exposure Medium Total										4.6E-07					0.1
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracena	6.9E-8	mg/m^3	2.4E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.6E-12	1.6E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	8.5E-8	mg/m^3	2.9E-11	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	3.2E-11	2.0E-09	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.5E-7	mg/m^3	4.9E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.4E-12	3.5E-09	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	1.6E-8	mg/m^3	5.3E-12	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	6.4E-12	3.7E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	6.4E-8	mg/m^3	2.2E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.4E-12	1.5E-09	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	2.8E-8	mg/m^3	9.4E-12	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	5.4E-12	6.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	2.9E-12	mg/m^3	9.9E-16	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	3.8E-11	7.0E-14	(mg/m^3)	4.0E-08	(mg/m^3)	0.000002

TABLE 7.1.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	0.006	mg/m^3	2.1E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.4E-04	(mg/m^3)	5.0E-03	(mg/m^3)	0.03
				Arsenic	1.9E-5	mg/m^3	6.4E-09	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	2.8E-08	4.5E-07	(mg/m^3)	1.5E-05	(mg/m^3)	0.03
				Beryllium	3.5E-7	mg/m^3	1.2E-10	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	2.9E-10	8.4E-09	(mg/m^3)	2.0E-05	(mg/m^3)	0.0004
				Chromium	7.6E-6	mg/m^3	2.6E-09	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.2E-07	1.8E-07	(mg/m^3)	1.0E-04	(mg/m^3)	0.002
				Cobalt	7.4E-6	mg/m^3	2.5E-09	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.2E-08	1.7E-07	(mg/m^3)	6.0E-06	(mg/m^3)	0.03
				Iron	0.018	mg/m^3	6.2E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	4.4E-04	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	2.5E-4	mg/m^3	8.3E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	5.8E-06	(mg/m^3)	5.0E-05	(mg/m^3)	0.1
			Exp. Route Total								2.7E-07					0.2
		Exposure Point Total									2.7E-07					0.2
	Exposure Medium Total										2.7E-07					0.2
Medium Total											7.3E-07					0.3
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)enthracene	0.036	mg/kg	3.5E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.5E-10	2.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	4.4E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.2E-09	3.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	7.0E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.1E-10	4.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	9.6E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.0E-10	6.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.9E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-10	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	3.7E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	7.5E-10	2.6E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	4.0E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.2E-09	2.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.003
				Aluminum	7,516	mg/kg	7.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	5.0E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.005
				Arsenic	29.8	mg/kg	2.9E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.3E-07	2.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Beryllium	0.414	mg/kg	4.0E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Chromium	11.1	mg/kg	1.1E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	5.3E-08	7.5E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	15.4	mg/kg	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Iron	37,930	mg/kg	3.6E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	2.5E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.04
				Manganese (soil)	1053	mg/kg	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.1E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.005
				Thallium	2.60	mg/kg	2.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								4.9E-07					0.2
			Dermal	Benzo(a)anthracene	0.036	mg/kg	4.5E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.3E-11	3.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	5.7E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.2E-10	4.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	9.1E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.6E-11	6.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.2E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	9.1E-11	8.7E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	3.7E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.7E-11	2.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	5.2E-11	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.0E-10	3.7E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.2E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.6E-10	8.5E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00008
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	8.6E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-08	6.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.4E-08					0.002
		Exposure Point Total									5.1E-07					0.2
	Exposure Medium Total										5.1E-07					0.2

TABLE 7.1.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	2.6E-8	mg/m^3	8.7E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	9.6E-13	6.1E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	3.3E-8	mg/m^3	1.1E-11	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.2E-11	7.8E-10	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	5.2E-8	mg/m^3	1.8E-11	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.9E-12	1.2E-09	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	7.1E-9	mg/m^3	2.4E-12	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.9E-12	1.7E-10	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.1E-8	mg/m^3	7.3E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.0E-13	5.1E-10	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	2.8E-8	mg/m^3	9.4E-12	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	5.4E-12	6.6E-10	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.0E-12	mg/m^3	1.0E-15	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	3.9E-11	7.1E-14	(mg/m^3)	4.0E-08	(mg/m^3)	0.000002
				Aluminum	0.005	mg/m^3	1.8E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.3E-04	(mg/m^3)	5.0E-03	(mg/m^3)	0.03
				Arsenic	2.1E-5	mg/m^3	7.2E-09	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	3.1E-08	5.1E-07	(mg/m^3)	1.5E-05	(mg/m^3)	0.03
				Beryllium	3.0E-7	mg/m^3	1.0E-10	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	2.4E-10	7.0E-09	(mg/m^3)	2.0E-05	(mg/m^3)	0.0004
				Chromium	7.9E-6	mg/m^3	2.7E-09	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.3E-07	1.9E-07	(mg/m^3)	1.0E-04	(mg/m^3)	0.002
				Cobalt	1.1E-5	mg/m^3	3.7E-09	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	3.4E-08	2.6E-07	(mg/m^3)	8.0E-06	(mg/m^3)	0.04
				Iron	0.027	mg/m^3	9.2E-06	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	6.4E-04	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	7.5E-4	mg/m^3	2.6E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.8E-05	(mg/m^3)	5.0E-05	(mg/m^3)	0.4
				Thallium	1.9E-6	mg/m^3	6.3E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.4E-08	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								2.9E-07					0.5
		Exposure Point Total									2.9E-07					0.5
	Exposure Medium Total										2.9E-07					0.5
Medium Total											8.0E-07					0.6
Groundwater	Groundwater	Tank Farm 5	Ingestion	Benzene	1.20	ug/L	8.7E-10	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	4.8E-11	6.1E-08	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.00002
				Aluminum	1,480	ug/L	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.5E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00008
				Arsenic	2.90	ug/L	2.1E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.2E-09	1.5E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0005
				Cobalt	11.1	ug/L	8.1E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.6E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	11,071	ug/L	8.0E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.6E-04	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.0008
				Manganese (water)	1,168	ug/L	8.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.9E-05	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.002
			Exp. Route Total								3.2E-09					0.006
			Dermal	Benzene	1.20	ug/L	7.6E-09	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	4.2E-10	5.3E-07	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.0001
				Aluminum	1,480	ug/L	5.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.0E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00004
				Arsenic	2.90	ug/L	3.4E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.1E-09	2.4E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0008
				Cobalt	11.1	ug/L	7.3E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.1E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	11,071	ug/L	9.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.5E-04	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.0009
				Manganese (water)	1,168	ug/L	9.6E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.7E-05	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.07
			Exp. Route Total								5.5E-09					0.07
		Exposure Point Total									8.7E-09					0.08
	Exposure Medium Total										8.7E-09					0.08
	Air	Tank Farm 5	Inhalation	Benzene	5.0E-5	mg/m^3	1.7E-08	(mg/m^3)	7.8E-06	(ug/m^3)$^{-1}$	1.3E-10	1.2E-06	(mg/m^3)	3.0E-02	(mg/m^3)	0.00004
				Aluminum	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	0.0E+00	(mg/m^3)	5.0E-03	(mg/m^3)	--
				Arsenic	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	--	0.0E+00	(mg/m^3)	1.5E-05	(mg/m^3)	--
				Cobalt	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	--	0.0E+00	(mg/m^3)	6.0E-06	(mg/m^3)	--
				Iron	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (water)	0.0E+0	mg/m^3	0.0E+00	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	0.0E+00	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.3E-10					0.00004
		Exposure Point Total									1.3E-10					0.00004
	Exposure Medium Total										1.3E-10					0.00004
Medium Total											8.8E-09					0.08
										Total of Receptor Risks - Surface Soil and Groundwater	7.4E-07	Total of Receptor Hazards - Surface Soil and Groundwater				0.4

TABLE 7 2.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	5.3E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.9E-09	4.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	6.6E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	4.8E-08	5.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.1E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	8.2E-09	8.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.2E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	8.8E-09	9.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	4.9E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	3.6E-09	3.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.1E-09	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	4.3E-09	1.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0008
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.3E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.9E-08	1.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	8,500	mg/kg	4.7E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	3.6E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	26.4	mg/kg	1.5E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	2.2E-06	1.1E-05	(mg/kg/dey)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.495	mg/kg	2.7E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	2.1E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Chromium	10.7	mg/kg	5.9E-07	(mg/kg/day)	5.0E-01	$(mg/kg/day)^{-1}$	2.9E-07	4.6E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	10.3	mg/kg	5.7E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	4.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	25,700	mg/kg	1.4E-03	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.1E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	343	mg/kg	1.9E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.5E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								2.6E-06					0.08
			Dermal	Benzo(a)enthracene	0.097	mg/kg	9.2E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.7E-10	7.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.1E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	8.2E-09	8.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluorenthene	0.204	mg/kg	1.9E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.4E-09	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)enthracene	0.022	mg/kg	2.1E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.5E-09	1.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	8.4E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.1E-10	6.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.0E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	7.9E-10	3.1E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	8.9E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	1.2E-09	7.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00007
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	5.8E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	8.6E-08	4.5E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/dey)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.0E-07					0.002
		Exposure Point Total									2.7E-06					0.08
	Exposure Medium Total										2.7E-06					0.08
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	2.3E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.5E-14	1.8E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	2.8E-13	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	3.1E-13	2.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	4.8E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	5.2E-14	3.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	5.1E-14	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	6.2E-14	4.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	2.1E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.3E-14	1.6E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	9.1E-14	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	5.2E-14	7.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	9.6E-18	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	3.6E-13	7.5E-17	(mg/m^3)	4.0E-08	(mg/m^3)	1.86364E-09

TABLE 7.2.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m³	2.0E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	1.5E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00003
				Arsenic	2.4E-9	mg/m³	6.2E-11	(mg/m³)	4.3E-03	(ug/m³)⁻¹	2.7E-10	4.8E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00003
				Beryllium	4.5E-11	mg/m³	1.2E-12	(mg/m³)	2.4E-03	(ug/m³)⁻¹	2.8E-12	9.0E-12	(mg/m³)	2.0E-05	(mg/m³)	0.0000005
				Chromium	9.7E-10	mg/m³	2.5E-11	(mg/m³)	8.4E-02	(ug/m³)⁻¹	2.1E-09	1.9E-10	(mg/m³)	1.0E-04	(mg/m³)	0.000002
				Cobalt	9.4E-10	mg/m³	2.4E-11	(mg/m³)	9.0E-03	(ug/m³)⁻¹	2.2E-10	1.9E-10	(mg/m³)	6.0E-06	(mg/m³)	0.00003
				Iron	2.3E-6	mg/m³	6.0E-08	(mg/m³)	NA	(ug/m³)⁻¹	--	4.7E-07	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	3.1E-8	mg/m³	8.0E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	6.2E-09	(mg/m³)	5.0E-05	(mg/m³)	0.0001
			Exp. Route Total								2.6E-09					0.0002
		Exposure Point Total									2.6E-09					0.0002
	Exposure Medium Total										2.6E-09					0.0002
Medium Total											2.7E-06					0.08
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(e)anthracene	0.036	mg/kg	2.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.4E-09	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	2.5E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	1.9E-08	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	4.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.9E-09	3.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	5.5E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	4.0E-09	4.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	1.7E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.2E-09	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.1E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	4.3E-09	1.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0008
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.3E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	3.0E-08	1.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	7,516	mg/kg	4.1E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	3.2E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.003
				Arsenic	29.8	mg/kg	1.6E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	2.5E-06	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.414	mg/kg	2.3E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Chromium	11.1	mg/kg	6.1E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	3.1E-07	4.8E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	15.4	mg/kg	8.5E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	6.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	37,930	mg/kg	2.1E-03	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.6E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	1,053	mg/kg	5.8E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	4.5E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	2.60	mg/kg	1.4E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.8E-06					0.10
			Dermal	Benzo(a)anthracene	0.036	mg/kg	3.4E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.5E-10	2.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	4.3E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	3.2E-09	3.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	6.9E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	5.0E-10	5.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	9.5E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	6.9E-10	7.4E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.8E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.1E-10	2.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.0E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	7.9E-10	3.1E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0002
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	9.2E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	1.2E-09	7.1E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00007
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	6.5E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	9.8E-08	5.1E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								1.0E-07					0.002
		Exposure Point Total									2.9E-06					0.1
	Exposure Medium Total										2.9E-06					0.1

TABLE 7.2.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scanario Timeframe. Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	8.4E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	9.3E-15	6.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	1.1E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.2E-13	8.4E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	1.7E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.9E-14	1.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	2.3E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.8E-14	1.8E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	7.0E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	7.7E-15	5.5E-13	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	9.1E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	5.2E-14	7.1E-13	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	9.8E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	3.7E-13	7.6E-17	(mg/m^3)	4.0E-08	(mg/m^3)	1.90909E-09
				Aluminum	6.8E-7	mg/m^3	1.8E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.4E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00003
				Arsenic	2.7E-9	mg/m^3	7.0E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	3.0E-10	5.4E-10	(mg/m^3)	1.5E-05	(mg/m^3)	0.00004
				Beryllium	3.8E-11	mg/m^3	9.7E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	2.3E-12	7.5E-12	(mg/m^3)	2.0E-05	(mg/m^3)	0.0000004
				Chromium	1.0E-9	mg/m^3	2.6E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.2E-09	2.0E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000002
				Cobalt	1.4E-9	mg/m^3	3.6E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	3.2E-10	2.8E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.00005
				Iron	3.4E-6	mg/m^3	8.9E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	6.9E-07	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	2.5E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.9E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0004
				Thallium	2.4E-10	mg/m^3	6.1E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.7E-11	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								2.8E-09					0.0005
		Exposure Point Total									2.8E-09					0.0005
	Exposure Medium Total										2.8E-09					0.0005
Medium Total											2.9E-06					0.1
										Total of Receptor Risks - Surface Soil	2.7E-06				Total of Receptor Hazards - Surface Soil	0.08

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	1.6E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-09	6.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	2.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-08	7.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	3.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.5E-09	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	3.7E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.7E-09	1.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-09	5.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.2E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	4.4E-10	2.6E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.3E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.0E-09	2.7E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0003
				Aluminum	8,500	mg/kg	4.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.6E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0006
				Arsenic	26.4	mg/kg	1.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.2E-07	1.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
				Beryllium	0.495	mg/kg	2.8E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.3E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00002
				Chromium	10.7	mg/kg	6.0E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.0E-08	7.0E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0002
				Cobalt	10.3	mg/kg	5.8E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	25,700	mg/kg	1.4E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.002
				Manganese (soil)	343	mg/kg	1.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.3E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0002
			Exp. Route Total								2.8E-07					0.01
			Dermal	Benzo(a)anthracene	0.097	mg/kg	6.9E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.0E-10	2.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	8.5E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.2E-09	3.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.1E-09	5.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.6E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.1E-09	6.1E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	6.3E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.6E-10	2.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.0E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.0E-10	1.2E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00006
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	2.2E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.9E-10	2.6E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00003
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	1.4E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.2E-08	1.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0006
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.2E-08					0.0006
		Exposure Point Total									3.1E-07					0.01
	Exposure Medium Total										3.1E-07					0.01
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	5.0E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.5E-15	9.7E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	6.1E-14	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	6.7E-14	1.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	1.0E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.1E-14	2.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	1.1E-14	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.4E-14	2.2E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	4.6E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.0E-15	8.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	6.7E-15	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	3.8E-15	3.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	7.0E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.7E-14	4.1E-18	(mg/m^3)	4.0E-08	(mg/m^3)	1.0E-10

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m^3	1.5E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	8.5E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	2.4E-9	mg/m^3	4.5E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.9E-11	2.6E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000002
				Beryllium	4.5E-11	mg/m^3	8.5E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	2.0E-13	4.9E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	9.7E-10	mg/m^3	1.8E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.5E-10	1.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	9.4E-10	mg/m^3	1.8E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.6E-11	1.0E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000002
				Iron	2.3E-6	mg/m^3	4.4E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.1E-8	mg/m^3	5.9E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.4E-10	(mg/m^3)	5.0E-05	(mg/m^3)	0.000007
			Exp. Route Total								1.9E-10					0.00001
		Exposure Point Total									1.9E-10					0.00001
	Exposure Medium Total										1.9E-10					0.00001
Medium Total											3.1E-07					0.01
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	6.1E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.4E-10	2.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	7.8E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.7E-09	3.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	1.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	9.0E-10	4.8E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.7E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.2E-09	6.6E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	5.1E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.7E-10	2.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.2E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	4.4E-10	2.6E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.4E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.1E-09	2.8E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0003
				Aluminum	7,516	mg/kg	4.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.9E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0005
				Arsenic	29.8	mg/kg	1.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.5E-07	2.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.007
				Beryllium	0.414	mg/kg	2.3E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.7E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00001
				Chromium	11.1	mg/kg	6.3E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	3.1E-08	7.3E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0002
				Cobalt	15.4	mg/kg	8.7E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.0E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Iron	37,930	mg/kg	2.1E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.5E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.004
				Manganese (soil)	1,053	mg/kg	5.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.9E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0005
				Thallium	2.60	mg/kg	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								3.0E-07					0.02
			Dermal	Benzo(a)anthracene	0.036	mg/kg	2.6E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-10	1.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	3.3E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.4E-09	1.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	5.2E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-10	2.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	7.1E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.2E-10	2.8E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.1E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.6E-10	8.3E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.0E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	2.0E-10	1.2E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00006
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.3E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	3.0E-10	2.7E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00003
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	1.6E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.4E-08	1.9E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0006
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.9E-08					0.0007
		Exposure Point Total									3.2E-07					0.02
	Exposure Medium Total										3.2E-07					0.02

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m³	1.8E-14	(mg/m³)	1.1E-04	(ug/m³)⁻¹	2.0E-15	3.6E-14	(mg/m³)	NA	(mg/m³)	--
				Benzo(a)pyrene	4.2E-12	mg/m³	2.4E-14	(mg/m³)	1.1E-03	(ug/m³)⁻¹	2.6E-14	4.6E-14	(mg/m³)	NA	(mg/m³)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m³	3.7E-14	(mg/m³)	1.1E-04	(ug/m³)⁻¹	4.1E-15	7.3E-14	(mg/m³)	NA	(mg/m³)	--
				Dibenzo(e,h)anthracene	9.1E-13	mg/m³	5.1E-15	(mg/m³)	1.2E-03	(ug/m³)⁻¹	6.1E-15	1.0E-14	(mg/m³)	NA	(mg/m³)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m³	1.5E-14	(mg/m³)	1.1E-04	(ug/m³)⁻¹	1.7E-15	3.0E-14	(mg/m³)	NA	(mg/m³)	--
				Aroclor-1254	3.5E-12	mg/m³	6.7E-15	(mg/m³)	5.7E-04	(ug/m³)⁻¹	3.8E-15	3.9E-14	(mg/m³)	NA	(mg/m³)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m³	7.2E-19	(mg/m³)	3.8E+01	(ug/m³)⁻¹	2.7E-14	4.2E-18	(mg/m³)	4.0E-08	(mg/m³)	1.0E-10
				Aluminum	6.8E-7	mg/m³	1.3E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	7.5E-09	(mg/m³)	5.0E-03	(mg/m³)	0.000001
				Arsenic	2.7E-9	mg/m³	5.1E-12	(mg/m³)	4.3E-03	(ug/m³)⁻¹	2.2E-11	3.0E-11	(mg/m³)	1.5E-05	(mg/m³)	0.000002
				Beryllium	3.8E-11	mg/m³	7.1E-14	(mg/m³)	2.4E-03	(ug/m³)⁻¹	1.7E-13	4.1E-13	(mg/m³)	2.0E-05	(mg/m³)	0.00000002
				Chromium	1.0E-9	mg/m³	1.9E-12	(mg/m³)	8.4E-02	(ug/m³)⁻¹	1.6E-10	1.1E-11	(mg/m³)	1.0E-04	(mg/m³)	0.0000001
				Cobalt	1.4E-9	mg/m³	2.6E-12	(mg/m³)	9.0E-03	(ug/m³)⁻¹	2.4E-11	1.5E-11	(mg/m³)	6.0E-06	(mg/m³)	0.000003
				Iron	3.4E-6	mg/m³	6.5E-09	(mg/m³)	NA	(ug/m³)⁻¹	--	3.8E-08	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	9.6E-8	mg/m³	1.8E-10	(mg/m³)	NA	(ug/m³)⁻¹	--	1.0E-09	(mg/m³)	5.0E-05	(mg/m³)	0.00002
				Thallium	2.4E-10	mg/m³	4.4E-13	(mg/m³)	NA	(ug/m³)⁻¹	--	2.6E-12	(mg/m³)	NA	(mg/m³)	--
			Exp. Route Total								2.1E-10					0.00003
		Exposure Point Total									2.1E-10					0.00003
	Exposure Medium Total										2.1E-10					0.00003
Medium Total											3.2E-07					0.02
Surface Water	Surface Water	Tank Farm 5	Ingestion	Chloroform	1.00	ug/L	0.0E+00	(mg/kg/day)	3.1E-02	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E-02	(mg/kg/day)	--
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	2.0E-02	(mg/kg/day)	--
				Aluminum	852	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	0.275	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	1.068	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Chloroform	1.00	ug/L	4.3E-09	(mg/kg/day)	3.1E-02	(mg/kg/day)⁻¹	1.3E-10	5.0E-08	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.000005
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	4.7E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	5.4E-07	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00003
				Aluminum	852	ug/L	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.3E-06	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.000002
				Arsenic	0.275	ng/L	6.3E-11	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	9.4E-11	7.3E-10	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000002
				Iron	1.068	ug/L	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	--	2.8E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000004
			Exp. Route Total								2.3E-10					0.00004
		Exposure Point Total									2.3E-10					0.00004
	Exposure Medium Total										2.3E-10					0.00004
Medium Total											2.3E-10					0.00004

TABLE 7 3 CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.440	mg/kg	7.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.4E-09	2.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	9.1E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.7E-08	3.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	9.6E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.0E-09	3.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	1.1E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	7.9E-11	4.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	2.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.5E-08	7.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	6.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.7E-09	2.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	5.1E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.6E-09	5.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	10,660	mg/kg	6.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.0E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0007
				Arsenic	62.5	mg/kg	3.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.3E-07	4.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.630	mg/kg	3.6E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00002
				Chromium	17.0	mg/kg	9.6E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	4.8E-08	1.1E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0004
				Cobalt	47.7	mg/kg	2.7E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	87,800	mg/kg	4.9E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.8E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.008
				Manganese (soil)	437	mg/kg	2.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.9E-05	(mg/kg/dey)	1.4E-01	(mg/kg/day)	0.0002
			Exp. Route Total								6.8E-07					0.03
			Dermal	Benzo(a)anthracene	0.440	mg/kg	7.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.7E-08	3.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(e)pyrene	0.540	mg/kg	9.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.0E-07	3.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	1.0E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.4E-08	3.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	1.1E-07	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	8.3E-10	4.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	2.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.6E-07	8.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	6.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.9E-08	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	1.2E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.6E-08	1.4E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.001
				Aluminum	10,660	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	62.5	mg/kg	8.6E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-06	1.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.03
				Beryllium	0.630	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	17.0	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	47.7	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	87,800	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	437	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								2.3E-06					0.03
		Exposure Point Total									3.0E-06					0.07
	Exposure Medium Total										3.0E-06					0.07
Medium Total											3.0E-06					0.07
										Total of Receptor Risks - Surface Soil, Surface Water, Sediment	3.3E-06	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.08
										Total of Receptor Risks - Subsurface Soil, Surface Water, Sediment	3.3E-06	Total of Receptor Hazards - Subsurface Soil, Surface Water, and Sediment				0.08

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	7.9E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.8E-09	4.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	9.7E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	7.1E-08	5.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.7E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.2E-08	8.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.8E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.3E-08	9.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	7.2E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.3E-09	3.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.9E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	9.8E-10	1.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	5.1E-14	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	6.7E-09	1.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	8,500	mg/kg	1.1E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	3.7E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	26.4	mg/kg	3.3E-07	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	5.0E-07	1.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.495	mg/kg	6.2E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	2.2E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Chromium	10.7	mg/kg	1.3E-07	(mg/kg/day)	5.0E-01	$(mg/kg/day)^{-1}$	6.7E-08	4.7E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	10.3	mg/kg	1.3E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	4.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	25,700	mg/kg	3.2E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.1E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	343	mg/kg	4.3E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.5E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								6.8E-07					0.08
			Dermal	Benzo(a)anthracene	0.097	mg/kg	1.1E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	8.4E-10	6.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.4E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.0E-08	7.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.4E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.8E-09	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.6E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.9E-09	1.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.1E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	7.7E-10	5.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	7.7E-11	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	1.5E-10	2.7E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.7E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.2E-10	6.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00006
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	1.1E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.7E-08	3.9E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.3E-08					0.001
		Exposure Point Total									7.1E-07					0.08
	Exposure Medium Total										7.1E-07					0.08
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	1.8E-14	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.0E-15	9.7E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	2.2E-14	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	2.4E-14	1.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	3.8E-14	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	4.2E-15	2.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	4.1E-15	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	4.9E-15	2.2E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	1.6E-14	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.8E-15	8.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	1.1E-15	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	6.3E-16	3.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	1.2E-19	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	4.4E-15	4.1E-18	(mg/m^3)	4.0E-08	(mg/m^3)	1.0E-10

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m^3	2.4E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	8.5E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000002
				Arsenic	2.4E-9	mg/m^3	7.5E-13	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	3.2E-12	2.6E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000002
				Beryllium	4.5E-11	mg/m^3	1.4E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	3.4E-14	4.9E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	9.7E-10	mg/m^3	3.0E-13	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.6E-11	1.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	9.4E-10	mg/m^3	2.9E-13	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.6E-12	1.0E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000002
				Iron	2.3E-6	mg/m^3	7.3E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.6E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.1E-8	mg/m^3	9.8E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	3.4E-10	(mg/m^3)	5.0E-05	(mg/m^3)	0.000007
			Exp. Route Total								3.2E-11					0.00001
		Exposure Point Total									3.2E-11					0.00001
	Exposure Medium Total										3.2E-11					0.00001
Medium Total											7.1E-07					0.08
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	2.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.1E-09	1.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	3.7E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.7E-08	2.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	5.9E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.3E-09	3.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	8.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.9E-09	4.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.8E-09	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.9E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	9.8E-10	1.7E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	5.3E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.8E-09	1.8E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	7,516	mg/kg	9.4E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.3E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.003
				Arsenic	29.8	mg/kg	3.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.6E-07	1.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.414	mg/kg	5.2E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Chromium	11.1	mg/kg	1.4E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	7.0E-08	4.9E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	15.4	mg/kg	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	6.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	37,930	mg/kg	4.8E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.7E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	1,053	mg/kg	1.3E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.6E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	2.60	mg/kg	3.3E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								6.8E-07					0.1
			Dermal	Benzo(a)anthracene	0.036	mg/kg	4.3E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-10	2.3E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	5.5E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.0E-09	2.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	8.7E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	6.3E-10	4.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.2E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	8.7E-10	6.4E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	3.6E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.6E-10	1.9E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	7.7E-11	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.5E-10	2.7E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.8E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.3E-10	6.2E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00006
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	1.3E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.9E-08	4.4E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.5E-08					0.002
		Exposure Point Total									7.0E-07					0.1
	Exposure Medium Total										7.0E-07					0.1

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	6.7E-15	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	7.3E-16	3.6E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	8.5E-15	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	9.4E-15	4.6E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	1.4E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.5E-15	7.3E-14	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	1.9E-15	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.2E-15	1.0E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	5.6E-15	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.1E-16	3.0E-14	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	1.1E-15	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	6.3E-16	3.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	1.2E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	4.5E-15	4.2E-18	(mg/m^3)	4.0E-08	(mg/m^3)	1.04608E-10
				Aluminum	6.8E-7	mg/m^3	2.1E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	7.5E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000001
				Arsenic	2.7E-9	mg/m^3	8.5E-13	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	3.6E-12	3.0E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000002
				Beryllium	3.8E-11	mg/m^3	1.2E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	2.8E-14	4.1E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.0E-9	mg/m^3	3.2E-13	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	2.7E-11	1.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.4E-9	mg/m^3	4.4E-13	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	3.9E-12	1.5E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000003
				Iron	3.4E-6	mg/m^3	1.1E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	3.0E-11	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.0E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00002
				Thallium	2.4E-10	mg/m^3	7.4E-14	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.6E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								3.4E-11					0.00003
		Exposure Point Total									3.4E-11					0.00003
	Exposure Medium Total										3.4E-11					0.00003
Medium Total											7.0E-07					0.1
Surface Water	Surface Water	Tank Farm 5	Ingestion	Chloroform	1.00	ug/L	0.0E+00	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E-02	(mg/kg/day)	--
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.0E-02	(mg/kg/day)	--
				Aluminum	852	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	0.275	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	1,068	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Chloroform	1.00	ug/L	3.3E-09	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	1.0E-10	1.2E-07	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.00001
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	3.6E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.3E-06	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00006
				Aluminum	852	ug/L	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.2E-06	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.000005
				Arsenic	0.275	ng/L	4.8E-11	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	7.2E-11	1.7E-09	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000006
				Iron	1,068	ug/L	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.6E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000009
			Exp. Route Total								1.7E-10					0.00009
		Exposure Point Total									1.7E-10					0.00009
	Exposure Medium Total										1.7E-10					0.00009
Medium Total											1.7E-10					0.00009

TABLE 7.4 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreationel User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.440	mg/kg	3.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.6E-08	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	4.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.2E-07	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	4.6E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.4E-08	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	5.2E-08	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.8E-10	2.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	9.8E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.1E-08	5.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	3.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-08	1.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	1.1E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	1.5E-08	3.9E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.004
				Aluminum	10,660	mg/kg	1.3E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.7E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.005
				Arsenic	62.5	mg/kg	7.8E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.2E-06	2.7E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Beryllium	0.630	mg/kg	7.9E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.8E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Chromium	17.0	mg/kg	2.1E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	1.1E-07	7.5E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	47.7	mg/kg	6.0E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
				Iron	87,800	mg/kg	1.1E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.8E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.05
				Manganese (soil)	437	mg/kg	5.5E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.9E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								1.8E-06					0.2
			Dermal	Benzo(a)anthracene	0.440	mg/kg	5.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-09	2.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	6.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.7E-08	3.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	6.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	4.9E-09	3.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	7.6E-09	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	5.5E-11	4.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	1.4E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.0E-08	7.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	4.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.3E-09	2.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	3.8E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	4.9E-10	1.3E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0001
				Aluminum	10,660	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	62.5	mg/kg	2.6E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	3.9E-08	9.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.003
				Beryllium	0.630	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	17.0	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	47.7	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	87,600	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganase (soil)	437	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.1E-07					0.003
		Exposure Point Total									1.9E-06					0.2
	Exposure Medium Total										1.9E-06					0.2
Medium Total											1.9E-06					0.2
										Total of Receptor Risks - Surface Soil, Surface Water, Sediment	2.6E-06	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.3
										Total of Receptor Risks - Subsurface Soil, Surface Water, Sediment	2.6E-06	Total of Receptor Hazards - Subsurface Soil, Surface Water, and Sediment				0.3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	7.2E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.2E-10	4.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	8.8E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	6.4E-09	5.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.5E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.1E-09	9.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.6E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.2E-09	1.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	6.6E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.8E-10	4.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	3.7E-10	1.8E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00009
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.9E-14	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.5E-09	1.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0002
				Aluminum	8,500	mg/kg	4.0E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	4.0E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0004
				Arsenic	26.4	mg/kg	1.2E-07	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.9E-07	1.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Beryllium	0.495	mg/kg	2.3E-09	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	2.3E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00001
				Chromium	10.7	mg/kg	5.0E-08	(mg/kg/day)	5.0E-01	$(mg/kg/day)^{-1}$	2.5E-08	5.0E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0002
				Cobalt	10.3	mg/kg	4.8E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	4.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	25,700	mg/kg	1.2E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.2E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.002
				Manganese (soil)	343	mg/kg	1.6E-06	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.6E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0001
			Exp. Route Total								2.2E-07					0.008
			Dermal	Benzo(a)anthracene	0.097	mg/kg	1.1E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	7.7E-11	6.8E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.3E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	9.5E-10	8.3E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.2E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.6E-10	1.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.4E-11	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.8E-10	1.5E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	9.7E-11	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	7.1E-11	6.2E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.9E-11	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	5.8E-11	2.9E-10	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	6.6E-16	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	8.6E-11	6.6E-15	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.000007
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	4.2E-09	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	6.4E-09	4.2E-08	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0001
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								7.9E-09					0.0002
		Exposure Point Total									2.3E-07					0.009
	Exposure Medium Total										2.3E-07					0.009
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	1.5E-14	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.7E-15	9.7E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	1.9E-14	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	2.0E-14	1.2E-13	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	3.2E-14	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	3.5E-15	2.0E-13	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	3.4E-15	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	4.1E-15	2.2E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	1.4E-14	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	1.5E-15	8.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	3.9E-15	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	2.2E-15	3.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	4.1E-19	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	1.6E-14	4.1E-18	(mg/m^3)	4.0E-08	(mg/m^3)	1.0E-10

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposura Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m³	8.5E-10	(mg/m³)	NA	(ug/m³)⁻¹	- -	8.5E-09	(mg/m³)	5.0E-03	(mg/m³)	0.000002
				Arsenic	2.4E-9	mg/m³	2.6E-12	(mg/m³)	4.3E-03	(ug/m³)⁻¹	1.1E-11	2.6E-11	(mg/m³)	1.5E-05	(mg/m³)	0.000002
				Beryllium	4.5E-11	mg/m³	4.9E-14	(mg/m³)	2.4E-03	(ug/m³)⁻¹	1.2E-13	4.9E-13	(mg/m³)	2.0E-05	(mg/m³)	0.00000002
				Chromium	9.7E-10	mg/m³	1.1E-12	(mg/m³)	8.4E-02	(ug/m³)⁻¹	9.0E-11	1.1E-11	(mg/m³)	1.0E-04	(mg/m³)	0.0000001
				Cobalt	9.4E-10	mg/m³	1.0E-12	(mg/m³)	9.0E-03	(ug/m³)⁻¹	9.2E-12	1.0E-11	(mg/m³)	6.0E-06	(mg/m³)	0.000002
				Iron	2.3E-6	mg/m³	2.6E-09	(mg/m³)	NA	(ug/m³)⁻¹	- -	2.6E-08	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	3.1E-8	mg/m³	3.4E-11	(mg/m³)	NA	(ug/m³)⁻¹	- -	3.4E-10	(mg/m³)	5.0E-05	(mg/m³)	0.000007
			Exp. Route Total								1.1E-10					0.00001
		Exposure Point Total									1.1E-10					0.00001
	Exposure Medium Total										1.1E-10					0.00001
Medium Total											2.3E-07					0.009
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	2.7E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.9E-10	1.7E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Banzo(a)pyrene	0.046	mg/kg	3.4E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.5E-09	2.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	5.4E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	3.9E-10	3.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	7.4E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	5.4E-10	4.7E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.2E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.6E-10	1.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	3.7E-10	1.8E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00009
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	2.0E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	2.6E-09	2.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0002
				Aluminum	7,516	mg/kg	3.5E-05	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	3.5E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0004
				Arsanic	29.8	mg/kg	1.4E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	2.1E-07	1.4E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.005
				Beryllium	0.414	mg/kg	1.9E-09	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	1.9E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.000010
				Chromium	11.1	mg/kg	5.2E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	2.6E-08	5.2E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0002
				Cobalt	15.4	mg/kg	7.2E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	7.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Iron	37,930	mg/kg	1.8E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	1.8E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese (soil)	1,053	mg/kg	4.9E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	4.9E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0004
				Thallium	2.60	mg/kg	1.2E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.4E-07					0.01
			Dermal	Benzo(a)anthracene	0.036	mg/kg	3.9E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.9E-11	2.5E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	5.0E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	3.7E-10	3.2E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	8.0E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	5.8E-11	5.1E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.1E-11	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	8.0E-11	7.0E-11	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	3.3E-11	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.4E-11	2.1E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.9E-11	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	5.8E-11	2.9E-10	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.00001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	6.7E-16	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	8.8E-11	6.7E-15	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.000007
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	4.8E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	7.2E-09	4.8E-08	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0002
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								7.9E-09					0.0002
		Exposure Point Total									2.5E-07					0.01
	Exposure Medium Total										2.5E-07					0.01

TABLE 7.5.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface/Subsurface Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	5.6E-15	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	6.2E-16	3.6E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	7.2E-15	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	7.9E-15	4.6E-14	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	1.1E-14	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.3E-15	7.3E-14	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	1.6E-15	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.9E-15	1.0E-14	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	4.7E-15	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	5.2E-16	3.0E-14	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	3.9E-15	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	2.2E-15	3.9E-14	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	4.2E-19	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	1.6E-14	4.2E-18	(mg/m^3)	4.0E-08	(mg/m^3)	1.04608E-10
				Aluminum	6.8E-7	mg/m^3	7.5E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	7.5E-09	(mg/m^3)	5.0E-03	(mg/m^3)	0.000001
				Arsenic	2.7E-9	mg/m^3	3.0E-12	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	1.3E-11	3.0E-11	(mg/m^3)	1.5E-05	(mg/m^3)	0.000002
				Beryllium	3.8E-11	mg/m^3	4.1E-14	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	9.9E-14	4.1E-13	(mg/m^3)	2.0E-05	(mg/m^3)	0.00000002
				Chromium	1.0E-9	mg/m^3	1.1E-12	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	9.3E-11	1.1E-11	(mg/m^3)	1.0E-04	(mg/m^3)	0.0000001
				Cobalt	1.4E-9	mg/m^3	1.5E-12	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	1.4E-11	1.5E-11	(mg/m^3)	6.0E-06	(mg/m^3)	0.000003
				Iron	3.4E-6	mg/m^3	3.8E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	3.8E-08	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	1.0E-10	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.0E-09	(mg/m^3)	5.0E-05	(mg/m^3)	0.00002
				Thallium	2.4E-10	mg/m^3	2.6E-13	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.6E-12	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								1.2E-10					0.00003
		Exposure Point Total									1.2E-10					0.00003
	Exposure Medium Total										1.2E-10					0.00003
Medium Total											2.5E-07					0.01
Surface Water	Surface Water	Tank Farm 5	Ingestion	Chloroform	1.00	ug/L	0.0E+00	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E-02	(mg/kg/day)	--
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.0E-02	(mg/kg/day)	--
				Aluminum	852	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	0.275	ng/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	1,068	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
			Exp. Route Total								--					--
			Dermal	Chloroform	1.00	ug/L	6.1E-09	(mg/kg/day)	3.1E-02	(mg/kg/day)$^{-1}$	1.9E-10	6.1E-08	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.000006
				Benzo(a)anthracene	0.151	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.160	ug/L	0.0E+00	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.150	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.110	ug/L	0.0E+00	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
				Naphthalene	1.50	ug/L	6.6E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	6.6E-07	(mg/kg/day)	2.0E-02	(mg/kg/day)	0.00003
				Aluminum	852	ug/L	2.8E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.8E-06	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.000003
				Arsenic	0.275	ng/L	8.9E-11	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.3E-10	8.9E-10	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.000003
				Iron	1,068	ug/L	3.5E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.5E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.000005
			Exp. Route Total								3.2E-10					0.00005
		Exposure Point Total									3.2E-10					0.00005
	Exposure Medium Total										3.2E-10					0.00005
Medium Total											3.2E-10					0.00005

TABLE 7.5.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.440	mg/kg	3.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.4E-09	2.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	4.0E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.9E-08	2.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	4.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.1E-09	2.7E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	4.7E-09	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	3.4E-11	3.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	8.9E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	6.5E-09	5.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	2.8E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.0E-09	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivalents	9.0E-6	mg/kg	4.2E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	5.5E-09	4.2E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0004
				Aluminum	10,660	mg/kg	5.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.0E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0005
				Arsenic	62.5	mg/kg	2.9E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.4E-07	2.9E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.010
				Beryllium	0.630	mg/kg	3.0E-09	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.0E-08	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00001
				Chromium	17.0	mg/kg	8.0E-08	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	4.0E-08	8.0E-07	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.0003
				Cobalt	47.7	mg/kg	2.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.007
				Iron	87,800	mg/kg	4.1E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.1E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.006
				Manganese (soil)	437	mg/kg	2.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-05	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.0001
			Exp. Route Total								5.3E-07					0.02
			Dermal	Benzo(a)anthracene	0.440	mg/kg	2.3E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.7E-09	1.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.540	mg/kg	2.9E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.1E-08	1.8E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.570	mg/kg	3.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.2E-09	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Chrysene	0.640	mg/kg	3.4E-09	(mg/kg/day)	7.3E-03	(mg/kg/day)$^{-1}$	2.5E-11	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.120	mg/kg	6.3E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	4.6E-09	4.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.380	mg/kg	2.0E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.5E-09	1.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				2,3,7,8-TCDD Equivelents	9.0E-6	mg/kg	7.0E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	9.1E-10	7.0E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00007
				Aluminum	10,660	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	62.5	mg/kg	4.8E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	7.3E-08	4.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.630	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	17.0	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	47.7	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	87,800	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	437	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								1.0E-07					0.002
		Exposure Point Total									6.3E-07					0.03
	Exposure Medium Total										6.3E-07					0.03
Medium Total											6.3E-07					0.03
										Total of Receptor Risks - Surface Soil, Surface Water, Sediment	8.7E-07	Total of Receptor Hazards - Surface Soil, Surface Water, and Sediment				0.03
										Total of Receptor Risks - Subsurface Soil, Surface Water, Sediment	8.8E-07	Total of Receptor Hazards - Subsurface Soil, Surface Water, and Sediment				0.04

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 7.6.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	7.7E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.6E-08	4.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	9.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/dey)$^{-1}$	6.9E-07	5.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.6E-07	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.2E-07	8.7E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.7E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.3E-07	9.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	7.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.2E-08	3.8E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	9.5E-09	1.7E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.008
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	5.0E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	6.5E-08	1.8E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
				Aluminum	8,500	mg/kg	1.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.6E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.04
				Arsenic	26.4	mg/kg	3.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	4.8E-06	1.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Beryllium	0.495	mg/kg	6.0E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.001
				Chromium	10.7	mg/kg	1.3E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	6.5E-07	4.6E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.02
				Cobalt	10.3	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	4.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Iron	25,700	mg/kg	3.1E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.1E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese (soil)	343	mg/kg	4.2E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.01
			Exp. Route Total								6.6E-06					0.8
			Dermal	Benzo(a)anthracene	0.097	mg/kg	1.1E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	8.2E-09	6.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.0E-07	7.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.7E-08	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.5E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	1.9E-08	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	1.0E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	7.5E-09	5.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	7.5E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	1.5E-09	2.6E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.7E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.2E-09	5.9E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	1.1E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	1.6E-07	3.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								3.2E-07					0.01
		Exposure Point Total									6.9E-06					0.8
	Exposure Medium Total										6.9E-06					0.8
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	1.0E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.2E-13	5.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	1.3E-12	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	1.4E-12	6.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	2.2E-12	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	2.4E-13	1.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	2.4E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	2.9E-13	1.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	9.6E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	1.1E-13	5.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	6.5E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	3.7E-14	2.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	6.8E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.6E-13	2.4E-16	(mg/m^3)	4.0E-08	(mg/m^3)	6.0E-09

TABLE 7.6.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m³	1.4E-08	(mg/m³)	NA	(ug/m³)⁻¹	- -	5.0E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00010
				Arsenic	2.4E-9	mg/m³	4.4E-11	(mg/m³)	4.3E-03	(ug/m³)⁻¹	1.9E-10	1.5E-09	(mg/m³)	1.5E-05	(mg/m³)	0.0001
				Beryllium	4.5E-11	mg/m³	8.2E-13	(mg/m³)	2.4E-03	(ug/m³)⁻¹	2.0E-12	2.9E-11	(mg/m³)	2.0E-05	(mg/m³)	0.000001
				Chromium	9.7E-10	mg/m³	1.8E-11	(mg/m³)	8.4E-02	(ug/m³)⁻¹	1.5E-09	6.2E-10	(mg/m³)	1.0E-04	(mg/m³)	0.000006
				Cobalt	9.4E-10	mg/m³	1.7E-11	(mg/m³)	9.0E-03	(ug/m³)⁻¹	1.5E-10	6.0E-10	(mg/m³)	6.0E-06	(mg/m³)	0.0001
				Iron	2.3E-6	mg/m³	4.3E-08	(mg/m³)	NA	(ug/m³)⁻¹	- -	1.5E-06	(mg/m³)	NA	(mg/m³)	--
				Manganese (soil)	3.1E-8	mg/m³	5.7E-10	(mg/m³)	NA	(ug/m³)⁻¹	- -	2.0E-08	(mg/m³)	5.0E-05	(mg/m³)	0.0004
			Exp. Route Total								1.8E-09					0.0007
		Exposure Point Total									1.8E-09					0.0007
	Exposure Medium Total										1.8E-09					0.0007
Medium Total											6.9E-06					0.8
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	2.9E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.1E-08	1.5E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	3.7E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	2.7E-07	2.0E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	5.8E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	4.2E-08	3.1E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	7.9E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	5.8E-08	4.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.4E-08	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	1.7E-08	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	4.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	9.5E-09	1.7E-07	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.008
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	5.1E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	6.7E-08	1.8E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
				Aluminum	7,516	mg/kg	9.2E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	3.2E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.03
				Arsenic	29.8	mg/kg	3.6E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	5.5E-06	1.3E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Beryllium	0.414	mg/kg	5.1E-08	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	1.8E-06	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0009
				Chromium	11.1	mg/kg	1.4E-06	(mg/kg/day)	5.0E-01	(mg/kg/day)⁻¹	6.8E-07	4.7E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.02
				Cobalt	15.4	mg/kg	1.9E-06	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	6.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Iron	37,930	mg/kg	4.6E-03	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	1.6E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese (soil)	1,053	mg/kg	1.3E-04	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	4.5E-03	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.03
				Thallium	2.60	mg/kg	3.2E-07	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								6.8E-06					1.0
			Dermal	Benzo(a)anthracene	0.036	mg/kg	4.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	3.0E-09	2.2E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	5.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	3.9E-08	2.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	8.4E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	6.2E-09	4.5E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.2E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)⁻¹	8.4E-09	6.2E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	3.5E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)⁻¹	2.5E-09	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	7.5E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)⁻¹	1.5E-09	2.6E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.7E-14	(mg/kg/day)	1.3E+05	(mg/kg/day)⁻¹	2.2E-09	6.0E-13	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.0006
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	1.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)⁻¹	1.8E-07	4.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)⁻¹	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.5E-07					0.02
		Exposure Point Total									6.9E-06					1.0
	Exposure Medium Total										6.9E-06					1.0

TABLE 7.6.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	3.9E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	4.3E-14	2.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	5.0E-13	(mg/m^3)	1.1E-03	(ug/m^3)$^{-1}$	5.5E-13	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	7.9E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	8.7E-14	4.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	1.1E-13	(mg/m^3)	1.2E-03	(ug/m^3)$^{-1}$	1.3E-13	5.8E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	3.2E-13	(mg/m^3)	1.1E-04	(ug/m^3)$^{-1}$	3.6E-14	1.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	6.5E-14	(mg/m^3)	5.7E-04	(ug/m^3)$^{-1}$	3.7E-14	2.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	7.0E-18	(mg/m^3)	3.8E+01	(ug/m^3)$^{-1}$	2.7E-13	2.4E-16	(mg/m^3)	4.0E-08	(mg/m^3)	6.11955E-09
				Aluminum	6.8E-7	mg/m^3	1.3E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	4.4E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00009
				Arsenic	2.7E-9	mg/m^3	5.0E-11	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	2.1E-10	1.7E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0001
				Beryllium	3.8E-11	mg/m^3	6.9E-13	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	1.7E-12	2.4E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Chromium	1.0E-9	mg/m^3	1.8E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	1.6E-09	6.5E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000006
				Cobalt	1.4E-9	mg/m^3	2.6E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	2.3E-10	9.0E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	3.4E-6	mg/m^3	6.3E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	2.2E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	9.6E-8	mg/m^3	1.8E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	6.1E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.001
				Thallium	2.4E-10	mg/m^3	4.3E-12	(mg/m^3)	NA	(ug/m^3)$^{-1}$	--	1.5E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								2.0E-09					0.002
		Exposure Point Total									2.0E-09					0.002
	Exposure Medium Total										2.0E-09					0.002
Medium Total											6.9E-06					1.0
Groundwater	Groundwater	Tank Farm 5	Ingestion	Benzene	1.20	ug/L	1.6E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	8.9E-08	5.7E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.01
				Aluminum	1,480	ug/L	2.0E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	7.0E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.07
				Arsenic	2.90	ug/L	3.9E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.9E-06	1.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.5
				Cobalt	11.1	ug/L	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.3E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.8
				Iron	11,071	ug/L	1.5E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.2E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.7
				Manganese (water)	1,168	ug/L	1.6E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	5.5E-02	(mg/kg/day)	2.4E-02	(mg/kg/day)	2.3
			Exp. Route Total								6.0E-06					5.3
			Dermal	Benzene	1.20	ug/L	1.8E-07	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	1.0E-08	6.5E-06	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.002
				Aluminum	1,480	ug/L	5.9E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0002
				Arsenic	2.90	ug/L	3.5E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	5.3E-08	1.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Cobalt	11.1	ug/L	7.6E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Iron	11,071	ug/L	9.7E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.4E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.005
				Manganese (water)	1,168	ug/L	1.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	3.5E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.4
			Exp. Route Total								6.3E-08					0.4
		Exposure Point Total									6.0E-06					5.7
	Exposure Medium Total										6.0E-06					5.7
	Air	Tank Farm 5	Inhalation	Benzene	1.20	ug/L	1.6E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	8.9E-08	5.7E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.01
				Aluminum	1,480	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	2.90	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	11.1	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	11,071	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	1,168	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								8.9E-08					0.01
		Exposure Point Total									8.9E-08					0.01
	Exposure Medium Total										8.9E-08					0.01
Medium Total											6.1E-06					5.7
Total of Receptor Risks - Surface Soil and Groundwater											1.3E-05	Total of Receptor Hazards - Surface Soil and Groundwater				6.5
Total of Receptor Risks - All Soil and Groundwater											1.3E-05	Total of Receptor Hazards - All Soil and Groundwater				6.7

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 7.7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.097	mg/kg	7.0E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	5.1E-09	4.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	8.6E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	6.3E-08	5.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	1.5E-08	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.1E-08	9.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	1.6E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.2E-08	1.0E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	6.4E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	4.7E-09	4.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-09	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	3.6E-09	1.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	1.9E-13	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	2.4E-08	1.9E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	8,500	mg/kg	3.9E-04	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	3.9E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.004
				Arsenic	26.4	mg/kg	1.2E-06	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	1.8E-06	1.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Beryllium	0.495	mg/kg	2.3E-08	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	2.3E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.0001
				Chromium	10.7	mg/kg	4.9E-07	(mg/kg/day)	5.0E-01	$(mg/kg/day)^{-1}$	2.4E-07	4.9E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	10.3	mg/kg	4.7E-07	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	4.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	25,700	mg/kg	1.2E-03	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.2E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	343	mg/kg	1.6E-05	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	1.6E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.001
			Exp. Route Total								2.2E-06					0.08
			Dermal	Benzo(a)anthracene	0.097	mg/kg	1.0E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	7.6E-10	6.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.119	mg/kg	1.3E-09	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	9.3E-09	8.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.204	mg/kg	2.2E-09	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	1.6E-09	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.022	mg/kg	2.3E-10	(mg/kg/day)	7.3E+00	$(mg/kg/day)^{-1}$	1.7E-09	1.5E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.089	mg/kg	9.5E-10	(mg/kg/day)	7.3E-01	$(mg/kg/day)^{-1}$	6.9E-10	6.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.9E-10	(mg/kg/day)	2.0E+00	$(mg/kg/day)^{-1}$	5.7E-10	2.9E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	4.1E-6	mg/kg	6.4E-15	(mg/kg/day)	1.3E+05	$(mg/kg/day)^{-1}$	8.3E-10	6.4E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00006
				Aluminum	8,500	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	26.4	mg/kg	4.1E-08	(mg/kg/day)	1.5E+00	$(mg/kg/day)^{-1}$	6.2E-08	4.1E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.001
				Beryllium	0.495	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	10.7	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	10.3	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	25,700	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	343	mg/kg	0.0E+00	(mg/kg/day)	NA	$(mg/kg/day)^{-1}$	--	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
			Exp. Route Total								7.7E-08					0.002
		Exposure Point Total									2.3E-06					0.08
	Exposure Medium Total										2.3E-06					0.08
	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	8.8E-12	mg/m^3	8.9E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	9.8E-14	5.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	1.1E-11	mg/m^3	1.1E-12	(mg/m^3)	1.1E-03	$(ug/m^3)^{-1}$	1.2E-12	6.9E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	1.9E-11	mg/m^3	1.9E-12	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	2.1E-13	1.2E-11	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	2.0E-12	mg/m^3	2.0E-13	(mg/m^3)	1.2E-03	$(ug/m^3)^{-1}$	2.4E-13	1.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	8.1E-12	mg/m^3	8.2E-13	(mg/m^3)	1.1E-04	$(ug/m^3)^{-1}$	9.0E-14	5.2E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.3E-13	(mg/m^3)	5.7E-04	$(ug/m^3)^{-1}$	1.3E-13	2.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.7E-16	mg/m^3	2.4E-17	(mg/m^3)	3.8E+01	$(ug/m^3)^{-1}$	9.1E-13	2.4E-16	(mg/m^3)	4.0E-08	(mg/m^3)	6.0E-09

TABLE 7.7.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Air	Tank Farm 5	Inhalation	Aluminum	7.7E-7	mg/m^3	5.0E-08	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	5.0E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00010
				Arsenic	2.4E-9	mg/m^3	1.5E-10	(mg/m^3)	4.3E-03	(ug/m^3)$^{-1}$	6.6E-10	1.5E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0001
				Beryllium	4.5E-11	mg/m^3	2.9E-12	(mg/m^3)	2.4E-03	(ug/m^3)$^{-1}$	6.9E-12	2.9E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Chromium	9.7E-10	mg/m^3	6.2E-11	(mg/m^3)	8.4E-02	(ug/m^3)$^{-1}$	5.2E-09	6.2E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000006
				Cobalt	9.4E-10	mg/m^3	6.0E-11	(mg/m^3)	9.0E-03	(ug/m^3)$^{-1}$	5.4E-10	6.0E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	2.3E-6	mg/m^3	1.5E-07	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	1.5E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganese (soil)	3.1E-8	mg/m^3	2.0E-09	(mg/m^3)	NA	(ug/m^3)$^{-1}$	- -	2.0E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.0004
			Exp. Route Total								6.5E-09					0.0007
		Exposure Point Total									6.5E-09					0.0007
	Exposure Medium Total										6.5E-09					0.0007
Medium Total											2.3E-06					0.08
All Soil	All Soil	Tank Farm 5	Ingestion	Benzo(a)anthracene	0.036	mg/kg	2.6E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.9E-09	1.6E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	3.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	2.4E-08	2.1E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	5.3E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	3.8E-09	3.3E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	7.2E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	5.3E-09	4.6E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	2.2E-09	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	1.6E-09	1.4E-08	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	1.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	3.6E-09	1.8E-08	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0009
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	1.9E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	2.5E-08	1.9E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Aluminum	7,516	mg/kg	3.4E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	3.4E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.003
				Arsenic	29.8	mg/kg	1.4E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	2.0E-06	1.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
				Barylium	0.414	mg/kg	1.9E-08	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.9E-07	(mg/kg/day)	2.0E-03	(mg/kg/day)	0.00009
				Chromium	11.1	mg/kg	5.1E-07	(mg/kg/day)	5.0E-01	(mg/kg/day)$^{-1}$	2.5E-07	5.1E-06	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.002
				Cobalt	15.4	mg/kg	7.1E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	7.1E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Iron	37,930	mg/kg	1.7E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.7E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese (soil)	1,053	mg/kg	4.8E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	4.8E-04	(mg/kg/day)	1.4E-01	(mg/kg/day)	0.003
				Thallium	2.60	mg/kg	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	1.2E-06	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								2.4E-06					0.1
			Dermal	Benzo(a)anthracene	0.036	mg/kg	3.8E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.8E-10	2.4E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(a)pyrene	0.046	mg/kg	4.9E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	3.6E-09	3.1E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Benzo(b)fluoranthene	0.073	mg/kg	7.8E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	5.7E-10	5.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Dibenzo(a,h)anthracene	0.010	mg/kg	1.1E-10	(mg/kg/day)	7.3E+00	(mg/kg/day)$^{-1}$	7.8E-10	6.8E-10	(mg/kg/day)	NA	(mg/kg/day)	--
				Indeno(1,2,3-cd)pyrene	0.030	mg/kg	3.2E-10	(mg/kg/day)	7.3E-01	(mg/kg/day)$^{-1}$	2.3E-10	2.0E-09	(mg/kg/day)	NA	(mg/kg/day)	--
				Aroclor-1254	0.039	mg/kg	2.9E-10	(mg/kg/day)	2.0E+00	(mg/kg/day)$^{-1}$	5.7E-10	2.9E-09	(mg/kg/day)	2.0E-05	(mg/kg/day)	0.0001
				2,3,7,8-TCDD Equivalents	4.2E-6	mg/kg	6.6E-15	(mg/kg/day)	1.3E+05	(mg/kg/day)$^{-1}$	8.6E-10	6.6E-14	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.00007
				Aluminum	7,516	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	29.8	mg/kg	4.7E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	7.0E-08	4.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Beryllium	0.414	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	1.4E-05	(mg/kg/day)	--
				Chromium	11.1	mg/kg	0.0E+00	(mg/kg/day)	2.0E+01	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.5E-05	(mg/kg/day)	--
				Cobalt	15.4	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	37,930	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (soil)	1,053	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	5.6E-03	(mg/kg/day)	--
				Thallium	2.60	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	- -	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	--
			Exp. Route Total								7.7E-08					0.002
		Exposure Point Total									2.4E-06					0.1
	Exposure Medium Total										2.4E-06					0.1

TABLE 7.7.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scanario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Madium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancar Hazard Calculations				
					Valua	Units	Intaka/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposura Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
All Soil	Air	Tank Farm 5	Inhalation	Benzo(a)anthracene	3.3E-12	mg/m^3	3.3E-13	(mg/m3)	1.1E-04	(ug/m^3)$^{-1}$	3.6E-14	2.1E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(a)pyrene	4.2E-12	mg/m^3	4.2E-13	(mg/m3)	1.1E-03	(ug/m^3)$^{-1}$	4.6E-13	2.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Benzo(b)fluoranthene	6.6E-12	mg/m^3	6.7E-13	(mg/m3)	1.1E-04	(ug/m^3)$^{-1}$	7.4E-14	4.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				Dibenzo(a,h)anthracene	9.1E-13	mg/m^3	9.2E-14	(mg/m3)	1.2E-03	(ug/m^3)$^{-1}$	1.1E-13	5.8E-13	(mg/m^3)	NA	(mg/m^3)	--
				Indeno(1,2,3-cd)pyrene	2.7E-12	mg/m^3	2.7E-13	(mg/m3)	1.1E-04	(ug/m^3)$^{-1}$	3.0E-14	1.7E-12	(mg/m^3)	NA	(mg/m^3)	--
				Aroclor-1254	3.5E-12	mg/m^3	2.3E-13	(mg/m3)	5.7E-04	(ug/m^3)$^{-1}$	1.3E-13	2.3E-12	(mg/m^3)	NA	(mg/m^3)	--
				2,3,7,8-TCDD Equivalents	3.8E-16	mg/m^3	2.4E-17	(mg/m3)	3.8E+01	(ug/m^3)$^{-1}$	9.3E-13	2.4E-16	(mg/m^3)	4.0E-08	(mg/m^3)	6.11955E-09
				Aluminum	6.8E-7	mg/m^3	4.4E-08	(mg/m3)	NA	(ug/m^3)$^{-1}$	--	4.4E-07	(mg/m^3)	5.0E-03	(mg/m^3)	0.00009
				Arsenic	2.7E-9	mg/m^3	1.7E-10	(mg/m3)	4.3E-03	(ug/m^3)$^{-1}$	7.5E-10	1.7E-09	(mg/m^3)	1.5E-05	(mg/m^3)	0.0001
				Beryllium	3.8E-11	mg/m^3	2.4E-12	(mg/m3)	2.4E-03	(ug/m^3)$^{-1}$	5.8E-12	2.4E-11	(mg/m^3)	2.0E-05	(mg/m^3)	0.000001
				Chromium	1.0E-9	mg/m^3	6.5E-11	(mg/m3)	8.4E-02	(ug/m^3)$^{-1}$	5.4E-09	6.5E-10	(mg/m^3)	1.0E-04	(mg/m^3)	0.000006
				Cobalt	1.4E-9	mg/m^3	9.0E-11	(mg/m3)	9.0E-03	(ug/m^3)$^{-1}$	8.1E-10	9.0E-10	(mg/m^3)	6.0E-06	(mg/m^3)	0.0001
				Iron	3.4E-6	mg/m^3	2.2E-07	(mg/m3)	NA	(ug/m^3)$^{-1}$	--	2.2E-06	(mg/m^3)	NA	(mg/m^3)	--
				Manganase (soil)	9.6E-8	mg/m^3	6.1E-09	(mg/m3)	NA	(ug/m^3)$^{-1}$	--	6.1E-08	(mg/m^3)	5.0E-05	(mg/m^3)	0.001
				Thallium	2.4E-10	mg/m^3	1.5E-11	(mg/m3)	NA	(ug/m^3)$^{-1}$	--	1.5E-10	(mg/m^3)	NA	(mg/m^3)	--
			Exp. Route Total								7.0E-09					0.002
		Exposure Point Total									7.0E-09					0.002
	Exposure Medium Total										7.0E-09					0.002
Medium Total											2.5E-06					0.1
Groundwater	Groundwater	Tank Farm 5	Ingestion	Benzene	1.20	ug/L	2.1E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	1.2E-07	2.1E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.005
				Aluminum	1,480	ug/L	2.6E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.6E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.03
				Arsenic	2.90	ug/L	5.1E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	7.7E-06	5.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Cobalt	11.1	ug/L	2.0E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
				Iron	11,071	ug/L	2.0E-02	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.0E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.3
				Manganese (water)	1,168	ug/L	2.1E-03	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	2.1E-02	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.9
			Exp. Route Total								7.8E-06					2.0
			Dermal	Benzene	1.20	ug/L	3.3E-07	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	1.8E-08	3.3E-06	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.0008
				Aluminum	1,480	ug/L	9.1E-06	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	9.1E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00009
				Arsenic	2.90	ug/L	5.4E-08	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	8.1E-08	5.4E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Cobalt	11.1	ug/L	1.2E-07	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.004
				Iron	11,071	ug/L	1.5E-04	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.002
				Manganese (water)	1,168	ug/L	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	1.5E-04	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.2
			Exp. Route Total								9.9E-08					0.2
		Exposure Point Total									7.9E-06					2.2
	Exposura Medium Total										7.9E-06					2.2
	Air	Tank Farm 5	Inhalation	Benzene	1.20	ug/L	2.1E-06	(mg/kg/day)	5.5E-02	(mg/kg/day)$^{-1}$	1.2E-07	2.1E-05	(mg/kg/day)	4.0E-03	(mg/kg/day)	0.005
				Aluminum	1,480	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	1.0E+00	(mg/kg/day)	--
				Arsenic	2.90	ug/L	0.0E+00	(mg/kg/day)	1.5E+00	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Cobalt	11.1	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	3.0E-04	(mg/kg/day)	--
				Iron	11,071	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	7.0E-01	(mg/kg/day)	--
				Manganese (water)	1,168	ug/L	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)$^{-1}$	--	0.0E+00	(mg/kg/day)	2.4E-02	(mg/kg/day)	--
			Exp. Route Total								1.2E-07					0.005
		Exposure Point Total									1.2E-07					0.005
	Exposure Medium Total										1.2E-07					0.005
Medium Total											8.0E-06					2.2
										Total of Receptor Risks - Surfaca Soil and Groundwater	1.0E-05	Totat ot Receptor Hazards - Surfaca Soil and Groundwater				2.3
										Total of Receptor Risks - All Soil and Groundwater	1.0E-05	Total of Receptor Hazards - All Soil and Groundwater				2.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

RAGS Part D Table 9

Summary of Receptor Risks and Hazards for COPCs

Tank Farm 4

LIST OF TABLES
RAGS PART D TABLE 9 - TANK FARM 4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.

Reasonable Maximum Exposures

9.1.RME Construction Workers - Tank Farm 4
9.2.RME Industrial Workers - Tank Farm 4
9.3.RME Adolescent Trespassers - Tank Farm 4
9.4.RME Child Recreational Users - Tank Farm 4
9.5.RME Adult Recreational Users - Tank Farm 4
9.6.RME Lifelong Recreational Users - Tank Farm 4
9.7.RME Child Residents - Tank Farm 4
9.8.RME Adult Residents - Tank Farm 4
9.9.RME Lifelong Residents - Tank Farm 4

Central Tendency Exposures

9.1.CTE Construction Workers - Tank Farm 4
9.2.CTE Industrial Workers - Tank Farm 4
9.3.CTE Adolescent Trespassers - Tank Farm 4
9.4.CTE Child Recreational Users - Tank Farm 4
9.5.CTE Adult Recreational Users - Tank Farm 4
9.6.CTE Lifelong Recreational Users - Tank Farm 4
9.7.CTE Child Residents - Tank Farm 4
9.8.CTE Adult Residents - Tank Farm 4
9.9.CTE Lifelong Residents - Tank Farm 4

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	- -	--	--
			Benzo(a)pyrene	2E-06	--	8E-07	--	3E-06	NA	--	- -	--	--
			Benzo(b)fluoranthene	4E-07	--	2E-07	--	5E-07	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.0002	- -	0.00009	0.0003
			Benzo(k)fluoranthene	2E-08	--	6E-09	--	2E-08	NA	--	- -	--	--
			Chrysene	5E-10	--	2E-10	--	7E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	3E-07	--	1E-07	--	4E-07	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.002	- -	0.0006	0.002
			Indeno(1,2,3-cd)pyrene	7E-08	--	3E-08	--	9E-08	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.002	- -	0.0009	0.003
			2,3,7,8-TCDD Equivalents	1E-08	--	9E-10	--	1E-08	Developmental	0.005	- -	0.0005	0.006
			Arsenic	6E-07	--	5E-08	--	6E-07	Skin, CVS	0.09	- -	0.008	0.10
			Beryllium	- -	--	- -	--	- -	GS	0.0004	- -	--	0.0004
			Cobalt	- -	--	- -	--	- -	Blood	0.07	- -	--	0.07
			Iron	- -	--	- -	--	- -	GS	0.08	- -	--	0.08
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.005	- -	--	0.005
			Chemical Total	4E-06	--	1E-06	--	5E-06		0.3	--	0.010	0.3
		Exposure Point Total						5E-06					0.3
	Exposure Medium Total							5E-06					0.3
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-09	--	--	3E-09	NA	- -	--	- -	--
			Benzo(a)pyrene	--	1E-08	--	--	1E-08	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	3E-09	--	--	3E-09	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	1E-09	--	--	1E-09	NA	- -	--	- -	--
			Chrysene	--	4E-11	--	--	4E-11	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	3E-09	--	--	3E-09	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	5E-10	--	--	5E-10	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	1E-10	--	--	1E-10	Liver, Respiratory, Developmental	- -	0.000007	- -	0.000007
			Arsenic	--	8E-08	--	--	8E-08	NA	- -	0.09	- -	0.09
			Beryllium	--	1E-09	--	--	1E-09	Lungs	- -	0.002	- -	0.002
			Cobalt	--	1E-07	--	--	1E-07	Lungs	- -	0.2	- -	0.2
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.8	- -	0.8
			Chemical Total	--	3E-07	--	--	3E-07		- -	1	- -	1
		Exposure Point Total						3E-07					1
	Exposure Medium Total							3E-07					1
Medium Total								5E-06					1

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	1E-07	--	4E-08	--	1E-07	NA	--	- -	--	--
			Benzo(a)pyrene	5E-07	--	2E-07	--	7E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-07	--	4E-08	--	1E-07	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00005	- -	0.00002	0.00007
			Benzo(k)fluoranthene	4E-09	--	1E-09	--	5E-09	NA	--	- -	--	--
			Chrysene	1E-09	--	5E-10	--	2E-09	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	3E-08	--	1E-08	--	5E-08	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0004	- -	0.0002	0.0005
			Indeno(1,2,3-cd)pyrene	1E-08	--	5E-09	--	2E-08	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.0005	- -	0.0002	0.0007
			Aroclor-1254	5E-09	--	2E-09	--	7E-09	Immune	0.008	- -	0.004	0.01
			2,3,7,8-TCDD Equivalents	8E-09	--	8E-10	--	9E-09	Developmental	0.005	- -	0.0004	0.005
			Arsenic	7E-07	--	6E-08	--	8E-07	Skin, CVS	0.1	- -	0.010	0.1
			Beryllium	- -	--	- -	--	- -	GS	0.0003	- -	--	0.0003
			Cobalt	- -	--	- -	--	- -	Blood	0.1	- -	--	0.1
			Iron	- -	--	- -	--	- -	GS	0.10	- -	--	0.10
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.01	- -	--	0.01
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	1E-06	--	3E-07	--	2E-06		0.3	--	0.01	0.4
		Exposure Point Total						2E-06					0.4
	Exposure Medium Total							2E-06					0.4
	Air	Tank Farm 4	Benzo(a)anthracene	--	8E-10	--	--	8E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	4E-09	--	--	4E-09	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	7E-10	--	--	7E-10	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	3E-10	--	--	3E-10	NA	- -	--	- -	--
			Chrysene	--	9E-11	--	--	9E-11	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	3E-10	--	--	3E-10	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			Aroclor-1254	--	7E-11	--	--	7E-11	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	1E-10	--	--	1E-10	Liver, Respiratory, Developmental	- -	0.000006	- -	0.000006
			Arsenic	--	1E-07	--	--	1E-07	NA	- -	0.1	- -	0.1
			Beryllium	--	1E-09	--	--	1E-09	Lungs	- -	0.002	- -	0.002
			Cobalt	--	2E-07	--	--	2E-07	Lungs	- -	0.3	- -	0.3

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Air	Tank Farm 4	Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	2	- -	2
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	3E-07	--	--	3E-07		- -	2	- -	2
		Exposure Point Total						3E-07					2
	Exposure Medium Total							3E-07					2
Medium Total								2E-06					3
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -	Body Weight	0.000002	- -	0.00006	0.00006
			Endrin Aldehyde	- -	--	- -	--	- -	Liver	0.006	- -	0.04	0.05
			Aluminum	- -	--	- -	--	- -	CNS	0.00006	- -	0.00003	0.00010
			Arsenic	3E-08	--	2E-08	--	5E-08	Skin, CVS	0.005	- -	0.003	0.008
			Cobalt	- -	--	- -	--	- -	Blood	0.01	- -	0.006	0.02
			Iron	- -	--	- -	--	- -	GS	0.006	- -	0.003	0.009
			Manganese (water)	- -	--	- -	--	- -	CNS	0.05	- -	0.7	0.8
			Chemical Total	3E-08	--	2E-08	--	5E-08		0.08	--	0.8	0.8
		Exposure Point Total						5E-08					0.8
	Exposure Medium Total							5E-08					0.8
	Air	Tank Farm 4	Naphthalene	--	3E-10	--	--	3E-10	Nasal	- -	0.0002	- -	0.0002
			Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	3E-10	--	--	3E-10		- -	0.0002	- -	0.0002
		Exposure Point Total						3E-10					0.0002
	Exposure Medium Total							3E-10					0.0002
Medium Total								5E-08					0.8
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				5E-06	Receptor HI Total (Surface Soil and Groundwater)				2
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				2E-06	Receptor HI Total (Subsurface Soil and Groundwater)				3

TABLE 9.1.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURES

NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	0.2
Total Body Weight HI	0.00006
Total CNS HI	3
Total CVS HI	0.2
Total Developmental HI	0.01
Total GS HI	0.2
Total Immune HI	0.01
Total Kidney HI	0.004
Total Liver HI	0.05
Total Lungs HI	0.5
Total Nasal HI	0.0002
Total Skin HI	0.2
Total Respiratory HI	0.00001

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	6E-06	--	5E-06	--	1E-05	NA	--	--	--	--
			Benzo(a)pyrene	3E-05	--	2E-05	--	5E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-06	--	5E-06	--	1E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0001	--	0.0001	0.0002
			Benzo(k)fluoranthene	2E-07	--	2E-07	--	4E-07	NA	--	--	--	--
			Chrysene	7E-09	--	6E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-06	--	4E-06	--	9E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0009	--	0.0008	0.002
			Indeno(1,2,3-cd)pyrene	1E-06	--	9E-07	--	2E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.001	--	0.001	0.002
			2,3,7,8-TCDD Equivalents	1E-07	--	3E-08	--	2E-07	Developmental	0.003	--	0.0006	0.004
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	8E-06	--	2E-06	--	1E-05	Skin, CVS	0.05	--	0.01	0.06
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Chemical Total	6E-05	--	4E-05	--	1E-04		0.2	--	0.01	0.2
		Exposure Point Total						1E-04					0.2
	Exposure Medium Total							1E-04					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-11	--	--	9E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	0.000000002	--	0.000000002
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	5E-10	--	--	5E-10	NA	--	0.00002	--	0.00002
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	8E-09	--	--	8E-09	Lungs	--	0.000003	--	0.000003
			Cobalt	--	9E-10	--	--	9E-10	Lungs	--	0.00005	--	0.00005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0003	--	0.0003
		Exposure Point Total						1E-08					0.0003
	Exposure Medium Total							1E-08					0.0003
Medium Total								1E-04					0.2

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(a)pyrene	7E-06	--	6E-06	--	1E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00003	--	0.00003	0.00006
			Benzo(k)fluoranthene	5E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Chrysene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-07	--	4E-07	--	9E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.0002	0.0004
			Indeno(1,2,3-cd)pyrene	2E-07	--	2E-07	--	3E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0003	--	0.0003	0.0006
			Aroclor-1254	7E-08	--	6E-08	--	1E-07	Immune	0.005	--	0.005	0.009
			2,3,7,8-TCDD Equivalents	1E-07	--	2E-08	--	1E-07	Developmental	0.003	--	0.0005	0.003
			Aluminum	--	--	--	--	--	CNS	0.009	--	--	0.009
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.06	--	0.01	0.08
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Manganese (soil)	--	--	--	--	--	CNS	0.007	--	--	0.007
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-05	--	1E-05	--	3E-05		0.2	--	0.02	0.2
		Exposure Point Total						3E-05					0.2
	Exposure Medium Total							3E-05					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	4E-13	--	--	4E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	8E-13	--	--	8E-13	Liver, Respiratory, Developmental	--	1.401E-09	--	1.401E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	6E-10	--	--	6E-10	NA	--	0.00003	--	0.00003
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	8E-09	--	--	8E-09	Lungs	--	0.000003	--	0.000003

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	1E-09	--	--	1E-09	Lungs	- -	0.00007	- -	0.00007
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.0004	- -	0.0004
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	1E-08	--	--	1E-08		- -	0.0006	- -	0.0006
		Exposure Point Total						1E-08					0.0006
	Exposure Medium Total							1E-08					0.0006
Medium Total								3E-05					0.2
Receptor Total							Receptor Risk Total (Surface Soil)	1E-04				Receptor HI Total (Surface Soil)	0.2

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	5E-06	--	8E-06	NA	--	--	--	--
			Benzo(a)pyrene	1E-05	--	2E-05	--	3E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-06	--	5E-06	--	7E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00003	--	0.00007	0.0001
			Benzo(k)fluoranthene	9E-08	--	2E-07	--	3E-07	NA	--	--	--	--
			Chrysene	3E-09	--	6E-09	--	8E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	4E-06	--	6E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.0005	0.0008
			Indeno(1,2,3-cd)pyrene	4E-07	--	8E-07	--	1E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0003	--	0.0007	0.001
			2,3,7,8-TCDD Equivalents	2E-08	--	9E-09	--	3E-08	Developmental	0.0008	--	0.0004	0.001
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	1E-06	--	5E-07	--	2E-06	Skin, CVS	0.01	--	0.007	0.02
			Beryllium	--	--	--	--	--	GS	0.00006	--	--	0.00006
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese (soil)	--	--	--	--	--	CNS	0.0009	--	--	0.0009
			Chemical Total	2E-05	--	4E-05	--	6E-05		0.04	--	0.008	0.05
		Exposure Point Total						6E-05					0.05
	Exposure Medium Total							6E-05					0.05
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	8E-14	--	--	8E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000008	--	0.000008
			Arsenic	--	5E-11	--	--	5E-11	NA	--	0.000004	--	0.000004
			Beryllium	--	7E-13	--	--	7E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	8E-10	--	--	8E-10	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	8E-11	--	--	8E-11	Lungs	--	0.000009	--	0.000009
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Chemical Total	--	9E-10	--	--	9E-10		--	0.00006	--	0.00006
		Exposure Point Total						9E-10					0.00006
	Exposure Medium Total							9E-10					0.00006
Medium Total								6E-05					0.05

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	6E-07	--	1E-06	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	3E-06	--	6E-06	--	8E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-07	--	1E-06	--	2E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000008	--	0.00002	0.00003
			Benzo(k)fluoranthene	2E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Chrysene	7E-09	--	1E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	4E-07	--	6E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00006	--	0.0001	0.0002
			Indeno(1,2,3-cd)pyrene	7E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00008	--	0.0002	0.0003
			Aroclor-1254	9E-09	--	2E-08	--	3E-08	Immune	0.001	--	0.003	0.004
			2,3,7,8-TCDD Equivalents	2E-08	--	8E-09	--	2E-08	Developmental	0.0007	--	0.0003	0.001
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	1E-06	--	6E-07	--	2E-06	Skin, CVS	0.02	--	0.008	0.03
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.002	--	--	0.002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	6E-06	--	9E-06	--	1E-05		0.06	--	0.01	0.07
		Exposure Point Total						1E-05					0.07
	Exposure Medium Total							1E-05					0.07
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	4E-14	--	--	4E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	7E-14	--	--	7E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	6E-11	--	--	6E-11	NA	--	0.000005	--	0.000005
			Beryllium	--	6E-13	--	--	6E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	7E-10	--	--	7E-10	Lungs	--	0.0000005	--	0.0000005

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	1E-10	--	--	1E-10	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00008	--	0.00008
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	9E-10	--	--	9E-10		--	0.0001	--	0.0001
		Exposure Point Total						9E-10					0.0001
	Exposure Medium Total							9E-10					0.0001
Medium Total								1E-05					0.07
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	1E-09	--	1E-09	Skin, CVS	--	--	0.00001	0.00001
			Iron	--	--	--	--	--	GS	--	--	0.000006	0.000006
			Chemical Total	--	--	1E-09	--	1E-09		--	--	0.00002	0.00002
		Exposure Point Total						1E-09					0.00002
	Exposure Medium Total							1E-09					0.00002
Medium Total								1E-09					0.00002
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	1E-09	--	5E-09	--	6E-09	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	6E-07	--	7E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	7E-08	--	8E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	2E-08	--	3E-08	--	5E-08	Developmental	0.001	--	0.001	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	1E-06	--	2E-06	--	3E-06	Skin, CVS	0.02	--	0.02	0.04
			Beryllium	--	--	--	--	--	GS	0.00007	--	--	0.00007
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese (soil)	--	--	--	--	--	CNS	0.004	--	--	0.004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-06	--	3E-06	--	5E-06		0.10	--	0.02	0.1
		Exposure Point Total						5E-06					0.1
	Exposure Medium Total							5E-06					0.1
Medium Total								5E-06					0.1
Receptor Total				Receptor Risk Total (Surface Soil, Surface Water, and Sediment)				6E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.2
Receptor Total				Receptor Risk Total (All Soil, Surface Water, and Sediment)				2E-05	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.2

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-05	--	5E-06	--	2E-05	NA	--	--	--	--
			Benzo(a)pyrene	6E-05	--	2E-05	--	9E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-05	--	5E-06	--	2E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0002	--	0.00008	0.0003
			Benzo(k)fluoranthene	5E-07	--	2E-07	--	7E-07	NA	--	--	--	--
			Chrysene	2E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-05	--	4E-06	--	1E-05	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.002	--	0.0006	0.002
			Indeno(1,2,3-cd)pyrene	2E-06	--	8E-07	--	3E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.002	--	0.0008	0.003
			2,3,7,8-TCDD Equivalents	6E-08	--	5E-09	--	7E-08	Developmental	0.005	--	0.0005	0.006
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	4E-06	--	3E-07	--	4E-06	Skin, CVS	0.09	--	0.008	0.1
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	1E-06	--	--	--	1E-06	Fetotoxicity, GS, Bone	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Blood	0.08	--	--	0.08
			Iron	--	--	--	--	--	GS	0.08	--	--	0.08
			Manganese (soil)	--	--	--	--	--	CNS	0.006	--	--	0.006
			Chemical Total	1E-04	--	4E-05	--	1E-04		0.3	--	0.010	0.3
		Exposure Point Total						1E-04					0.3
	Exposure Medium Total							1E-04					0.3
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-14	--	--	4E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000008	--	0.000008
			Arsenic	--	2E-11	--	--	2E-11	NA	--	0.000004	--	0.000004
			Beryllium	--	3E-13	--	--	3E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	4E-10	--	--	4E-10	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	4E-11	--	--	4E-11	Lungs	--	0.000009	--	0.000009
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Chemical Total	--	5E-10	--	--	5E-10		--	0.00006	--	0.00006
		Exposure Point Total						5E-10					0.00006
	Exposure Medium Total							5E-10					0.00006
Medium Total								1E-04					0.3

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	1E-06	--	5E-06	NA	--	--	--	--
			Benzo(a)pyrene	2E-05	--	6E-06	--	2E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.00002	0.00008
			Benzo(k)fluoranthene	1E-07	--	4E-08	--	2E-07	NA	--	--	--	--
			Chrysene	4E-08	--	1E-08	--	5E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	4E-07	--	2E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.0001	0.0006
			Indeno(1,2,3-cd)pyrene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.0002	0.0008
			Aroclor-1254	3E-08	--	1E-08	--	4E-08	Immune	0.009	--	0.003	0.01
			2,3,7,8-TCDD Equivalents	5E-08	--	4E-09	--	6E-08	Developmental	0.005	--	0.0004	0.005
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	4E-06	--	4E-07	--	5E-06	Skin, CVS	0.1	--	0.009	0.1
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	1E-06	--	--	--	1E-06	Fetotoxicity, GS, Bone	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Blood	0.1	--	--	0.1
			Iron	--	--	--	--	--	GS	0.1	--	--	0.1
			Manganese (soil)	--	--	--	--	--	CNS	0.01	--	--	0.01
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-05	--	9E-06	--	4E-05		0.4	--	0.01	0.4
		Exposure Point Total						4E-05					0.4
	Exposure Medium Total							4E-05					0.4
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	2E-14	--	--	2E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-14	--	--	4E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	3E-11	--	--	3E-11	NA	--	0.000005	--	0.000005
			Beryllium	--	3E-13	--	--	3E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	4E-10	--	--	4E-10	Lungs	--	0.0000005	--	0.0000005

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	6E-11	--	--	6E-11	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00008	--	0.00008
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	5E-10	--	--	5E-10		--	0.0001	--	0.0001
		Exposure Point Total						5E-10					0.0001
	Exposure Medium Total							5E-10					0.0001
Medium Total								4E-05					0.4
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	1E-09	--	1E-09	Skin, CVS	--	--	0.00003	0.00003
			Iron	--	--	--	--	--	GS	--	--	0.00001	0.00001
			Chemical Total	--	--	1E-09	--	1E-09		--	--	0.00004	0.00004
		Exposure Point Total						1E-09					0.00004
	Exposure Medium Total							1E-09					0.00004
Medium Total								1E-09					0.00004
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	6E-09	--	2E-09	--	8E-09	NA	--	--	--	--
			Benzo(a)pyrene	6E-07	--	2E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	9E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	5E-06	--	4E-07	--	5E-06	Skin, CVS	0.1	--	0.01	0.1
			Beryllium	--	--	--	--	--	GS	0.0005	--	--	0.0005
			Chromium	1E-06	--	--	--	1E-06	Fetotoxicity, GS, Bone	0.01	--	--	0.01
			Cobalt	--	--	--	--	--	Blood	0.3	--	--	0.3
			Iron	--	--	--	--	--	GS	0.2	--	--	0.2
			Manganese (soil)	--	--	--	--	--	CNS	0.03	--	--	0.03
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	7E-06	--	7E-07	--	8E-06		0.7	--	0.01	0.7
		Exposure Point Total						8E-06					0.7
	Exposure Medium Total							8E-06					0.7
Medium Total								8E-06					0.7
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					2E-04	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				1.0
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					5E-05	Receptor HI Total (All Soil, Surface Water, and Sediment)				1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Total Blood HI	0.4
Total Bone HI	0.03

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(a)pyrene	9E-06	--	5E-06	--	1E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00002	--	0.00001	0.00004
			Benzo(k)fluoranthene	7E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Chrysene	2E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	8E-07	--	2E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.00009	0.0003
			Indeno(1,2,3-cd)pyrene	3E-07	--	2E-07	--	5E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0002	--	0.0001	0.0004
			2,3,7,8-TCDD Equivalents	3E-08	--	3E-09	--	3E-08	Developmental	0.0006	--	0.00007	0.0007
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.010	--	0.001	0.01
			Beryllium	--	--	--	--	--	GS	0.00004	--	--	0.00004
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.0008	--	--	0.0008
			Cobalt	--	--	--	--	--	Blood	0.008	--	--	0.008
			Iron	--	--	--	--	--	GS	0.009	--	--	0.009
			Manganese (soil)	--	--	--	--	--	CNS	0.0006	--	--	0.0006
			Chemical Total	2E-05	--	8E-06	--	3E-05		0.03	--	0.001	0.03
		Exposure Point Total						3E-05					0.03
	Exposure Medium Total							3E-05					0.03
	Air	Tank Farm 4	Benzo(a)anthracene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000008	--	0.000008
			Arsenic	--	9E-11	--	--	9E-11	NA	--	0.000004	--	0.000004
			Beryllium	--	1E-12	--	--	1E-12	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.000009	--	0.000009
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Chemical Total	--	2E-09	--	--	2E-09		--	0.00006	--	0.00006
		Exposure Point Total						2E-09					0.00006
	Exposure Medium Total							2E-09					0.00006
Medium Total								3E-05					0.03

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	5E-07	--	3E-07	--	8E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-07	--	2E-07	--	7E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000006	--	0.000003	0.000009
			Benzo(k)fluoranthene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Chrysene	6E-09	--	3E-09	--	9E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	8E-08	--	2E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00004	--	0.00002	0.00007
			Indeno(1,2,3-cd)pyrene	6E-08	--	3E-08	--	9E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00006	--	0.00003	0.00009
			Aroclor-1254	1E-08	--	7E-09	--	2E-08	Immune	0.0009	--	0.0005	0.001
			2,3,7,8-TCDD Equivalents	2E-08	--	3E-09	--	3E-08	Developmental	0.0005	--	0.00006	0.0006
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.001	0.01
			Beryllium	--	--	--	--	--	GS	0.00004	--	--	0.00004
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.0008	--	--	0.0008
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	6E-06	--	2E-06	--	8E-06		0.04	--	0.002	0.04
		Exposure Point Total						8E-06					0.04
	Exposure Medium Total							8E-06					0.04
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	8E-14	--	--	8E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-13	--	--	1E-13	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	1E-10	--	--	1E-10	NA	--	0.000005	--	0.000005
			Beryllium	--	1E-12	--	--	1E-12	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.0000005	--	0.0000005

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00008	--	0.00008
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0001	--	0.0001
		Exposure Point Total						2E-09					0.0001
	Exposure Medium Total							2E-09					0.0001
Medium Total								8E-06					0.04
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	2E-09	--	2E-09	Skin, CVS	--	--	0.00002	0.00002
			Iron	--	--	--	--	--	GS	--	--	0.000008	0.000008
			Chemical Total	--	--	2E-09	--	2E-09		--	--	0.00002	0.00002
		Exposure Point Total						2E-09					0.00002
	Exposure Medium Total							2E-09					0.00002
Medium Total								2E-09					0.00002
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	9E-10	--	5E-10	--	1E-09	NA	--	--	--	--
			Benzo(a)pyrene	9E-08	--	6E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	7E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	2E-08	--	4E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	3E-08	--	5E-09	--	4E-08	Developmental	0.0008	--	0.0001	0.0009
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	3E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	6E-07	--	--	--	6E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-06	--	4E-07	--	3E-06		0.07	--	0.002	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
Medium Total								3E-06					0.07
Receptor Total				Receptor Risk Total (Surface Soil, Surface Water, and Sediment)				3E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.1
Receptor Total				Receptor Risk Total (All Soil, Surface Water, and Sediment)				1E-05	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	6E-06	--	2E-05					
			Benzo(a)pyrene	7E-05	--	3E-05	--	1E-04					
			Benzo(b)fluoranthene	2E-05	--	6E-06	--	2E-05					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	6E-07	--	2E-07	--	8E-07					
			Chrysene	2E-08	--	7E-09	--	3E-08					
			Dibenzo(a,h)anthracene	1E-05	--	5E-06	--	2E-05					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	3E-06	--	1E-06	--	4E-06					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	9E-08	--	8E-09	--	9E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	5E-06	--	5E-07	--	6E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	5E-05	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-11	--	--	1E-11					
			Benzo(a)pyrene	--	5E-11	--	--	5E-11					
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	4E-12	--	--	4E-12					
			Chrysene	--	1E-13	--	--	1E-13					
			Dibenzo(a,h)anthracene	--	9E-12	--	--	9E-12					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-10	--	--	1E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	2E-09	--	--	2E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								2E-04					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	2E-06	--	6E-06					
			Benzo(a)pyrene	2E-05	--	7E-06	--	3E-05					
			Benzo(b)fluoranthene	4E-06	--	1E-06	--	5E-06					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-07	--	5E-08	--	2E-07					
			Chrysene	4E-08	--	2E-08	--	6E-08					
			Dibenzo(a,h)anthracene	1E-06	--	5E-07	--	2E-06					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	5E-07	--	2E-07	--	7E-07					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	4E-08	--	2E-08	--	6E-08					
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	8E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	6E-06	--	6E-07	--	7E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Thallium	- -	--	- -	--	- -					
			Chemical Total	4E-05	--	1E-05	--	5E-05					
		Exposure Point Total						5E-05					
	Exposure Medium Total							5E-05					
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-12	--	--	3E-12					
			Benzo(a)pyrene	--	1E-11	--	--	1E-11					
			Benzo(b)fluoranthene	--	3E-12	--	--	3E-12					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	1E-12	--	--	1E-12					
			Chrysene	--	3E-13	--	--	3E-13					
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	3E-13	--	--	3E-13					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	1E-13	--	--	1E-13					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-10	--	--	1E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	2E-09	--	--	2E-09					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
All Soil	Air	Tank Farm 4	Cobalt	--	3E-10	--	--	3E-10					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								5E-05					
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--					
			Arsenic	--	--	4E-09	--	4E-09					
			Iron	--	--	--	--	--					
			Chemical Total	--	--	4E-09	--	4E-09					
		Exposure Point Total						4E-09					
	Exposure Medium Total							4E-09					
Medium Total								4E-09					
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	7E-09	--	3E-09	--	9E-09					
			Benzo(a)pyrene	7E-07	--	3E-07	--	1E-06					
			Benzo(b)fluoranthene	9E-08	--	3E-08	--	1E-07					
			Dibenzo(a,h)anthracene	2E-07	--	7E-08	--	3E-07					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	7E-06	--	7E-07	--	8E-06					
			Beryllium	--	--	--	--	--					
			Chromium	2E-06	--	--	--	2E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	1E-05	--	1E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
Medium Total								1E-05					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					2E-04					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					6E-05					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-04	--	4E-05	--	1E-04	NA	--	- -	--	--
			Benzo(a)pyrene	5E-04	--	2E-04	--	6E-04	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-04	--	3E-05	--	1E-04	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.002	- -	0.0006	0.002
			Benzo(k)fluoranthene	4E-06	--	1E-06	--	5E-06	NA	--	- -	--	--
			Chrysene	1E-07	--	4E-08	--	2E-07	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	8E-05	--	3E-05	--	1E-04	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.01	- -	0.004	0.02
			Indeno(1,2,3-cd)pyrene	2E-05	--	6E-06	--	2E-05	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.02	- -	0.006	0.02
			2,3,7,8-TCDD Equivalents	4E-07	--	4E-08	--	5E-07	Developmental	0.04	- -	0.003	0.04
			Arsenic	3E-05	--	2E-06	--	3E-05	Skin, CVS	0.7	- -	0.06	0.7
			Beryllium	- -	--	- -	--	- -	GS	0.003	- -	--	0.003
			Cobalt	- -	--	- -	--	- -	Blood	0.6	- -	--	0.6
			Iron	- -	--	- -	--	- -	GS	0.6	- -	--	0.6
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.04	- -	--	0.04
			Chemical Total	8E-04	--	3E-04	--	1E-03		2	--	0.07	2
		Exposure Point Total						1E-03					2
	Exposure Medium Total							1E-03					2
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	5E-10	--	--	5E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	4E-11	--	--	4E-11	NA	- -	--	- -	--
			Chrysene	--	1E-12	--	--	1E-12	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	9E-11	--	--	9E-11	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	- -	7E-09	- -	7E-09
			Arsenic	--	5E-10	--	--	5E-10	NA	- -	0.00009	- -	0.00009
			Beryllium	--	8E-12	--	--	8E-12	Lungs	- -	0.000002	- -	0.000002
			Cobalt	--	9E-10	--	--	9E-10	Lungs	- -	0.0002	- -	0.0002
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.0008	- -	0.0008
			Chemical Total	--	2E-09	--	--	2E-09		- -	0.001	- -	0.001
		Exposure Point Total						2E-09					0.001
	Exposure Medium Total							2E-09					0.001
Medium Total								1E-03					2

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	3E-05	--	9E-06	--	3E-05	NA	--	- -	--	--
			Benzo(a)pyrene	1E-04	--	4E-05	--	2E-04	NA	--	- -	--	--
			Benzo(b)fluoranthene	2E-05	--	9E-06	--	3E-05	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.0004	- -	0.0001	0.0006
			Benzo(k)fluoranthene	9E-07	--	3E-07	--	1E-06	NA	--	- -	--	--
			Chrysene	3E-07	--	1E-07	--	4E-07	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	8E-06	--	3E-06	--	1E-05	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.003	- -	0.001	0.004
			Indeno(1,2,3-cd)pyrene	3E-06	--	1E-06	--	4E-06	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.004	- -	0.001	0.006
			Aroclor-1254	2E-07	--	9E-08	--	3E-07	Immune	0.06	- -	0.03	0.09
			2,3,7,8-TCDD Equivalents	4E-07	--	3E-08	--	4E-07	Developmental	0.03	- -	0.003	0.04
			Arsenic	3E-05	--	3E-06	--	3E-05	Skin, CVS	0.8	- -	0.07	0.9
			Beryllium	- -	--	- -	--	- -	GS	0.002	- -	--	0.002
			Cobalt	- -	--	- -	--	- -	Blood	0.8	- -	--	0.8
			Iron	- -	--	- -	--	- -	GS	0.7	- -	--	0.7
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.10	- -	--	0.10
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	2E-04	--	7E-05	--	3E-04		3	--	0.10	3
		Exposure Point Total						3E-04					3
	Exposure Medium Total							3E-04					3
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	9E-12	--	--	9E-12	NA	- -	--	- -	--
			Chrysene	--	3E-12	--	--	3E-12	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	9E-12	--	--	9E-12	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	3E-12	--	--	3E-12	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			Aroclor-1254	--	4E-13	--	--	4E-13	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	8E-13	--	--	8E-13	Liver, Respiratory, Developmental	- -	6E-09	- -	6E-09
			Arsenic	--	6E-10	--	--	6E-10	NA	- -	0.0001	- -	0.0001
			Beryllium	--	7E-12	--	--	7E-12	Lungs	- -	0.000002	- -	0.000002

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Tank Farm 4	Cobalt	--	1E-09	--	--	1E-09	Lungs	- -	0.0003	- -	0.0003
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.002	- -	0.002
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	2E-09	--	--	2E-09		- -	0.002	- -	0.002
		Exposure Point Total						2E-09					0.002
	Exposure Medium Total							2E-09					0.002
Medium Total								3E-04					3
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -	Body Weight	0.0009	- -	0.0004	0.001
			Endrin Aldehyde	- -	--	- -	--	- -	Liver	2	- -	0.4	2
			Aluminum	- -	--	- -	--	- -	CNS	0.02	- -	0.0001	0.02
			Arsenic	7E-05	--	3E-07	--	7E-05	Skin, CVS	2	- -	0.009	2
			Cobalt	- -	--	- -	--	- -	Blood	4	- -	0.02	4
			Iron	- -	--	- -	--	- -	GS	2	- -	0.01	2
			Manganese (water)	- -	--	- -	--	- -	CNS	19	- -	2	21
			Chemical Total	7E-05	--	3E-07	--	7E-05		29	--	3	31
		Exposure Point Total						7E-05					31
	Exposure Medium Total							7E-05					31
	Air	Tank Farm 4	Naphthalene	--	- -	--	--	- -	Nasal	- -	0.0009	- -	0.0009
			Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	0.0009	- -	0.0009
		Exposure Point Total						- -					0.0009
	Exposure Medium Total							- -					0.0009
Medium Total								7E-05					31
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-03	Receptor HI Total (Surface Soil and Groundwater)				33
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				3E-04	Receptor HI Total (Subsurface Soil and Groundwater)				34

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.7.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	5
Total Body Weight HI	0.001
Total CNS HI	21
Total CVS HI	4
Total Developmental HI	0.08
Total GS HI	4
Total Immune HI	0.09
Total Kidney HI	0.03
Total Liver HI	2
Total Lungs HI	0.0005
Total Nasal HI	0.0009
Total Skin HI	4
Total Respiratory HI	0.00000001

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	8E-06	--	2E-05	NA	--	- -	--	--
			Benzo(a)pyrene	7E-05	--	4E-05	--	1E-04	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-05	--	7E-06	--	2E-05	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.0002	- -	0.00009	0.0003
			Benzo(k)fluoranthene	5E-07	--	3E-07	--	8E-07	NA	--	- -	--	--
			Chrysene	2E-08	--	9E-09	--	3E-08	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-05	--	6E-06	--	2E-05	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.001	- -	0.0007	0.002
			Indeno(1,2,3-cd)pyrene	2E-06	--	1E-06	--	4E-06	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.002	- -	0.0009	0.003
			2,3,7,8-TCDD Equivalents	2E-07	--	2E-08	--	2E-07	Developmental	0.004	- -	0.0005	0.005
			Arsenic	1E-05	--	1E-06	--	1E-05	Skin, CVS	0.07	- -	0.009	0.08
			Beryllium	- -	--	- -	--	- -	GS	0.0003	- -	--	0.0003
			Cobalt	- -	--	- -	--	- -	Blood	0.06	- -	--	0.06
			Iron	- -	--	- -	--	- -	GS	0.07	- -	--	0.07
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.004	- -	--	0.004
			Chemical Total	1E-04	--	6E-05	--	2E-04		0.2	--	0.01	0.2
		Exposure Point Total						2E-04					0.2
	Exposure Medium Total							2E-04					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	7E-10	--	--	7E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	5E-11	--	--	5E-11	NA	- -	--	- -	--
			Chrysene	--	2E-12	--	--	2E-12	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	4E-12	--	--	4E-12	Liver, Respiratory, Developmental	- -	7E-09	- -	7E-09
			Arsenic	--	2E-09	--	--	2E-09	NA	- -	0.00009	- -	0.00009
			Beryllium	--	3E-11	--	--	3E-11	Lungs	- -	0.000002	- -	0.000002
			Cobalt	--	4E-09	--	--	4E-09	Lungs	- -	0.0002	- -	0.0002
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.0008	- -	0.0008
			Chemical Total	--	7E-09	--	--	7E-09		- -	0.001	- -	0.001
		Exposure Point Total						7E-09					0.001
	Exposure Medium Total							7E-09					0.001
Medium Total								2E-04					0.2

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	2E-06	--	6E-06	NA	--	- -	--	--
			Benzo(a)pyrene	2E-05	--	9E-06	--	3E-05	NA	--	- -	--	--
			Benzo(b)fluoranthene	3E-06	--	2E-06	--	5E-06	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00004	- -	0.00002	0.00007
			Benzo(k)fluoranthene	1E-07	--	7E-08	--	2E-07	NA	--	- -	--	--
			Chrysene	4E-08	--	2E-08	--	6E-08	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-06	--	6E-07	--	2E-06	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0003	- -	0.0002	0.0005
			Indeno(1,2,3-cd)pyrene	5E-07	--	2E-07	--	7E-07	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.0004	- -	0.0002	0.0007
			Aroclor-1254	9E-08	--	5E-08	--	1E-07	Immune	0.007	- -	0.004	0.01
			2,3,7,8-TCDD Equivalents	2E-07	--	2E-08	--	2E-07	Developmental	0.004	- -	0.0004	0.004
			Arsenic	1E-05	--	2E-06	--	2E-05	Skin, CVS	0.09	- -	0.01	0.10
			Beryllium	- -	--	- -	--	- -	GS	0.0003	- -	--	0.0003
			Cobalt	- -	--	- -	--	- -	Blood	0.09	- -	--	0.09
			Iron	- -	--	- -	--	- -	GS	0.08	- -	--	0.08
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.01	- -	--	0.01
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	4E-05	--	2E-05	--	5E-05		0.3	--	0.02	0.3
		Exposure Point Total						5E-05					0.3
	Exposure Medium Total							5E-05					0.3
	Air	Tank Farm 4	Benzo(a)anthracene	--	4E-11	--	--	4E-11	NA	- -	--	- -	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	1E-11	--	--	1E-11	NA	- -	--	- -	--
			Chrysene	--	4E-12	--	--	4E-12	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	1E-11	--	--	1E-11	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	4E-12	--	--	4E-12	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			Aroclor-1254	--	2E-12	--	--	2E-12	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	3E-12	--	--	3E-12	Liver, Respiratory, Developmental	- -	6E-09	- -	6E-09
			Arsenic	--	2E-09	--	--	2E-09	NA	- -	0.0001	- -	0.0001
			Beryllium	--	3E-11	--	--	3E-11	Lungs	- -	0.000002	- -	0.000002

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Tank Farm 4	Cobalt	--	5E-09	--	--	5E-09	Lungs	- -	0.0003	- -	0.0003
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.002	- -	0.002
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	8E-09	--	--	8E-09		- -	0.002	- -	0.002
		Exposure Point Total						8E-09					0.002
	Exposure Medium Total							8E-09					0.002
Medium Total								6E-05					0.3
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -	Body Weight	0.0003	- -	0.0002	0.0004
			Endrin Aldehyde	- -	--	- -	--	- -	Liver	0.6	- -	0.2	0.8
			Aluminum	- -	--	- -	--	- -	CNS	0.007	- -	0.00004	0.007
			Arsenic	9E-05	--	5E-07	--	9E-05	Skin, CVS	0.6	- -	0.003	0.6
			Cobalt	- -	--	- -	--	- -	Blood	1	- -	0.006	1
			Iron	- -	--	- -	--	- -	GS	0.7	- -	0.003	0.7
			Manganese (water)	- -	--	- -	--	- -	CNS	6	- -	0.7	6
			Chemical Total	9E-05	--	5E-07	--	9E-05		9	--	0.9	10
		Exposure Point Total						9E-05					10
	Exposure Medium Total							9E-05					10
	Air	Tank Farm 4	Naphthalene	--	- -	--	--	- -	Nasal	- -	0.0003	- -	0.0003
			Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	0.0003	- -	0.0003
		Exposure Point Total						- -					0.0003
	Exposure Medium Total							- -					0.0003
Medium Total								9E-05					10
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				3E-04	Receptor HI Total (Surface Soil and Groundwater)				10
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				1E-04	Receptor HI Total (Subsurface Soil and Groundwater)				10

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	1
Total Body Weight HI	0.0004
Total CNS HI	7
Total CVS HI	0.8
Total Developmental HI	0.009
Total GS HI	0.8
Total Immune HI	0.01
Total Kidney HI	0.004
Total Liver HI	0.8
Total Lungs HI	0.0005
Total Nasal HI	0.0003
Total Skin HI	0.8
Total Respiratory HI	0.00000001

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-04	--	5E-05	--	2E-04					
			Benzo(a)pyrene	5E-04	--	2E-04	--	7E-04					
			Benzo(b)fluoranthene	1E-04	--	4E-05	--	2E-04					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	4E-06	--	2E-06	--	6E-06					
			Chrysene	1E-07	--	5E-08	--	2E-07					
			Dibenzo(a,h)anthracene	9E-05	--	3E-05	--	1E-04					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	2E-05	--	7E-06	--	3E-05					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	6E-07	--	6E-08	--	7E-07					
			Arsenic	4E-05	--	4E-06	--	4E-05					
			Beryllium	- -	--	- -	--	- -					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	9E-04	--	3E-04	--	1E-03					
		Exposure Point Total						1E-03					
	Exposure Medium Total							1E-03					
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-10	--	--	3E-10					
			Benzo(a)pyrene	--	1E-09	--	--	1E-09					
			Benzo(b)fluoranthene	--	2E-10	--	--	2E-10					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	9E-11	--	--	9E-11					
			Chrysene	--	3E-12	--	--	3E-12					
			Dibenzo(a,h)anthracene	--	2E-10	--	--	2E-10					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	4E-11	--	--	4E-11					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	4E-12	--	--	4E-12					
			Arsenic	--	3E-09	--	--	3E-09					
			Beryllium	--	4E-11	--	--	4E-11					
			Cobalt	--	4E-09	--	--	4E-09					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	9E-09	--	--	9E-09					
		Exposure Point Total						9E-09					
	Exposure Medium Total							9E-09					
Medium Total								1E-03					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	3E-05	--	1E-05	--	4E-05					
			Benzo(a)pyrene	1E-04	--	5E-05	--	2E-04					
			Benzo(b)fluoranthene	3E-05	--	1E-05	--	4E-05					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-06	--	4E-07	--	1E-06					
			Chrysene	3E-07	--	1E-07	--	4E-07					
			Dibenzo(a,h)anthracene	9E-06	--	4E-06	--	1E-05					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	4E-06	--	1E-06	--	5E-06					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	3E-07	--	1E-07	--	5E-07					
			2,3,7,8-TCDD Equivalents	5E-07	--	5E-08	--	6E-07					
			Arsenic	5E-05	--	4E-06	--	5E-05					
			Beryllium	- -	--	- -	--	- -					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Thallium	- -	--	- -	--	- -					
			Chemical Total	2E-04	--	8E-05	--	3E-04					
		Exposure Point Total						3E-04					
	Exposure Medium Total							3E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-11	--	--	6E-11					
			Benzo(a)pyrene	--	3E-10	--	--	3E-10					
			Benzo(b)fluoranthene	--	6E-11	--	--	6E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	2E-11	--	--	2E-11					
			Chrysene	--	7E-12	--	--	7E-12					
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	7E-12	--	--	7E-12					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	2E-12	--	--	2E-12					
			2,3,7,8-TCDD Equivalents	--	4E-12	--	--	4E-12					
			Arsenic	--	3E-09	--	--	3E-09					
			Beryllium	--	3E-11	--	--	3E-11					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Tank Farm 4	Cobalt	--	6E-09	--	--	6E-09					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Thallium	--	- -	--	--	- -					
			Chemical Total	--	1E-08	--	--	1E-08					
		Exposure Point Total						1E-08					
	Exposure Medium Total							1E-08					
Medium Total								3E-04					
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -					
			Endrin Aldehyde	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-04	--	8E-07	--	2E-04					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (water)	- -	--	- -	--	- -					
			Chemical Total	2E-04	--	8E-07	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 4	Naphthalene	--	- -	--	--	- -					
			Endrin Aldehyde	--	- -	--	--	- -					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	- -	--	--	- -					
			Cobalt	--	- -	--	--	- -					
			Iron	--	- -	--	--	- -					
			Manganese (water)	--	- -	--	--	- -					
			Chemical Total	--	- -	--	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
Medium Total								2E-04					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-03					
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				5E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-07	--	2E-08	--	2E-07	NA	--	- -	--	--
			Benzo(a)pyrene	8E-07	--	1E-07	--	9E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	2E-07	--	2E-08	--	2E-07	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00009	- -	0.00001	0.00010
			Benzo(k)fluoranthene	6E-09	--	8E-10	--	7E-09	NA	--	- -	--	--
			Chrysene	2E-10	--	2E-11	--	2E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0006	- -	0.00008	0.0007
			Indeno(1,2,3-cd)pyrene	3E-08	--	4E-09	--	3E-08	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.0009	- -	0.0001	0.0010
			2,3,7,8-TCDD Equivalents	4E-09	--	1E-10	--	4E-09	Developmental	0.002	- -	0.00006	0.002
			Arsenic	2E-07	--	7E-09	--	2E-07	Skin, CVS	0.04	- -	0.001	0.04
			Beryllium	- -	--	- -	--	- -	GS	0.0001	- -	--	0.0001
			Cobalt	- -	--	- -	--	- -	Blood	0.03	- -	--	0.03
			Iron	- -	--	- -	--	- -	GS	0.03	- -	--	0.03
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.002	- -	--	0.002
			Chemical Total	1E-06	--	2E-07	--	2E-06		0.1	--	0.001	0.1
		Exposure Point Total						2E-06					0.1
	Exposure Medium Total							2E-06					0.1
	Air	Tank Farm 4	Benzo(a)anthracene	--	7E-10	--	--	7E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	3E-09	--	--	3E-09	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	6E-10	--	--	6E-10	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	2E-10	--	--	2E-10	NA	- -	--	- -	--
			Chrysene	--	7E-12	--	--	7E-12	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	5E-10	--	--	5E-10	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	3E-11	--	--	3E-11	Liver, Respiratory, Developmental	- -	0.000001	- -	0.000001
			Arsenic	--	2E-08	--	--	2E-08	NA	- -	0.02	- -	0.02
			Beryllium	--	2E-10	--	--	2E-10	Lungs	- -	0.0004	- -	0.0004
			Cobalt	--	3E-08	--	--	3E-08	Lungs	- -	0.04	- -	0.04
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.2	- -	0.2
			Chemical Total	--	5E-08	--	--	5E-08		- -	0.2	- -	0.2
		Exposure Point Total						5E-08					0.2
	Exposure Medium Total							5E-08					0.2
Medium Total								2E-06					0.3

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	4E-08	--	5E-09	--	5E-08	NA	--	- -	--	--
			Benzo(a)pyrene	2E-07	--	2E-08	--	2E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	4E-08	--	5E-09	--	4E-08	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00002	- -	0.000003	0.00002
			Benzo(k)fluoranthene	1E-09	--	2E-10	--	2E-09	NA	--	- -	--	--
			Chrysene	5E-10	--	6E-11	--	5E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	2E-08	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0002	- -	0.00002	0.0002
			Indeno(1,2,3-cd)pyrene	5E-09	--	7E-10	--	6E-09	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.0002	- -	0.00003	0.0002
			Aroclor-1254	2E-09	--	3E-10	--	2E-09	Immune	0.003	- -	0.0005	0.004
			2,3,7,8-TCDD Equivalents	3E-09	--	1E-10	--	3E-09	Developmental	0.002	- -	0.00005	0.002
			Arsenic	3E-07	--	8E-09	--	3E-07	Skin, CVS	0.04	- -	0.001	0.04
			Beryllium	- -	--	- -	--	- -	GS	0.0001	- -	--	0.0001
			Cobalt	- -	--	- -	--	- -	Blood	0.04	- -	--	0.04
			Iron	- -	--	- -	--	- -	GS	0.04	- -	--	0.04
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.005	- -	--	0.005
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	6E-07	--	5E-08	--	6E-07		0.1	--	0.002	0.1
		Exposure Point Total						6E-07					0.1
	Exposure Medium Total							6E-07					0.1
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-10	--	--	2E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	7E-10	--	--	7E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	6E-11	--	--	6E-11	NA	- -	--	- -	--
			Chrysene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	6E-11	--	--	6E-11	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			Aroclor-1254	--	1E-11	--	--	1E-11	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	2E-11	--	--	2E-11	Liver, Respiratory, Developmental	- -	0.000001	- -	0.000001
			Arsenic	--	2E-08	--	--	2E-08	NA	- -	0.02	- -	0.02
			Beryllium	--	2E-10	--	--	2E-10	Lungs	- -	0.0003	- -	0.0003
			Cobalt	--	4E-08	--	--	4E-08	Lungs	- -	0.05	- -	0.05

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Air	Tank Farm 4	Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.4	- -	0.4
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	6E-08	--	--	6E-08		- -	0.4	- -	0.4
		Exposure Point Total						6E-08					0.4
	Exposure Medium Total							6E-08					0.4
Medium Total								7E-07					0.6
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -	Body Weight	0.0000005	- -	0.00001	0.00001
			Endrin Aldehyde	- -	--	- -	--	- -	Liver	0.001	- -	0.01	0.01
			Aluminum	- -	--	- -	--	- -	CNS	0.00001	- -	0.000007	0.00002
			Arsenic	3E-09	--	4E-09	--	6E-09	Skin, CVS	0.0004	- -	0.0006	0.0010
			Cobalt	- -	--	- -	--	- -	Blood	0.002	- -	0.001	0.003
			Iron	- -	--	- -	--	- -	GS	0.0007	- -	0.0007	0.001
			Manganese (water)	- -	--	- -	--	- -	CNS	0.003	- -	0.1	0.1
			Chemical Total	3E-09	--	4E-09	--	6E-09		0.007	--	0.2	0.2
		Exposure Point Total						6E-09					0.2
	Exposure Medium Total							6E-09					0.2
	Air	Tank Farm 4	Naphthalene	--	6E-11	--	--	6E-11	Nasal	- -	0.00004	- -	0.00004
			Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	6E-11	--	--	6E-11		- -	0.00004	- -	0.00004
		Exposure Point Total						6E-11					0.00004
	Exposure Medium Total							6E-11					0.00004
Medium Total								6E-09					0.2
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-06	Receptor HI Total (Surface Soil and Groundwater)				0.5
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				7E-07	Receptor HI Total (Subsurface Soil and Groundwater)				0.7

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(a)pyrene	4E-06	--	8E-07	--	5E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-07	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.000010	0.00007
			Benzo(k)fluoranthene	3E-08	--	6E-09	--	4E-08	NA	--	--	--	--
			Chrysene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-07	--	1E-07	--	8E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.00007	0.0005
			Indeno(1,2,3-cd)pyrene	2E-07	--	3E-08	--	2E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.00010	0.0007
			2,3,7,8-TCDD Equivalents	2E-08	--	9E-10	--	2E-08	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	1E-06	--	5E-08	--	1E-06	Skin, CVS	0.02	--	0.0009	0.02
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chemical Total	9E-06	--	1E-06	--	1E-05		0.07	--	0.001	0.07
		Exposure Point Total						1E-05					0.07
	Exposure Medium Total							1E-05					0.07
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13	Liver, Respiratory, Developmental	--	0.000000001	--	0.000000001
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.00002	--	0.00002
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	3E-09	--	--	3E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	3E-10	--	--	3E-10	Lungs	--	0.00004	--	0.00004
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0003	--	0.0003
		Exposure Point Total						3E-09					0.0003
	Exposure Medium Total							3E-09					0.0003
Medium Total								1E-05					0.07

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	2E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Benzo(k)fluoranthene	8E-09	--	1E-09	--	1E-08	NA	--	--	--	--
			Chrysene	3E-09	--	5E-10	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-08	--	1E-08	--	9E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00010	--	0.00002	0.0001
			Indeno(1,2,3-cd)pyrene	3E-08	--	5E-09	--	3E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0001	--	0.00002	0.0002
			Aroclor-1254	1E-08	--	2E-09	--	1E-08	Immune	0.002	--	0.0004	0.003
			2,3,7,8-TCDD Equivalents	2E-08	--	8E-10	--	2E-08	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	6E-08	--	2E-06	Skin, CVS	0.03	--	0.001	0.03
			Beryllium	--	--	--	--	--	GS	0.00008	--	--	0.00008
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	4E-06	--	4E-07	--	4E-06		0.09	--	0.002	0.09
		Exposure Point Total						4E-06					0.09
	Exposure Medium Total							4E-06					0.09
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	1E-13	--	--	1E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	0.000000001	--	0.000000001
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.00002	--	0.00002
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	3E-09	--	--	3E-09	Lungs	--	0.000002	--	0.000002

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	4E-10	--	--	4E-10	Lungs	--	0.00006	--	0.00006
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0004	--	0.0004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0005	--	0.0005
		Exposure Point Total						3E-09					0.0005
	Exposure Medium Total							3E-09					0.0005
Medium Total								4E-06					0.09
Receptor Total							Receptor Risk Total (Surface Soil)	1E-05				Receptor HI Total (Surface Soil)	0.07

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	6E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000009	--	0.000004	0.00001
			Benzo(k)fluoranthene	1E-08	--	5E-09	--	2E-08	NA	--	--	--	--
			Chrysene	3E-10	--	1E-10	--	5E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	9E-08	--	3E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00006	--	0.00003	0.00009
			Indeno(1,2,3-cd)pyrene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00009	--	0.00004	0.0001
			2,3,7,8-TCDD Equivalents	2E-09	--	2E-10	--	2E-09	Developmental	0.0002	--	0.00002	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0007	--	--	0.0007
			Arsenic	1E-07	--	1E-08	--	1E-07	Skin, CVS	0.003	--	0.0003	0.004
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	4E-08	--	--	--	4E-08	Fetotoxicity, GS, Bone	0.0003	--	--	0.0003
			Cobalt	--	--	--	--	--	Blood	0.003	--	--	0.003
			Iron	--	--	--	--	--	GS	0.003	--	--	0.003
			Manganese (soil)	--	--	--	--	--	CNS	0.0002	--	--	0.0002
			Chemical Total	2E-06	--	9E-07	--	3E-06		0.01	--	0.0004	0.01
		Exposure Point Total						3E-06					0.01
	Exposure Medium Total							3E-06					0.01
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chrysene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	8E-11	--	8E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000001	--	0.000001
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	2E-10	--	--	2E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000009	--	0.000009
			Chemical Total	--	2E-10	--	--	2E-10		--	0.00001	--	0.00001
		Exposure Point Total						2E-10					0.00001
	Exposure Medium Total							2E-10					0.00001
Medium Total								3E-06					0.01

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	7E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	1E-07	--	5E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000002	--	0.0000009	0.000003
			Benzo(k)fluoranthene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Chrysene	8E-10	--	3E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00002	--	0.000006	0.00002
			Indeno(1,2,3-cd)pyrene	9E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00002	--	0.000009	0.00003
			Aroclor-1254	1E-09	--	5E-10	--	2E-09	Immune	0.0003	--	0.0001	0.0005
			2,3,7,8-TCDD Equivalents	2E-09	--	2E-10	--	2E-09	Developmental	0.0002	--	0.00002	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0006	--	--	0.0006
			Arsenic	2E-07	--	2E-08	--	2E-07	Skin, CVS	0.004	--	0.0004	0.005
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	4E-08	--	--	--	4E-08	Fetotoxicity, GS, Bone	0.0003	--	--	0.0003
			Cobalt	--	--	--	--	--	Blood	0.004	--	--	0.004
			Iron	--	--	--	--	--	GS	0.004	--	--	0.004
			Manganese (soil)	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	7E-07	--	2E-07	--	9E-07		0.01	--	0.0006	0.01
		Exposure Point Total						9E-07					0.01
	Exposure Medium Total							9E-07					0.01
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Chrysene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	1E-14	--	--	1E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	7E-11	--	7E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000001	--	0.000001
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	2E-10	--	--	2E-10	Lungs	--	0.0000001	--	0.0000001

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	3E-11	--	--	3E-11	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-10	--	--	2E-10		--	0.00003	--	0.00003
		Exposure Point Total						2E-10					0.00003
	Exposure Medium Total							2E-10					0.00003
Medium Total								9E-07					0.01
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	1E-10	--	1E-10	Skin, CVS	--	--	0.000003	0.000003
			Iron	--	--	--	--	--	GS	--	--	0.000002	0.000002
			Chemical Total	--	--	1E-10	--	1E-10		--	--	0.000005	0.000005
		Exposure Point Total						1E-10					0.000005
	Exposure Medium Total							1E-10					0.000005
Medium Total								1E-10					0.000005
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	1E-10	--	1E-09	--	1E-09	NA	--	--	--	--
			Benzo(a)pyrene	1E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-09	--	2E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-09	--	4E-08	--	4E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	3E-09	--	7E-09	--	1E-08	Developmental	0.0003	--	0.0007	0.0009
			Aluminum	--	--	--	--	--	CNS	0.0007	--	--	0.0007
			Arsenic	2E-07	--	4E-07	--	6E-07	Skin, CVS	0.005	--	0.01	0.02
			Beryllium	--	--	--	--	--	GS	0.00002	--	--	0.00002
			Chromium	5E-08	--	--	--	5E-08	Fetotoxicity, GS, Bone	0.0004	--	--	0.0004
			Cobalt	--	--	--	--	--	Blood	0.009	--	--	0.009
			Iron	--	--	--	--	--	GS	0.008	--	--	0.008
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-07	--	6E-07	--	9E-07		0.02	--	0.01	0.04
		Exposure Point Total						9E-07					0.04
	Exposure Medium Total							9E-07					0.04
Medium Total								9E-07					0.04
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					4E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.05
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					2E-06	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.05

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	7E-06	--	1E-06	--	7E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.000008	0.00007
			Benzo(k)fluoranthene	5E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Chrysene	2E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.00006	0.0005
			Indeno(1,2,3-cd)pyrene	2E-07	--	3E-08	--	3E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.00008	0.0007
			2,3,7,8-TCDD Equivalents	5E-09	--	2E-10	--	5E-09	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	3E-07	--	1E-08	--	3E-07	Skin, CVS	0.02	--	0.0008	0.02
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	8E-08	--	--	--	8E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chemical Total	1E-05	--	2E-06	--	1E-05		0.07	--	0.0010	0.07
		Exposure Point Total						1E-05					0.07
	Exposure Medium Total							1E-05					0.07
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-15	--	--	3E-15	Liver, Respiratory, Developmental	--	8E-11	--	8E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	2E-12	--	--	2E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	3E-12	--	--	3E-12	Lungs	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000009	--	0.000009
			Chemical Total	--	4E-11	--	--	4E-11		--	0.00001	--	0.00001
		Exposure Point Total						4E-11					0.00001
	Exposure Medium Total							4E-11					0.00001
Medium Total								1E-05					0.07

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-07	--	5E-08	--	4E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	5E-08	--	4E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Benzo(k)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Chrysene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0001	--	0.00001	0.0001
			Indeno(1,2,3-cd)pyrene	4E-08	--	6E-09	--	5E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0001	--	0.00002	0.0002
			Aroclor-1254	3E-09	--	4E-10	--	3E-09	Immune	0.002	--	0.0003	0.003
			2,3,7,8-TCDD Equivalents	4E-09	--	1E-10	--	5E-09	Developmental	0.001	--	0.00004	0.001
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.03	--	0.0009	0.03
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	8E-08	--	--	--	8E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-06	--	4E-07	--	3E-06		0.09	--	0.001	0.10
		Exposure Point Total						3E-06					0.10
	Exposure Medium Total							3E-06					0.10
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Chrysene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	2E-15	--	--	2E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-15	--	--	3E-15	Liver, Respiratory, Developmental	--	7E-11	--	7E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	2E-12	--	--	2E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	5E-12	--	--	5E-12	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	4E-11	--	--	4E-11		--	0.00003	--	0.00003
		Exposure Point Total						4E-11					0.00003
	Exposure Medium Total							4E-11					0.00003
Medium Total								3E-06					0.10
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	9E-11	--	9E-11	Skin, CVS	--	--	0.000007	0.000007
			Iron	--	--	--	--	--	GS	--	--	0.000004	0.000004
			Chemical Total	--	--	9E-11	--	9E-11		--	--	0.00001	0.00001
		Exposure Point Total						9E-11					0.00001
	Exposure Medium Total							9E-11					0.00001
Medium Total								9E-11					0.00001
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	6E-10	--	9E-11	--	7E-10	NA	--	--	--	--
			Benzo(a)pyrene	7E-08	--	1E-08	--	7E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	8E-09	--	1E-09	--	9E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	2E-09	--	2E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.03	--	0.001	0.03
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.003	--	--	0.003
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese (soil)	--	--	--	--	--	CNS	0.007	--	--	0.007
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	6E-07	--	3E-08	--	6E-07		0.2	--	0.001	0.2
		Exposure Point Total						6E-07					0.2
	Exposure Medium Total							6E-07					0.2
Medium Total								6E-07					0.2
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.2
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					4E-06	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	6E-07	--	9E-08	--	7E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000006	--	0.0000009	0.000007
			Benzo(k)fluoranthene	5E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Chrysene	1E-10	--	2E-11	--	2E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	1E-08	--	1E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00004	--	0.000007	0.00005
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00006	--	0.000009	0.00007
			2,3,7,8-TCDD Equivalents	2E-09	--	6E-11	--	2E-09	Developmental	0.0001	--	0.000005	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	1E-07	--	4E-09	--	1E-07	Skin, CVS	0.002	--	0.00008	0.003
			Beryllium	--	--	--	--	--	GS	0.000010	--	--	0.000010
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Iron	--	--	--	--	--	GS	0.002	--	--	0.002
			Manganese (soil)	--	--	--	--	--	CNS	0.0002	--	--	0.0002
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.008	--	0.0001	0.008
		Exposure Point Total						1E-06					0.008
	Exposure Medium Total							1E-06					0.008
	Air	Tank Farm 4	Benzo(a)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Chrysene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-14	--	--	1E-14	Liver, Respiratory, Developmental	--	8E-11	--	8E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	7E-12	--	--	7E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	1E-13	--	--	1E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	1E-10	--	--	1E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	1E-11	--	--	1E-11	Lungs	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000009	--	0.000009
			Chemical Total	--	1E-10	--	--	1E-10		--	0.00001	--	0.00001
		Exposure Point Total						1E-10					0.00001
	Exposure Medium Total							1E-10					0.00001
Medium Total								1E-06					0.008

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-08	--	5E-09	--	4E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000002	--	0.0000002	0.000002
			Benzo(k)fluoranthene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Chrysene	4E-10	--	5E-11	--	4E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00001	--	0.000002	0.00001
			Indeno(1,2,3-cd)pyrene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Aroclor-1254	9E-10	--	1E-10	--	1E-09	Immune	0.0002	--	0.00004	0.0003
			2,3,7,8-TCDD Equivalents	2E-09	--	6E-11	--	2E-09	Developmental	0.0001	--	0.000004	0.0001
			Aluminum	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Arsenic	1E-07	--	5E-09	--	1E-07	Skin, CVS	0.003	--	0.0001	0.003
			Beryllium	--	--	--	--	--	GS	0.000009	--	--	0.000009
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.003	--	--	0.003
			Iron	--	--	--	--	--	GS	0.003	--	--	0.003
			Manganese (soil)	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	4E-07	--	4E-08	--	4E-07		0.01	--	0.0001	0.01
		Exposure Point Total						4E-07					0.01
	Exposure Medium Total							4E-07					0.01
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Chrysene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	6E-15	--	--	6E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-14	--	--	1E-14	Liver, Respiratory, Developmental	--	7E-11	--	7E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	8E-12	--	--	8E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	9E-14	--	--	9E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	1E-10	--	--	1E-10	Lungs	--	0.0000001	--	0.0000001

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-10	--	--	1E-10		--	0.00003	--	0.00003
		Exposure Point Total						1E-10					0.00003
	Exposure Medium Total							1E-10					0.00003
Medium Total								4E-07					0.01
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	2E-10	--	2E-10	Skin, CVS	--	--	0.000004	0.000004
			Iron	--	--	--	--	--	GS	--	--	0.000002	0.000002
			Chemical Total	--	--	2E-10	--	2E-10		--	--	0.000006	0.000006
		Exposure Point Total						2E-10					0.000006
	Exposure Medium Total							2E-10					0.000006
Medium Total								2E-10					0.000006
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	5E-11	--	4E-11	--	9E-11	NA	--	--	--	--
			Benzo(a)pyrene	6E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-10	--	5E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-09	--	1E-09	--	3E-09	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	3E-09	--	4E-10	--	3E-09	Developmental	0.0002	--	0.00003	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	2E-07	--	3E-08	--	2E-07	Skin, CVS	0.003	--	0.0006	0.004
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	4E-08	--	--	--	4E-08	Fetotoxicity, GS, Bone	0.0003	--	--	0.0003
			Cobalt	--	--	--	--	--	Blood	0.007	--	--	0.007
			Iron	--	--	--	--	--	GS	0.006	--	--	0.006
			Manganese (soil)	--	--	--	--	--	CNS	0.0007	--	--	0.0007
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-07	--	3E-08	--	2E-07		0.02	--	0.0006	0.02
		Exposure Point Total						2E-07					0.02
	Exposure Medium Total							2E-07					0.02
Medium Total								2E-07					0.02
Receptor Total				Receptor Risk Total (Surface Soil, Surface Water, and Sediment)				1E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.03
Receptor Total				Receptor Risk Total (All Soil, Surface Water, and Sediment)				7E-07	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.03

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	2E-07	--	2E-06					
			Benzo(a)pyrene	7E-06	--	1E-06	--	8E-06					
			Benzo(b)fluoranthene	1E-06	--	2E-07	--	2E-06					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	6E-08	--	8E-09	--	6E-08					
			Chrysene	2E-09	--	3E-10	--	2E-09					
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	3E-07	--	4E-08	--	3E-07					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	4E-07	--	1E-08	--	4E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-07	--	- -	--	1E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	1E-05	--	2E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 4	Benzo(a)anthracene	--	9E-13	--	--	9E-13					
			Benzo(a)pyrene	--	4E-12	--	--	4E-12					
			Benzo(b)fluoranthene	--	8E-13	--	--	8E-13					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	3E-13	--	--	3E-13					
			Chrysene	--	1E-14	--	--	1E-14					
			Dibenzo(a,h)anthracene	--	7E-13	--	--	7E-13					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	9E-12	--	--	9E-12					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	2E-11	--	--	2E-11					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	2E-10	--	--	2E-10					
		Exposure Point Total						2E-10					
	Exposure Medium Total							2E-10					
Medium Total								1E-05					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-07	--	6E-08	--	4E-07					
			Benzo(a)pyrene	2E-06	--	3E-07	--	2E-06					
			Benzo(b)fluoranthene	4E-07	--	5E-08	--	4E-07					
			Benzo(g,h,i)perylene	--	--	--	--	--					
			Benzo(k)fluoranthene	1E-08	--	2E-09	--	2E-08					
			Chrysene	4E-09	--	6E-10	--	5E-09					
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07					
			Fluoranthene	--	--	--	--	--					
			Indeno(1,2,3-cd)pyrene	5E-08	--	7E-09	--	5E-08					
			Pyrene	--	--	--	--	--					
			Aroclor-1254	3E-09	--	5E-10	--	4E-09					
			2,3,7,8-TCDD Equivalents	6E-09	--	2E-10	--	6E-09					
			Aluminum	--	--	--	--	--					
			Arsenic	5E-07	--	2E-08	--	5E-07					
			Beryllium	--	--	--	--	--					
			Chromium	1E-07	--	--	--	1E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	3E-06	--	4E-07	--	4E-06					
		Exposure Point Total						4E-06					
	Exposure Medium Total							4E-06					
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-13	--	--	2E-13					
			Benzo(a)pyrene	--	1E-12	--	--	1E-12					
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13					
			Benzo(g,h,i)perylene	--	--	--	--	--					
			Benzo(k)fluoranthene	--	8E-14	--	--	8E-14					
			Chrysene	--	2E-14	--	--	2E-14					
			Dibenzo(a,h)anthracene	--	8E-14	--	--	8E-14					
			Fluoranthene	--	--	--	--	--					
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14					
			Pyrene	--	--	--	--	--					
			Aroclor-1254	--	7E-15	--	--	7E-15					
			2,3,7,8-TCDD Equivalents	--	1E-14	--	--	1E-14					
			Aluminum	--	--	--	--	--					
			Arsenic	--	1E-11	--	--	1E-11					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	1E-10	--	--	1E-10					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Cobalt	--	2E-11	--	--	2E-11					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	--	2E-10	--	--	2E-10					
		Exposure Point Total						2E-10					
	Exposure Medium Total							2E-10					
Medium Total								4E-06					
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--					
			Arsenic	--	--	3E-10	--	3E-10					
			Iron	--	--	--	--	--					
			Chemical Total	--	--	3E-10	--	3E-10					
		Exposure Point Total						3E-10					
	Exposure Medium Total							3E-10					
Medium Total								3E-10					
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	6E-10	--	1E-10	--	8E-10					
			Benzo(a)pyrene	7E-08	--	1E-08	--	9E-08					
			Benzo(b)fluoranthene	8E-09	--	2E-09	--	1E-08					
			Dibenzo(a,h)anthracene	2E-08	--	4E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	9E-09	--	6E-10	--	1E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	6E-07	--	4E-08	--	6E-07					
			Beryllium	--	--	--	--	--					
			Chromium	2E-07	--	--	--	2E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	8E-07	--	6E-08	--	9E-07					
		Exposure Point Total						9E-07					
	Exposure Medium Total							9E-07					
Medium Total								9E-07					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-05					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					5E-06					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-05	--	2E-06	--	2E-05	NA	--	- -	--	--
			Benzo(a)pyrene	6E-05	--	9E-06	--	7E-05	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-05	--	2E-06	--	1E-05	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.0006	- -	0.00008	0.0006
			Benzo(k)fluoranthene	5E-07	--	7E-08	--	6E-07	NA	--	- -	--	--
			Chrysene	2E-08	--	2E-09	--	2E-08	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-05	--	2E-06	--	1E-05	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.004	- -	0.0006	0.005
			Indeno(1,2,3-cd)pyrene	2E-06	--	3E-07	--	3E-06	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.006	- -	0.0008	0.006
			2,3,7,8-TCDD Equivalents	5E-08	--	2E-09	--	5E-08	Developmental	0.01	- -	0.0004	0.01
			Arsenic	3E-06	--	1E-07	--	3E-06	Skin, CVS	0.2	- -	0.008	0.2
			Beryllium	- -	--	- -	--	- -	GS	0.0009	- -	--	0.0009
			Cobalt	- -	--	- -	--	- -	Blood	0.2	- -	--	0.2
			Iron	- -	--	- -	--	- -	GS	0.2	- -	--	0.2
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.01	- -	--	0.01
			Chemical Total	1E-04	--	2E-05	--	1E-04		0.7	--	0.009	0.7
		Exposure Point Total						1E-04					0.7
	Exposure Medium Total							1E-04					0.7
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	1E-11	--	--	1E-11	NA	- -	--	- -	--
			Chrysene	--	3E-13	--	--	3E-13	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	5E-12	--	--	5E-12	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	- -	4.51681E-09	- -	4.51681E-09
			Arsenic	--	1E-10	--	--	1E-10	NA	- -	0.00006	- -	0.00006
			Beryllium	--	2E-12	--	--	2E-12	Lungs	- -	0.000001	- -	0.000001
			Cobalt	--	2E-10	--	--	2E-10	Lungs	- -	0.0001	- -	0.0001
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.0005	- -	0.0005
			Chemical Total	--	5E-10	--	--	5E-10		- -	0.0007	- -	0.0007
		Exposure Point Total						5E-10					0.0007
	Exposure Medium Total							5E-10					0.0007
Medium Total								1E-04					0.7

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	3E-06	--	5E-07	--	4E-06	NA	--	- -	--	--
			Benzo(a)pyrene	2E-05	--	2E-06	--	2E-05	NA	--	- -	--	--
			Benzo(b)fluoranthene	3E-06	--	5E-07	--	4E-06	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.0001	- -	0.00002	0.0002
			Benzo(k)fluoranthene	1E-07	--	2E-08	--	1E-07	NA	--	- -	--	--
			Chrysene	4E-08	--	6E-09	--	4E-08	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0010	- -	0.0001	0.001
			Indeno(1,2,3-cd)pyrene	4E-07	--	6E-08	--	5E-07	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.001	- -	0.0002	0.002
			Aroclor-1254	2E-08	--	4E-09	--	3E-08	Immune	0.02	- -	0.003	0.02
			2,3,7,8-TCDD Equivalents	4E-08	--	1E-09	--	4E-08	Developmental	0.01	- -	0.0004	0.01
			Arsenic	4E-06	--	1E-07	--	4E-06	Skin, CVS	0.3	- -	0.009	0.3
			Beryllium	- -	--	- -	--	- -	GS	0.0008	- -	--	0.0008
			Cobalt	- -	--	- -	--	- -	Blood	0.3	- -	--	0.3
			Iron	- -	--	- -	--	- -	GS	0.3	- -	--	0.3
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.03	- -	--	0.03
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	3E-05	--	4E-06	--	3E-05		0.9	--	0.01	0.9
		Exposure Point Total						3E-05					0.9
	Exposure Medium Total							3E-05					0.9
	Air	Tank Farm 4	Benzo(a)anthracene	--	7E-12	--	--	7E-12	NA	- -	--	- -	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	7E-12	--	--	7E-12	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	3E-12	--	--	3E-12	NA	- -	--	- -	--
			Chrysene	--	8E-13	--	--	8E-13	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			Aroclor-1254	--	9E-14	--	--	9E-14	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	- -	3.934E-09	- -	3.934E-09
			Arsenic	--	1E-10	--	--	1E-10	NA	- -	0.00007	- -	0.00007
			Beryllium	--	2E-12	--	--	2E-12	Lungs	- -	0.000001	- -	0.000001

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Tank Farm 4	Cobalt	--	3E-10	--	--	3E-10	Lungs	- -	0.0002	- -	0.0002
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.001	- -	0.001
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	5E-10	--	--	5E-10		- -	0.002	- -	0.002
		Exposure Point Total						5E-10					0.002
	Exposure Medium Total							5E-10					0.002
Medium Total								3E-05					0.9
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -	Body Weight	0.0004	- -	0.0002	0.0007
			Endrin Aldehyde	- -	--	- -	--	- -	Liver	1	- -	0.2	1
			Aluminum	- -	--	- -	--	- -	CNS	0.01	- -	0.00004	0.01
			Arsenic	5E-06	--	4E-08	--	5E-06	Skin, CVS	0.4	- -	0.003	0.4
			Cobalt	- -	--	- -	--	- -	Blood	1	- -	0.006	1
			Iron	- -	--	- -	--	- -	GS	0.6	- -	0.003	0.6
			Manganese (water)	- -	--	- -	--	- -	CNS	3	- -	0.7	4
			Chemical Total	5E-06	--	4E-08	--	5E-06		6	--	1.0	7
		Exposure Point Total						5E-06					7
	Exposure Medium Total							5E-06					7
	Air	Tank Farm 4	Naphthalene	--	- -	--	--	- -	Nasal	- -	0.0004	- -	0.0004
			Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	0.0004	- -	0.0004
		Exposure Point Total						- -					0.0004
	Exposure Medium Total							- -					0.0004
Medium Total								5E-06					7
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-04	Receptor HI Total (Surface Soil and Groundwater)				8
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				4E-05	Receptor HI Total (Subsurface Soil and Groundwater)				8

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.7.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	2
Total Body Weight HI	0.0007
Total CNS HI	4
Total CVS HI	0.9
Total Developmental HI	0.03
Total GS HI	1
Total Immune HI	0.02
Total Kidney HI	0.009
Total Liver HI	1
Total Lungs HI	0.0003
Total Nasal HI	0.0004
Total Skin HI	0.9
Total Respiratory HI	8.45081E-09

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	- -	--	--
			Benzo(a)pyrene	6E-06	--	9E-07	--	7E-06	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-06	--	2E-07	--	1E-06	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00006	- -	0.000009	0.00007
			Benzo(k)fluoranthene	5E-08	--	7E-09	--	5E-08	NA	--	- -	--	--
			Chrysene	1E-09	--	2E-10	--	2E-09	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	9E-07	--	1E-07	--	1E-06	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0004	- -	0.00006	0.0005
			Indeno(1,2,3-cd)pyrene	2E-07	--	3E-08	--	2E-07	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.0006	- -	0.00009	0.0007
			2,3,7,8-TCDD Equivalents	2E-08	--	6E-10	--	2E-08	Developmental	0.001	- -	0.00005	0.001
			Arsenic	1E-06	--	4E-08	--	1E-06	Skin, CVS	0.02	- -	0.0008	0.02
			Beryllium	- -	--	- -	--	- -	GS	0.00010	- -	--	0.00010
			Cobalt	- -	--	- -	--	- -	Blood	0.02	- -	--	0.02
			Iron	- -	--	- -	--	- -	GS	0.02	- -	--	0.02
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.001	- -	--	0.001
			Chemical Total	1E-05	--	1E-06	--	1E-05		0.07	--	0.001	0.07
		Exposure Point Total						1E-05					0.07
	Exposure Medium Total							1E-05					0.07
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	9E-12	--	--	9E-12	NA	- -	--	- -	--
			Chrysene	--	3E-13	--	--	3E-13	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	4E-12	--	--	4E-12	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	7E-13	--	--	7E-13	Liver, Respiratory, Developmental	- -	5E-09	- -	5E-09
			Arsenic	--	4E-10	--	--	4E-10	NA	- -	0.00006	- -	0.00006
			Beryllium	--	6E-12	--	--	6E-12	Lungs	- -	0.000001	- -	0.000001
			Cobalt	--	7E-10	--	--	7E-10	Lungs	- -	0.0001	- -	0.0001
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.0005	- -	0.0005
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.0007	- -	0.0007
		Exposure Point Total						1E-09					0.0007
	Exposure Medium Total							1E-09					0.0007
Medium Total								1E-05					0.07

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	3E-07	--	5E-08	--	4E-07	NA	--	- -	--	--
			Benzo(a)pyrene	1E-06	--	2E-07	--	2E-06	NA	--	- -	--	--
			Benzo(b)fluoranthene	3E-07	--	4E-08	--	3E-07	NA	--	- -	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00001	- -	0.000002	0.00002
			Benzo(k)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	- -	--	--
			Chrysene	3E-09	--	5E-10	--	4E-09	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-07	--	1E-08	--	1E-07	NA	--	- -	--	--
			Fluoranthene	- -	--	- -	--	- -	Liver	0.0001	- -	0.00002	0.0001
			Indeno(1,2,3-cd)pyrene	4E-08	--	6E-09	--	4E-08	NA	--	- -	--	--
			Pyrene	- -	--	- -	--	- -	Kidney	0.0001	- -	0.00002	0.0002
			Aroclor-1254	9E-09	--	1E-09	--	1E-08	Immune	0.002	- -	0.0004	0.003
			2,3,7,8-TCDD Equivalents	2E-08	--	5E-10	--	2E-08	Developmental	0.001	- -	0.00004	0.001
			Arsenic	1E-06	--	5E-08	--	1E-06	Skin, CVS	0.03	- -	0.001	0.03
			Beryllium	- -	--	- -	--	- -	GS	0.00009	- -	--	0.00009
			Cobalt	- -	--	- -	--	- -	Blood	0.03	- -	--	0.03
			Iron	- -	--	- -	--	- -	GS	0.03	- -	--	0.03
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.003	- -	--	0.003
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	4E-06	--	4E-07	--	4E-06		0.09	--	0.001	0.09
		Exposure Point Total						4E-06					0.09
	Exposure Medium Total							4E-06					0.09
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-12	--	--	6E-12	NA	- -	--	- -	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	- -	--	- -	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	- -	--	- -	--
			Chrysene	--	7E-13	--	--	7E-13	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	- -	--	- -	--
			Fluoranthene	--	- -	--	--	- -	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	7E-13	--	--	7E-13	NA	- -	--	- -	--
			Pyrene	--	- -	--	--	- -	NA	- -	--	- -	--
			Aroclor-1254	--	3E-13	--	--	3E-13	NA	- -	--	- -	--
			2,3,7,8-TCDD Equivalents	--	6E-13	--	--	6E-13	Liver, Respiratory, Developmental	- -	4E-09	- -	4E-09
			Arsenic	--	5E-10	--	--	5E-10	NA	- -	0.00007	- -	0.00007
			Beryllium	--	5E-12	--	--	5E-12	Lungs	- -	0.000001	- -	0.000001

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Tank Farm 4	Cobalt	--	1E-09	--	--	1E-09	Lungs	- -	0.0002	- -	0.0002
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (soil)	--	- -	--	--	- -	CNS	- -	0.001	- -	0.001
			Thallium	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	2E-09	--	--	2E-09		- -	0.002	- -	0.002
		Exposure Point Total						2E-09					0.002
	Exposure Medium Total							2E-09					0.002
Medium Total								4E-06					0.10
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -	Body Weight	0.0002	- -	0.0001	0.0003
			Endrin Aldehyde	- -	--	- -	--	- -	Liver	0.4	- -	0.1	0.5
			Aluminum	- -	--	- -	--	- -	CNS	0.004	- -	0.00002	0.004
			Arsenic	6E-06	--	6E-08	--	6E-06	Skin, CVS	0.1	- -	0.001	0.1
			Cobalt	- -	--	- -	--	- -	Blood	0.5	- -	0.003	0.5
			Iron	- -	--	- -	--	- -	GS	0.2	- -	0.002	0.2
			Manganese (water)	- -	--	- -	--	- -	CNS	1	- -	0.3	1
			Chemical Total	6E-06	--	6E-08	--	6E-06		2	--	0.4	3
		Exposure Point Total						6E-06					3
	Exposure Medium Total							6E-06					3
	Air	Tank Farm 4	Naphthalene	--	- -	--	--	- -	Nasal	- -	0.0002	- -	0.0002
			Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	0.0002	- -	0.0002
		Exposure Point Total						- -					0.0002
	Exposure Medium Total							- -					0.0002
Medium Total								6E-06					3
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-05	Receptor HI Total (Surface Soil and Groundwater)				3
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				1E-05	Receptor HI Total (Subsurface Soil and Groundwater)				3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.8.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	0.6
Total Body Weight HI	0.0003
Total CNS HI	1
Total CVS HI	0.2
Total Developmental HI	0.003
Total GS HI	0.3
Total Immune HI	0.003
Total Kidney HI	0.0009
Total Liver HI	0.5
Total Lungs HI	0.0003
Total Nasal HI	0.0002
Total Skin HI	0.2
Total Respiratory HI	8E-09

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	2E-06	--	2E-05					
			Benzo(a)pyrene	7E-05	--	1E-05	--	8E-05					
			Benzo(b)fluoranthene	1E-05	--	2E-06	--	2E-05					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	5E-07	--	8E-08	--	6E-07					
			Chrysene	2E-08	--	2E-09	--	2E-08					
			Dibenzo(a,h)anthracene	1E-05	--	2E-06	--	1E-05					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	2E-06	--	4E-07	--	3E-06					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	7E-08	--	2E-09	--	7E-08					
			Arsenic	4E-06	--	1E-07	--	4E-06					
			Beryllium	- -	--	- -	--	- -					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	2E-05	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-11	--	--	5E-11					
			Benzo(a)pyrene	--	2E-10	--	--	2E-10					
			Benzo(b)fluoranthene	--	5E-11	--	--	5E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	2E-11	--	--	2E-11					
			Chrysene	--	6E-13	--	--	6E-13					
			Dibenzo(a,h)anthracene	--	4E-11	--	--	4E-11					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	9E-12	--	--	9E-12					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13					
			Arsenic	--	5E-10	--	--	5E-10					
			Beryllium	--	8E-12	--	--	8E-12					
			Cobalt	--	9E-10	--	--	9E-10					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								1E-04					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	6E-07	--	4E-06					
			Benzo(a)pyrene	2E-05	--	2E-06	--	2E-05					
			Benzo(b)fluoranthene	3E-06	--	5E-07	--	4E-06					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-07	--	2E-08	--	2E-07					
			Chrysene	4E-08	--	6E-09	--	5E-08					
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	5E-07	--	7E-08	--	5E-07					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	3E-08	--	5E-09	--	4E-08					
			2,3,7,8-TCDD Equivalents	6E-08	--	2E-09	--	6E-08					
			Arsenic	5E-06	--	2E-07	--	5E-06					
			Beryllium	- -	--	- -	--	- -					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Thallium	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	4E-06	--	4E-05					
		Exposure Point Total						4E-05					
	Exposure Medium Total							4E-05					
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-11	--	--	1E-11					
			Benzo(a)pyrene	--	6E-11	--	--	6E-11					
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	5E-12	--	--	5E-12					
			Chrysene	--	1E-12	--	--	1E-12					
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	4E-13	--	--	4E-13					
			2,3,7,8-TCDD Equivalents	--	8E-13	--	--	8E-13					
			Arsenic	--	6E-10	--	--	6E-10					
			Beryllium	--	7E-12	--	--	7E-12					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Tank Farm 4	Cobalt	--	1E-09	--	--	1E-09					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Thallium	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								4E-05					
Groundwater	Groundwater	Tank Farm 4	Naphthalene	- -	--	- -	--	- -					
			Endrin Aldehyde	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-05	--	1E-07	--	1E-05					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (water)	- -	--	- -	--	- -					
			Chemical Total	1E-05	--	1E-07	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 4	Naphthalene	--	- -	--	--	- -					
			Endrin Aldehyde	--	- -	--	--	- -					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	- -	--	--	- -					
			Cobalt	--	- -	--	--	- -					
			Iron	--	- -	--	--	- -					
			Manganese (water)	--	- -	--	--	- -					
			Chemical Total	--	- -	--	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
Medium Total								1E-05					
Receptor Total							Receptor Risk Total	1E-04					
Receptor Total							Receptor Risk Total	5E-05					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Tank Farm 5

LIST OF TABLES
RAGS PART D TABLE 9 - TANK FARM 5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.

Reasonable Maximum Exposures

9.1.RME Construction Workers - Tank Farm 5
9.2.RME Industrial Workers - Tank Farm 5
9.3.RME Adolescent Trespassers - Tank Farm 5
9.4.RME Child Recreational Users - Tank Farm 5
9.5.RME Adult Recreational Users - Tank Farm 5
9.6.RME Lifelong Recreational Users - Tank Farm 5
9.7.RME Child Residents - Tank Farm 5
9.8.RME Adult Residents - Tank Farm 5
9.9.RME Lifelong Residents - Tank Farm 5

Central Tendency Exposures

9.1.CTE Construction Workers - Tank Farm 5
9.2.CTE Industrial Workers - Tank Farm 5
9.3.CTE Adolescent Trespassers - Tank Farm 5
9.4.CTE Child Recreational Users - Tank Farm 5
9.5.CTE Adult Recreational Users - Tank Farm 5
9.6.CTE Lifelong Recreational Users - Tank Farm 5
9.7.CTE Child Residents - Tank Farm 5
9.8.CTE Adult Residents - Tank Farm 5
9.9.CTE Lifelong Residents - Tank Farm 5

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	7E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	8E-09	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	1E-09	--	5E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-09	--	2E-09	--	5E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	6E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	2E-09	--	8E-10	--	3E-09	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	1E-08	--	1E-09	--	1E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	9E-07	--	9E-08	--	1E-06	Skin, CVS	0.1	--	0.01	0.2
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Manganese (soil)	--	--	--	--	--	CNS	0.004	--	--	0.004
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.3	--	0.02	0.3
		Exposure Point Total						1E-06					0.3
	Exposure Medium Total							1E-06					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Aroclor-1254	--	3E-11	--	--	3E-11	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-10	--	--	2E-10	Liver, Respiratory, Developmental	--	0.000009	--	0.000009
			Aluminum	--	--	--	--	--	CNS	--	0.1	--	0.1
			Arsenic	--	1E-07	--	--	1E-07	NA	--	0.1	--	0.1
			Beryllium	--	1E-09	--	--	1E-09	Lungs	--	0.002	--	0.002
			Chromium	--	1E-06	--	--	1E-06	Lungs	--	0.009	--	0.009
			Cobalt	--	1E-07	--	--	1E-07	Lungs	--	0.1	--	0.1
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.6	--	0.6
			Chemical Total	--	1E-06	--	--	1E-06		--	1	--	1
		Exposure Point Total						1E-06					1
	Exposure Medium Total							1E-06					1
Medium Total								3E-06					1

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	6E-10	--	2E-10	--	9E-10	NA	--	--	--	--
			Benzo(a)pyrene	8E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-09	--	7E-10	--	2E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-10	--	2E-10	--	7E-10	NA	--	--	--	--
			Aroclor-1254	2E-09	--	8E-10	--	3E-09	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	1E-08	--	1E-09	--	1E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	1E-06	--	1E-07	--	1E-06	Skin, CVS	0.2	--	0.02	0.2
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.09	--	--	0.09
			Iron	--	--	--	--	--	GS	0.09	--	--	0.09
			Manganese (soil)	--	--	--	--	--	CNS	0.013	--	--	0.013
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.4	--	0.02	0.4
		Exposure Point Total						1E-06					0.4
	Exposure Medium Total							1E-06					0.4
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Aroclor-1254	--	3E-11	--	--	3E-11	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-10	--	--	2E-10	Liver, Respiratory, Developmental	--	0.000009	--	0.000009
			Aluminum	--	--	--	--	--	CNS	--	0.1	--	0.1
			Arsenic	--	2E-07	--	--	2E-07	NA	--	0.2	--	0.2
			Beryllium	--	1E-09	--	--	1E-09	Lungs	--	0.002	--	0.002
			Chromium	--	1E-06	--	--	1E-06	Lungs	--	0.009	--	0.009
			Cobalt	--	2E-07	--	--	2E-07	Lungs	--	0.2	--	0.2
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	2	--	2
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-06	--	--	1E-06		--	2	--	2
		Exposure Point Total						1E-06					2
	Exposure Medium Total							1E-06					2
Medium Total								3E-06					3

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	2E-10	--	2E-09	--	2E-09	Blood	0.00008	--	0.0006	0.0007
			Aluminum	--	--	--	--	--	CNS	0.0004	--	0.0002	0.0006
			Arsenic	5E-08	--	3E-08	--	7E-08	Skin, CVS	0.007	--	0.004	0.01
			Cobalt	--	--	--	--	--	Blood	0.02	--	0.009	0.02
			Iron	--	--	--	--	--	GS	0.009	--	0.005	0.01
			Manganese (water)	--	--	--	--	--	CNS	0.03	--	0.4	0.4
			Chemical Total	5E-08	--	3E-08	--	8E-08		0.06	--	0.4	0.4
		Exposure Point Total						8E-08					0.4
	Exposure Medium Total							8E-08					0.4
	Air	Tank Farm 5	Benzene	--	7E-10	--	--	7E-10	Blood	--	0.0002	--	0.0002
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	7E-10	--	--	7E-10		--	0.0002	--	0.0002
		Exposure Point Total						7E-10					0.0002
	Exposure Medium Total							7E-10					0.0002
Medium Total								8E-08					0.4
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				3E-06	Receptor HI Total (Surface Soil and Groundwater)				2
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				3E-06	Receptor HI Total (All Soil and Groundwater)				3

Total Blood HI	0.2
Total Bone HI	0.01
Total CNS HI	3
Total CVS HI	0.4
Total Developmental HI	0.02
Total Fetotoxicity HI	0.01
Total GS HI	0.2
Total Immune HI	0.009
Total Liver HI	0.00002
Total Lungs HI	0.4
Total Skin HI	0.4
Total Respiratory HI	0.00002

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	3E-07	--	6E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	2E-08	--	4E-08	NA	--	--	--	--
			Aroclor-1254	3E-08	--	3E-08	--	5E-08	Immune	0.002	--	0.002	0.004
			2,3,7,8-TCDD Equivalents	2E-07	--	4E-08	--	2E-07	Developmental	0.004	--	0.0008	0.005
			Aluminum	--	--	--	--	--	CNS	0.008	--	--	0.008
			Arsenic	1E-05	--	3E-06	--	2E-05	Skin, CVS	0.09	--	0.02	0.1
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.003	--	--	0.003
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Manganese (soil)	--	--	--	--	--	CNS	0.002	--	--	0.002
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.2	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	8E-10	--	--	8E-10	NA	--	0.00004	--	0.00004
			Beryllium	--	9E-12	--	--	9E-12	Lungs	--	0.0000005	--	0.0000005
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	7E-10	--	--	7E-10	Lungs	--	0.00004	--	0.00004
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Chemical Total	--	8E-09	--	--	8E-09		--	0.0003	--	0.0003
		Exposure Point Total						8E-09					0.0003
	Exposure Medium Total							8E-09					0.0003
Medium Total								2E-05					0.2

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	9E-09	--	8E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	1E-07	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-09	--	7E-09	--	1E-08	NA	--	--	--	--
			Aroclor-1254	3E-08	--	3E-08	--	5E-08	Immune	0.002	--	0.002	0.004
			2,3,7,8-TCDD Equivalents	2E-07	--	4E-08	--	2E-07	Developmental	0.004	--	0.0008	0.005
			Aluminum	--	--	--	--	--	CNS	0.007	--	--	0.007
			Arsenic	2E-05	--	3E-06	--	2E-05	Skin, CVS	0.10	--	0.02	0.1
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Blood	0.05	--	--	0.05
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese (soil)	--	--	--	--	--	CNS	0.007	--	--	0.007
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.2	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	9E-10	--	--	9E-10	NA	--	0.00004	--	0.00004
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	1E-09	--	--	1E-09	Lungs	--	0.00005	--	0.00005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0004	--	0.0004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	9E-09	--	--	9E-09		--	0.0006	--	0.0006
		Exposure Point Total						9E-09					0.0006
	Exposure Medium Total							9E-09					0.0006
Medium Total								2E-05					0.2
Receptor Total							Receptor Risk Total (Surface Soil)	2E-05				Receptor HI Total (Surface Soil)	0.2

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	1E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	2E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	5E-08	--	7E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9E-09	--	2E-08	--	3E-08	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-09	--	1E-08	Immune	0.0005	--	0.001	0.002
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-08	--	4E-08	Developmental	0.001	--	0.0005	0.002
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	9E-07	--	3E-06	Skin, CVS	0.02	--	0.01	0.03
			Beryllium	--	--	--	--	--	GS	0.00007	--	--	0.00007
			Chromium	2E-07	--	--	--	2E-07	Fetotoxicity, GS, Bone	0.0009	--	--	0.0009
			Cobalt	--	--	--	--	--	Blood	0.009	--	--	0.009
			Iron	--	--	--	--	--	GS	0.010	--	--	0.010
			Manganese (soil)	--	--	--	--	--	CNS	0.0006	--	--	0.0006
			Chemical Total	2E-06	--	1E-06	--	3E-06		0.05	--	0.01	0.06
		Exposure Point Total						3E-06					0.06
	Exposure Medium Total							3E-06					0.06
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	2E-14	--	--	2E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-13	--	--	1E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	8E-11	--	--	8E-11	NA	--	0.000007	--	0.000007
			Beryllium	--	8E-13	--	--	8E-13	Lungs	--	0.00000010	--	0.00000010
			Chromium	--	6E-10	--	--	6E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	6E-11	--	--	6E-11	Lungs	--	0.000007	--	0.000007
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Chemical Total	--	8E-10	--	--	8E-10		--	0.00005	--	0.00005
		Exposure Point Total						8E-10					0.00005
	Exposure Medium Total							8E-10					0.00005
Medium Total								3E-06					0.06

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	4E-09	--	7E-09	--	1E-08	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-09	--	2E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-09	--	6E-09	--	9E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-09	--	1E-08	Immune	0.0005	--	0.001	0.002
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-08	--	4E-08	Developmental	0.001	--	0.0005	0.002
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	1E-06	--	3E-06	Skin, CVS	0.03	--	0.01	0.04
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.0010	--	--	0.0010
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese (soil)	--	--	--	--	--	CNS	0.002	--	--	0.002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-06	--	1E-06	--	4E-06		0.06	--	0.01	0.07
		Exposure Point Total						4E-06					0.07
	Exposure Medium Total							4E-06					0.07
	Air	Tank Farm 5	Benzo(a)anthracene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-15	--	--	7E-15	NA	--	--	--	--
			Aroclor-1254	--	2E-14	--	--	2E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-13	--	--	1E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000006	--	0.000006
			Arsenic	--	9E-11	--	--	9E-11	NA	--	0.000008	--	0.000008
			Beryllium	--	7E-13	--	--	7E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	6E-10	--	--	6E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	9E-11	--	--	9E-11	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00008	--	0.00008
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	8E-10	--	--	8E-10		--	0.0001	--	0.0001
		Exposure Point Total						8E-10					0.0001
	Exposure Medium Total							8E-10					0.0001
Medium Total								4E-06					0.07

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	8E-10	--	8E-10	Liver	--	--	0.00001	0.00001
			Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Benzo(a)pyrene	--	--	--	--	--	NA	--	--	--	--
			Benzo(b)fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	--	--	--	--	NA	--	--	--	--
			Naphthalene	--	--	--	--	--	Body Weight	--	--	0.00008	0.00008
			Aluminum	--	--	--	--	--	CNS	--	--	0.000009	0.000009
			Arsenic	--	--	8E-10	--	8E-10	Skin, CVS	--	--	0.000010	0.000010
			Iron	--	--	--	--	--	GS	--	--	0.00002	0.00002
			Chemical Total	--	--	2E-09	--	2E-09		--	--	0.0001	0.0001
		Exposure Point Total						2E-09					0.0001
	Exposure Medium Total							2E-09					0.0001
Medium Total								2E-09					0.0001
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	4E-08	--	2E-07	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	5E-07	--	3E-06	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-08	--	3E-07	--	4E-07	NA	--	--	--	--
			Chrysene	6E-10	--	3E-09	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	6E-07	--	7E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-08	--	2E-07	--	2E-07	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	5E-08	--	6E-08	--	1E-07	Developmental	0.002	--	0.003	0.005
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	4E-06	--	5E-06	--	9E-06	Skin, CVS	0.05	--	0.07	0.1
			Beryllium	--	--	--	--	--	GS	0.00008	--	--	0.00008
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese (soil)	--	--	--	--	--	CNS	0.0008	--	--	0.0008
			Chemical Total	5E-06	--	9E-06	--	1E-05		0.1	--	0.07	0.2
		Exposure Point Total						1E-05					0.2
	Exposure Medium Total							1E-05					0.2
Medium Total								1E-05					0.2
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					2E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.3
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					2E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	0.06
Total Body Weight HI	0.00008
Total Bone HI	0.003
Total CNS HI	0.01
Total CVS HI	0.2
Total Developmental HI	0.008
Total Fetotoxicity HI	0.003
Total GS HI	0.06
Total Immune HI	0.003
Total Liver HI	0.00001
Total Lungs HI	0.00002
Total Skin HI	0.2
Total Respiratory HI	8E-10

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	2E-08	--	8E-08	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	3E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	4E-08	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	5E-09	--	2E-08	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	9E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	6E-06	--	5E-07	--	6E-06	Skin, CVS	0.2	--	0.01	0.2
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	8E-07	--	--	--	8E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Manganese (soil)	--	--	--	--	--	CNS	0.004	--	--	0.004
			Chemical Total	8E-06	--	9E-07	--	9E-06		0.3	--	0.01	0.3
		Exposure Point Total						9E-06					0.3
	Exposure Medium Total							9E-06					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	8E-15	--	--	8E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-14	--	--	5E-14	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	4E-11	--	--	4E-11	NA	--	0.000007	--	0.000007
			Beryllium	--	4E-13	--	--	4E-13	Lungs	--	0.00000010	--	0.00000010
			Chromium	--	3E-10	--	--	3E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	3E-11	--	--	3E-11	Lungs	--	0.000007	--	0.000007
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Chemical Total	--	4E-10	--	--	4E-10		--	0.00005	--	0.00005
		Exposure Point Total						4E-10					0.00005
	Exposure Medium Total							4E-10					0.00005
Medium Total								9E-06					0.3

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	8E-09	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	2E-08	--	6E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	2E-08	--	8E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	5E-09	--	2E-08	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	9E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	7E-06	--	6E-07	--	7E-06	Skin, CVS	0.2	--	0.01	0.2
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	8E-07	--	--	--	8E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.09	--	--	0.09
			Iron	--	--	--	--	--	GS	0.10	--	--	0.10
			Manganese (soil)	--	--	--	--	--	CNS	0.01	--	--	0.01
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	8E-06	--	7E-07	--	9E-06		0.4	--	0.02	0.4
		Exposure Point Total						9E-06					0.4
	Exposure Medium Total							9E-06					0.4
	Air	Tank Farm 5	Benzo(a)anthracene	--	7E-15	--	--	7E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-15	--	--	6E-15	NA	--	--	--	--
			Aroclor-1254	--	8E-15	--	--	8E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-14	--	--	5E-14	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000006	--	0.000006
			Arsenic	--	4E-11	--	--	4E-11	NA	--	0.000008	--	0.000008
			Beryllium	--	3E-13	--	--	3E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	3E-10	--	--	3E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	5E-11	--	--	5E-11	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00008	--	0.00008
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	4E-10	--	--	4E-10		--	0.0001	--	0.0001
		Exposure Point Total						4E-10					0.0001
	Exposure Medium Total							4E-10					0.0001
Medium Total								9E-06					0.4

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	9E-10	--	9E-10	Liver	--	--	0.00003	0.00003
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	--	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	--	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	--	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	--	0.0002	0.0002
			Aluminum	- -	--	- -	--	- -	CNS	--	--	0.00002	0.00002
			Arsenic	- -	--	9E-10	--	9E-10	Skin, CVS	--	--	0.00002	0.00002
			Iron	- -	--	- -	--	- -	GS	--	--	0.00004	0.00004
			Chemical Total	- -	--	2E-09	--	2E-09		--	--	0.0003	0.0003
		Exposure Point Total						2E-09					0.0003
	Exposure Medium Total							2E-09					0.0003
Medium Total								2E-09					0.0003
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-07	--	9E-08	--	4E-07	NA	--	--	--	--
			Benzo(a)pyrene	3E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	5E-07	NA	--	--	--	--
			Chrysene	4E-09	--	1E-09	--	5E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-07	--	8E-08	--	3E-07	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	2E-07	--	1E-08	--	2E-07	Developmental	0.02	--	0.001	0.02
			Aluminum	- -	--	- -	--	- -	CNS	0.02	--	--	0.02
			Arsenic	1E-05	--	1E-06	--	2E-05	Skin, CVS	0.4	--	0.03	0.4
			Beryllium	- -	--	- -	--	- -	GS	0.0006	--	--	0.0006
			Chromium	1E-06	--	- -	--	1E-06	Fetotoxicity, GS, Bone	0.010	--	--	0.010
			Cobalt	- -	--	- -	--	- -	Blood	0.3	--	--	0.3
			Iron	- -	--	- -	--	- -	GS	0.2	--	--	0.2
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.005	--	--	0.005
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.9	--	0.03	0.9
		Exposure Point Total						2E-05					0.9
	Exposure Medium Total							2E-05					0.9
Medium Total								2E-05					0.9
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-05	Receplor HI Total (Surface Soil, Surface Water, and Sediment)				1
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	0.4
Total Body Weight HI	0.0002
Total Bone HI	0.02
Total CNS HI	0.07
Total CVS HI	0.8
Total Developmental HI	0.03
Total Fetotoxicity HI	0.02
Total GS HI	0.4
Total Immune HI	0.010
Total Liver HI	0.00003
Total Lungs HI	0.00002
Total Skin HI	0.8
Total Respiratory HI	8E-10

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	8E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Aroclor-1254	5E-09	--	3E-09	--	8E-09	Immune	0.0004	--	0.0002	0.0006
			2,3,7,8-TCDD Equivalents	3E-08	--	4E-09	--	4E-08	Developmental	0.0008	--	0.00009	0.0009
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	3E-06	--	3E-07	--	3E-06	Skin, CVS	0.02	--	0.002	0.02
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Blood	0.006	--	--	0.006
			Iron	--	--	--	--	--	GS	0.007	--	--	0.007
			Manganese (soil)	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Chemical Total	3E-06	--	4E-07	--	3E-06		0.03	--	0.002	0.04
		Exposure Point Total						3E-06					0.04
	Exposure Medium Total							3E-06					0.04
	Air	Tank Farm 5	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	3E-14	--	--	3E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.000007	--	0.000007
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.00000010	--	0.00000010
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	1E-10	--	--	1E-10	Lungs	--	0.000007	--	0.000007
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Chemical Total	--	2E-09	--	--	2E-09		--	0.00005	--	0.00005
		Exposure Point Total						2E-09					0.00005
	Exposure Medium Total							2E-09					0.00005
Medium Total								3E-06					0.04

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	3E-09	--	2E-09	--	5E-09	NA	--	--	--	--
			Benzo(a)pyrene	4E-08	--	2E-08	--	6E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Aroclor-1254	5E-09	--	3E-09	--	8E-09	Immune	0.0004	--	0.0002	0.0006
			2,3,7,8-TCDD Equivalents	4E-08	--	4E-09	--	4E-08	Developmental	0.0008	--	0.00009	0.0009
			Aluminum	--	--	--	--	--	CNS	0.001	--	--	0.001
			Arsenic	3E-06	--	3E-07	--	3E-06	Skin, CVS	0.02	--	0.002	0.02
			Beryllium	--	--	--	--	--	GS	0.00004	--	--	0.00004
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Blood	0.010	--	--	0.010
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-06	--	4E-07	--	4E-06		0.04	--	0.003	0.05
		Exposure Point Total						4E-06					0.05
	Exposure Medium Total							4E-06					0.05
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Aroclor-1254	--	3E-14	--	--	3E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000006	--	0.000006
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.000008	--	0.000008
			Beryllium	--	1E-12	--	--	1E-12	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00008	--	0.00008
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0001	--	0.0001
		Exposure Point Total						2E-09					0.0001
	Exposure Medium Total							2E-09					0.0001
Medium Total								4E-06					0.05

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	2E-09	--	2E-09	Liver	--	- -	0.00002	0.00002
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	- -	0.00009	0.00009
			Aluminum	- -	--	- -	--	- -	CNS	--	- -	0.00001	0.00001
			Arsenic	- -	--	2E-09	--	2E-09	Skin, CVS	--	- -	0.00001	0.00001
			Iron	- -	--	- -	--	- -	GS	--	- -	0.00002	0.00002
			Chemical Total	- -	--	4E-09	--	4E-09		--	--	0.0002	0.0002
		Exposure Point Total						4E-09					0.0002
	Exposure Medium Total							4E-09					0.0002
Medium Total								4E-09					0.0002
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	4E-08	--	2E-08	--	6E-08	NA	--	- -	--	--
			Benzo(a)pyrene	5E-07	--	3E-07	--	8E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	5E-08	--	3E-08	--	8E-08	NA	--	- -	--	--
			Chrysene	6E-10	--	3E-10	--	9E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-07	--	6E-08	--	2E-07	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	3E-08	--	2E-08	--	5E-08	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	8E-08	--	1E-08	--	9E-08	Developmental	0.002	- -	0.0002	0.002
			Aluminum	- -	--	- -	--	- -	CNS	0.002	- -	--	0.002
			Arsenic	6E-06	--	9E-07	--	7E-06	Skin, CVS	0.04	- -	0.006	0.04
			Beryllium	- -	--	- -	--	- -	GS	0.00006	- -	--	0.00006
			Chromium	5E-07	--	- -	--	5E-07	Fetotoxicity, GS, Bone	0.001	- -	--	0.001
			Cobalt	- -	--	- -	--	- -	Blood	0.03	- -	--	0.03
			Iron	- -	--	- -	--	- -	GS	0.02	- -	--	0.02
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.0006	- -	--	0.0006
			Chemical Total	7E-06	--	1E-06	--	9E-06		0.10	--	0.006	0.1
		Exposure Point Total						9E-06					0.1
	Exposure Medium Total							9E-06					0.1
Medium Total								9E-06					0.1
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.1
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	7E-08	--	2E-08	--	9E-08					
			Benzo(a)pyrene	8E-07	--	3E-07	--	1E-06					
			Benzo(b)fluoranthene	1E-07	--	5E-08	--	2E-07					
			Dibenzo(a,h)anthracene	1E-07	--	6E-08	--	2E-07					
			Indeno(1,2,3-cd)pyrene	6E-08	--	2E-08	--	8E-08					
			Aroclor-1254	2E-08	--	7E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	9E-06	--	8E-07	--	9E-06					
			Beryllium	--	--	--	--	--					
			Chromium	1E-06	--	--	--	1E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	1E-05	--	1E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-14	--	--	5E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	8E-14	--	--	8E-14					
			Dibenzo(a,h)anthracene	--	9E-14	--	--	9E-14					
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14					
			Aroclor-1254	--	5E-14	--	--	5E-14					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					
			Aluminum	--	--	--	--	--					
			Arsenic	--	2E-10	--	--	2E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	1E-09	--	--	1E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								1E-05					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	9E-09	--	3E-08					
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07					
			Benzo(b)fluoranthene	5E-08	--	2E-08	--	7E-08					
			Dibenzo(a,h)anthracene	7E-08	--	3E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	8E-09	--	3E-08					
			Aroclor-1254	2E-08	--	7E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-05	--	9E-07	--	1E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Thallium	- -	--	- -	--	- -					
			Chemical Total	1E-05	--	1E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14					
			Benzo(a)pyrene	--	2E-13	--	--	2E-13					
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14					
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14					
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14					
			Aroclor-1254	--	4E-14	--	--	4E-14					
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	2E-10	--	--	2E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	2E-09	--	--	2E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Thallium	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								1E-05					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	3E-09	--	3E-09					
			Benzo(a)anthracene	- -	--	- -	--	- -					
			Benzo(a)pyrene	- -	--	- -	--	- -					
			Benzo(b)fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -					
			Naphthalene	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	- -	--	3E-09	--	3E-09					
			Iron	- -	--	- -	--	- -					
			Chemical Total	- -	--	5E-09	--	5E-09					
		Exposure Point Total						5E-09					
	Exposure Medium Total							5E-09					
Medium Total								5E-09					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-07	--	1E-07	--	4E-07					
			Benzo(a)pyrene	4E-06	--	1E-06	--	5E-06					
			Benzo(b)fluoranthene	4E-07	--	2E-07	--	5E-07					
			Chrysene	4E-09	--	2E-09	--	6E-09					
			Dibenzo(a,h)anthracene	8E-07	--	3E-07	--	1E-06					
			Indeno(1,2,3-cd)pyrene	3E-07	--	1E-07	--	4E-07					
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-05	--	2E-06	--	2E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	2E-06	--	- -	--	2E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	4E-06	--	3E-05					
		Exposure Point Total						3E-05					
	Exposure Medium Total							3E-05					
Medium Total								3E-05					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					4E-05					
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					4E-05					

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	7E-08	--	2E-08	--	9E-08					
			Benzo(a)pyrene	8E-07	--	3E-07	--	1E-06					
			Benzo(b)fluoranthene	1E-07	--	5E-08	--	2E-07					
			Dibenzo(a,h)anthracene	1E-07	--	6E-08	--	2E-07					
			Indeno(1,2,3-cd)pyrene	6E-08	--	2E-08	--	8E-08					
			Aroclor-1254	2E-08	--	7E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	9E-06	--	8E-07	--	9E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	1E-05	--	1E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-14	--	--	5E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	8E-14	--	--	8E-14					
			Dibenzo(a,h)anthracene	--	9E-14	--	--	9E-14					
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14					
			Aroclor-1254	--	5E-14	--	--	5E-14					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	2E-10	--	--	2E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	1E-09	--	--	1E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								1E-05					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	9E-09	--	3E-08					
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07					
			Benzo(b)fluoranthene	5E-08	--	2E-08	--	7E-08					
			Dibenzo(a,h)anthracene	7E-08	--	3E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	8E-09	--	3E-08					
			Aroclor-1254	2E-08	--	7E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	1E-05	--	9E-07	--	1E-05					
			Beryllium	--	--	--	--	--					
			Chromium	1E-06	--	--	--	1E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	1E-05	--	1E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14					
			Benzo(a)pyrene	--	2E-13	--	--	2E-13					
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14					
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14					
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14					
			Aroclor-1254	--	4E-14	--	--	4E-14					
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13					
			Aluminum	--	--	--	--	--					
			Arsenic	--	2E-10	--	--	2E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	2E-09	--	--	2E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								1E-05					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	3E-09	--	3E-09					
			Benzo(a)anthracene	- -	--	- -	--	- -					
			Benzo(a)pyrene	- -	--	- -	--	- -					
			Benzo(b)fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	- -	--	5E-06	--	5E-06					
			Naphthalene	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	- -	--	3E-09	--	3E-09					
			Iron	- -	--	- -	--	- -					
			Chemical Total	- -	--	5E-06	--	5E-06					
		Exposure Point Total						5E-06					
	Exposure Medium Total							5E-06					
Medium Total								5E-06					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-07	--	1E-07	--	4E-07					
			Benzo(a)pyrene	4E-06	--	1E-06	--	5E-06					
			Benzo(b)fluoranthene	4E-07	--	2E-07	--	5E-07					
			Chrysene	4E-09	--	2E-09	--	6E-09					
			Dibenzo(a,h)anthracene	8E-07	--	3E-07	--	1E-06					
			Indeno(1,2,3-cd)pyrene	3E-07	--	1E-07	--	4E-07					
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-05	--	2E-06	--	2E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	2E-06	--	- -	--	2E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	4E-06	--	3E-05					
		Exposure Point Total						3E-05					
	Exposure Medium Total							3E-05					
Medium Total								3E-05					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					5E-05					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					5E-05					

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Benzo(a)pyrene	5E-06	--	2E-06	--	7E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-07	--	1E-07	--	5E-07	NA	--	--	--	--
			Aroclor-1254	9E-08	--	3E-08	--	1E-07	Immune	0.02	--	0.010	0.03
			2,3,7,8-TCDD Equivalents	6E-07	--	5E-08	--	6E-07	Developmental	0.05	--	0.004	0.06
			Aluminum	--	--	--	--	--	CNS	0.1	--	--	0.1
			Arsenic	4E-05	--	4E-06	--	5E-05	Skin, CVS	1	--	0.09	1
			Beryllium	--	--	--	--	--	GS	0.003	--	--	0.003
			Chromium	6E-06	--	--	--	6E-06	Fetotoxicity, GS, Bone	0.05	--	--	0.05
			Cobalt	--	--	--	--	--	Blood	0.4	--	--	0.4
			Iron	--	--	--	--	--	GS	0.5	--	--	0.5
			Manganese (soil)	--	--	--	--	--	CNS	0.03	--	--	0.03
			Chemical Total	6E-05	--	7E-06	--	6E-05		2	--	0.1	2
		Exposure Point Total						6E-05					2
	Exposure Medium Total							6E-05					2
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	8E-10	--	--	8E-10	NA	--	0.0002	--	0.0002
			Beryllium	--	9E-12	--	--	9E-12	Lungs	--	0.000002	--	0.000002
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000009	--	0.000009
			Cobalt	--	7E-10	--	--	7E-10	Lungs	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0006	--	0.0006
			Chemical Total	--	8E-09	--	--	8E-09		--	0.001	--	0.001
		Exposure Point Total						8E-09					0.001
	Exposure Medium Total							8E-09					0.001
Medium Total								6E-05					2

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	7E-07	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Aroclor-1254	9E-08	--	3E-08	--	1E-07	Immune	0.02	--	0.010	0.03
			2,3,7,8-TCDD Equivalents	6E-07	--	5E-08	--	6E-07	Developmental	0.05	--	0.005	0.06
			Aluminum	--	--	--	--	--	CNS	0.10	--	--	0.10
			Arsenic	5E-05	--	4E-06	--	5E-05	Skin, CVS	1	--	0.1	1
			Beryllium	--	--	--	--	--	GS	0.003	--	--	0.003
			Chromium	6E-06	--	--	--	6E-06	Fetotoxicity, GS, Bone	0.05	--	--	0.05
			Cobalt	--	--	--	--	--	Blood	0.7	--	--	0.7
			Iron	--	--	--	--	--	GS	0.7	--	--	0.7
			Manganese (soil)	--	--	--	--	--	CNS	0.10	--	--	0.10
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	6E-05	--	5E-06	--	6E-05		3	--	0.1	3
		Exposure Point Total						6E-05					3
	Exposure Medium Total							6E-05					3
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	1E-09	--	--	1E-09	NA	--	0.0002	--	0.0002
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.000002	--	0.000002
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000010	--	0.000010
			Cobalt	--	1E-09	--	--	1E-09	Lungs	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.002	--	0.002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	9E-09	--	--	9E-09		--	0.002	--	0.002
		Exposure Point Total						9E-09					0.002
	Exposure Medium Total							9E-09					0.002
Medium Total								6E-05					3

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	5E-07	--	6E-08	--	6E-07	Blood	0.03	--	0.003	0.03
			Aluminum	--	--	--	--	--	CNS	0.1	--	0.0006	0.1
			Arsenic	1E-04	--	5E-07	--	1E-04	Skin, CVS	3	--	0.01	3
			Cobalt	--	--	--	--	--	Blood	6	--	0.03	6
			Iron	--	--	--	--	--	GS	3	--	0.01	3
			Manganese (water)	--	--	--	--	--	CNS	9	--	1	10
			Chemical Total	1E-04	--	5E-07	--	1E-04		21	--	1	22
		Exposure Point Total						1E-04					22
	Exposure Medium Total							1E-04					22
	Air	Tank Farm 5	Benzene	--	5E-07	--	--	5E-07	Blood	--	0.03	--	0.03
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	5E-07	--	--	5E-07		--	0.03	--	0.03
		Exposure Point Total						5E-07					0.03
	Exposure Medium Total							5E-07					0.03
Medium Total								1E-04					22
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-04	Receptor HI Total (Surface Soil and Groundwater)				25
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				2E-04	Receptor HI Total (All Soil and Groundwater)				25

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	7
Total Bone HI	0.09
Total CNS HI	11
Total CVS HI	5
Total Developmental HI	0.1
Total Fetotoxicity HI	0.09
Total GS HI	4
Total Immune HI	0.07
Total Liver HI	0.00000002
Total Lungs HI	0.0004
Total Skin HI	5
Total Respiratory HI	0.00000002

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	3E-08	--	9E-08	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	4E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	6E-08	--	3E-08	--	8E-08	NA	--	--	--	--
			Aroclor-1254	4E-08	--	2E-08	--	6E-08	Immune	0.003	--	0.001	0.004
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07	Developmental	0.006	--	0.0007	0.006
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	2E-05	--	2E-06	--	2E-05	Skin, CVS	0.1	--	0.01	0.1
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	3E-06	--	--	--	3E-06	Fetotoxicity, GS, Bone	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Blood	0.05	--	--	0.05
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Chemical Total	2E-05	--	3E-06	--	3E-05		0.2	--	0.02	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Aroclor-1254	--	7E-13	--	--	7E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-12	--	--	5E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	3E-09	--	--	3E-09	NA	--	0.0002	--	0.0002
			Beryllium	--	4E-11	--	--	4E-11	Lungs	--	0.000002	--	0.000002
			Chromium	--	3E-08	--	--	3E-08	Lungs	--	0.000009	--	0.000009
			Cobalt	--	3E-09	--	--	3E-09	Lungs	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0006	--	0.0006
			Chemical Total	--	3E-08	--	--	3E-08		--	0.001	--	0.001
		Exposure Point Total						3E-08					0.001
	Exposure Medium Total							3E-08					0.001
Medium Total								3E-05					0.3

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Aroclor-1254	4E-08	--	2E-08	--	6E-08	Immune	0.003	--	0.001	0.004
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07	Developmental	0.006	--	0.0007	0.006
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	2E-05	--	3E-06	--	2E-05	Skin, CVS	0.1	--	0.02	0.2
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	3E-06	--	--	--	3E-06	Fetotoxicity, GS, Bone	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Blood	0.07	--	--	0.07
			Iron	--	--	--	--	--	GS	0.07	--	--	0.07
			Manganese (soil)	--	--	--	--	--	CNS	0.01	--	--	0.01
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-05	--	3E-06	--	3E-05		0.3	--	0.02	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	7E-13	--	--	7E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Aroclor-1254	--	7E-13	--	--	7E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-12	--	--	5E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	4E-09	--	--	4E-09	NA	--	0.0002	--	0.0002
			Beryllium	--	3E-11	--	--	3E-11	Lungs	--	0.000002	--	0.000002
			Chromium	--	3E-08	--	--	3E-08	Lungs	--	0.000010	--	0.000010
			Cobalt	--	4E-09	--	--	4E-09	Lungs	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.002	--	0.002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	4E-08	--	--	4E-08		--	0.002	--	0.002
		Exposure Point Total						4E-08					0.002
	Exposure Medium Total							4E-08					0.002
Medium Total								3E-05					0.3

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	6E-07	--	9E-08	--	7E-07	Blood	0.008	--	0.001	0.009
			Aluminum	--	--	--	--	--	CNS	0.04	--	0.0002	0.04
			Arsenic	1E-04	--	6E-07	--	1E-04	Skin, CVS	0.8	--	0.004	0.8
			Cobalt	--	--	--	--	--	Blood	2	--	0.009	2
			Iron	--	--	--	--	--	GS	1.0	--	0.005	1.0
			Manganese (water)	--	--	--	--	--	CNS	3	--	0.4	3
			Chemical Total	1E-04	--	7E-07	--	1E-04		6	--	0.4	7
		Exposure Point Total						1E-04					7
	Exposure Medium Total							1E-04					7
	Air	Tank Farm 5	Benzene	--	6E-07	--	--	6E-07	Blood	--	0.008	--	0.008
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	6E-07	--	--	6E-07		--	0.008	--	0.008
		Exposure Point Total						6E-07					0.008
	Exposure Medium Total							6E-07					0.008
Medium Total								1E-04					7
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-04	Receptor HI Total (Surface Soil and Groundwater)				7
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				2E-04	Receptor HI Total (All Soil and Groundwater)				7

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	2
Total Bone HI	0.010
Total CNS HI	3
Total CVS HI	1
Total Developmental HI	0.01
Total Fetotoxicity HI	0.010
Total GS HI	1
Total Immune HI	0.008
Total Liver HI	0.00000002
Total Lungs HI	0.0004
Total Skin HI	1
Total Respiratory HI	0.00000002

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	5E-07	--	2E-07	--	7E-07					
			Benzo(a)pyrene	6E-06	--	2E-06	--	8E-06					
			Benzo(b)fluoranthene	1E-06	--	4E-07	--	1E-06					
			Dibenzo(a,h)anthracene	1E-06	--	4E-07	--	1E-06					
			Indeno(1,2,3-cd)pyrene	4E-07	--	2E-07	--	6E-07					
			Aroclor-1254	1E-07	--	5E-08	--	2E-07					
			2,3,7,8-TCDD Equivalents	8E-07	--	8E-08	--	9E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	6E-05	--	6E-06	--	7E-05					
			Beryllium	--	--	--	--	--					
			Chromium	8E-06	--	--	--	8E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	8E-05	--	9E-06	--	9E-05					
		Exposure Point Total						9E-05					
	Exposure Medium Total							9E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-12	--	--	1E-12					
			Benzo(a)pyrene	--	1E-11	--	--	1E-11					
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12					
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12					
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13					
			Aroclor-1254	--	8E-13	--	--	8E-13					
			2,3,7,8-TCDD Equivalents	--	6E-12	--	--	6E-12					
			Aluminum	--	--	--	--	--					
			Arsenic	--	4E-09	--	--	4E-09					
			Beryllium	--	4E-11	--	--	4E-11					
			Chromium	--	3E-08	--	--	3E-08					
			Cobalt	--	3E-09	--	--	3E-09					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	--	4E-08	--	--	4E-08					
		Exposure Point Total						4E-08					
	Exposure Medium Total							4E-08					
Medium Total								9E-05					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-07	--	7E-08	--	2E-07					
			Benzo(a)pyrene	2E-06	--	9E-07	--	3E-06					
			Benzo(b)fluoranthene	4E-07	--	1E-07	--	5E-07					
			Dibenzo(a,h)anthracene	5E-07	--	2E-07	--	7E-07					
			Indeno(1,2,3-cd)pyrene	1E-07	--	6E-08	--	2E-07					
			Aroclor-1254	1E-07	--	5E-08	--	2E-07					
			2,3,7,8-TCDD Equivalents	9E-07	--	8E-08	--	9E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	7E-05	--	7E-06	--	8E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	9E-06	--	- -	--	9E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Thallium	- -	--	- -	--	- -					
			Chemical Total	8E-05	--	8E-06	--	9E-05					
		Exposure Point Total						9E-05					
	Exposure Medium Total							9E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-13	--	--	4E-13					
			Benzo(a)pyrene	--	5E-12	--	--	5E-12					
			Benzo(b)fluoranthene	--	8E-13	--	--	8E-13					
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12					
			Indeno(1,2,3-cd)pyrene	--	3E-13	--	--	3E-13					
			Aroclor-1254	--	8E-13	--	--	8E-13					
			2,3,7,8-TCDD Equivalents	--	6E-12	--	--	6E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	5E-09	--	--	5E-09					
			Beryllium	--	4E-11	--	--	4E-11					
			Chromium	--	3E-08	--	--	3E-08					
			Cobalt	--	5E-09	--	--	5E-09					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Thallium	--	- -	--	--	- -					
			Chemical Total	--	4E-08	--	--	4E-08					
		Exposure Point Total						4E-08					
	Exposure Medium Total							4E-08					
Medium Total								9E-05					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	1E-06	--	1E-07	--	1E-06					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-04	--	1E-06	--	2E-04					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	2E-04	--	1E-06	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 5	Benzene	--	1E-06	--	--	1E-06					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	--	--	--					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	--	1E-06	--	--	1E-06					
		Exposure Point Total						1E-06					
	Exposure Medium Total							1E-06					
Medium Total								2E-04					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				3E-04					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				3E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	7E-10	--	9E-11	--	8E-10	NA	--	--	--	--
			Benzo(a)pyrene	8E-09	--	1E-09	--	9E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	6E-10	--	8E-11	--	7E-10	NA	--	--	--	--
			Aroclor-1254	7E-10	--	1E-10	--	9E-10	Immune	0.001	--	0.0002	0.001
			2,3,7,8-TCDD Equivalents	5E-09	--	2E-10	--	5E-09	Developmental	0.003	--	0.00008	0.003
			Aluminum	--	--	--	--	--	CNS	0.006	--	--	0.006
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.06	--	0.002	0.06
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	5E-08	--	--	--	5E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.002	--	--	0.002
			Chemical Total	4E-07	--	1E-08	--	5E-07		0.1	--	0.002	0.1
		Exposure Point Total						5E-07					0.1
	Exposure Medium Total							5E-07					0.1
	Air	Tank Farm 5	Benzo(a)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Aroclor-1254	--	5E-12	--	--	5E-12	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-11	--	--	4E-11	Liver, Respiratory, Developmental	--	0.000002	--	0.000002
			Aluminum	--	--	--	--	--	CNS	--	0.03	--	0.03
			Arsenic	--	3E-08	--	--	3E-08	NA	--	0.03	--	0.03
			Beryllium	--	3E-10	--	--	3E-10	Lungs	--	0.0004	--	0.0004
			Chromium	--	2E-07	--	--	2E-07	Lungs	--	0.002	--	0.002
			Cobalt	--	2E-08	--	--	2E-08	Lungs	--	0.03	--	0.03
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.1	--	0.1
			Chemical Total	--	3E-07	--	--	3E-07		--	0.2	--	0.2
		Exposure Point Total						3E-07					0.2
	Exposure Medium Total							3E-07					0.2
Medium Total								7E-07					0.3

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	3E-10	--	3E-11	--	3E-10	NA	--	--	--	--
			Benzo(a)pyrene	3E-09	--	4E-10	--	4E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-10	--	7E-11	--	6E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-10	--	9E-11	--	8E-10	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-10	--	3E-11	--	2E-10	NA	--	--	--	--
			Aroclor-1254	7E-10	--	1E-10	--	9E-10	Immune	0.001	--	0.0002	0.001
			2,3,7,8-TCDD Equivalents	5E-09	--	2E-10	--	5E-09	Developmental	0.003	--	0.00008	0.003
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.07	--	0.002	0.07
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	5E-08	--	--	--	5E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Manganese (soil)	--	--	--	--	--	CNS	0.005	--	--	0.005
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	5E-07	--	1E-08	--	5E-07		0.2	--	0.002	0.2
		Exposure Point Total						5E-07					0.2
	Exposure Medium Total							5E-07					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Aroclor-1254	--	5E-12	--	--	5E-12	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-11	--	--	4E-11	Liver, Respiratory, Developmental	--	0.000002	--	0.000002
			Aluminum	--	--	--	--	--	CNS	--	0.03	--	0.03
			Arsenic	--	3E-08	--	--	3E-08	NA	--	0.03	--	0.03
			Beryllium	--	2E-10	--	--	2E-10	Lungs	--	0.0004	--	0.0004
			Chromium	--	2E-07	--	--	2E-07	Lungs	--	0.002	--	0.002
			Cobalt	--	3E-08	--	--	3E-08	Lungs	--	0.04	--	0.04
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.4	--	0.4
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	3E-07	--	--	3E-07		--	0.5	--	0.5
		Exposure Point Total						3E-07					0.5
	Exposure Medium Total							3E-07					0.5
Medium Total								8E-07					1

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	5E-11	--	4E-10	--	5E-10	Blood	0.00002	--	0.0001	0.0001
			Aluminum	--	--	--	--	--	CNS	0.00008	--	0.00004	0.0001
			Arsenic	3E-09	--	5E-09	--	8E-09	Skin, CVS	0.0005	--	0.0008	0.001
			Cobalt	--	--	--	--	--	Blood	0.002	--	0.002	0.004
			Iron	--	--	--	--	--	GS	0.0008	--	0.0009	0.002
			Manganese (water)	--	--	--	--	--	CNS	0.002	--	0.07	0.07
			Chemical Total	3E-09	--	5E-09	--	9E-09		0.006	--	0.07	0.08
		Exposure Point Total						9E-09					0.08
	Exposure Medium Total							9E-09					0.08
	Air	Tank Farm 5	Benzene	--	1E-10	--	--	1E-10	Blood	--	0.00004	--	0.00004
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	1E-10	--	--	1E-10		--	0.00004	--	0.00004
		Exposure Point Total						1E-10					0.00004
	Exposure Medium Total							1E-10					0.00004
Medium Total								9E-09					0.08
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				7E-07	Receptor HI Total (Surface Soil and Groundwater)				0.4
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				8E-07	Receptor HI Total (All Soil and Groundwater)				1

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	4E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	8E-09	--	1E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-09	--	2E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-10	--	5E-09	Immune	0.0008	--	0.0002	0.0010
			2,3,7,8-TCDD Equivalents	3E-08	--	1E-09	--	3E-08	Developmental	0.002	--	0.00007	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	9E-08	--	2E-06	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chemical Total	3E-06	--	1E-07	--	3E-06		0.08	--	0.002	0.08
		Exposure Point Total						3E-06					0.08
	Exposure Medium Total							3E-06					0.08
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	5E-14	--	--	5E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-13	--	--	4E-13	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	3E-10	--	--	3E-10	NA	--	0.00003	--	0.00003
			Beryllium	--	3E-12	--	--	3E-12	Lungs	--	0.0000005	--	0.0000005
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.00003	--	0.00003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0002	--	0.0002
		Exposure Point Total						3E-09					0.0002
	Exposure Medium Total							3E-09					0.0002
Medium Total								3E-06					0.08

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	1E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-09	--	5E-10	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-10	--	5E-09	Immune	0.0008	--	0.0002	0.0010
			2,3,7,8-TCDD Equivalents	3E-08	--	1E-09	--	3E-08	Developmental	0.002	--	0.00007	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	2E-06	--	1E-07	--	3E-06	Skin, CVS	0.04	--	0.002	0.04
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-06	--	1E-07	--	3E-06		0.10	--	0.002	0.1
		Exposure Point Total						3E-06					0.1
	Exposure Medium Total							3E-06					0.1
	Air	Tank Farm 5	Benzo(a)anthracene	--	9E-15	--	--	9E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Aroclor-1254	--	5E-14	--	--	5E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-13	--	--	4E-13	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	3E-10	--	--	3E-10	NA	--	0.00004	--	0.00004
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	3E-10	--	--	3E-10	Lungs	--	0.00005	--	0.00005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0004	--	0.0004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0005	--	0.0005
		Exposure Point Total						3E-09					0.0005
	Exposure Medium Total							3E-09					0.0005
Medium Total								3E-06					0.1
Receptor Total							Receptor Risk Total (Surface Soil)	3E-06				Receptor HI Total (Surface Soil)	0.08

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	1E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	4E-10	--	2E-10	--	6E-10	Immune	0.0001	--	0.00006	0.0002
			2,3,7,8-TCDD Equivalents	3E-09	--	3E-10	--	3E-09	Developmental	0.0003	--	0.00003	0.0003
			Aluminum	--	--	--	--	--	CNS	0.0006	--	--	0.0006
			Arsenic	2E-07	--	2E-08	--	2E-07	Skin, CVS	0.006	--	0.0006	0.006
			Beryllium	--	--	--	--	--	GS	0.00002	--	--	0.00002
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Iron	--	--	--	--	--	GS	0.002	--	--	0.002
			Manganese (soil)	--	--	--	--	--	CNS	0.0002	--	--	0.0002
			Chemical Total	3E-07	--	3E-08	--	3E-07		0.01	--	0.0006	0.01
		Exposure Point Total						3E-07					0.01
	Exposure Medium Total							3E-07					0.01
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Aroclor-1254	--	4E-15	--	--	4E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-14	--	--	3E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	2E-11	--	--	2E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	2E-10	--	--	2E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Chemical Total	--	2E-10	--	--	2E-10		--	0.00001	--	0.00001
		Exposure Point Total						2E-10					0.00001
	Exposure Medium Total							2E-10					0.00001
Medium Total								3E-07					0.01

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	4E-10	--	2E-10	--	6E-10	NA	--	--	--	--
			Benzo(a)pyrene	6E-09	--	2E-09	--	8E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-10	--	4E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-10	--	2E-10	--	5E-10	NA	--	--	--	--
			Aroclor-1254	4E-10	--	2E-10	--	6E-10	Immune	0.0001	--	0.00006	0.0002
			2,3,7,8-TCDD Equivalents	3E-09	--	3E-10	--	3E-09	Developmental	0.0003	--	0.00003	0.0003
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	3E-07	--	2E-08	--	3E-07	Skin, CVS	0.007	--	0.0006	0.007
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.003	--	--	0.003
			Iron	--	--	--	--	--	GS	0.004	--	--	0.004
			Manganese (soil)	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-07	--	3E-08	--	3E-07		0.02	--	0.0007	0.02
		Exposure Point Total						3E-07					0.02
	Exposure Medium Total							3E-07					0.02
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-15	--	--	6E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Aroclor-1254	--	4E-15	--	--	4E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-14	--	--	3E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000001	--	0.000001
			Arsenic	--	2E-11	--	--	2E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	2E-10	--	--	2E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-10	--	--	2E-10		--	0.00003	--	0.00003
		Exposure Point Total						2E-10					0.00003
	Exposure Medium Total							2E-10					0.00003
Medium Total								3E-07					0.02

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	1E-10	--	1E-10	Liver	--	- -	0.000005	0.000005
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	- -	0.00003	0.00003
			Aluminum	- -	--	- -	--	- -	CNS	--	- -	0.000002	0.000002
			Arsenic	- -	--	9E-11	--	9E-11	Skin, CVS	--	- -	0.000002	0.000002
			Iron	- -	--	- -	--	- -	GS	--	- -	0.000004	0.000004
			Chemical Total	- -	--	2E-10	--	2E-10		--	--	0.00004	0.00004
		Exposure Point Total						2E-10					0.00004
	Exposure Medium Total							2E-10					0.00004
Medium Total								2E-10					0.00004
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	5E-09	--	6E-08	--	6E-08	NA	--	- -	--	--
			Benzo(a)pyrene	7E-08	--	7E-07	--	8E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	7E-09	--	7E-08	--	8E-08	NA	--	- -	--	--
			Chrysene	8E-11	--	8E-10	--	9E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-07	--	2E-07	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	5E-09	--	5E-08	--	5E-08	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-08	--	2E-08	Developmental	0.0006	- -	0.001	0.002
			Aluminum	- -	--	- -	--	- -	CNS	0.0007	- -	--	0.0007
			Arsenic	5E-07	--	1E-06	--	2E-06	Skin, CVS	0.01	- -	0.03	0.05
			Beryllium	- -	--	- -	--	- -	GS	0.00002	- -	--	0.00002
			Chromium	5E-08	--	- -	--	5E-08	Fetotoxicity, GS, Bone	0.0004	- -	--	0.0004
			Cobalt	- -	--	- -	--	- -	Blood	0.01	- -	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.008	- -	--	0.008
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.0002	- -	--	0.0002
			Chemical Total	7E-07	--	2E-06	--	3E-06		0.03	--	0.03	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
Medium Total								3E-06					0.07
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.08
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.08

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-09	--	8E-10	--	7E-09	NA	--	--	--	--
			Benzo(a)pyrene	7E-08	--	1E-08	--	8E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-09	--	8E-10	--	6E-09	NA	--	--	--	--
			Aroclor-1254	1E-09	--	2E-10	--	1E-09	Immune	0.0009	--	0.0001	0.0010
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	5E-07	--	2E-08	--	5E-07	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	7E-08	--	--	--	7E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chemical Total	7E-07	--	3E-08	--	7E-07		0.08	--	0.001	0.08
		Exposure Point Total						7E-07					0.08
	Exposure Medium Total							7E-07					0.08
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Aroclor-1254	--	6E-16	--	--	6E-16	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-15	--	--	4E-15	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	3E-12	--	--	3E-12	NA	--	0.000002	--	0.000002
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	3E-12	--	--	3E-12	Lungs	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Chemical Total	--	3E-11	--	--	3E-11		--	0.00001	--	0.00001
		Exposure Point Total						3E-11					0.00001
	Exposure Medium Total							3E-11					0.00001
Medium Total								7E-07					0.08

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	3E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	6E-10	--	5E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-09	--	9E-10	--	7E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	3E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	1E-09	--	2E-10	--	1E-09	Immune	0.0009	--	0.0001	0.0010
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	6E-07	--	2E-08	--	6E-07	Skin, CVS	0.04	--	0.001	0.05
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	7E-08	--	--	--	7E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	7E-07	--	3E-08	--	7E-07		0.1	--	0.002	0.1
		Exposure Point Total						7E-07					0.1
	Exposure Medium Total							7E-07					0.1
	Air	Tank Farm 5	Benzo(a)anthracene	--	7E-16	--	--	7E-16	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-15	--	--	9E-15	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-16	--	--	6E-16	NA	--	--	--	--
			Aroclor-1254	--	6E-16	--	--	6E-16	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-15	--	--	5E-15	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000001	--	0.000001
			Arsenic	--	4E-12	--	--	4E-12	NA	--	0.000002	--	0.000002
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	4E-12	--	--	4E-12	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	3E-11	--	--	3E-11		--	0.00003	--	0.00003
		Exposure Point Total						3E-11					0.00003
	Exposure Medium Total							3E-11					0.00003
Medium Total								7E-07					0.1

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	1E-10	--	1E-10	Liver	--	- -	0.00001	0.00001
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	- -	0.00006	0.00006
			Aluminum	- -	--	- -	--	- -	CNS	--	- -	0.000005	0.000005
			Arsenic	- -	--	7E-11	--	7E-11	Skin, CVS	--	- -	0.000006	0.000006
			Iron	- -	--	- -	--	- -	GS	--	- -	0.000009	0.000009
			Chemical Total	- -	--	2E-10	--	2E-10		--	--	0.00009	0.00009
		Exposure Point Total						2E-10					0.00009
	Exposure Medium Total							2E-10					0.00009
Medium Total								2E-10					0.00009
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-08	--	4E-09	--	3E-08	NA	--	- -	--	--
			Benzo(a)pyrene	3E-07	--	5E-08	--	4E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	3E-08	--	5E-09	--	4E-08	NA	--	- -	--	--
			Chrysene	4E-10	--	6E-11	--	4E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	7E-08	--	1E-08	--	8E-08	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	3E-08	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	1E-08	--	5E-10	--	2E-08	Developmental	0.004	- -	0.0001	0.004
			Aluminum	- -	--	- -	--	- -	CNS	0.005	- -	--	0.005
			Arsenic	1E-06	--	4E-08	--	1E-06	Skin, CVS	0.09	- -	0.003	0.09
			Beryllium	- -	--	- -	--	- -	GS	0.0001	- -	--	0.0001
			Chromium	1E-07	--	- -	--	1E-07	Fetotoxicity, GS, Bone	0.002	- -	--	0.002
			Cobalt	- -	--	- -	--	- -	Blood	0.07	- -	--	0.07
			Iron	- -	--	- -	--	- -	GS	0.05	- -	--	0.05
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.001	- -	--	0.001
			Chemical Total	2E-06	--	1E-07	--	2E-06		0.2	--	0.003	0.2
		Exposure Point Total						2E-06					0.2
	Exposure Medium Total							2E-06					0.2
Medium Total								2E-06					0.2
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.3
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	5E-10	--	8E-11	--	6E-10	NA	--	--	--	--
			Benzo(a)pyrene	6E-09	--	1E-09	--	7E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-10	--	7E-11	--	6E-10	NA	--	--	--	--
			Aroclor-1254	4E-10	--	6E-11	--	4E-10	Immune	0.00009	--	0.00001	0.0001
			2,3,7,8-TCDD Equivalents	3E-09	--	9E-11	--	3E-09	Developmental	0.0002	--	0.000007	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Arsenic	2E-07	--	6E-09	--	2E-07	Skin, CVS	0.004	--	0.0001	0.004
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Iron	--	--	--	--	--	GS	0.002	--	--	0.002
			Manganese (soil)	--	--	--	--	--	CNS	0.0001	--	--	0.0001
			Chemical Total	2E-07	--	8E-09	--	2E-07		0.008	--	0.0002	0.009
		Exposure Point Total						2E-07					0.009
	Exposure Medium Total							2E-07					0.009
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Aroclor-1254	--	2E-15	--	--	2E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	1E-13	--	--	1E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	9E-11	--	--	9E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	9E-12	--	--	9E-12	Lungs	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Chemical Total	--	1E-10	--	--	1E-10		--	0.00001	--	0.00001
		Exposure Point Total						1E-10					0.00001
	Exposure Medium Total							1E-10					0.00001
Medium Total								2E-07					0.009

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-10	--	3E-11	--	2E-10	NA	--	--	--	--
			Benzo(a)pyrene	2E-09	--	4E-10	--	3E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-10	--	6E-11	--	5E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-10	--	8E-11	--	6E-10	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-10	--	2E-11	--	2E-10	NA	--	--	--	--
			Aroclor-1254	4E-10	--	6E-11	--	4E-10	Immune	0.00009	--	0.00001	0.0001
			2,3,7,8-TCDD Equivalents	3E-09	--	9E-11	--	3E-09	Developmental	0.0002	--	0.000007	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Arsenic	2E-07	--	7E-09	--	2E-07	Skin, CVS	0.005	--	0.0002	0.005
			Beryllium	--	--	--	--	--	GS	0.000010	--	--	0.000010
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Iron	--	--	--	--	--	GS	0.003	--	--	0.003
			Manganese (soil)	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-07	--	8E-09	--	3E-07		0.01	--	0.0002	0.01
		Exposure Point Total						3E-07					0.01
	Exposure Medium Total							3E-07					0.01
	Air	Tank Farm 5	Benzo(a)anthracene	--	6E-16	--	--	6E-16	NA	--	--	--	--
			Benzo(a)pyrene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-16	--	--	5E-16	NA	--	--	--	--
			Aroclor-1254	--	2E-15	--	--	2E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000001	--	0.000001
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	1E-13	--	--	1E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	9E-11	--	--	9E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	1E-11	--	--	1E-11	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-10	--	--	1E-10		--	0.00003	--	0.00003
		Exposure Point Total						1E-10					0.00003
	Exposure Medium Total							1E-10					0.00003
Medium Total								3E-07					0.01

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	2E-10	--	2E-10	Liver	--	- -	0.000006	0.000006
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	- -	0.00003	0.00003
			Aluminum	- -	--	- -	--	- -	CNS	--	- -	0.000003	0.000003
			Arsenic	- -	--	1E-10	--	1E-10	Skin, CVS	--	- -	0.000003	0.000003
			Iron	- -	--	- -	--	- -	GS	--	- -	0.000005	0.000005
			Chemical Total	- -	--	3E-10	--	3E-10		--	--	0.00005	0.00005
		Exposure Point Total						3E-10					0.00005
	Exposure Medium Total							3E-10					0.00005
Medium Total								3E-10					0.00005
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	2E-09	--	2E-09	--	4E-09	NA	--	- -	--	--
			Benzo(a)pyrene	3E-08	--	2E-08	--	5E-08	NA	--	- -	--	--
			Benzo(b)fluoranthene	3E-09	--	2E-09	--	5E-09	NA	--	- -	--	--
			Chrysene	3E-11	--	2E-11	--	6E-11	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	6E-09	--	5E-09	--	1E-08	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	1E-09	--	4E-09	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	5E-09	--	9E-10	--	6E-09	Developmental	0.0004	- -	0.00007	0.0005
			Aluminum	- -	--	- -	--	- -	CNS	0.0005	- -	--	0.0005
			Arsenic	4E-07	--	7E-08	--	5E-07	Skin, CVS	0.010	- -	0.002	0.01
			Beryllium	- -	--	- -	--	- -	GS	0.00001	- -	--	0.00001
			Chromium	4E-08	--	- -	--	4E-08	Fetotoxicity, GS, Bone	0.0003	- -	--	0.0003
			Cobalt	- -	--	- -	--	- -	Blood	0.007	- -	--	0.007
			Iron	- -	--	- -	--	- -	GS	0.006	- -	--	0.006
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.0001	- -	--	0.0001
			Chemical Total	5E-07	--	1E-07	--	6E-07		0.02	--	0.002	0.03
		Exposure Point Total						6E-07					0.03
	Exposure Medium Total							6E-07					0.03
Medium Total								6E-07					0.03
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					9E-07	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.03
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					9E-07	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.04

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-09	--	9E-10	--	7E-09					
			Benzo(a)pyrene	8E-08	--	1E-08	--	9E-08					
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	2E-08					
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	2E-08					
			Indeno(1,2,3-cd)pyrene	6E-09	--	8E-10	--	7E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	9E-09					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	7E-07	--	2E-08	--	7E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	9E-08	--	- -	--	9E-08					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	9E-07	--	4E-08	--	9E-07					
		Exposure Point Total						9E-07					
	Exposure Medium Total							9E-07					
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-15	--	--	4E-15					
			Benzo(a)pyrene	--	4E-14	--	--	4E-14					
			Benzo(b)fluoranthene	--	8E-15	--	--	8E-15					
			Dibenzo(a,h)anthracene	--	9E-15	--	--	9E-15					
			Indeno(1,2,3-cd)pyrene	--	3E-15	--	--	3E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-11	--	--	1E-11					
			Beryllium	--	2E-13	--	--	2E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	1E-11	--	--	1E-11					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								9E-07					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	3E-09					
			Benzo(a)pyrene	3E-08	--	4E-09	--	3E-08					
			Benzo(b)fluoranthene	5E-09	--	7E-10	--	5E-09					
			Dibenzo(a,h)anthracene	6E-09	--	9E-10	--	7E-09					
			Indeno(1,2,3-cd)pyrene	2E-09	--	3E-10	--	2E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	1E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	8E-07	--	3E-08	--	8E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-07	--	- -	--	1E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Thallium	- -	--	- -	--	- -					
			Chemical Total	9E-07	--	3E-08	--	1E-06					
		Exposure Point Total						1E-06					
	Exposure Medium Total							1E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-15	--	--	1E-15					
			Benzo(a)pyrene	--	2E-14	--	--	2E-14					
			Benzo(b)fluoranthene	--	3E-15	--	--	3E-15					
			Dibenzo(a,h)anthracene	--	4E-15	--	--	4E-15					
			Indeno(1,2,3-cd)pyrene	--	1E-15	--	--	1E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	2E-11	--	--	2E-11					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	2E-11	--	--	2E-11					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Thallium	--	- -	--	--	- -					
			Chemical Total	--	2E-10	--	--	2E-10					
		Exposure Point Total						2E-10					
	Exposure Medium Total							2E-10					
Medium Total								1E-06					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	3E-10	--	3E-10					
			Benzo(a)anthracene	--	--	--	--	--					
			Benzo(a)pyrene	--	--	--	--	--					
			Benzo(b)fluoranthene	--	--	--	--	--					
			Indeno(1,2,3-cd)pyrene	--	--	--	--	--					
			Naphthalene	--	--	--	--	--					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	2E-10	--	2E-10					
			Iron	--	--	--	--	--					
			Chemical Total	--	--	5E-10	--	5E-10					
		Exposure Point Total						5E-10					
	Exposure Medium Total							5E-10					
Medium Total								5E-10					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-08	--	6E-09	--	3E-08					
			Benzo(a)pyrene	4E-07	--	7E-08	--	4E-07					
			Benzo(b)fluoranthene	4E-08	--	7E-09	--	4E-08					
			Chrysene	4E-10	--	8E-11	--	5E-10					
			Dibenzo(a,h)anthracene	8E-08	--	2E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-09	--	3E-08					
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-09	--	2E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-06	--	1E-07	--	2E-06					
			Beryllium	--	--	--	--	--					
			Chromium	1E-07	--	--	--	1E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	2E-06	--	2E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
Medium Total								3E-06					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-06					
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-06					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-09	--	9E-10	--	7E-09					
			Benzo(a)pyrene	8E-08	--	1E-08	--	9E-08					
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	2E-08					
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	2E-08					
			Indeno(1,2,3-cd)pyrene	6E-09	--	8E-10	--	7E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	9E-09					
			Aluminum	--	--	--	--	--					
			Arsenic	7E-07	--	2E-08	--	7E-07					
			Beryllium	--	--	--	--	--					
			Chromium	9E-08	--	--	--	9E-08					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	9E-07	--	4E-08	--	9E-07					
		Exposure Point Total						9E-07					
	Exposure Medium Total							9E-07					
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-15	--	--	4E-15					
			Benzo(a)pyrene	--	4E-14	--	--	4E-14					
			Benzo(b)fluoranthene	--	8E-15	--	--	8E-15					
			Dibenzo(a,h)anthracene	--	9E-15	--	--	9E-15					
			Indeno(1,2,3-cd)pyrene	--	3E-15	--	--	3E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	--	--	--	--					
			Arsenic	--	1E-11	--	--	1E-11					
			Beryllium	--	2E-13	--	--	2E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	1E-11	--	--	1E-11					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								9E-07					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	3E-09					
			Benzo(a)pyrene	3E-08	--	4E-09	--	3E-08					
			Benzo(b)fluoranthene	5E-09	--	7E-10	--	5E-09					
			Dibenzo(a,h)anthracene	6E-09	--	9E-10	--	7E-09					
			Indeno(1,2,3-cd)pyrene	2E-09	--	3E-10	--	2E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	1E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	8E-07	--	3E-08	--	8E-07					
			Beryllium	--	--	--	--	--					
			Chromium	1E-07	--	--	--	1E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	9E-07	--	3E-08	--	1E-06					
		Exposure Point Total						1E-06					
	Exposure Medium Total							1E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-15	--	--	1E-15					
			Benzo(a)pyrene	--	2E-14	--	--	2E-14					
			Benzo(b)fluoranthene	--	3E-15	--	--	3E-15					
			Dibenzo(a,h)anthracene	--	4E-15	--	--	4E-15					
			Indeno(1,2,3-cd)pyrene	--	1E-15	--	--	1E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	--	--	--	--					
			Arsenic	--	2E-11	--	--	2E-11					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	2E-11	--	--	2E-11					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	--	2E-10	--	--	2E-10					
		Exposure Point Total						2E-10					
	Exposure Medium Total							2E-10					
Medium Total								1E-06					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	3E-10	--	3E-10					
			Benzo(a)anthracene	- -	--	- -	--	- -					
			Benzo(a)pyrene	- -	--	- -	--	- -					
			Benzo(b)fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	- -	--	6E-07	--	6E-07					
			Naphthalene	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	- -	--	2E-10	--	2E-10					
			Iron	- -	--	- -	--	- -					
			Chemical Total	- -	--	6E-07	--	6E-07					
		Exposure Point Total						6E-07					
	Exposure Medium Total							6E-07					
Medium Total								6E-07					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-08	--	6E-09	--	3E-08					
			Benzo(a)pyrene	4E-07	--	7E-08	--	4E-07					
			Benzo(b)fluoranthene	4E-08	--	7E-09	--	4E-08					
			Chrysene	4E-10	--	8E-tt	--	5E-10					
			Dibenzo(a,h)anthracene	8E-08	--	2E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-09	--	3E-08					
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-09	--	2E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-06	--	tE-07	--	2E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-07	--	- -	--	tE-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	2E-06	--	2E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
Medium Total								3E-06					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					4E-06					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					4E-06					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	1E-07	--	8E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	1E-09	--	1E-08	Immune	0.008	--	0.001	0.010
			2,3,7,8-TCDD Equivalents	7E-08	--	2E-09	--	7E-08	Developmental	0.02	--	0.0006	0.02
			Aluminum	--	--	--	--	--	CNS	0.04	--	--	0.04
			Arsenic	5E-06	--	2E-07	--	5E-06	Skin, CVS	0.4	--	0.01	0.4
			Beryllium	--	--	--	--	--	GS	0.001	--	--	0.001
			Chromium	7E-07	--	--	--	7E-07	Fetotoxicity, GS, Bone	0.02	--	--	0.02
			Cobalt	--	--	--	--	--	Blood	0.1	--	--	0.1
			Iron	--	--	--	--	--	GS	0.2	--	--	0.2
			Manganese (soil)	--	--	--	--	--	CNS	0.01	--	--	0.01
			Chemical Total	7E-06	--	3E-07	--	7E-06		0.8	--	0.01	0.8
		Exposure Point Total						7E-06					0.8
	Exposure Medium Total							7E-06					0.8
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Aroclor-1254	--	4E-14	--	--	4E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00010	--	0.00010
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0004	--	0.0004
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0007	--	0.0007
		Exposure Point Total						2E-09					0.0007
	Exposure Medium Total							2E-09					0.0007
Medium Total								7E-06					0.8

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	6E-09	--	5E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	8E-09	--	7E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	1E-09	--	1E-08	Immune	0.008	--	0.001	0.010
			2,3,7,8-TCDD Equivalents	7E-08	--	2E-09	--	7E-08	Developmental	0.02	--	0.0006	0.02
			Aluminum	--	--	--	--	--	CNS	0.03	--	--	0.03
			Arsenic	5E-06	--	2E-07	--	6E-06	Skin, CVS	0.4	--	0.01	0.4
			Beryllium	--	--	--	--	--	GS	0.0009	--	--	0.0009
			Chromium	7E-07	--	--	--	7E-07	Fetotoxicity, GS, Bone	0.02	--	--	0.02
			Cobalt	--	--	--	--	--	Blood	0.2	--	--	0.2
			Iron	--	--	--	--	--	GS	0.2	--	--	0.2
			Manganese (soil)	--	--	--	--	--	CNS	0.03	--	--	0.03
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	7E-06	--	2E-07	--	7E-06		1.0	--	0.02	1.0
		Exposure Point Total						7E-06					1.0
	Exposure Medium Total							7E-06					1.0
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Aroclor-1254	--	4E-14	--	--	4E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00009	--	0.00009
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.001	--	0.001
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-09	--	--	2E-09		--	0.002	--	0.002
		Exposure Point Total						2E-09					0.002
	Exposure Medium Total							2E-09					0.002
Medium Total								7E-06					1

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	9E-08	--	1E-08	--	1E-07	Blood	0.01	--	0.002	0.02
			Aluminum	--	--	--	--	--	CNS	0.07	--	0.0002	0.07
			Arsenic	6E-06	--	5E-08	--	6E-06	Skin, CVS	0.5	--	0.004	0.5
			Cobalt	--	--	--	--	--	Blood	2	--	0.009	2
			Iron	--	--	--	--	--	GS	0.7	--	0.005	0.8
			Manganese (water)	--	--	--	--	--	CNS	2	--	0.4	3
			Chemical Total	6E-06	--	6E-08	--	6E-06		5	--	0.4	6
		Exposure Point Total						6E-06					6
	Exposure Medium Total							6E-06					6
	Air	Tank Farm 5	Benzene	--	9E-08	--	--	9E-08	Blood	--	0.01	--	0.01
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	9E-08	--	--	9E-08		--	0.01	--	0.01
		Exposure Point Total						9E-08					0.01
	Exposure Medium Total							9E-08					0.01
Medium Total								6E-06					6
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-05	Receptor HI Total (Surface Soil and Groundwater)				7
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				1E-05	Receptor HI Total (All Soil and Groundwater)				7

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	2
Total Bone HI	0.03
Total CNS HI	3
Total CVS HI	t
Total Developmental HI	0.04
Total Fetotoxicity HI	0.03
Total GS HI	t
Total Immune HI	0.02
Total Liver HI	0.00000001
Total Lungs HI	0.0003
Total Skin HI	t
Total Respiratory HI	0.00000001

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	5E-09	--	8E-10	--	6E-09	NA	--	--	--	--
			Benzo(a)pyrene	6E-08	--	9E-09	--	7E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	6E-10	--	4E-09	Immune	0.0009	--	0.0001	0.001
			2,3,7,8-TCDD Equivalents	2E-08	--	8E-10	--	3E-08	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	6E-08	--	2E-06	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	2E-07	--	--	--	2E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chemical Total	2E-06	--	8E-08	--	2E-06		0.08	--	0.002	0.08
		Exposure Point Total						2E-06					0.08
	Exposure Medium Total							2E-06					0.08
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Aroclor-1254	--	1E-13	--	--	1E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00010	--	0.00010
			Arsenic	--	7E-10	--	--	7E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	5E-09	--	--	5E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	5E-10	--	--	5E-10	Lungs	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.0004	--	0.0004
			Chemical Total	--	6E-09	--	--	6E-09		--	0.0007	--	0.0007
		Exposure Point Total						6E-09					0.0007
	Exposure Medium Total							6E-09					0.0007
Medium Total								2E-06					0.08

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-09	--	8E-10	--	6E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	6E-10	--	4E-09	Immune	0.0009	--	0.0001	0.001
			2,3,7,8-TCDD Equivalents	3E-08	--	9E-10	--	3E-08	Developmental	0.002	--	0.00007	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	2E-06	--	7E-08	--	2E-06	Skin, CVS	0.05	--	0.002	0.05
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-06	--	8E-08	--	2E-06		0.1	--	0.002	0.1
		Exposure Point Total						2E-06					0.1
	Exposure Medium Total							2E-06					0.1
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Aroclor-1254	--	1E-13	--	--	1E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00009	--	0.00009
			Arsenic	--	7E-10	--	--	7E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	6E-12	--	--	6E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	5E-09	--	--	5E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	8E-10	--	--	8E-10	Lungs	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (soil)	--	--	--	--	--	CNS	--	0.001	--	0.001
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	7E-09	--	--	7E-09		--	0.002	--	0.002
		Exposure Point Total						7E-09					0.002
	Exposure Medium Total							7E-09					0.002
Medium Total								2E-06					0.1

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	1E-07	--	2E-08	--	1E-07	Blood	0.005	--	0.0008	0.006
			Aluminum	--	--	--	--	--	CNS	0.03	--	0.00009	0.03
			Arsenic	8E-06	--	8E-08	--	8E-06	Skin, CVS	0.2	--	0.002	0.2
			Cobalt	--	--	--	--	--	Blood	0.7	--	0.004	0.7
			Iron	--	--	--	--	--	GS	0.3	--	0.002	0.3
			Manganese (water)	--	--	--	--	--	CNS	0.9	--	0.2	1
			Chemical Total	8E-06	--	1E-07	--	8E-06		2	--	0.2	2
		Exposure Point Total						8E-06					2
	Exposure Medium Total							8E-06					2
	Air	Tank Farm 5	Benzene	--	1E-07	--	--	1E-07	Blood	--	0.005	--	0.005
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	1E-07	--	--	1E-07		--	0.005	--	0.005
		Exposure Point Total						1E-07					0.005
	Exposure Medium Total							1E-07					0.005
Medium Total								8E-06					2
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-05	Receptor HI Total (Surface Soil and Groundwater)				2
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				1E-05	Receptor HI Total (All Soil and Groundwater)				2

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	0.7
Total Bone HI	0.003
Total CNS HI	t
Total CVS HI	0.3
Total Developmental HI	0.004
Total Fetotoxicity HI	0.003
Total GS HI	0.3
Total Immune HI	0.002
Total Liver HI	0.00000001
Total Lungs HI	0.0003
Total Skin HI	0.3
Total Respiratory HI	0.00000001

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	9E-09	--	7E-08					
			Benzo(a)pyrene	8E-07	--	1E-07	--	9E-07					
			Benzo(b)fluoranthene	1E-07	--	2E-08	--	1E-07					
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	2E-07					
			Indeno(1,2,3-cd)pyrene	6E-08	--	8E-09	--	6E-08					
			Aroclor-1254	1E-08	--	2E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	9E-08	--	3E-09	--	9E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	7E-06	--	2E-07	--	7E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	9E-07	--	- -	--	9E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	9E-06	--	4E-07	--	9E-06					
		Exposure Point Total						9E-06					
	Exposure Medium Total							9E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-13	--	--	2E-13					
			Benzo(a)pyrene	--	1E-12	--	--	1E-12					
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13					
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13					
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13					
			Aroclor-1254	--	2E-13	--	--	2E-13					
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	9E-10	--	--	9E-10					
			Beryllium	--	9E-12	--	--	9E-12					
			Chromium	--	7E-09	--	--	7E-09					
			Cobalt	--	7E-10	--	--	7E-10					
			Iron	--	- -	--	--	- -					
			Manganese (soil)	--	- -	--	--	- -					
			Chemical Total	--	8E-09	--	--	8E-09					
		Exposure Point Total						8E-09					
	Exposure Medium Total							8E-09					
Medium Total								9E-06					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	3E-09	--	3E-08					
			Benzo(a)pyrene	3E-07	--	4E-08	--	3E-07					
			Benzo(b)fluoranthene	5E-08	--	7E-09	--	5E-08					
			Dibenzo(a,h)anthracene	6E-08	--	9E-09	--	7E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	2E-08					
			Aroclor-1254	1E-08	--	2E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	9E-08	--	3E-09	--	9E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	8E-06	--	3E-07	--	8E-06					
			Beryllium	--	--	--	--	--					
			Chromium	9E-07	--	--	--	9E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	9E-06	--	3E-07	--	9E-06					
		Exposure Point Total						9E-06					
	Exposure Medium Total							9E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	8E-14	--	--	8E-14					
			Benzo(a)pyrene	--	1E-12	--	--	1E-12					
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13					
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13					
			Indeno(1,2,3-cd)pyrene	--	7E-14	--	--	7E-14					
			Aroclor-1254	--	2E-13	--	--	2E-13					
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12					
			Aluminum	--	--	--	--	--					
			Arsenic	--	1E-09	--	--	1E-09					
			Beryllium	--	7E-12	--	--	7E-12					
			Chromium	--	7E-09	--	--	7E-09					
			Cobalt	--	1E-09	--	--	1E-09					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	--	9E-09	--	--	9E-09					
		Exposure Point Total						9E-09					
	Exposure Medium Total							9E-09					
Medium Total								9E-06					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	2E-07	--	3E-08	--	2E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	1E-05	--	1E-07	--	1E-05					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	1E-05	--	2E-07	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 5	Benzene	--	2E-07	--	--	2E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	--	--	--					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	--	2E-07	--	--	2E-07					
		Exposure Point Total						2E-07					
	Exposure Medium Total							2E-07					
Medium Total								1E-05					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-05					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				2E-05					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

RAGS Part D Table 10

Risks Summary

Tank Farm 4

TABLE 10.1.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
All Soil	All Soil	Tank Farm 4	Manganese (soil)	- -	--	- -	--	- -	CNS	0.01	- -	--	0.01
			Chemical Total	- -	--	- -	--	- -		0.01	--	--	0.01
		Exposure Point Total						- -					0.01
	Exposure Medium Total							- -					0.01
	Air	Tank Farm 4	Manganese (soil)	--	- -	--	--	- -	CNS	- -	2	- -	2
			Chemical Total	--	- -	--	--	- -		- -	2	- -	2
		Exposure Point Total						- -					2
	Exposure Medium Total							- -					2
Medium Total								- -					2
Groundwater	Groundwater	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	- -	--	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				- -	Receptor HI Total (Surface Soil and Groundwater)				--
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				- -	Receptor HI Total (All Soil and Groundwater)				2

Total CNS HI 2

TABLE 10.2.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.3.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.4.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 10.5.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--					--

TABLE 10 6.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	6E-06	--	2E-05					
			Benzo(a)pyrene	7E-05	--	3E-05	--	1E-04					
			Benzo(b)fluoranthene	2E-05	--	6E-06	--	2E-05					
			Benzo(k)fluoranthene	6E-07	--	2E-07	--	8E-07					
			Chrysene	2E-08	--	7E-09	--	3E-08					
			Dibenzo(a,h)anthracene	1E-05	--	5E-06	--	2E-05					
			Indeno(1,2,3-cd)pyrene	3E-06	--	1E-06	--	4E-06					
			Arsenic	5E-06	--	5E-07	--	6E-06					
			Chemical Total	1E-04	--	5E-05	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-11	--	--	1E-11					
			Benzo(a)pyrene	--	5E-11	--	--	5E-11					
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11					
			Benzo(k)fluoranthene	--	4E-12	--	--	4E-12					
			Chrysene	--	1E-13	--	--	1E-13					
			Dibenzo(a,h)anthracene	--	9E-12	--	--	9E-12					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Arsenic	--	1E-10	--	--	1E-10					
			Chemical Total	--	2E-10	--	--	2E-10					
		Exposure Point Total						2E-10					
	Exposure Medium Total							2E-10					
Medium Total								2E-04					
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Receptor Total							Receptor Risk Total	2E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 10.7.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-04	--	4E-05	--	1E-04	NA	--	- -	--	--
			Benzo(a)pyrene	5E-04	--	2E-04	--	6E-04	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-04	--	3E-05	--	1E-04	NA	--	- -	--	--
			Benzo(k)fluoranthene	4E-06	--	1E-06	--	5E-06	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	8E-05	--	3E-05	--	1E-04	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	2E-05	--	6E-06	--	2E-05	NA	--	- -	--	--
			Arsenic	3E-05	--	2E-06	--	3E-05	Skin, CVS	0.7	- -	0.06	0.7
			Chemical Total	8E-04	--	3E-04	--	1E-03		1	--	0.06	1
		Exposure Point Total						1E-03					1
	Exposure Medium Total							1E-03					1
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	5E-10	--	--	5E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	4E-11	--	--	4E-11	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	9E-11	--	--	9E-11	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Arsenic	--	5E-10	--	--	5E-10	NA	- -	0.00009	- -	0.00009
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.000	- -	0.000
		Exposure Point Total						1E-09					0.000
	Exposure Medium Total							1E-09					0.000
Medium Total								1E-03					1
Subsurface Soil	Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	3E-05	--	9E-06	--	3E-05	NA	--	- -	--	--
			Benzo(a)pyrene	1E-04	--	4E-05	--	2E-04	NA	--	- -	--	--
			Benzo(b)fluoranthene	2E-05	--	9E-06	--	3E-05	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	8E-06	--	3E-06	--	1E-05	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	3E-06	--	1E-06	--	4E-06	NA	--	- -	--	--
			Arsenic	3E-05	--	3E-06	--	3E-05	Skin, CVS	0.8	- -	0.07	0.9
			Chemical Total	2E-04	--	7E-05	--	3E-04		1	--	0.07	1
		Exposure Point Total						3E-04					1
	Exposure Medium Total							3E-04					1
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	- -	--	- -	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	9E-12	--	--	9E-12	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	3E-12	--	--	3E-12	NA	- -	--	- -	--
			Arsenic	--	6E-10	--	--	6E-10	NA	- -	0.0001	- -	0.0001
			Chemical Total	--	8E-10	--	--	8E-10		- -	0.000	- -	0.000
		Exposure Point Total						8E-10					0.000
	Exposure Medium Total							8E-10					0.000
Medium Total								3E-04					1

TABLE 10.7.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 4	Endrin Aldehyde	- -	--	- -	--	- -	Liver	2	- -	0.4	2
			Aluminum	- -	--	- -	--	- -	CNS	0.02	- -	0.0001	0.02
			Arsenic	7E-05	--	3E-07	--	7E-05	Skin, CVS	2	- -	0.009	2
			Cobalt	- -	--	- -	--	- -	Blood	4	- -	0.02	4
			Iron	- -	--	- -	--	- -	GS	2	- -	0.01	2
			Manganese (water)	- -	--	- -	--	- -	CNS	19	- -	2	21
			Chemical Total	7E-05	--	3E-07	--	7E-05		29	--	3	31
		Exposure Point Total						7E-05					31
	Exposure Medium Total							7E-05					31
	Air	Tank Farm 4	Endrin Aldehyde	--	- -	--	--	- -	NA	- -	--	- -	--
			Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Cobalt	--	- -	--	--	- -	Lungs	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	0.0000	- -	0.0000
		Exposure Point Total						- -					0.0000
	Exposure Medium Total							- -					0.0000
Medium Total								7E-05					31
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-03	Receptor HI Total (Surface Soil and Groundwater)				32
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				3E-04	Receptor HI Total (Subsurface Soil and Groundwater)				32

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	4
Total CNS HI	21
Total CVS HI	4
Total GS HI	2
Total Liver HI	2
Total Skin HI	4

TABLE 10.8.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	8E-06	--	2E-05	NA	--	- -	--	--
			Benzo(a)pyrene	7E-05	--	4E-05	--	1E-04	NA	--	- -	--	--
			Benzo(b)fluoranthene	1E-05	--	7E-06	--	2E-05	NA	--	- -	--	--
			Benzo(k)fluoranthene	5E-07	--	3E-07	--	8E-07	NA	--	- -	--	--
			Chrysene	2E-08	--	9E-09	--	3E-08	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-05	--	6E-06	--	2E-05	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	2E-06	--	1E-06	--	4E-06	NA	--	- -	--	--
			Arsenic	1E-05	--	1E-06	--	1E-05	Skin, CVS	0.07	- -	0.009	0.08
			Chemical Total	1E-04	--	6E-05	--	2E-04		0.07	--	0.009	0.08
		Exposure Point Total						2E-04					0.08
	Exposure Medium Total							2E-04					0.08
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(a)pyrene	--	7E-10	--	--	7E-10	NA	- -	--	- -	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Benzo(k)fluoranthene	--	5E-11	--	--	5E-11	NA	- -	--	- -	--
			Chrysene	--	2E-12	--	--	2E-12	NA	- -	--	- -	--
			Dibenzo(a,h)anthracene	--	1E-10	--	--	1E-10	NA	- -	--	- -	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	- -	--	- -	--
			Arsenic	--	2E-09	--	--	2E-09	NA	- -	0.00009	- -	0.00009
			Chemical Total	--	3E-09	--	--	3E-09		- -	0.0001	- -	0.0001
		Exposure Point Total						3E-09					0.0001
	Exposure Medium Total							3E-09					0.0001
Medium Total								2E-04					0.08
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
Groundwater	Groundwater	Tank Farm 4	Arsenic	9E-05	--	5E-07	--	9E-05	Skin, CVS	0.6	- -	0.003	0.6
			Manganese (water)	- -	--	- -	--	- -	CNS	6	- -	0.7	6
			Chemical Total	9E-05	--	5E-07	--	9E-05		6	--	0.8	7
		Exposure Point Total						9E-05					7
	Exposure Medium Total							9E-05					7

TABLE 10.8.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Air	Tank Farm 4	Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	--	- -	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								9E-05					7
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				3E-04	Receptor HI Total (Surface Soil and Groundwater)				7
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				9E-05	Receptor HI Total (All Soil and Groundwater)				7

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

	Surface Soil and Groundwater
Total CNS HI	6
Total CVS HI	0.7
Total Skin HI	0.7

	All Soil and Groundwater
Total CNS HI	6
Total CVS HI	0.6
Total Skin HI	0.6

TABLE 10.9.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-04	--	5E-05	--	2E-04					
			Benzo(a)pyrene	5E-04	--	2E-04	--	7E-04					
			Benzo(b)fluoranthene	1E-04	--	4E-05	--	2E-04					
			Benzo(k)fluoranthene	4E-06	--	2E-06	--	6E-06					
			Chrysene	1E-07	--	5E-08	--	2E-07					
			Dibenzo(a,h)anthracene	9E-05	--	3E-05	--	1E-04					
			Indeno(1,2,3-cd)pyrene	2E-05	--	7E-06	--	3E-05					
			Arsenic	4E-05	--	4E-06	--	4E-05					
			Chemical Total	9E-04	--	3E-04	--	1E-03					
		Exposure Point Total						1E-03					
	Exposure Medium Total							1E-03					
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-10	--	--	3E-10					
			Benzo(a)pyrene	--	1E-09	--	--	1E-09					
			Benzo(b)fluoranthene	--	2E-10	--	--	2E-10					
			Benzo(k)fluoranthene	--	9E-11	--	--	9E-11					
			Chrysene	--	3E-12	--	--	3E-12					
			Dibenzo(a,h)anthracene	--	2E-10	--	--	2E-10					
			Indeno(1,2,3-cd)pyrene	--	4E-11	--	--	4E-11					
			Arsenic	--	3E-09	--	--	3E-09					
			Chemical Total	--	5E-09	--	--	5E-09					
		Exposure Point Total						5E-09					
	Exposure Medium Total							5E-09					
Medium Total								1E-03					
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-05	--	1E-05	--	4E-05					
			Benzo(a)pyrene	1E-04	--	5E-05	--	2E-04					
			Benzo(b)fluoranthene	3E-05	--	1E-05	--	4E-05					
			Benzo(k)fluoranthene	1E-06	--	4E-07	--	1E-06					
			Chrysene	3E-07	--	1E-07	--	4E-07					
			Dibenzo(a,h)anthracene	9E-06	--	4E-06	--	1E-05					
			Indeno(1,2,3-cd)pyrene	4E-06	--	1E-06	--	5E-06					
			Arsenic	5E-05	--	4E-06	--	5E-05					
			Chemical Total	2E-04	--	8E-05	--	3E-04					
		Exposure Point Total						3E-04					
	Exposure Medium Total							3E-04					

TABLE 10.9.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-11	--	--	6E-11					
			Benzo(a)pyrene	--	3E-10	--	--	3E-10					
			Benzo(b)fluoranthene	--	6E-11	--	--	6E-11					
			Benzo(k)fluoranthene	--	2E-11	--	--	2E-11					
			Chrysene	--	7E-12	--	--	7E-12					
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11					
			Indeno(1,2,3-cd)pyrene	--	7E-12	--	--	7E-12					
			Arsenic	--	3E-09	--	--	3E-09					
			Chemical Total	--	4E-09	--	--	4E-09					
		Exposure Point Total						4E-09					
	Exposure Medium Total							4E-09					
Medium Total								3E-04					
Groundwater	Groundwater	Tank Farm 4	Arsenic	2E-04	--	8E-07	--	2E-04					
			Chemical Total	2E-04	--	8E-07	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 4	Arsenic	--	- -	--	--	- -					
			Chemical Total	--	- -	--	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
Medium Total								2E-04					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-03					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				5E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 10.1.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Groundwater	Groundwater	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				--	Receptor HI Total (Surface Soil and Groundwater)				--
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				--	Receptor HI Total (All Soil and Groundwater)				--

TABLE 10.2.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.3.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.4.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.5.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--					--

TABLE 10.6.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Surface Water	Surface Water	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Sediment	Sediment	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Receptor Total							Receptor Risk Total	--					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 10.7.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
Groundwater	Groundwater	Tank Farm 4	Arsenic	5E-06	--	4E-08	--	5E-06	Skin, CVS	0.4	- -	0.003	0.4
			Iron	- -	--	- -	--	- -	GS	0.6	- -	0.003	0.6
			Manganese (water)	- -	--	- -	--	- -	CNS	3	- -	0.7	4
			Chemical Total	5E-06	--	4E-08	--	5E-06		4	--	0.7	5
		Exposure Point Total						5E-06					5
	Exposure Medium Total							5E-06					5
	Air	Tank Farm 4	Aluminum	--	- -	--	--	- -	CNS	- -	--	- -	--
			Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Manganese (water)	--	- -	--	--	- -	CNS	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	--	- -	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								5E-06					12
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				5E-06	Receptor HI Total (Surface Soil and Groundwater)				12
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				5E-06	Receptor HI Total (All Soil and Groundwater)				12

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total CNS HI	4
Total CVS HI	0.4
Total GS HI	0.6
Total Skin HI	0.4

TABLE 10.8.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels					All Hazard Quotients WIthin Acceptable Levels				
			Chemical Total	- -	--	- -	--	- -		--	--	--	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								- -					--
Groundwater	Groundwater	Tank Farm 4	Arsenic	6E-06	--	6E-08	--	6E-06	Skin, CVS	0.1	- -	0.001	0.1
			Chemical Total	6E-06	--	6E-08	--	6E-06		0.1	--	0.001	0.1
		Exposure Point Total						6E-06					0.1
	Exposure Medium Total							6E-06					0.1
	Air	Tank Farm 4	Arsenic	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	- -	--	--	- -		- -	- -	- -	--
		Exposure Point Total						- -					--
	Exposure Medium Total							- -					--
Medium Total								6E-06					0.1
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				6E-06	Receptor HI Total (Surface Soil and Groundwater)				0.1
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				6E-06	Receptor HI Total (All Soil and Groundwater)				0.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total CVS HI	0.1
Total Skin HI	0.1

TABLE 10.9.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	- -	--	- -	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	- -	--	- -	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
Medium Total								- -					
All Soil	All Soil	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	- -	--	- -	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
	Air	Tank Farm 4		All Cancer Risks Within Acceptable Levels									
			Chemical Total	- -	--	- -	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
Medium Total								- -					
Groundwater	Groundwater	Tank Farm 4	Arsenic	1E-05	--	1E-07	--	1E-05					
			Chemical Total	1E-05	--	1E-07	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 4	Aroclor-1248	--	- -	--	--	- -					
			Aroclor-1254	--	- -	--	--	- -					
			Arsenic	--	- -	--	--	- -					
			Chemical Total	--	- -	--	--	- -					
		Exposure Point Total						- -					
	Exposure Medium Total							- -					
Medium Total								1E-05					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-05					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				1E-05					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Tank Farm 5

LIST OF TABLES
RAGS PART D TABLE 10 - TANK FARM 5
RISKS SUMMARY

Table No.	
	Reasonable Maximum Exposures
10.1.RME	Construction Workers - Tank Farm 5
10.2.RME	Industrial Workers - Tank Farm 5
10.3.RME	Adolescent Trespassers - Tank Farm 5
10.4.RME	Child Recreational Users - Tank Farm 5
10.5.RME	Adult Recreational Users - Tank Farm 5
10.6.RME	Lifelong Recreational Users - Tank Farm 5
10.7.RME	Child Residents - Tank Farm 5
10.8.RME	Adult Residents - Tank Farm 5
10.9.RME	Lifelong Residents - Tank Farm 5
	Central Tendency Exposures
10.1.CTE	Construction Workers - Tank Farm 5
10.2.CTE	Industrial Workers - Tank Farm 5
10.3.CTE	Adolescent Trespassers - Tank Farm 5
10.4.CTE	Child Recreational Users - Tank Farm 5
10.5.CTE	Adult Recreational Users - Tank Farm 5
10.6.CTE	Lifelong Recreational Users - Tank Farm 5
10.7.CTE	Child Residents - Tank Farm 5
10.8.CTE	Adult Residents - Tank Farm 5
10.9.CTE	Lifelong Residents - Tank Farm 5

TABLE 10.1.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5	Manganese (soil)	--	--	--	--	--	CNS	0.01	--	--	0.01
			Chemical Total	--	--	--	--	--		0.01	--	--	0.01
		Exposure Point Total						--					0.01
	Exposure Medium Total							--					0.01
	Air	Tank Farm 5	Manganese (soil)	--	--	--	--	--	CNS	--	2	--	2
			Chemical Total	--	--	--	--	--		--	2	--	2
		Exposure Point Total						--					2
	Exposure Medium Total							--					2
Medium Total								--					2
Groundwater	Groundwater	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				--	Receptor HI Total (Surface Soil and Groundwater)				--
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				--	Receptor HI Total (All Soil and Groundwater)				2

Total CNS HI 2

TABLE 10.2.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.4.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.5.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.6.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Receptor Total							Receptor Risk Total	--					

TABLE 10.7.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Groundwater	Groundwater	Tank Farm 5	Arsenic	t E-04	--	5E-07	--	1E-04	Skin, CVS	3	--	0.01	3
			Cobalt	--	--	--	--	--	Blood	6	--	0.03	6
			Iron	--	--	--	--	--	GS	3	--	0.01	3
			Manganese (water)	--	--	--	--	--	CNS	9	--	1	10
			Chemical Total	1E-04	--	5E-07	--	1E-04		21	--	1	22
		Exposure Point Total						1E-04					22
	Exposure Medium Total							1E-04					22
	Air	Tank Farm 5	Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	1E-04				Receptor HI Total	22

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	6
Total CNS HI	10
Total CVS HI	3
Total GS HI	3
Total Skin HI	3

TABLE 10.8.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Groundwater	Groundwater	Tank Farm 5	Cobalt	--	--	--	--	--	Blood	2	--	0.009	2
			Manganese (water)	--	--	--	--	--	CNS	3	--	0.4	3
			Chemical Total	--	--	--	--	--		5	--	0.4	5
		Exposure Point Total						--					5
	Exposure Medium Total							--					5
	Air	Tank Farm 5	Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					5
Receptor Total							Receptor Risk Total	--				Receptor HI Total	5

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	2
Total CNS HI	3

TABLE 10.9.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Groundwater	Groundwater	Tank Farm 5	Arsenic	2E-04	--	1E-06	--	2E-04					
			Chemical Total	2E-04	--	1E-06	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 5	Arsenic	--	--	--	--	--					
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								2E-04					
Receptor Total							Receptor Risk Total	2E-04					

TABLE 10.1.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Groundwater	Groundwater	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				--	Receptor HI Total (Surface Soil and Groundwater)				--
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				--	Receptor HI Total (All Soil and Groundwater)				--

TABLE 10.2.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.4.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.5.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	--

TABLE 10.6.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Surface Water	Surface Water	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Sediment	Sediment	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Receptor Total							Receptor Risk Total	--					

TABLE 10.7.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Groundwater	Groundwater	Tank Farm 5	Cobalt	--	--	--	--	--	Blood	2	--	0.009	2
			Manganese (water)	--	--	--	--	--	CNS	2	--	0.4	3
			Chemical Total	--	--	--	--	--		4	--	0.4	4
		Exposure Point Total						--					4
	Exposure Medium Total							--					4
	Air	Tank Farm 5	Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--				Receptor HI Total	4

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	2
Total CNS HI	3

TABLE t0.8.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					
Groundwater	Groundwater	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels					All Hazard Quotients Within Acceptable Levels				
			Chemical Total	--	--	--	--	--		--	--	--	--
		Exposure Point Total						--					--
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total							Receptor Risk Total	--					--

TABLE 10.9.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
All Soil	All Soil	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Groundwater	Groundwater	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
	Air	Tank Farm 5		All Cancer Risks Within Acceptable Levels									
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Receptor Total							Receptor Risk Total	--					

APPENDIX H.3

RISKS FOR ONLY SITE-RELATED COPCS

Tank Farm 4

LIST OF TABLES
RAGS PART D TABLE 9 - TANK FARM 4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.

Reasonable Maximum Exposures

9.1.RME Construction Workers - Tank Farm 4
9.2.RME Industrial Workers - Tank Farm 4
9.3.RME Adolescent Trespassers - Tank Farm 4
9.4.RME Child Recreational Users - Tank Farm 4
9.5.RME Adult Recreational Users - Tank Farm 4
9.6.RME Lifelong Recreational Users - Tank Farm 4
9.7.RME Child Residents - Tank Farm 4
9.8.RME Adult Residents - Tank Farm 4
9.9.RME Lifelong Residents - Tank Farm 4

Central Tendency Exposures

9.1.CTE Construction Workers - Tank Farm 4
9.2.CTE Industrial Workers - Tank Farm 4
9.3.CTE Adolescent Trespassers - Tank Farm 4
9.4.CTE Child Recreational Users - Tank Farm 4
9.5.CTE Adult Recreational Users - Tank Farm 4
9.6.CTE Lifelong Recreational Users - Tank Farm 4
9.7.CTE Child Residents - Tank Farm 4
9.8.CTE Adult Residents - Tank Farm 4
9.9.CTE Lifelong Residents - Tank Farm 4

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	8E-07	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-07	--	2E-07	--	5E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0002	--	0.00009	0.0003
			Benzo(k)fluoranthene	2E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Chrysene	5E-10	--	2E-10	--	7E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.002	--	0.0006	0.002
			Indeno(1,2,3-cd)pyrene	7E-08	--	3E-08	--	9E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.002	--	0.0009	0.003
			2,3,7,8-TCDD Equivalents	1E-08	--	9E-10	--	1E-08	Developmental	0.005	--	0.0005	0.006
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	6E-07	--	5E-08	--	6E-07	Skin, CVS	0.09	--	0.008	0.10
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	2E-07	--	--	--	2E-07	Fetotoxicity, GS, Bone	0.007	--	--	0.007
			Cobalt	--	--	--	--	--	Blood	0.07	--	--	0.07
			Chemical Total	4E-06	--	1E-06	--	5E-06		0.2	--	0.010	0.2
		Exposure Point Total						5E-06					0.2
	Exposure Medium Total							5E-06					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-09	--	--	3E-09	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-08	--	--	1E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-09	--	--	3E-09	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-09	--	--	1E-09	NA	--	--	--	--
			Chrysene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-09	--	--	3E-09	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-10	--	--	5E-10	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-10	--	--	1E-10	Liver, Respiratory, Developmental	--	0.000007	--	0.000007
			Aluminum	--	--	--	--	--	CNS	--	0.2	--	0.2
			Arsenic	--	8E-08	--	--	8E-08	NA	--	0.09	--	0.09
			Beryllium	--	1E-09	--	--	1E-09	Lungs	--	0.002	--	0.002
			Chromium	--	1E-06	--	--	1E-06	Lungs	--	0.01	--	0.01
			Cobalt	--	1E-07	--	--	1E-07	Lungs	--	0.2	--	0.2
			Chemical Total	--	2E-06	--	--	2E-06		--	0.5	--	0.5
		Exposure Point Total						2E-06					0.5
	Exposure Medium Total							2E-06					0.5
Medium Total								7E-06					0.7

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	1E-07	--	4E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	5E-07	--	2E-07	--	7E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	4E-08	--	1E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00005	--	0.00002	0.00007
			Benzo(k)fluoranthene	4E-09	--	1E-09	--	5E-09	NA	--	--	--	--
			Chrysene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-08	--	1E-08	--	5E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.0002	0.0005
			Indeno(1,2,3-cd)pyrene	1E-08	--	5E-09	--	2E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0005	--	0.0002	0.0007
			Aroclor-1254	5E-09	--	2E-09	--	7E-09	Immune	0.008	--	0.004	0.01
			2,3,7,8-TCDD Equivalents	8E-09	--	8E-10	--	9E-09	Developmental	0.005	--	0.0004	0.005
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	7E-07	--	6E-08	--	8E-07	Skin, CVS	0.1	--	0.010	0.1
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	2E-07	--	--	--	2E-07	Fetotoxicity, GS, Bone	0.007	--	--	0.007
			Cobalt	--	--	--	--	--	Blood	0.1	--	--	0.1
			Iron	--	--	--	--	--	GS	0.10	--	--	0.10
			Chemical Total	2E-06	--	3E-07	--	2E-06		0.3	--	0.01	0.4
		Exposure Point Total						2E-06					0.4
	Exposure Medium Total							2E-06					0.4
	Air	Tank Farm 4	Benzo(a)anthracene	--	8E-10	--	--	8E-10	NA	--	--	--	--
			Benzo(a)pyrene	--	4E-09	--	--	4E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	--	7E-10	--	--	7E-10	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Chrysene	--	9E-11	--	--	9E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	7E-11	--	--	7E-11	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-10	--	--	1E-10	Liver, Respiratory, Developmental	--	0.000006	--	0.000006
			Aluminum	--	--	--	--	--	CNS	--	0.1	--	0.1
			Arsenic	--	1E-07	--	--	1E-07	NA	--	0.1	--	0.1
			Beryllium	--	1E-09	--	--	1E-09	Lungs	--	0.002	--	0.002

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Chromium	--	1E-06	--	--	1E-06	Lungs	--	0.01	--	0.01
			Cobalt	--	2E-07	--	--	2E-07	Lungs	--	0.3	--	0.3
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-06	--	--	2E-06		--	0.5	--	0.5
		Exposure Point Total						2E-06					0.5
	Exposure Medium Total							2E-06					0.5
Medium Total								4E-06					0.9
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	--	Body Weight	0.000002	--	0.00006	0.00006
			Aroclor-1248	5E-08	--	--	--	5E-08	NA	--	--	--	--
			Aroclor-1254	2E-08	--	--	--	2E-08	Immune	0.04	--	--	0.04
			Endrin Aldehyde	--	--	--	--	--	Liver	0.006	--	0.04	0.05
			Aluminum	--	--	--	--	--	CNS	0.00006	--	0.00003	0.00010
			Arsenic	3E-08	--	2E-08	--	5E-08	Skin, CVS	0.005	--	0.003	0.008
			Cobalt	--	--	--	--	--	Blood	0.01	--	0.006	0.02
			Iron	--	--	--	--	--	GS	0.006	--	0.003	0.009
			Manganese (water)	--	--	--	--	--	CNS	0.05	--	0.7	0.8
			Chemical Total	1E-07	--	2E-08	--	1E-07		0.1	--	0.8	0.9
		Exposure Point Total						1E-07					0.9
	Exposure Medium Total							1E-07					0.9
	Air	Tank Farm 4	Naphthalene	--	3E-10	--	--	3E-10	Nasal	--	0.0002	--	0.0002
			Aroclor-1248	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	--	--	--	--	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	--	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	3E-10	--	--	3E-10		--	0.0002	--	0.0002
		Exposure Point Total						3E-10					0.0002
	Exposure Medium Total							3E-10					0.0002
Medium Total								1E-07					0.9
	Exposure Medium Total							--					--
Medium Total								--					--
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				7E-06	Receptor HI Total (Surface Soil and Groundwater)				2
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				4E-06	Receptor HI Total (All Soil and Groundwater)				2

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	0.2
Total Body Weight HI	0.00006
Total Bone HI	0.01
Total CNS HI	1
Total CVS HI	0.2
Total Developmental HI	0.01
Total Fetotoxicity HI	0.01
Total GS HI	0.1
Total Immune HI	0.05
Total Kidney HI	0.004
Total Liver HI	0.05
Total Lungs HI	0.5
Total Nasal HI	0.0002
Total Skin HI	0.2
Total Respiratory HI	0.00001

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	6E-06	--	5E-06	--	1E-05	NA	--	--	--	--
			Benzo(a)pyrene	3E-05	--	2E-05	--	5E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-06	--	5E-06	--	1E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0001	--	0.0001	0.0002
			Benzo(k)fluoranthene	2E-07	--	2E-07	--	4E-07	NA	--	--	--	--
			Chrysene	7E-09	--	6E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-06	--	4E-06	--	9E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0009	--	0.0008	0.002
			Indeno(1,2,3-cd)pyrene	1E-06	--	9E-07	--	2E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.001	--	0.001	0.002
			2,3,7,8-TCDD Equivalents	1E-07	--	3E-08	--	2E-07	Developmental	0.003	--	0.0006	0.004
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	8E-06	--	2E-06	--	1E-05	Skin, CVS	0.05	--	0.01	0.06
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Chemical Total	6E-05	--	4E-05	--	1E-04		0.1	--	0.01	0.1
		Exposure Point Total						1E-04					0.1
	Exposure Medium Total							1E-04					0.1
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-11	--	--	9E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	0.000000002	--	0.000000002
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	5E-10	--	--	5E-10	NA	--	0.00002	--	0.00002
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	8E-09	--	--	8E-09	Lungs	--	0.000003	--	0.000003
			Cobalt	--	9E-10	--	--	9E-10	Lungs	--	0.00005	--	0.00005
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0001	--	0.0001
		Exposure Point Total						1E-08					0.0001
	Exposure Medium Total							1E-08					0.0001
Medium Total								1E-04					0.1

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(a)pyrene	7E-06	--	6E-06	--	1E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00003	--	0.00003	0.00006
			Benzo(k)fluoranthene	5E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Chrysene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-07	--	4E-07	--	9E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.0002	0.0004
			Indeno(1,2,3-cd)pyrene	2E-07	--	2E-07	--	3E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0003	--	0.0003	0.0006
			Aroclor-1254	7E-08	--	6E-08	--	1E-07	Immune	0.005	--	0.005	0.009
			2,3,7,8-TCDD Equivalents	1E-07	--	2E-08	--	1E-07	Developmental	0.003	--	0.0005	0.003
			Aluminum	--	--	--	--	--	CNS	0.009	--	--	0.009
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.06	--	0.01	0.08
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Chemical Total	2E-05	--	1E-05	--	3E-05		0.2	--	0.02	0.2
		Exposure Point Total						3E-05					0.2
	Exposure Medium Total							3E-05					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	4E-13	--	--	4E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	8E-13	--	--	8E-13	Liver, Respiratory, Developmental	--	1.401E-09	--	1.401E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	6E-10	--	--	6E-10	NA	--	0.00003	--	0.00003

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Beryllium	--	7E-12	--	--	7E-12	Lungs	- -	0.0000004	- -	0.0000004
			Chromium	--	8E-09	--	--	8E-09	Lungs	- -	0.000003	- -	0.000003
			Cobalt	--	1E-09	--	--	1E-09	Lungs	- -	0.00007	- -	0.00007
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	1E-08	--	--	1E-08		- -	0.0001	- -	0.0001
		Exposure Point Total						1E-08					0.0001
	Exposure Medium Total							1E-08					0.0001
Medium Total								3E-05					0.2
Receptor Total				Receptor Risk Total (Surface Soil)				1E-04	Receptor HI Total (Surface Soil)				0.1
Receptor Total				Receptor Risk Total (All Soil)				3E-05	Receptor HI Total (All Soil)				0.2

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	5E-06	--	8E-06	NA	--	--	--	--
			Benzo(a)pyrene	1E-05	--	2E-05	--	3E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-06	--	5E-06	--	7E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00003	--	0.00007	0.0001
			Benzo(k)fluoranthene	9E-08	--	2E-07	--	3E-07	NA	--	--	--	--
			Chrysene	3E-09	--	6E-09	--	8E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	4E-06	--	6E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.0005	0.0008
			Indeno(1,2,3-cd)pyrene	4E-07	--	8E-07	--	1E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0003	--	0.0007	0.001
			2,3,7,8-TCDD Equivalents	2E-08	--	9E-09	--	3E-08	Developmental	0.0008	--	0.0004	0.001
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	1E-06	--	5E-07	--	2E-06	Skin, CVS	0.01	--	0.007	0.02
			Beryllium	--	--	--	--	--	GS	0.00006	--	--	0.00006
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Chemical Total	2E-05	--	4E-05	--	6E-05		0.03	--	0.008	0.04
		Exposure Point Total						6E-05					0.04
	Exposure Medium Total							6E-05					0.04
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	8E-14	--	--	8E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000008	--	0.000008
			Arsenic	--	5E-11	--	--	5E-11	NA	--	0.000004	--	0.000004
			Beryllium	--	7E-13	--	--	7E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	8E-10	--	--	8E-10	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	8E-11	--	--	8E-11	Lungs	--	0.000009	--	0.000009
			Chemical Total	--	9E-10	--	--	9E-10		--	0.00002	--	0.00002
		Exposure Point Total						9E-10					0.00002
	Exposure Medium Total							9E-10					0.00002
Medium Total								6E-05					0.04

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	6E-07	--	1E-06	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	3E-06	--	6E-06	--	8E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-07	--	1E-06	--	2E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000008	--	0.00002	0.00003
			Benzo(k)fluoranthene	2E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Chrysene	7E-09	--	1E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	4E-07	--	6E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00006	--	0.0001	0.0002
			Indeno(1,2,3-cd)pyrene	7E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00008	--	0.0002	0.0003
			Aroclor-1254	9E-09	--	2E-08	--	3E-08	Immune	0.001	--	0.003	0.004
			2,3,7,8-TCDD Equivalents	2E-08	--	8E-09	--	2E-08	Developmental	0.0007	--	0.0003	0.001
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	1E-06	--	6E-07	--	2E-06	Skin, CVS	0.02	--	0.008	0.03
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Chemical Total	6E-06	--	9E-06	--	1E-05		0.05	--	0.01	0.07
		Exposure Point Total						1E-05					0.07
	Exposure Medium Total							1E-05					0.07
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	4E-14	--	--	4E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	7E-14	--	--	7E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	6E-11	--	--	6E-11	NA	--	0.000005	--	0.000005
			Beryllium	--	6E-13	--	--	6E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	7E-10	--	--	7E-10	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	1E-10	--	--	1E-10	Lungs	--	0.0000t	--	0.0000t
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	9E-10	--	--	9E-10		--	0.00003	--	0.00003
		Exposure Point Total						9E-10					0.00003
	Exposure Medium Total							9E-10					0.00003
Medium Total								1E-05					0.07
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	1E-09	--	1E-09	Skin, CVS	--	--	0.00001	0.00001
			Iron	--	--	--	--	--	GS	--	--	0.000006	0.000006
			Chemical Total	--	--	1E-09	--	1E-09		--	--	0.00002	0.00002
		Exposure Point Total						1E-09					0.00002
	Exposure Medium Total							1E-09					0.00002
Medium Total								1E-09					0.00002
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	1E-09	--	5E-09	--	6E-09	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	6E-07	--	7E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	7E-08	--	8E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	2E-08	--	3E-08	--	5E-08	Developmental	0.001	--	0.001	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	1E-06	--	2E-06	--	3E-06	Skin, CVS	0.02	--	0.02	0.04
			Beryllium	--	--	--	--	--	GS	0.00007	--	--	0.00007
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese (soil)	--	--	--	--	--	CNS	0.004	--	--	0.004
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-06	--	3E-06	--	5E-06		0.10	--	0.02	0.1
		Exposure Point Total						5E-06					0.1
	Exposure Medium Total							5E-06					0.1
Medium Total								5E-06					0.1
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					6E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.2
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					2E-05	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.2

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-05	--	5E-06	--	2E-05	NA	--	--	--	--
			Benzo(a)pyrene	6E-05	--	2E-05	--	9E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-05	--	5E-06	--	2E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0002	--	0.00008	0.0003
			Benzo(k)fluoranthene	5E-07	--	2E-07	--	7E-07	NA	--	--	--	--
			Chrysene	2E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-05	--	4E-06	--	1E-05	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.002	--	0.0006	0.002
			Indeno(1,2,3-cd)pyrene	2E-06	--	8E-07	--	3E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.002	--	0.0008	0.003
			2,3,7,8-TCDD Equivalents	6E-08	--	5E-09	--	7E-08	Developmental	0.005	--	0.0005	0.006
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	4E-06	--	3E-07	--	4E-06	Skin, CVS	0.09	--	0.008	0.1
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	1E-06	--	--	--	1E-06	Fetotoxicity, GS, Bone	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Blood	0.08	--	--	0.08
			Chemical Total	1E-04	--	4E-05	--	1E-04		0.2	--	0.010	0.2
		Exposure Point Total						1E-04					0.2
	Exposure Medium Total							1E-04					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-14	--	--	4E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000008	--	0.000008
			Arsenic	--	2E-11	--	--	2E-11	NA	--	0.000004	--	0.000004
			Beryllium	--	3E-13	--	--	3E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	4E-10	--	--	4E-10	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	4E-11	--	--	4E-11	Lungs	--	0.000009	--	0.000009
			Chemical Total	--	5E-10	--	--	5E-10		--	0.00002	--	0.00002
		Exposure Point Total						5E-10					0.00002
	Exposure Medium Total							5E-10					0.00002
Medium Total								1E-04					0.2

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	1E-06	--	5E-06	NA	--	--	--	--
			Benzo(a)pyrene	2E-05	--	6E-06	--	2E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.00002	0.00008
			Benzo(k)fluoranthene	1E-07	--	4E-08	--	2E-07	NA	--	--	--	--
			Chrysene	4E-08	--	1E-08	--	5E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	4E-07	--	2E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.0001	0.0006
			Indeno(1,2,3-cd)pyrene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.0002	0.0008
			Aroclor-1254	3E-08	--	1E-08	--	4E-08	Immune	0.009	--	0.003	0.01
			2,3,7,8-TCDD Equivalents	5E-08	--	4E-09	--	6E-08	Developmental	0.005	--	0.0004	0.005
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	4E-06	--	4E-07	--	5E-06	Skin, CVS	0.1	--	0.009	0.1
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	1E-06	--	--	--	1E-06	Fetotoxicity, GS, Bone	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Blood	0.1	--	--	0.1
			Iron	--	--	--	--	--	GS	0.1	--	--	0.1
			Chemical Total	3E-05	--	9E-06	--	4E-05		0.4	--	0.01	0.4
		Exposure Point Total						4E-05					0.4
	Exposure Medium Total							4E-05					0.4
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	2E-14	--	--	2E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-14	--	--	4E-14	Liver, Respiratory, Developmental	--	3E-10	--	3E-10

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Air	Tank Farm 4	Aluminum	--	- -	--	--	- -	CNS	- -	0.000007	- -	0.000007
			Arsenic	--	3E-11	--	--	3E-11	NA	- -	0.000005	- -	0.000005
			Beryllium	--	3E-13	--	--	3E-13	Lungs	- -	0.00000008	- -	0.00000008
			Chromium	--	4E-10	--	--	4E-10	Lungs	- -	0.0000005	- -	0.0000005
			Cobalt	--	6E-11	--	--	6E-11	Lungs	- -	0.00001	- -	0.00001
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	5E-10	--	--	5E-10		- -	0.00003	- -	0.00003
		Exposure Point Total						5E-10					0.00003
	Exposure Medium Total							5E-10					0.00003
Medium Total								4E-05					0.4
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Arsenic	- -	--	1E-09	--	1E-09	Skin, CVS	--	- -	0.00003	0.00003
			Iron	- -	--	- -	--	- -	GS	--	- -	0.00001	0.00001
			Chemical Total	- -	--	1E-09	--	1E-09		--	--	0.00004	0.00004
		Exposure Point Total						1E-09					0.00004
	Exposure Medium Total							1E-09					0.00004
Medium Total								1E-09					0.00004
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	6E-09	--	2E-09	--	8E-09	NA	--	- -	--	--
			Benzo(a)pyrene	6E-07	--	2E-07	--	9E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	7E-08	--	3E-08	--	1E-07	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	2E-07	--	6E-08	--	2E-07	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	9E-08	Developmental	0.007	- -	0.0006	0.008
			Aluminum	- -	--	- -	--	- -	CNS	0.02	- -	--	0.02
			Arsenic	5E-06	--	4E-07	--	5E-06	Skin, CVS	0.1	- -	0.01	0.1
			Beryllium	- -	--	- -	--	- -	GS	0.0005	- -	--	0.0005
			Chromium	1E-06	--	- -	--	1E-06	Fetotoxicity, GS, Bone	0.01	- -	--	0.01
			Cobalt	- -	--	- -	--	- -	Blood	0.3	- -	--	0.3
			Iron	- -	--	- -	--	- -	GS	0.2	- -	--	0.2
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.03	- -	--	0.03
			Thallium	- -	--	- -	--	- -	NA	--	- -	--	--
			Chemical Total	7E-06	--	7E-07	--	8E-06		0.7	--	0.01	0.7
		Exposure Point Total						8E-06					0.7
	Exposure Medium Total							8E-06					0.7
Medium Total								8E-06					0.7
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					2E-04	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.9
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					5E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(a)pyrene	9E-06	--	5E-06	--	1E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00002	--	0.00001	0.00004
			Benzo(k)fluoranthene	7E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Chrysene	2E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	8E-07	--	2E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.00009	0.0003
			Indeno(1,2,3-cd)pyrene	3E-07	--	2E-07	--	5E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0002	--	0.0001	0.0004
			2,3,7,8-TCDD Equivalents	3E-08	--	3E-09	--	3E-08	Developmental	0.0006	--	0.00007	0.0007
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.010	--	0.001	0.01
			Beryllium	--	--	--	--	--	GS	0.00004	--	--	0.00004
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.0008	--	--	0.0008
			Cobalt	--	--	--	--	--	Blood	0.008	--	--	0.008
			Chemical Total	2E-05	--	8E-06	--	3E-05		0.02	--	0.001	0.02
		Exposure Point Total						3E-05					0.02
	Exposure Medium Total							3E-05					0.02
	Air	Tank Farm 4	Benzo(a)anthracene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	3E-10	--	3E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000008	--	0.000008
			Arsenic	--	9E-11	--	--	9E-11	NA	--	0.000004	--	0.000004
			Beryllium	--	1E-12	--	--	1E-12	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.000009	--	0.000009
			Chemical Total	--	2E-09	--	--	2E-09		--	0.00002	--	0.00002
		Exposure Point Total						2E-09					0.00002
	Exposure Medium Total							2E-09					0.00002
Medium Total								3E-05					0.02

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	5E-07	--	3E-07	--	8E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-07	--	2E-07	--	7E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000006	--	0.000003	0.000009
			Benzo(k)fluoranthene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Chrysene	6E-09	--	3E-09	--	9E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	8E-08	--	2E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00004	--	0.00002	0.00007
			Indeno(1,2,3-cd)pyrene	6E-08	--	3E-08	--	9E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00006	--	0.00003	0.00009
			Aroclor-1254	1E-08	--	7E-09	--	2E-08	Immune	0.0009	--	0.0005	0.001
			2,3,7,8-TCDD Equivalents	2E-08	--	3E-09	--	3E-08	Developmental	0.0005	--	0.00006	0.0006
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.001	0.01
			Beryllium	--	--	--	--	--	GS	0.00004	--	--	0.00004
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.0008	--	--	0.0008
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Chemical Total	6E-06	--	2E-06	--	8E-06		0.04	--	0.002	0.04
		Exposure Point Total						8E-06					0.04
	Exposure Medium Total							8E-06					0.04
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	8E-14	--	--	8E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-13	--	--	1E-13	Liver, Respiratory, Developmental	--	3E-10	--	3E-10

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	1E-10	--	--	1E-10	NA	--	0.000005	--	0.000005
			Beryllium	--	1E-12	--	--	1E-12	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.0000005	--	0.0000005
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-09	--	--	2E-09		--	0.00003	--	0.00003
		Exposure Point Total						2E-09					0.00003
	Exposure Medium Total							2E-09					0.00003
Medium Total								8E-06					0.04
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	2E-09	--	2E-09	Skin, CVS	--	--	0.00002	0.00002
			Iron	--	--	--	--	--	GS	--	--	0.000008	0.000008
			Chemical Total	--	--	2E-09	--	2E-09		--	--	0.00002	0.00002
		Exposure Point Total						2E-09					0.00002
	Exposure Medium Total							2E-09					0.00002
Medium Total								2E-09					0.00002
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	9E-10	--	5E-10	--	1E-09	NA	--	--	--	--
			Benzo(a)pyrene	9E-08	--	6E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	7E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	2E-08	--	4E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	3E-08	--	5E-09	--	4E-08	Developmental	0.0008	--	0.0001	0.0009
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	3E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	6E-07	--	--	--	6E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.003	--	--	0.003
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-06	--	4E-07	--	3E-06		0.07	--	0.002	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
Medium Total								3E-06					0.07
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.10
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	6E-06	--	2E-05					
			Benzo(a)pyrene	7E-05	--	3E-05	--	1E-04					
			Benzo(b)fluoranthene	2E-05	--	6E-06	--	2E-05					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	6E-07	--	2E-07	--	8E-07					
			Chrysene	2E-08	--	7E-09	--	3E-08					
			Dibenzo(a,h)anthracene	1E-05	--	5E-06	--	2E-05					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	3E-06	--	1E-06	--	4E-06					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	9E-08	--	8E-09	--	9E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-06	--	2E-07	--	2E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	4E-07	--	- -	--	4E-07					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	5E-05	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-11	--	--	1E-11					
			Benzo(a)pyrene	--	5E-11	--	--	5E-11					
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	4E-12	--	--	4E-12					
			Chrysene	--	1E-13	--	--	1E-13					
			Dibenzo(a,h)anthracene	--	9E-12	--	--	9E-12					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-10	--	--	1E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	2E-09	--	--	2E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								2E-04					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	2E-06	--	6E-06					
			Benzo(a)pyrene	2E-05	--	7E-06	--	3E-05					
			Benzo(b)fluoranthene	4E-06	--	1E-06	--	5E-06					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-07	--	5E-08	--	2E-07					
			Chrysene	4E-08	--	2E-08	--	6E-08					
			Dibenzo(a,h)anthracene	1E-06	--	5E-07	--	2E-06					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	5E-07	--	2E-07	--	7E-07					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	4E-08	--	2E-08	--	6E-08					
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	8E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-06	--	2E-07	--	2E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	4E-07	--	- -	--	4E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	1E-05	--	4E-05					
		Exposure Point Total						4E-05					
	Exposure Medium Total							4E-05					
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-12	--	--	3E-12					
			Benzo(a)pyrene	--	1E-11	--	--	1E-11					
			Benzo(b)fluoranthene	--	3E-12	--	--	3E-12					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	1E-12	--	--	1E-12					
			Chrysene	--	3E-13	--	--	3E-13					
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	3E-13	--	--	3E-13					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	1E-13	--	--	1E-13					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total					
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--					
			Arsenic	--	1E-10	--	--	1E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	1E-09	--	--	1E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	--	--	--	--					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								4E-05					
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--					
			Arsenic	--	--	4E-09	--	4E-09					
			Iron	--	--	--	--	--					
			Chemical Total	--	--	4E-09	--	4E-09					
		Exposure Point Total						4E-09					
	Exposure Medium Total							4E-09					
Medium Total								4E-09					
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	7E-09	--	3E-09	--	9E-09					
			Benzo(a)pyrene	7E-07	--	3E-07	--	1E-06					
			Benzo(b)fluoranthene	9E-08	--	3E-08	--	1E-07					
			Dibenzo(a,h)anthracene	2E-07	--	7E-08	--	3E-07					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	7E-06	--	7E-07	--	8E-06					
			Beryllium	--	--	--	--	--					
			Chromium	2E-06	--	--	--	2E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	1E-05	--	1E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
Medium Total								1E-05					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					2E-04					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					5E-05					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-04	--	4E-05	--	1E-04	NA	--	--	--	--
			Benzo(a)pyrene	5E-04	--	2E-04	--	6E-04	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-04	--	3E-05	--	1E-04	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.002	--	0.0006	0.002
			Benzo(k)fluoranthene	4E-06	--	1E-06	--	5E-06	NA	--	--	--	--
			Chrysene	1E-07	--	4E-08	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-05	--	3E-05	--	1E-04	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.01	--	0.004	0.02
			Indeno(1,2,3-cd)pyrene	2E-05	--	6E-06	--	2E-05	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.02	--	0.006	0.02
			2,3,7,8-TCDD Equivalents	4E-07	--	4E-08	--	5E-07	Developmental	0.04	--	0.003	0.04
			Aluminum	--	--	--	--	--	CNS	0.1	--	--	0.1
			Arsenic	3E-05	--	2E-06	--	3E-05	Skin, CVS	0.7	--	0.06	0.7
			Beryllium	--	--	--	--	--	GS	0.003	--	--	0.003
			Chromium	7E-06	--	--	--	7E-06	Fetotoxicity, GS, Bone	0.06	--	--	0.06
			Cobalt	--	--	--	--	--	Blood	0.6	--	--	0.6
			Chemical Total	8E-04	--	3E-04	--	1E-03		2	--	0.07	2
		Exposure Point Total						1E-03					2
	Exposure Medium Total							1E-03					2
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-10	--	--	5E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Chrysene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	9E-11	--	--	9E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	7E-09	--	7E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	5E-10	--	--	5E-10	NA	--	0.00009	--	0.00009
			Beryllium	--	8E-12	--	--	8E-12	Lungs	--	0.000002	--	0.000002
			Chromium	--	8E-09	--	--	8E-09	Lungs	--	0.00001	--	0.00001
			Cobalt	--	9E-10	--	--	9E-10	Lungs	--	0.0002	--	0.0002
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0005	--	0.0005
		Exposure Point Total						1E-08					0.0005
	Exposure Medium Total							1E-08					0.0005
Medium Total								1E-03					2

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-05	--	9E-06	--	3E-05	NA	--	--	--	--
			Benzo(a)pyrene	1E-04	--	4E-05	--	2E-04	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-05	--	9E-06	--	3E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0004	--	0.0001	0.0006
			Benzo(k)fluoranthene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Chrysene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-06	--	3E-06	--	1E-05	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.003	--	0.001	0.004
			Indeno(1,2,3-cd)pyrene	3E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.004	--	0.001	0.006
			Aroclor-1254	2E-07	--	9E-08	--	3E-07	Immune	0.06	--	0.03	0.09
			2,3,7,8-TCDD Equivalents	4E-07	--	3E-08	--	4E-07	Developmental	0.03	--	0.003	0.04
			Aluminum	--	--	--	--	--	CNS	0.1	--	--	0.1
			Arsenic	3E-05	--	3E-06	--	3E-05	Skin, CVS	0.8	--	0.07	0.9
			Beryllium	--	--	--	--	--	GS	0.002	--	--	0.002
			Chromium	7E-06	--	--	--	7E-06	Fetotoxicity, GS, Bone	0.05	--	--	0.05
			Cobalt	--	--	--	--	--	Blood	0.8	--	--	0.8
			Iron	--	--	--	--	--	GS	0.7	--	--	0.7
			Chemical Total	2E-04	--	7E-05	--	3E-04		3	--	0.10	3
		Exposure Point Total						3E-04					3
	Exposure Medium Total							3E-04					3
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	9E-12	--	--	9E-12	NA	--	--	--	--
			Chrysene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	9E-12	--	--	9E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	4E-13	--	--	4E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	8E-13	--	--	8E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	6E-10	--	--	6E-10	NA	--	0.0001	--	0.0001

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.000002	--	0.000002
			Chromium	--	8E-09	--	--	8E-09	Lungs	--	0.00001	--	0.00001
			Cobalt	--	1E-09	--	--	1E-09	Lungs	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0006	--	0.0006
		Exposure Point Total						1E-08					0.0006
	Exposure Medium Total							1E-08					0.0006
Medium Total								3E-04					3
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	--	Body Weight	0.0009	--	0.0004	0.001
			Aroclor-1248	1E-04	--	--	--	1E-04	NA	--	--	--	--
			Aroclor-1254	5E-05	--	--	--	5E-05	Immune	14	--	--	14
			Endrin Aldehyde	--	--	--	--	--	Liver	2	--	0.4	2
			Aluminum	--	--	--	--	--	CNS	0.02	--	0.0001	0.02
			Arsenic	7E-05	--	3E-07	--	7E-05	Skin, CVS	2	--	0.009	2
			Cobalt	--	--	--	--	--	Blood	4	--	0.02	4
			Iron	--	--	--	--	--	GS	2	--	0.01	2
			Manganese (water)	--	--	--	--	--	CNS	19	--	2	21
			Chemical Total	2E-04	--	3E-07	--	2E-04		42	--	3	45
		Exposure Point Total						2E-04					45
	Exposure Medium Total							2E-04					45
	Air	Tank Farm 4	Naphthalene	--	--	--	--	--	Nasal	--	0.0009	--	0.0009
			Aroclor-1248	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	--	--	--	--	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	--	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	0.0009	--	0.0009
		Exposure Point Total						--					0.0009
	Exposure Medium Total							--					0.0009
Medium Total								2E-04					45
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-03	Receptor HI Total (Surface Soil and Groundwater)				46
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				5E-04	Receptor HI Total (All Soil and Groundwater)				48

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	5
Total Body Weight HI	0.00t
Total Bone HI	0.t
Total CNS HI	2t
Total CVS HI	4
Total Developmental HI	0.08
Total Fetotoxicity HI	0.t
Total GS HI	3
Total Immune HI	14
Total Kidney HI	0.03
Total Liver HI	2
Total Lungs HI	0.0005
Total Nasal HI	0.0009
Total Skin HI	4
Total Respiratory HI	0.00000001

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	8E-06	--	2E-05	NA	--	--	--	--
			Benzo(a)pyrene	7E-05	--	4E-05	--	1E-04	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-05	--	7E-06	--	2E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0002	--	0.00009	0.0003
			Benzo(k)fluoranthene	5E-07	--	3E-07	--	8E-07	NA	--	--	--	--
			Chrysene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-05	--	6E-06	--	2E-05	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.001	--	0.0007	0.002
			Indeno(1,2,3-cd)pyrene	2E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.002	--	0.0009	0.003
			2,3,7,8-TCDD Equivalents	2E-07	--	2E-08	--	2E-07	Developmental	0.004	--	0.0005	0.005
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	1E-05	--	1E-06	--	1E-05	Skin, CVS	0.07	--	0.009	0.08
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	3E-06	--	--	--	3E-06	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Chemical Total	1E-04	--	6E-05	--	2E-04		0.2	--	0.01	0.2
		Exposure Point Total						2E-04					0.2
	Exposure Medium Total							2E-04					0.2
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-10	--	--	7E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-11	--	--	5E-11	NA	--	--	--	--
			Chrysene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-12	--	--	4E-12	Liver, Respiratory, Developmental	--	7E-09	--	7E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	2E-09	--	--	2E-09	NA	--	0.00009	--	0.00009
			Beryllium	--	3E-11	--	--	3E-11	Lungs	--	0.000002	--	0.000002
			Chromium	--	3E-08	--	--	3E-08	Lungs	--	0.00001	--	0.00001
			Cobalt	--	4E-09	--	--	4E-09	Lungs	--	0.0002	--	0.0002
			Chemical Total	--	4E-08	--	--	4E-08		--	0.0005	--	0.0005
		Exposure Point Total						4E-08					0.0005
	Exposure Medium Total							4E-08					0.0005
Medium Total								2E-04					0.2

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	2E-06	--	6E-06	NA	--	--	--	--
			Benzo(a)pyrene	2E-05	--	9E-06	--	3E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-06	--	2E-06	--	5E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00004	--	0.00002	0.00007
			Benzo(k)fluoranthene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Chrysene	4E-08	--	2E-08	--	6E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	6E-07	--	2E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0003	--	0.0002	0.0005
			Indeno(1,2,3-cd)pyrene	5E-07	--	2E-07	--	7E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0004	--	0.0002	0.0007
			Aroclor-1254	9E-08	--	5E-08	--	1E-07	Immune	0.007	--	0.004	0.01
			2,3,7,8-TCDD Equivalents	2E-07	--	2E-08	--	2E-07	Developmental	0.004	--	0.0004	0.004
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	1E-05	--	2E-06	--	2E-05	Skin, CVS	0.09	--	0.01	0.10
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	3E-06	--	--	--	3E-06	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.09	--	--	0.09
			Iron	--	--	--	--	--	GS	0.08	--	--	0.08
			Chemical Total	4E-05	--	2E-05	--	6E-05		0.3	--	0.02	0.3
		Exposure Point Total						6E-05					0.3
	Exposure Medium Total							6E-05					0.3
	Air	Tank Farm 4	Benzo(a)anthracene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Chrysene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	2E-12	--	--	2E-12	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-12	--	--	3E-12	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	2E-09	--	--	2E-09	NA	--	0.0001	--	0.0001

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Air	Tank Farm 4	Beryllium	--	3E-11	--	--	3E-11	Lungs	--	0.000002	--	0.000002
			Chromium	--	3E-08	--	--	3E-08	Lungs	--	0.00001	--	0.00001
			Cobalt	--	5E-09	--	--	5E-09	Lungs	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	4E-08	--	--	4E-08		--	0.0006	--	0.0006
		Exposure Point Total						4E-08					0.0006
	Exposure Medium Total							4E-08					0.0006
Medium Total								6E-05					0.3
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	--	Body Weight	0.0003	--	0.0002	0.0004
			Aroclor-1248	1E-04	--	--	--	1E-04	NA	--	--	--	--
			Aroclor-1254	6E-05	--	--	--	6E-05	Immune	4	--	--	4
			Endrin Aldehyde	--	--	--	--	--	Liver	0.6	--	0.2	0.8
			Aluminum	--	--	--	--	--	CNS	0.007	--	0.00004	0.007
			Arsenic	9E-05	--	5E-07	--	9E-05	Skin, CVS	0.6	--	0.003	0.6
			Cobalt	--	--	--	--	--	Blood	1	--	0.006	1
			Iron	--	--	--	--	--	GS	0.7	--	0.003	0.7
			Manganese (water)	--	--	--	--	--	CNS	6	--	0.7	6
			Chemical Total	3E-04	--	5E-07	--	3E-04		13	--	0.9	14
		Exposure Point Total						3E-04					14
	Exposure Medium Total							3E-04					14
	Air	Tank Farm 4	Naphthalene	--	--	--	--	--	Nasal	--	0.0003	--	0.0003
			Aroclor-1248	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	--	--	--	--	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	--	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	0.0003	--	0.0003
		Exposure Point Total						--					0.0003
	Exposure Medium Total							--					0.0003
Medium Total								3E-04					14
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				5E-04	Receptor HI Total (Surface Soil and Groundwater)				14
Receptor Total				Receptor Risk Total (Subsurface Soil and Groundwater)				3E-04	Receptor HI Total (Subsurface Soil and Groundwater)				14

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	t
Total Body Weight HI	0.0004
Total CNS HI	7
Total CVS HI	0.8
Total Developmental HI	0.009
Total GS HI	0.8
Total Immune HI	4
Total Kidney HI	0.004
Total Liver HI	0.8
Total Lungs HI	0.0005
Total Nasal HI	0.0003
Total Skin HI	0.8
Total Respiratory HI	0.00000001

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-04	--	5E-05	--	2E-04					
			Benzo(a)pyrene	5E-04	--	2E-04	--	7E-04					
			Benzo(b)fluoranthene	1E-04	--	4E-05	--	2E-04					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	4E-06	--	2E-06	--	6E-06					
			Chrysene	1E-07	--	5E-08	--	2E-07					
			Dibenzo(a,h)anthracene	9E-05	--	3E-05	--	1E-04					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	2E-05	--	7E-06	--	3E-05					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	6E-07	--	6E-08	--	7E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-05	--	1E-06	--	1E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-06	--	- -	--	3E-06					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	9E-04	--	3E-04	--	1E-03					
		Exposure Point Total						1E-03					
	Exposure Medium Total							1E-03					
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-10	--	--	3E-10					
			Benzo(a)pyrene	--	1E-09	--	--	1E-09					
			Benzo(b)fluoranthene	--	2E-10	--	--	2E-10					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	9E-11	--	--	9E-11					
			Chrysene	--	3E-12	--	--	3E-12					
			Dibenzo(a,h)anthracene	--	2E-10	--	--	2E-10					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	4E-11	--	--	4E-11					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	4E-12	--	--	4E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	3E-09	--	--	3E-09					
			Beryllium	--	4E-11	--	--	4E-11					
			Chromium	--	3E-08	--	--	3E-08					
			Cobalt	--	4E-09	--	--	4E-09					
			Chemical Total	--	4E-08	--	--	4E-08					
		Exposure Point Total						4E-08					
	Exposure Medium Total							4E-08					
Medium Total								1E-03					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-05	--	1E-05	--	4E-05					
			Benzo(a)pyrene	1E-04	--	5E-05	--	2E-04					
			Benzo(b)fluoranthene	3E-05	--	1E-05	--	4E-05					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-06	--	4E-07	--	1E-06					
			Chrysene	3E-07	--	1E-07	--	4E-07					
			Dibenzo(a,h)anthracene	9E-06	--	4E-06	--	1E-05					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	4E-06	--	1E-06	--	5E-06					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	3E-07	--	1E-07	--	5E-07					
			2,3,7,8-TCDD Equivalents	5E-07	--	5E-08	--	6E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-05	--	2E-06	--	2E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-06	--	- -	--	3E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	2E-04	--	8E-05	--	3E-04					
		Exposure Point Total						3E-04					
	Exposure Medium Total							3E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-11	--	--	6E-11					
			Benzo(a)pyrene	--	3E-10	--	--	3E-10					
			Benzo(b)fluoranthene	--	6E-11	--	--	6E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	2E-11	--	--	2E-11					
			Chrysene	--	7E-12	--	--	7E-12					
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	7E-12	--	--	7E-12					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	2E-12	--	--	2E-12					
			2,3,7,8-TCDD Equivalents	--	4E-12	--	--	4E-12					
All Soil	Air	Tank Farm 4	Aluminum	--	- -	--	--	- -					

TABLE 9.9 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Arsenic	--	3E-09	--	--	3E-09					
			Beryllium	--	3E-11	--	--	3E-11					
			Chromium	--	3E-08	--	--	3E-08					
			Cobalt	--	5E-09	--	--	5E-09					
			Iron	--	--	--	--	--					
			Chemical Total	--	4E-08	--	--	4E-08					
		Exposure Point Total						4E-08					
	Exposure Medium Total							4E-08					
Medium Total								4E-08					
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	3E-04					
			Aroclor-1248	2E-04	--	--	--	--					
			Aroclor-1254	1E-04	--	--	--	2E-04					
			Endrin Aldehyde	--	--	--	--	1E-04					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-04	--	8E-07	--	--					
			Cobalt	--	--	--	--	2E-04					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	5E-04	--	8E-07	--	--					
		Exposure Point Total						5E-04					
	Exposure Medium Total							5E-04					
	Air	Tank Farm 4	Naphthalene	--	--	--	--	5E-04					
			Aroclor-1248	--	--	--	--	--					
			Aroclor-1254	--	--	--	--	--					
			Endrin Aldehyde	--	--	--	--	--					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	--	--	--					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								5E-04					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-03					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				8E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	8E-07	--	1E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00009	--	0.00001	0.00010
			Benzo(k)fluoranthene	6E-09	--	8E-10	--	7E-09	NA	--	--	--	--
			Chrysene	2E-10	--	2E-11	--	2E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0006	--	0.00008	0.0007
			Indeno(1,2,3-cd)pyrene	3E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0009	--	0.0001	0.0010
			2,3,7,8-TCDD Equivalents	4E-09	--	1E-10	--	4E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.007	--	--	0.007
			Arsenic	2E-07	--	7E-09	--	2E-07	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	6E-08	--	--	--	6E-08	Fetotoxicity, GS, Bone	0.003	--	--	0.003
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Chemical Total	2E-06	--	2E-07	--	2E-06		0.08	--	0.001	0.08
		Exposure Point Total						2E-06					0.08
	Exposure Medium Total							2E-06					0.08
	Air	Tank Farm 4	Benzo(a)anthracene	--	7E-10	--	--	7E-10	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-09	--	--	3E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-10	--	--	6E-10	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Chrysene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-10	--	--	5E-10	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-11	--	--	3E-11	Liver, Respiratory, Devetopmental	--	0.000001	--	0.000001
			Aluminum	--	--	--	--	--	CNS	--	0.04	--	0.04
			Arsenic	--	2E-08	--	--	2E-08	NA	--	0.02	--	0.02
			Beryllium	--	2E-10	--	--	2E-10	Lungs	--	0.0004	--	0.0004
			Chromium	--	3E-07	--	--	3E-07	Lungs	--	0.002	--	0.002
			Cobalt	--	3E-08	--	--	3E-08	Lungs	--	0.04	--	0.04
			Chemical Total	--	3E-07	--	--	3E-07		--	0.09	--	0.09
		Exposure Point Total						3E-07					0.09
	Exposure Medium Total							3E-07					0.09
Medium Total								2E-06					0.2

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-08	--	5E-09	--	5E-08	NA	--	--	--	--
			Benzo(a)pyrene	2E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	5E-09	--	4E-08	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00002	--	0.000003	0.00002
			Benzo(k)fluoranthene	1E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Chrysene	5E-10	--	6E-11	--	5E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	2E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0002	--	0.00002	0.0002
			Indeno(1,2,3-cd)pyrene	5E-09	--	7E-10	--	6E-09	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0002	--	0.00003	0.0002
			Aroclor-1254	2E-09	--	3E-10	--	2E-09	Immune	0.003	--	0.0005	0.004
			2,3,7,8-TCDD Equivalents	3E-09	--	1E-10	--	3E-09	Developmental	0.002	--	0.00005	0.002
			Aluminum	--	--	--	--	--	CNS	0.006	--	--	0.006
			Arsenic	3E-07	--	8E-09	--	3E-07	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	6E-08	--	--	--	6E-08	Fetotoxicity, GS, Bone	0.003	--	--	0.003
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Chemical Total	6E-07	--	5E-08	--	7E-07		0.1	--	0.002	0.1
		Exposure Point Total						7E-07					0.1
	Exposure Medium Total							7E-07					0.1
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-10	--	--	7E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Chrysene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	1E-11	--	--	1E-11	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-11	--	--	2E-11	Liver, Respiratory, Developmental	--	0.000001	--	0.000001
			Aluminum	--	--	--	--	--	CNS	--	0.03	--	0.03
			Arsenic	--	2E-08	--	--	2E-08	NA	--	0.02	--	0.02
			Beryllium	--	2E-10	--	--	2E-10	Lungs	--	0.0003	--	0.0003

TABLE 8.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Chromium	--	3E-07	--	--	3E-07	Lungs	--	0.002	--	0.002
			Cobalt	--	4E-08	--	--	4E-08	Lungs	--	0.05	--	0.05
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	3E-07	--	--	3E-07		--	0.1	--	0.1
		Exposure Point Total						3E-07					0.1
	Exposure Medium Total							3E-07					0.1
Medium Total								3E-07					0.1
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	1E-06					0.2
			Aroclor-1248	1E-08	--	--	--	--	Body Weight	0.0000005	--	0.00001	0.00001
			Aroclor-1254	4E-09	--	--	--	1E-08	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	4E-09	Immune	0.008	--	--	0.008
			Aluminum	--	--	--	--	--	Liver	0.001	--	0.01	0.01
			Arsenic	3E-09	--	4E-09	--	--	CNS	0.00001	--	0.000007	0.00002
			Cobalt	--	--	--	--	6E-09	Skin, CVS	0.0004	--	0.0006	0.0010
			Iron	--	--	--	--	--	Blood	0.002	--	0.001	0.003
			Manganese (water)	--	--	--	--	--	GS	0.0007	--	0.0007	0.001
			Chemical Total	2E-08	--	4E-09	--	--	CNS	0.003	--	0.1	0.1
		Exposure Point Total						2E-08		0.01	--	0.2	0.2
	Exposure Medium Total							2E-08					0.2
	Air	Tank Farm 4	Naphthalene	--	6E-11	--	--	2E-08					0.2
			Aroclor-1248	--	--	--	--	6E-11	Nasal	--	0.00004	--	0.00004
			Aroclor-1254	--	--	--	--	--	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	--	NA	--	--	--	--
			Aluminum	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	--	--	--	CNS	--	--	--	--
			Cobalt	--	--	--	--	--	NA	--	--	--	--
			Iron	--	--	--	--	--	Lungs	--	--	--	--
			Manganese (water)	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	6E-11	--	--	--	CNS	--	--	--	--
		Exposure Point Total						6E-11		--	0.00004	--	0.00004
	Exposure Medium Total							6E-11					0.00004
Medium Total								6E-11					0.00004
	Exposure Medium Total							2E-08					0.2
Medium Total								--					--
								--					--

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(a)pyrene	4E-06	--	8E-07	--	5E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-07	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.000010	0.00007
			Benzo(k)fluoranthene	3E-08	--	6E-09	--	4E-08	NA	--	--	--	--
			Chrysene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-07	--	1E-07	--	8E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.00007	0.0005
			Indeno(1,2,3-cd)pyrene	2E-07	--	3E-08	--	2E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.00010	0.0007
			2,3,7,8-TCDD Equivalents	2E-08	--	9E-10	--	2E-08	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	1E-06	--	5E-08	--	1E-06	Skin, CVS	0.02	--	0.0009	0.02
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	9E-06	--	1E-06	--	1E-05		0.05	--	0.001	0.05
		Exposure Point Total						1E-05					0.05
	Exposure Medium Total							1E-05					0.05
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13	Liver, Respiratory, Developmental	--	0.000000001	--	0.000000001
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.00002	--	0.00002
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	3E-09	--	--	3E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	3E-10	--	--	3E-10	Lungs	--	0.00004	--	0.00004
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0001	--	0.0001
		Exposure Point Total						3E-09					0.0001
	Exposure Medium Total							3E-09					0.0001
Medium Total								1E-05					0.05

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	2E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Benzo(k)fluoranthene	8E-09	--	1E-09	--	1E-08	NA	--	--	--	--
			Chrysene	3E-09	--	5E-10	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-08	--	1E-08	--	9E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00010	--	0.00002	0.0001
			Indeno(1,2,3-cd)pyrene	3E-08	--	5E-09	--	3E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0001	--	0.00002	0.0002
			Aroclor-1254	1E-08	--	2E-09	--	1E-08	Immune	0.002	--	0.0004	0.003
			2,3,7,8-TCDD Equivalents	2E-08	--	8E-10	--	2E-08	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	6E-08	--	2E-06	Skin, CVS	0.03	--	0.001	0.03
			Beryllium	--	--	--	--	--	GS	0.00008	--	--	0.00008
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Chemical Total	4E-06	--	4E-07	--	4E-06		0.09	--	0.002	0.09
		Exposure Point Total						4E-06					0.09
	Exposure Medium Total							4E-06					0.09
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	1E-13	--	--	1E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	0.000000001	--	0.000000001
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.00002	--	0.00002

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Beryllium	--	2E-12	--	--	2E-12	Lungs	- -	0.0000004	- -	0.0000004
			Chromium	--	3E-09	--	--	3E-09	Lungs	- -	0.000002	- -	0.000002
			Cobalt	--	4E-10	--	--	4E-10	Lungs	- -	0.00006	- -	0.00006
			Iron	--	- -	--	--	- -	NA	- -	--	- -	--
			Chemical Total	--	3E-09	--	--	3E-09		- -	0.0001	- -	0.0001
		Exposure Point Total						3E-09					0.0001
	Exposure Medium Total							3E-09					0.0001
Medium Total								4E-06					0.09
Receptor Total							Receptor Risk Total (Surface Soil)	1E-05				Receptor HI Total (Surface Soil)	0.05
Receptor Total							Receptor Risk Total (All Soil)	4E-06				Receptor HI Total (All Soil)	0.09

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	6E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000009	--	0.000004	0.00001
			Benzo(k)fluoranthene	1E-08	--	5E-09	--	2E-08	NA	--	--	--	--
			Chrysene	3E-10	--	1E-10	--	5E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	9E-08	--	3E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00006	--	0.00003	0.00009
			Indeno(1,2,3-cd)pyrene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00009	--	0.00004	0.0001
			2,3,7,8-TCDD Equivalents	2E-09	--	2E-10	--	2E-09	Developmental	0.0002	--	0.00002	0.0002
			Arsenic	1E-07	--	1E-08	--	1E-07	Skin, CVS	0.0035	--	--	0.0038
			Beryllium	--	--	--	--	--	GS	0.000	--	0.0000	0.000
			Cobalt	--	--	--	--	--	Blood	0.00292	--	--	0.00292
			Iron	--	--	--	--	--	GS	0.0031	--	--	0.0031
			Manganese (soil)	--	--	--	--	--	CNS	0.000	--	--	0.000
			Chemical Total	2E-06	--	9E-07	--	3E-06		0.010	--	0.0004	0.011
		Exposure Point Total						3E-06					0.011
	Exposure Medium Total							3E-06					0.011
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chrysene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	8E-11	--	8E-11
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000001	--	0.000001
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.000000	--	0.000000
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.00000221	--	0.00000221
			Iron	--	--	--	--	--	NA	--	0.0000000	--	0.0000000
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000009	--	0.000009
			Chemical Total	--	4E-11	--	--	4E-11		--	0.000012	--	0.000012
		Exposure Point Total						4E-11					0.000012
	Exposure Medium Total							4E-11					0.000012
Medium Total								3E-06					0.011

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	7E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	1E-07	--	5E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000002	--	0.0000009	0.000003
			Benzo(k)fluoranthene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Chrysene	8E-10	--	3E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00002	--	0.000006	0.00002
			Indeno(1,2,3-cd)pyrene	9E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00002	--	0.000009	0.00003
			Aroclor-1254	1E-09	--	5E-10	--	2E-09	Immune	0.0003	--	0.0001	0.0005
			2,3,7,8-TCDD Equivalents	2E-09	--	2E-10	--	2E-09	Developmental	0.0002	--	0.00002	0.0002
			Arsenic	2E-07	--	2E-08	--	2E-07	Skin, CVS	0.0042	--	--	0.0046
			Beryllium	--	--	--	--	--	GS	0.000	--	0.0000	0.000
			Cobalt	--	--	--	--	--	Blood	0.00419	--	--	0.00419
			Iron	--	--	--	--	--	GS	0.0039	--	--	0.0039
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Thallium	--	--	--	--	--	NA	0.000	--	--	0.000
			Chemical Total	7E-07	--	2E-07	--	9E-07		0.01	--	0.0006	0.01
		Exposure Point Total						9E-07					0.01
	Exposure Medium Total							9E-07					0.01
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Chrysene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	1E-14	--	--	1E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	7E-11	--	7E-11

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenerio Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000001	--	0.000001
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.000000	--	0.000000
			Cobalt	--	3E-11	--	--	3E-11	Lungs	--	0.00000317	--	0.00000317
			Iron	--	--	--	--	--	NA	--	0.0000000	--	0.0000000
			Manganese (soil)	--	--	--	--	--	CNS	--	0.000021	--	0.000021
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	5E-11	--	--	5E-11		--	0.000026	--	0.000026
		Exposure Point Total						5E-11					0.000026
	Exposure Medium Total							5E-11					0.000026
Medium Total								9E-07					0.01
Surface Water	Surfece Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	1E-10	--	1E-10	Skin, CVS	--	--	0.000003	0.000003
			Iron	--	--	--	--	--	GS	--	--	0.000002	0.000002
			Chemical Total	--	--	1E-10	--	1E-10		--	--	0.000005	0.000005
		Exposure Point Total						1E-10					0.000005
	Exposure Medium Total							1E-10					0.000005
Medium Total								1E-10					0.000005
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	1E-10	--	1E-09	--	1E-09	NA	--	--	--	--
			Benzo(a)pyrene	1E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-09	--	2E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-09	--	4E-08	--	4E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	3E-09	--	7E-09	--	1E-08	Developmental	0.0003	--	0.0007	0.0009
			Aluminum	--	--	--	--	--	CNS	0.0007	--	--	0.0007
			Arsenic	2E-07	--	4E-07	--	6E-07	Skin, CVS	0.005	--	0.01	0.02
			Beryllium	--	--	--	--	--	GS	0.00002	--	--	0.00002
			Chromium	5E-08	--	--	--	5E-08	Fetotoxicity, GS, Bone	0.0004	--	--	0.0004
			Cobalt	--	--	--	--	--	Blood	0.009	--	--	0.009
			Iron	--	--	--	--	--	GS	0.008	--	--	0.008
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	3E-07	--	6E-07	--	9E-07		0.02	--	0.01	0.04
		Exposure Point Total						9E-07					0.04
	Exposure Medium Total							9E-07					0.04
Medium Total								9E-07					0.04
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					4E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.05
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					2E-06	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.05

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	7E-06	--	1E-06	--	7E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.000008	0.00007
			Benzo(k)fluoranthene	5E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Chrysene	2E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.00006	0.0005
			Indeno(1,2,3-cd)pyrene	2E-07	--	3E-08	--	3E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.00008	0.0007
			2,3,7,8-TCDD Equivalents	5E-09	--	2E-10	--	5E-09	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	3E-07	--	1E-08	--	3E-07	Skin, CVS	0.02	--	0.0008	0.02
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	8E-08	--	--	--	8E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	1E-05	--	2E-06	--	1E-05		0.05	--	0.0010	0.05
		Exposure Point Total						1E-05					0.05
	Exposure Medium Total							1E-05					0.05
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-15	--	--	3E-15	Liver, Respiratory, Developmental	--	8E-11	--	8E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	2E-12	--	--	2E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	3E-12	--	--	3E-12	Lungs	--	0.000002	--	0.000002
			Chemical Total	--	4E-11	--	--	4E-11		--	0.000006	--	0.000006
		Exposure Point Total						4E-11					0.000006
	Exposure Medium Total							4E-11					0.000006
Medium Total								1E-05					0.05

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-07	--	5E-08	--	4E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	5E-08	--	4E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Benzo(k)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Chrysene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0001	--	0.00001	0.0001
			Indeno(1,2,3-cd)pyrene	4E-08	--	6E-09	--	5E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0001	--	0.00002	0.0002
			Aroclor-1254	3E-09	--	4E-10	--	3E-09	Immune	0.002	--	0.0003	0.003
			2,3,7,8-TCDD Equivalents	4E-09	--	1E-10	--	5E-09	Developmental	0.001	--	0.00004	0.001
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.03	--	0.0009	0.03
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	8E-08	--	--	--	8E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Chemical Total	3E-06	--	4E-07	--	3E-06		0.09	--	0.001	0.09
		Exposure Point Total						3E-06					0.09
	Exposure Medium Total							3E-06					0.09
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Chrysene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	2E-15	--	--	2E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-15	--	--	3E-15	Liver, Respiratory, Developmental	--	7E-11	--	7E-11

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	2E-12	--	--	2E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	5E-12	--	--	5E-12	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	4E-11	--	--	4E-11		--	0.000006	--	0.000006
		Exposure Point Total						4E-11					0.000006
	Exposure Medium Total							4E-11					0.000006
Medium Total								3E-06					0.09
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	9E-11	--	9E-11	Skin, CVS	--	--	0.000007	0.000007
			Iron	--	--	--	--	--	GS	--	--	0.000004	0.000004
			Chemical Total	--	--	9E-11	--	9E-11		--	--	0.00001	0.00001
		Exposure Point Total						9E-11					0.00001
	Exposure Medium Total							9E-11					0.00001
Medium Total								9E-11					0.00001
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	6E-10	--	9E-11	--	7E-10	NA	--	--	--	--
			Benzo(a)pyrene	7E-08	--	1E-08	--	7E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	8E-09	--	1E-09	--	9E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	2E-09	--	2E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.03	--	0.001	0.03
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.003	--	--	0.003
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese (soil)	--	--	--	--	--	CNS	0.007	--	--	0.007
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	6E-07	--	3E-08	--	6E-07		0.2	--	0.001	0.2
		Exposure Point Total						6E-07					0.2
	Exposure Medium Total							6E-07					0.2
Medium Total								6E-07					0.2
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.2
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					4E-06	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.3

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	6E-07	--	9E-08	--	7E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000006	--	0.0000009	0.000007
			Benzo(k)fluoranthene	5E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Chrysene	1E-10	--	2E-11	--	2E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	1E-08	--	1E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00004	--	0.000007	0.00005
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00006	--	0.000009	0.00007
			2,3,7,8-TCDD Equivalents	2E-09	--	6E-11	--	2E-09	Developmental	0.0001	--	0.000005	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	1E-07	--	4E-09	--	1E-07	Skin, CVS	0.002	--	0.00008	0.003
			Beryllium	--	--	--	--	--	GS	0.000010	--	--	0.000010
			Chromium	3E-08	--	--	--	3E-08	Feotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.006	--	0.0001	0.006
		Exposure Point Total						1E-06					0.006
	Exposure Medium Total							1E-06					0.006
	Air	Tank Farm 4	Benzo(a)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Chrysene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-14	--	--	1E-14	Liver, Respiratory, Developmental	--	8E-11	--	8E-11
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	7E-12	--	--	7E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	1E-13	--	--	1E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	1E-10	--	--	1E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	1E-11	--	--	1E-11	Lungs	--	0.000002	--	0.000002
			Chemical Total	--	1E-10	--	--	1E-10		--	0.000006	--	0.000006
		Exposure Point Total						1E-10					0.000006
	Exposure Medium Total							1E-10					0.000006
Medium Total								1E-06					0.006

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-08	--	5E-09	--	4E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	2E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000002	--	0.0000002	0.000002
			Benzo(k)fluoranthene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Chrysene	4E-10	--	5E-11	--	4E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.00001	--	0.000002	0.00001
			Indeno(1,2,3-cd)pyrene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Aroclor-1254	9E-10	--	1E-10	--	1E-09	Immune	0.0002	--	0.00004	0.0003
			2,3,7,8-TCDD Equivalents	2E-09	--	6E-11	--	2E-09	Developmental	0.0001	--	0.000004	0.0001
			Aluminum	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Arsenic	1E-07	--	5E-09	--	1E-07	Skin, CVS	0.003	--	0.0001	0.003
			Beryllium	--	--	--	--	--	GS	0.000009	--	--	0.000009
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.003	--	--	0.003
			Iron	--	--	--	--	--	GS	0.003	--	--	0.003
			Chemical Total	4E-07	--	4E-08	--	4E-07		0.010	--	0.0001	0.010
		Exposure Point Total						4E-07					0.010
	Exposure Medium Total							4E-07					0.010
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Chrysene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	6E-15	--	--	6E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-14	--	--	1E-14	Liver, Respiratory, Developmental	--	7E-11	--	7E-11

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	8E-12	--	--	8E-12	NA	--	0.000001	--	0.000001
			Beryllium	--	9E-14	--	--	9E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	1E-10	--	--	1E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-10	--	--	1E-10		--	0.000006	--	0.000006
		Exposure Point Total						1E-10					0.000006
	Exposure Medium Total							1E-10					0.000006
Medium Total								4E-07					0.010
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Arsenic	--	--	2E-10	--	2E-10	Skin, CVS	--	--	0.000004	0.000004
			Iron	--	--	--	--	--	GS	--	--	0.000002	0.000002
			Chemical Total	--	--	2E-10	--	2E-10		--	--	0.000006	0.000006
		Exposure Point Total						2E-10					0.000006
	Exposure Medium Total							2E-10					0.000006
Medium Total								2E-10					0.000006
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	5E-11	--	4E-11	--	9E-11	NA	--	--	--	--
			Benzo(a)pyrene	6E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-10	--	5E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-09	--	1E-09	--	3E-09	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	3E-09	--	4E-10	--	3E-09	Developmental	0.0002	--	0.00003	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	2E-07	--	3E-08	--	2E-07	Skin, CVS	0.003	--	0.0006	0.004
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	4E-08	--	--	--	4E-08	Fetotoxicity, GS, Bone	0.0003	--	--	0.0003
			Cobalt	--	--	--	--	--	Blood	0.007	--	--	0.007
			Iron	--	--	--	--	--	GS	0.006	--	--	0.006
			Manganese (soil)	--	--	--	--	--	CNS	0.0007	--	--	0.0007
			Thallium	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	2E-07	--	3E-08	--	2E-07		0.02	--	0.0006	0.02
		Exposure Point Total						2E-07					0.02
	Exposure Medium Total							2E-07					0.02
Medium Total								2E-07					0.02
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.02
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					7E-07	Receptor HI Total (All Soil, Surface Water, and Sediment)				0.03

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-06	--	2E-07	--	2E-06					
			Benzo(a)pyrene	7E-06	--	1E-06	--	8E-06					
			Benzo(b)fluoranthene	1E-06	--	2E-07	--	2E-06					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	6E-08	--	8E-09	--	6E-08					
			Chrysene	2E-09	--	3E-10	--	2E-09					
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	3E-07	--	4E-08	--	3E-07					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-07	--	4E-09	--	1E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-08	--	- -	--	3E-08					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	1E-05	--	2E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 4	Benzo(a)anthracene	--	9E-13	--	--	9E-13					
			Benzo(a)pyrene	--	4E-12	--	--	4E-12					
			Benzo(b)fluoranthene	--	8E-13	--	--	8E-13					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	3E-13	--	--	3E-13					
			Chrysene	--	1E-14	--	--	1E-14					
			Dibenzo(a,h)anthracene	--	7E-13	--	--	7E-13					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	9E-12	--	--	9E-12					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	1E-11	--	--	1E-11					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								1E-05					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-07	--	6E-08	--	4E-07					
			Benzo(a)pyrene	2E-06	--	3E-07	--	2E-06					
			Benzo(b)fluoranthene	4E-07	--	5E-08	--	4E-07					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-08	--	2E-09	--	2E-08					
			Chrysene	4E-09	--	6E-10	--	5E-09					
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	5E-08	--	7E-09	--	5E-08					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	3E-09	--	5E-10	--	4E-09					
			2,3,7,8-TCDD Equivalents	6E-09	--	2E-10	--	6E-09					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-07	--	5E-09	--	1E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-08	--	- -	--	3E-08					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	3E-06	--	4E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-13	--	--	2E-13					
			Benzo(a)pyrene	--	1E-12	--	--	1E-12					
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	8E-14	--	--	8E-14					
			Chrysene	--	2E-14	--	--	2E-14					
			Dibenzo(a,h)anthracene	--	8E-14	--	--	8E-14					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	7E-15	--	--	7E-15					
			2,3,7,8-TCDD Equivalents	--	1E-14	--	--	1E-14					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--					
			Arsenic	--	1E-11	--	--	1E-11					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	1E-10	--	--	1E-10					
			Cobalt	--	2E-11	--	--	2E-11					
			Iron	--	--	--	--	--					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								3E-06					
Surface Water	Surface Water	Tank Farm 4	Benzo(a)anthracene	--	--	--	--	--					
			Arsenic	--	--	3E-10	--	3E-10					
			Iron	--	--	--	--	--					
			Chemical Total	--	--	3E-10	--	3E-10					
		Exposure Point Total						3E-10					
	Exposure Medium Total							3E-10					
Medium Total								3E-10					
Sediment	Sediment	Tank Farm 4	Benzo(a)anthracene	6E-10	--	1E-10	--	8E-10					
			Benzo(a)pyrene	7E-08	--	1E-08	--	9E-08					
			Benzo(b)fluoranthene	8E-09	--	2E-09	--	1E-08					
			Dibenzo(a,h)anthracene	2E-08	--	4E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	9E-09	--	6E-10	--	1E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	6E-07	--	4E-08	--	6E-07					
			Beryllium	--	--	--	--	--					
			Chromium	2E-07	--	--	--	2E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Thallium	--	--	--	--	--					
			Chemical Total	8E-07	--	6E-08	--	9E-07					
		Exposure Point Total						9E-07					
	Exposure Medium Total							9E-07					
Medium Total								9E-07					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-05					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					4E-06					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-05	--	2E-06	--	2E-05	NA	--	--	--	--
			Benzo(a)pyrene	6E-05	--	9E-06	--	7E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-05	--	2E-06	--	1E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0006	--	0.00008	0.0006
			Benzo(k)fluoranthene	5E-07	--	7E-08	--	6E-07	NA	--	--	--	--
			Chrysene	2E-08	--	2E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-05	--	2E-06	--	1E-05	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.004	--	0.0006	0.005
			Indeno(1,2,3-cd)pyrene	2E-06	--	3E-07	--	3E-06	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.006	--	0.0008	0.006
			2,3,7,8-TCDD Equivalents	5E-08	--	2E-09	--	5E-08	Developmental	0.01	--	0.0004	0.01
			Aluminum	--	--	--	--	--	CNS	0.05	--	--	0.05
			Arsenic	3E-06	--	1E-07	--	3E-06	Skin, CVS	0.2	--	0.008	0.2
			Beryllium	--	--	--	--	--	GS	0.0009	--	--	0.0009
			Chromium	8E-07	--	--	--	8E-07	Fetotoxicity, GS, Bone	0.02	--	--	0.02
			Cobalt	--	--	--	--	--	Blood	0.2	--	--	0.2
			Chemical Total	1E-04	--	2E-05	--	1E-04		0.5	--	0.009	0.5
		Exposure Point Total						1E-04					0.5
	Exposure Medium Total							1E-04					0.5
	Air	Tank Farm 4	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Chrysene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	4.51681E-09	--	4.51681E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	1E-10	--	--	1E-10	NA	--	0.00006	--	0.00006
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000008	--	0.000008
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0003	--	0.0003
		Exposure Point Total						2E-09					0.0003
	Exposure Medium Total							2E-09					0.0003
Medium Total								1E-04					0.5

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-06	--	5E-07	--	4E-06	NA	--	--	--	--
			Benzo(a)pyrene	2E-05	--	2E-06	--	2E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-06	--	5E-07	--	4E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0001	--	0.00002	0.0002
			Benzo(k)fluoranthene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Chrysene	4E-08	--	6E-09	--	4E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0010	--	0.0001	0.001
			Indeno(1,2,3-cd)pyrene	4E-07	--	6E-08	--	5E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.001	--	0.0002	0.002
			Aroclor-1254	2E-08	--	4E-09	--	3E-08	Immune	0.02	--	0.003	0.02
			2,3,7,8-TCDD Equivalents	4E-08	--	1E-09	--	4E-08	Developmental	0.01	--	0.0004	0.01
			Aluminum	--	--	--	--	--	CNS	0.04	--	--	0.04
			Arsenic	4E-06	--	1E-07	--	4E-06	Skin, CVS	0.3	--	0.009	0.3
			Beryllium	--	--	--	--	--	GS	0.0008	--	--	0.0008
			Chromium	8E-07	--	--	--	8E-07	Fetotoxicity, GS, Bone	0.02	--	--	0.02
			Cobalt	--	--	--	--	--	Blood	0.3	--	--	0.3
			Iron	--	--	--	--	--	GS	0.3	--	--	0.3
			Chemical Total	3E-05	--	4E-06	--	3E-05		0.9	--	0.01	0.9
		Exposure Point Total						3E-05					0.9
	Exposure Medium Total							3E-05					0.9
	Air	Tank Farm 4	Benzo(a)anthracene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Chrysene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	9E-14	--	--	9E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	3.934E-09	--	3.934E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	1E-10	--	--	1E-10	NA	--	0.00007	--	0.00007

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000008	--	0.000008
			Cobalt	--	3E-10	--	--	3E-10	Lungs	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0004	--	0.0004
		Exposure Point Total						2E-09					0.0004
	Exposure Medium Total							2E-09					0.0004
Medium Total								3E-05					0.9
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	--	Body Weight	0.0004	--	0.0002	0.0007
			Aroclor-1248	2E-05	--	--	--	2E-05	NA	--	--	--	--
			Aroclor-1254	8E-06	--	--	--	8E-06	Immune	7	--	--	7
			Endrin Aldehyde	--	--	--	--	--	Liver	t	--	0.2	t
			Aluminum	--	--	--	--	--	CNS	0.01	--	0.00004	0.01
			Arsenic	5E-06	--	4E-08	--	5E-06	Skin, CVS	0.4	--	0.003	0.4
			Cobalt	--	--	--	--	--	Blood	1	--	0.006	t
			Iron	--	--	--	--	--	GS	0.6	--	0.003	0.6
			Manganese (water)	--	--	--	--	--	CNS	3	--	0.7	4
			Chemical Total	3E-05	--	4E-08	--	3E-05		14	--	1.0	15
		Exposure Point Total						3E-05					15
	Exposure Medium Total							3E-05					15
	Air	Tank Farm 4	Naphthalene	--	--	--	--	--	Nasal	--	0.0004	--	0.0004
			Aroclor-1248	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	--	--	--	--	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	--	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	0.0004	--	0.0004
		Exposure Point Total						--					0.0004
	Exposure Medium Total							--					0.0004
Medium Total								3E-05					15
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-04	Receptor HI Total (Surface Soil and Groundwater)				15
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				6E-05	Receptor HI Total (All Soil and Groundwater)				16

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	2
Total Body Weight HI	0.0007
Total Bone HI	0.04
Total CNS HI	4
Total CVS HI	0.9
Total Developmental HI	0.03
Total Fetotoxicity HI	0.04
Total GS HI	0.9
Total Immune HI	7
Total Kidney HI	0.009
Total Liver HI	1
Total Lungs HI	0.0003
Total Nasal HI	0.0004
Total Skin HI	0.9
Total Respiratory HI	8.45081E-09

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(a)pyrene	6E-06	--	9E-07	--	7E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00006	--	0.000009	0.00007
			Benzo(k)fluoranthene	5E-08	--	7E-09	--	5E-08	NA	--	--	--	--
			Chrysene	1E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-07	--	1E-07	--	1E-06	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0004	--	0.00006	0.0005
			Indeno(1,2,3-cd)pyrene	2E-07	--	3E-08	--	2E-07	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0006	--	0.00009	0.0007
			2,3,7,8-TCDD Equivalents	2E-08	--	6E-10	--	2E-08	Developmental	0.001	--	0.00005	0.001
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	1E-06	--	4E-08	--	1E-06	Skin, CVS	0.02	--	0.0008	0.02
			Beryllium	--	--	--	--	--	GS	0.00010	--	--	0.00010
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	1E-05	--	1E-06	--	1E-05		0.05	--	0.001	0.05
		Exposure Point Total						1E-05					0.05
	Exposure Medium Total							1E-05					0.05
	Air	Tank Farm 4	Benzo(a)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-10	--	--	1E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	9E-12	--	--	9E-12	NA	--	--	--	--
			Chrysene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	7E-13	--	--	7E-13	Liver, Respiratory, Developmental	--	5E-09	--	5E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	4E-10	--	--	4E-10	NA	--	0.00006	--	0.00006
			Beryllium	--	6E-12	--	--	6E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	6E-09	--	--	6E-09	Lungs	--	0.000008	--	0.000008
			Cobalt	--	7E-10	--	--	7E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	8E-09	--	--	8E-09		--	0.0003	--	0.0003
		Exposure Point Total						8E-09					0.0003
	Exposure Medium Total							8E-09					0.0003
Medium Total								1E-05					0.06

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	3E-07	--	5E-08	--	4E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	2E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00001	--	0.000002	0.00002
			Benzo(k)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Chrysene	3E-09	--	5E-10	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	1E-08	--	1E-07	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	Liver	0.0001	--	0.00002	0.0001
			Indeno(1,2,3-cd)pyrene	4E-08	--	6E-09	--	4E-08	NA	--	--	--	--
			Pyrene	--	--	--	--	--	Kidney	0.0001	--	0.00002	0.0002
			Aroclor-1254	9E-09	--	1E-09	--	1E-08	Immune	0.002	--	0.0004	0.003
			2,3,7,8-TCDD Equivalents	2E-08	--	5E-10	--	2E-08	Developmental	0.001	--	0.00004	0.001
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	1E-06	--	5E-08	--	1E-06	Skin, CVS	0.03	--	0.001	0.03
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Chemical Total	4E-06	--	4E-07	--	4E-06		0.10	--	0.001	0.10
		Exposure Point Total						4E-06					0.10
	Exposure Medium Total							4E-06					0.10
	Air	Tank Farm 4	Benzo(a)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	7E-13	--	--	7E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-13	--	--	7E-13	NA	--	--	--	--
			Pyrene	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	3E-13	--	--	3E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	6E-13	--	--	6E-13	Liver, Respiratory, Developmental	--	4E-09	--	4E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Arsenic	--	5E-10	--	--	5E-10	NA	--	0.00007	--	0.00007
			Beryllium	--	5E-12	--	--	5E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	6E-09	--	--	6E-09	Lungs	--	0.000008	--	0.000008
			Cobalt	--	1E-09	--	--	1E-09	Lungs	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	8E-09	--	--	8E-09		--	0.0004	--	0.0004
		Exposure Point Total						8E-09					0.0004
	Exposure Medium Total							8E-09					0.0004
Medium Total								4E-06					0.10
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	--	Body Weight	0.0002	--	0.0001	0.0003
			Aroclor-1248	3E-05	--	--	--	3E-05	NA	--	--	--	--
			Aroclor-1254	1E-05	--	--	--	1E-05	Immune	3	--	--	3
			Endrin Aldehyde	--	--	--	--	--	Liver	0.4	--	0.1	0.5
			Aluminum	--	--	--	--	--	CNS	0.004	--	0.00002	0.004
			Arsenic	6E-06	--	6E-08	--	6E-06	Skin, CVS	0.1	--	0.001	0.1
			Cobalt	--	--	--	--	--	Blood	0.5	--	0.003	0.5
			Iron	--	--	--	--	--	GS	0.2	--	0.002	0.2
			Manganese (water)	--	--	--	--	--	CNS	1	--	0.3	1
			Chemical Total	4E-05	--	6E-08	--	4E-05		5	--	0.4	6
		Exposure Point Total						4E-05					6
	Exposure Medium Total							4E-05					6
	Air	Tank Farm 4	Naphthalene	--	--	--	--	--	Nasal	--	0.0002	--	0.0002
			Aroclor-1248	--	--	--	--	--	NA	--	--	--	--
			Aroclor-1254	--	--	--	--	--	NA	--	--	--	--
			Endrin Aldehyde	--	--	--	--	--	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	--	--	--	--		--	0.0002	--	0.0002
		Exposure Point Total						--					0.0002
	Exposure Medium Total							--					0.0002
Medium Total								4E-05					6
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				6E-05	Receptor HI Total (Surface Soil and Groundwater)				6
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				5E-05	Receptor HI Total (All Soil and Groundwater)				6

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI	0.6
Total Body Weight HI	0.0003
Total CNS HI	1
Total CVS HI	0.2
Total Developmental HI	0.003
Total GS HI	0.3
Total Immune HI	3
Total Kidney HI	0.0009
Total Liver HI	0.5
Total Lungs HI	0.0003
Total Nasal HI	0.0002
Total Skin HI	0.2
Total Respiratory HI	8E-09

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 4	Benzo(a)anthracene	2E-05	--	2E-06	--	2E-05					
			Benzo(a)pyrene	7E-05	--	1E-05	--	8E-05					
			Benzo(b)fluoranthene	1E-05	--	2E-06	--	2E-05					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	5E-07	--	8E-08	--	6E-07					
			Chrysene	2E-08	--	2E-09	--	2E-08					
			Dibenzo(a,h)anthracene	1E-05	--	2E-06	--	1E-05					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	2E-06	--	4E-07	--	3E-06					
			Pyrene	- -	--	- -	--	- -					
			2,3,7,8-TCDD Equivalents	7E-08	--	2E-09	--	7E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-06	--	4E-08	--	1E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-07	--	- -	--	3E-07					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	2E-05	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					
	Air	Tank Farm 4	Benzo(a)anthracene	--	5E-11	--	--	5E-11					
			Benzo(a)pyrene	--	2E-10	--	--	2E-10					
			Benzo(b)fluoranthene	--	5E-11	--	--	5E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	2E-11	--	--	2E-11					
			Chrysene	--	6E-13	--	--	6E-13					
			Dibenzo(a,h)anthracene	--	4E-11	--	--	4E-11					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	9E-12	--	--	9E-12					
			Pyrene	--	- -	--	--	- -					
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	5E-10	--	--	5E-10					
			Beryllium	--	8E-12	--	--	8E-12					
			Chromium	--	6E-09	--	--	6E-09					
			Cobalt	--	7E-10	--	--	7E-10					
			Chemical Total	--	8E-09	--	--	8E-09					
		Exposure Point Total						8E-09					
	Exposure Medium Total							8E-09					
Medium Total								1E-04					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 4	Benzo(a)anthracene	4E-06	--	6E-07	--	4E-06					
			Benzo(a)pyrene	2E-05	--	2E-06	--	2E-05					
			Benzo(b)fluoranthene	3E-06	--	5E-07	--	4E-06					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-07	--	2E-08	--	2E-07					
			Chrysene	4E-08	--	6E-09	--	5E-08					
			Dibenzo(a,h)anthracene	1E-06	--	2E-07	--	1E-06					
			Fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	5E-07	--	7E-08	--	5E-07					
			Pyrene	- -	--	- -	--	- -					
			Aroclor-1254	3E-08	--	5E-09	--	4E-08					
			2,3,7,8-TCDD Equivalents	6E-08	--	2E-09	--	6E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	1E-06	--	5E-08	--	1E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-07	--	- -	--	3E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	4E-06	--	3E-05					
		Exposure Point Total						3E-05					
	Exposure Medium Total							3E-05					
	Air	Tank Farm 4	Benzo(a)anthracene	--	1E-11	--	--	1E-11					
			Benzo(a)pyrene	--	6E-11	--	--	6E-11					
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	5E-12	--	--	5E-12					
			Chrysene	--	1E-12	--	--	1E-12					
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12					
			Fluoranthene	--	- -	--	--	- -					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Pyrene	--	- -	--	--	- -					
			Aroclor-1254	--	4E-13	--	--	4E-13					
			2,3,7,8-TCDD Equivalents	--	8E-13	--	--	8E-13					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	Air	Tank Farm 4	Aluminum	--	--	--	--	--					
			Arsenic	--	6E-10	--	--	6E-10					
			Beryllium	--	7E-12	--	--	7E-12					
			Chromium	--	6E-09	--	--	6E-09					
			Cobalt	--	1E-09	--	--	1E-09					
			Iron	--	--	--	--	--					
			Chemical Total	--	8E-09	--	--	8E-09					
		Exposure Point Total						8E-09					
	Exposure Medium Total							8E-09					
Medium Total								3E-05					
Groundwater	Groundwater	Tank Farm 4	Naphthalene	--	--	--	--	--					
			Aroclor-1248	5E-05	--	--	--	5E-05					
			Aroclor-1254	2E-05	--	--	--	2E-05					
			Endrin Aldehyde	--	--	--	--	--					
			Aluminum	--	--	--	--	--					
			Arsenic	1E-05	--	1E-07	--	1E-05					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	8E-05	--	1E-07	--	8E-05					
		Exposure Point Total						8E-05					
	Exposure Medium Total							8E-05					
	Air	Tank Farm 4	Naphthalene	--	--	--	--	--					
			Aroclor-1248	--	--	--	--	--					
			Aroclor-1254	--	--	--	--	--					
			Endrin Aldehyde	--	--	--	--	--					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	--	--	--					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	--	--	--	--	--					
		Exposure Point Total						--					
	Exposure Medium Total							--					
Medium Total								--					
Receptor Total								8E-05					
Receptor Total							Receptor Risk Total	2E-04					
							Receptor Risk Total	1E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Tank Farm 5

LIST OF TABLES
RAGS PART D TABLE 9 - TANK FARM 5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.

Reasonable Maximum Exposures

9.1.RME Construction Workers - Tank Farm 5
9.2.RME Industrial Workers - Tank Farm 5
9.3.RME Adolescent Trespassers - Tank Farm 5
9.4.RME Child Recreational Users - Tank Farm 5
9.5.RME Adult Recreational Users - Tank Farm 5
9.6.RME Lifelong Recreational Users - Tank Farm 5
9.7.RME Child Residents - Tank Farm 5
9.8.RME Adult Residents - Tank Farm 5
9.9.RME Lifelong Residents - Tank Farm 5

Central Tendency Exposures

9.1.CTE Construction Workers - Tank Farm 5
9.2.CTE Industrial Workers - Tank Farm 5
9.3.CTE Adolescent Trespassers - Tank Farm 5
9.4.CTE Child Recreational Users - Tank Farm 5
9.5.CTE Adult Recreational Users - Tank Farm 5
9.6.CTE Lifelong Recreational Users - Tank Farm 5
9.7.CTE Child Residents - Tank Farm 5
9.8.CTE Adult Residents - Tank Farm 5
9.9.CTE Lifelong Residents - Tank Farm 5

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	7E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	8E-09	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	1E-09	--	5E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-09	--	2E-09	--	5E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	6E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	2E-09	--	8E-10	--	3E-09	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	1E-08	--	1E-09	--	1E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	9E-07	--	9E-08	--	1E-06	Skin, CVS	0.1	--	0.01	0.2
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.2	--	0.02	0.3
		Exposure Point Total						1E-06					0.3
	Exposure Medium Total							1E-06					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Aroclor-1254	--	3E-11	--	--	3E-11	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-10	--	--	2E-10	Liver, Respiratory, Developmental	--	0.000009	--	0.000009
			Aluminum	--	--	--	--	--	CNS	--	0.1	--	0.1
			Arsenic	--	1E-07	--	--	1E-07	NA	--	0.1	--	0.1
			Beryllium	--	1E-09	--	--	1E-09	Lungs	--	0.002	--	0.002
			Chromium	--	1E-06	--	--	1E-06	Lungs	--	0.009	--	0.009
			Cobalt	--	1E-07	--	--	1E-07	Lungs	--	0.1	--	0.1
			Chemical Total	--	1E-06	--	--	1E-06		--	0.5	--	0.5
		Exposure Point Total						1E-06					0.5
	Exposure Medium Total							1E-06					0.5
Medium Total								3E-06					0.7

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	6E-10	--	2E-10	--	9E-10	NA	--	--	--	--
			Benzo(a)pyrene	8E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-09	--	7E-10	--	2E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-10	--	2E-10	--	7E-10	NA	--	--	--	--
			Aroclor-1254	2E-09	--	8E-10	--	3E-09	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	1E-08	--	1E-09	--	1E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	1E-06	--	1E-07	--	1E-06	Skin, CVS	0.2	--	0.02	0.2
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.09	--	--	0.09
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.3	--	0.02	0.3
		Exposure Point Total						1E-06					0.3
	Exposure Medium Total							1E-06					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Aroclor-1254	--	3E-11	--	--	3E-11	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-10	--	--	2E-10	Liver, Respiratory, Developmental	--	0.000009	--	0.000009
			Aluminum	--	--	--	--	--	CNS	--	0.1	--	0.1
			Arsenic	--	2E-07	--	--	2E-07	NA	--	0.2	--	0.2
			Beryllium	--	1E-09	--	--	1E-09	Lungs	--	0.002	--	0.002
			Chromium	--	1E-06	--	--	1E-06	Lungs	--	0.009	--	0.009
			Cobalt	--	2E-07	--	--	2E-07	Lungs	--	0.2	--	0.2
			Chemical Total	--	1E-06	--	--	1E-06		--	0.5	--	0.5
		Exposure Point Total						1E-06					0.5
	Exposure Medium Total							1E-06					0.5
Medium Total								3E-06					0.8

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	2E-10	--	2E-09	--	2E-09	Blood	0.00008	--	0.0006	0.0007
			Aluminum	--	--	--	--	--	CNS	0.0004	--	0.0002	0.0006
			Arsenic	5E-08	--	3E-08	--	7E-08	Skin, CVS	0.007	--	0.004	0.01
			Cobalt	--	--	--	--	--	Blood	0.02	--	0.009	0.02
			Iron	--	--	--	--	--	GS	0.009	--	0.005	0.01
			Manganese (water)	--	--	--	--	--	CNS	0.03	--	0.4	0.4
			Chemical Total	5E-08	--	3E-08	--	8E-08		0.06	--	0.4	0.4
		Exposure Point Total						8E-08					0.4
	Exposure Medium Total							8E-08					0.4
	Air	Tank Farm 5	Benzene	--	7E-10	--	--	7E-10	Blood	--	0.0002	--	0.0002
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	7E-10	--	--	7E-10		--	0.0002	--	0.0002
		Exposure Point Total						7E-10					0.0002
	Exposure Medium Total							7E-10					0.0002
Medium Total								8E-08					0.4
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				3E-06	Receptor HI Total (Surface Soil and Groundwater)				1
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				3E-06	Receptor HI Total (All Soil and Groundwater)				1

TABLE 9.2.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	3E-07	--	6E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	2E-08	--	4E-08	NA	--	--	--	--
			Aroclor-1254	3E-08	--	3E-08	--	5E-08	Immune	0.002	--	0.002	0.004
			2,3,7,8-TCDD Equivalents	2E-07	--	4E-08	--	2E-07	Developmental	0.004	--	0.0008	0.005
			Aluminum	--	--	--	--	--	CNS	0.008	--	--	0.008
			Arsenic	1E-05	--	3E-06	--	2E-05	Skin, CVS	0.09	--	0.02	0.1
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.003	--	--	0.003
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.1	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	8E-10	--	--	8E-10	NA	--	0.00004	--	0.00004
			Beryllium	--	9E-12	--	--	9E-12	Lungs	--	0.0000005	--	0.0000005
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	7E-10	--	--	7E-10	Lungs	--	0.00004	--	0.00004
			Chemical Total	--	8E-09	--	--	8E-09		--	0.0001	--	0.0001
		Exposure Point Total						8E-09					0.0001
	Exposure Medium Total							8E-09					0.0001
Medium Total								2E-05					0.2

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	9E-09	--	8E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	1E-07	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-09	--	7E-09	--	1E-08	NA	--	--	--	--
			Aroclor-1254	3E-08	--	3E-08	--	5E-08	Immune	0.002	--	0.002	0.004
			2,3,7,8-TCDD Equivalents	2E-07	--	4E-08	--	2E-07	Developmental	0.004	--	0.0008	0.005
			Aluminum	--	--	--	--	--	CNS	0.007	--	--	0.007
			Arsenic	2E-05	--	3E-06	--	2E-05	Skin, CVS	0.10	--	0.02	0.1
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	2E-06	--	--	--	2E-06	Fetotoxicity, GS, Bone	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Blood	0.05	--	--	0.05
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.2	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	9E-10	--	--	9E-10	NA	--	0.00004	--	0.00004
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	1E-09	--	--	1E-09	Lungs	--	0.00005	--	0.00005
			Chemical Total	--	9E-09	--	--	9E-09		--	0.0001	--	0.0001
		Exposure Point Total						9E-09					0.0001
	Exposure Medium Total							9E-09					0.0001
Medium Total								2E-05					0.2
Receptor Total							Receptor Risk Total (Surface Soil)	2E-05				Receptor HI Total (Surface Soil)	0.2
Receptor Total							Receptor Risk Total (All Soil)	2E-05				Receptor HI Total (All Soil)	0.2

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	1E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	2E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	5E-08	--	7E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9E-09	--	2E-08	--	3E-08	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-09	--	1E-08	Immune	0.0005	--	0.001	0.002
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-08	--	4E-08	Developmental	0.001	--	0.0005	0.002
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	9E-07	--	3E-06	Skin, CVS	0.02	--	0.01	0.03
			Beryllium	--	--	--	--	--	GS	0.00007	--	--	0.00007
			Chromium	2E-07	--	--	--	2E-07	Fetotoxicity, GS, Bone	0.0009	--	--	0.0009
			Cobalt	--	--	--	--	--	Blood	0.009	--	--	0.009
			Chemical Total	2E-06	--	1E-06	--	3E-06	-	0.04	--	0.01	0.05
		Exposure Point Total						3E-06					0.05
	Exposure Medium Total							3E-06					0.05
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	2E-14	--	--	2E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-13	--	--	1E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	8E-11	--	--	8E-11	NA	--	0.000007	--	0.000007
			Beryllium	--	8E-13	--	--	8E-13	Lungs	--	0.00000010	--	0.00000010
			Chromium	--	6E-10	--	--	6E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	6E-11	--	--	6E-11	Lungs	--	0.000007	--	0.000007
			Chemical Total	--	8E-10	--	--	8E-10		--	0.00002	--	0.00002
		Exposure Point Total						8E-10					0.00002
	Exposure Medium Total							8E-10					0.00002
Medium Total								3E-06					0.05

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	4E-09	--	7E-09	--	1E-08	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-09	--	2E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-09	--	6E-09	--	9E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-09	--	1E-08	Immune	0.0005	--	0.001	0.002
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-08	--	4E-08	Developmental	0.001	--	0.0005	0.002
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	1E-06	--	3E-06	Skin, CVS	0.03	--	0.01	0.04
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.0010	--	--	0.0010
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Chemical Total	2E-06	--	1E-06	--	4E-06		0.04	--	0.01	0.06
		Exposure Point Total						4E-06					0.06
	Exposure Medium Total							4E-06					0.06
	Air	Tank Farm 5	Benzo(a)anthracene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-15	--	--	7E-15	NA	--	--	--	--
			Aroclor-1254	--	2E-14	--	--	2E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-13	--	--	1E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000006	--	0.000006
			Arsenic	--	9E-11	--	--	9E-11	NA	--	0.000008	--	0.000008
			Beryllium	--	7E-13	--	--	7E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	6E-10	--	--	6E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	9E-11	--	--	9E-11	Lungs	--	0.00001	--	0.00001
			Chemical Total	--	8E-10	--	--	8E-10		--	0.00002	--	0.00002
		Exposure Point Total						8E-10					0.00002
	Exposure Medium Total							8E-10					0.00002
Medium Total								4E-06					0.06

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	8E-10	--	8E-10	Liver	--	--	0.0000t	0.0000t
			Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Benzo(a)pyrene	--	--	--	--	--	NA	--	--	--	--
			Benzo(b)fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	--	--	--	--	NA	--	--	--	--
			Naphthalene	--	--	--	--	--	Body Weight	--	--	0.00008	0.00008
			Aluminum	--	--	--	--	--	CNS	--	--	0.000009	0.000009
			Arsenic	--	--	8E-10	--	8E-10	Skin, CVS	--	--	0.0000t0	0.0000t0
			Iron	--	--	--	--	--	GS	--	--	0.00002	0.00002
			Chemical Total	--	--	2E-09	--	2E-09		--	--	0.0001	0.000t
		Exposure Point Total						2E-09					0.0001
	Exposure Medium Total							2E-09					0.000t
Medium Total								2E-09					0.0001
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	4E-08	--	2E-07	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	5E-07	--	3E-06	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-08	--	3E-07	--	4E-07	NA	--	--	--	--
			Chrysene	6E-10	--	3E-09	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	6E-07	--	7E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-08	--	2E-07	--	2E-07	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	5E-08	--	6E-08	--	1E-07	Developmental	0.002	--	0.003	0.005
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	4E-06	--	5E-06	--	9E-06	Skin, CVS	0.05	--	0.07	0.1
			Beryllium	--	--	--	--	--	GS	0.00008	--	--	0.00008
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese (soil)	--	--	--	--	--	CNS	0.0008	--	--	0.0008
			Chemical Total	5E-06	--	9E-06	--	1E-05		0.1	--	0.07	0.2
		Exposure Point Total						1E-05					0.2
	Exposure Medium Total							1E-05					0.2
Medium Total								1E-05					0.2
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					2E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.3
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					2E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.3

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	2E-08	--	8E-08	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	3E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	4E-08	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	5E-09	--	2E-08	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	9E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	6E-06	--	5E-07	--	6E-06	Skin, CVS	0.2	--	0.01	0.2
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	8E-07	--	--	--	8E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.06	--	--	0.06
			Chemical Total	8E-06	--	9E-07	--	9E-06		0.2	--	0.01	0.3
		Exposure Point Total						9E-06					0.3
	Exposure Medium Total							9E-06					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	8E-15	--	--	8E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-14	--	--	5E-14	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	4E-11	--	--	4E-11	NA	--	0.000007	--	0.000007
			Beryllium	--	4E-13	--	--	4E-13	Lungs	--	0.00000010	--	0.00000010
			Chromium	--	3E-10	--	--	3E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	3E-11	--	--	3E-11	Lungs	--	0.000007	--	0.000007
			Chemical Total	--	4E-10	--	--	4E-10		--	0.00002	--	0.00002
		Exposure Point Total						4E-10					0.00002
	Exposure Medium Total							4E-10					0.00002
Medium Total								9E-06					0.3

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	8E-09	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	2E-08	--	6E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	2E-08	--	8E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	5E-09	--	2E-08	Immune	0.003	--	0.001	0.005
			2,3,7,8-TCDD Equivalents	8E-08	--	7E-09	--	9E-08	Developmental	0.007	--	0.0006	0.008
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	7E-06	--	6E-07	--	7E-06	Skin, CVS	0.2	--	0.01	0.2
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Chromium	8E-07	--	--	--	8E-07	Fetotoxicity, GS, Bone	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Blood	0.09	--	--	0.09
			Chemical Total	8E-06	--	7E-07	--	9E-06		0.3	--	0.02	0.3
		Exposure Point Total						9E-06					0.3
	Exposure Medium Total							9E-06					0.3
	Air	Tank Farm 5	Benzo(a)anthracene	--	7E-15	--	--	7E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-15	--	--	6E-15	NA	--	--	--	--
			Aroclor-1254	--	8E-15	--	--	8E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-14	--	--	5E-14	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000006	--	0.000006
			Arsenic	--	4E-11	--	--	4E-11	NA	--	0.000008	--	0.000008
			Beryllium	--	3E-13	--	--	3E-13	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	3E-10	--	--	3E-10	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	5E-11	--	--	5E-11	Lungs	--	0.00001	--	0.00001
			Chemical Total	--	4E-10	--	--	4E-10		--	0.00002	--	0.00002
		Exposure Point Total						4E-10					0.00002
	Exposure Medium Total							4E-10					0.00002
Medium Total								9E-06					0.3

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	9E-10	--	9E-10	Liver	--	- -	0.00003	0.00003
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	- -	0.0002	0.0002
			Aluminum	- -	--	- -	--	- -	CNS	--	- -	0.00002	0.00002
			Arsenic	- -	--	9E-10	--	9E-10	Skin, CVS	--	- -	0.00002	0.00002
			Iron	- -	--	- -	--	- -	GS	--	- -	0.00004	0.00004
			Chemical Total	- -	--	2E-09	--	2E-09		--	--	0.0003	0.0003
		Exposure Point Total						2E-09					0.0003
	Exposure Medium Total							2E-09					0.0003
Medium Total								2E-09					0.0003
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-07	--	9E-08	--	4E-07	NA	--	- -	--	--
			Benzo(a)pyrene	3E-06	--	1E-06	--	4E-06	NA	--	- -	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	5E-07	NA	--	- -	--	--
			Chrysene	4E-09	--	1E-09	--	5E-09	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	7E-07	--	3E-07	--	1E-06	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	2E-07	--	8E-08	--	3E-07	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	2E-07	--	1E-08	--	2E-07	Developmental	0.02	- -	0.001	0.02
			Aluminum	- -	--	- -	--	- -	CNS	0.02	- -	--	0.02
			Arsenic	1E-05	--	1E-06	--	2E-05	Skin, CVS	0.4	- -	0.03	0.4
			Beryllium	- -	--	- -	--	- -	GS	0.0006	- -	--	0.0006
			Chromium	1E-06	--	- -	--	1E-06	Fetotoxicity, GS, Bone	0.010	- -	--	0.010
			Cobalt	- -	--	- -	--	- -	Blood	0.3	- -	--	0.3
			Iron	- -	--	- -	--	- -	GS	0.2	- -	--	0.2
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.005	- -	--	0.005
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.9	--	0.03	0.9
		Exposure Point Total						2E-05					0.9
	Exposure Medium Total							2E-05					0.9
Medium Total								2E-05					0.9
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				1
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	8E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Aroclor-1254	5E-09	--	3E-09	--	8E-09	Immune	0.0004	--	0.0002	0.0006
			2,3,7,8-TCDD Equivalents	3E-08	--	4E-09	--	4E-08	Developmental	0.0008	--	0.00009	0.0009
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	3E-06	--	3E-07	--	3E-06	Skin, CVS	0.02	--	0.002	0.02
			Beryllium	--	--	--	--	--	GS	0.00005	--	--	0.00005
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Blood	0.006	--	--	0.006
			Chemical Total	3E-06	--	4E-07	--	3E-06		0.03	--	0.002	0.03
		Exposure Point Total						3E-06					0.03
	Exposure Medium Total							3E-06					0.03
	Air	Tank Farm 5	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	3E-14	--	--	3E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000007	--	0.000007
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.000007	--	0.000007
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.00000010	--	0.00000010
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	1E-10	--	--	1E-10	Lungs	--	0.000007	--	0.000007
			Chemical Total	--	2E-09	--	--	2E-09		--	0.00002	--	0.00002
		Exposure Point Total						2E-09					0.00002
	Exposure Medium Total							2E-09					0.00002
Medium Total								3E-06					0.03

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	3E-09	--	2E-09	--	5E-09	NA	--	--	--	--
			Benzo(a)pyrene	4E-08	--	2E-08	--	6E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Aroclor-1254	5E-09	--	3E-09	--	8E-09	Immune	0.0004	--	0.0002	0.0006
			2,3,7,8-TCDD Equivalents	4E-08	--	4E-09	--	4E-08	Developmental	0.0008	--	0.00009	0.0009
			Aluminum	--	--	--	--	--	CNS	0.001	--	--	0.001
			Arsenic	3E-06	--	3E-07	--	3E-06	Skin, CVS	0.02	--	0.002	0.02
			Beryllium	--	--	--	--	--	GS	0.00004	--	--	0.00004
			Chromium	4E-07	--	--	--	4E-07	Fetotoxicity, GS, Bone	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Blood	0.010	--	--	0.010
			Chemical Total	3E-06	--	4E-07	--	4E-06		0.03	--	0.003	0.03
		Exposure Point Total						4E-06					0.03
	Exposure Medium Total							4E-06					0.03
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Aroclor-1254	--	3E-14	--	--	3E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13	Liver, Respiratory, Developmental	--	4E-10	--	4E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000006	--	0.000006
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.000008	--	0.000008
			Beryllium	--	1E-12	--	--	1E-12	Lungs	--	0.00000008	--	0.00000008
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.0000004	--	0.0000004
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.00001	--	0.00001
			Chemical Total	--	2E-09	--	--	2E-09		--	0.00002	--	0.00002
		Exposure Point Total						2E-09					0.00002
	Exposure Medium Total							2E-09					0.00002
Medium Total								4E-06					0.03

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	2E-09	--	2E-09	Liver	--	--	0.00002	0.00002
			Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Benzo(a)pyrene	--	--	--	--	--	NA	--	--	--	--
			Benzo(b)fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	--	--	--	--	NA	--	--	--	--
			Naphthalene	--	--	--	--	--	Body Weight	--	--	0.00009	0.00009
			Aluminum	--	--	--	--	--	CNS	--	--	0.00001	0.00001
			Arsenic	--	--	2E-09	--	2E-09	Skin, CVS	--	--	0.00001	0.00001
			Iron	--	--	--	--	--	GS	--	--	0.00002	0.00002
			Chemical Total	--	--	4E-09	--	4E-09		--	--	0.0002	0.0002
		Exposure Point Total						4E-09					0.0002
	Exposure Medium Total							4E-09					0.0002
Medium Total								4E-09					0.0002
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	4E-08	--	2E-08	--	6E-08	NA	--	--	--	--
			Benzo(a)pyrene	5E-07	--	3E-07	--	8E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-08	--	3E-08	--	8E-08	NA	--	--	--	--
			Chrysene	6E-10	--	3E-10	--	9E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	8E-08	--	1E-08	--	9E-08	Developmental	0.002	--	0.0002	0.002
			Aluminum	--	--	--	--	--	CNS	0.002	--	--	0.002
			Arsenic	6E-06	--	9E-07	--	7E-06	Skin, CVS	0.04	--	0.006	0.04
			Beryllium	--	--	--	--	--	GS	0.00006	--	--	0.00006
			Chromium	5E-07	--	--	--	5E-07	Fetotoxicity, GS, Bone	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Manganese (soil)	--	--	--	--	--	CNS	0.0006	--	--	0.0006
			Chemical Total	7E-06	--	1E-06	--	9E-06		0.10	--	0.006	0.1
		Exposure Point Total						9E-06					0.1
	Exposure Medium Total							9E-06					0.1
Medium Total								9E-06					0.1
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.1
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					1E-05	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.1

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	7E-08	--	2E-08	--	9E-08					
			Benzo(a)pyrene	8E-07	--	3E-07	--	1E-06					
			Benzo(b)fluoranthene	1E-07	--	5E-08	--	2E-07					
			Dibenzo(a,h)anthracene	1E-07	--	6E-08	--	2E-07					
			Indeno(1,2,3-cd)pyrene	6E-08	--	2E-08	--	8E-08					
			Aroclor-1254	2E-08	--	7E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	3E-06	--	3E-07	--	3E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-07	--	- -	--	3E-07					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	4E-06	--	8E-07	--	5E-06					
		Exposure Point Total						5E-06					
	Exposure Medium Total							5E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-14	--	--	5E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	8E-14	--	--	8E-14					
			Dibenzo(a,h)anthracene	--	9E-14	--	--	9E-14					
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14					
			Aroclor-1254	--	5E-14	--	--	5E-14					
			2,3,7,8-TCDD Equivalents	--	2E-13	--	--	2E-13					
			Aluminum	--	2E-14	--	--	2E-14					
			Arsenic	--	2E-10	--	--	2E-10					
			Beryllium	--	2E-12	--	--	2E-12					
			Chromium	--	1E-09	--	--	1E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								5E-06					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	9E-09	--	3E-08					
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07					
			Benzo(b)fluoranthene	5E-08	--	2E-08	--	7E-08					
			Dibenzo(a,h)anthracene	7E-08	--	3E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	8E-09	--	3E-08					
			Aroclor-1254	2E-08	--	7E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	1E-07	--	1E-08	--	1E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	3E-06	--	3E-07	--	3E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	4E-07	--	- -	--	4E-07					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	4E-06	--	5E-07	--	4E-06					
		Exposure Point Total						4E-06					
	Exposure Medium Total							4E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14					
			Benzo(a)pyrene	--	2E-13	--	--	2E-13					
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14					
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14					
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14					
			Aroclor-1254	--	4E-14	--	--	4E-14					
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	2E-10	--	--	2E-10					
			Beryllium	--	1E-12	--	--	1E-12					
			Chromium	--	1E-09	--	--	1E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								4E-06					

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	3E-09	--	3E-09					
			Benzo(a)anthracene	- -	--	- -	--	- -					
			Benzo(a)pyrene	- -	--	- -	--	- -					
			Benzo(b)fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -					
			Naphthalene	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	- -	--	3E-09	--	3E-09					
			Iron	- -	--	- -	--	- -					
			Chemical Total	- -	--	5E-09	--	5E-09					
		Exposure Point Total						5E-09					
	Exposure Medium Total							5E-09					
Medium Total								5E-09					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-07	--	1E-07	--	4E-07					
			Benzo(a)pyrene	4E-06	--	1E-06	--	5E-06					
			Benzo(b)fluoranthene	4E-07	--	2E-07	--	5E-07					
			Chrysene	4E-09	--	2E-09	--	6E-09					
			Dibenzo(a,h)anthracene	8E-07	--	3E-07	--	1E-06					
			Indeno(1,2,3-cd)pyrene	3E-07	--	1E-07	--	4E-07					
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-05	--	2E-06	--	2E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	2E-06	--	- -	--	2E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	4E-06	--	3E-05					
		Exposure Point Total						3E-05					
	Exposure Medium Total							3E-05					
Medium Total								3E-05					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					4E-05					
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					4E-05					

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Benzo(a)pyrene	5E-06	--	2E-06	--	7E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-07	--	1E-07	--	5E-07	NA	--	--	--	--
			Aroclor-1254	9E-08	--	3E-08	--	1E-07	Immune	0.02	--	0.010	0.03
			2,3,7,8-TCDD Equivalents	6E-07	--	5E-08	--	6E-07	Developmental	0.05	--	0.004	0.06
			Aluminum	--	--	--	--	--	CNS	0.1	--	--	0.1
			Arsenic	4E-05	--	4E-06	--	5E-05	Skin, CVS	1	--	0.09	1
			Beryllium	--	--	--	--	--	GS	0.003	--	--	0.003
			Chromium	6E-06	--	--	--	6E-06	Fetotoxicity, GS, Bone	0.05	--	--	0.05
			Cobalt	--	--	--	--	--	Blood	0.4	--	--	0.4
			Chemical Total	6E-05	--	7E-06	--	6E-05		2	--	0.1	2
		Exposure Point Total						6E-05					2
	Exposure Medium Total							6E-05					2
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	8E-10	--	--	8E-10	NA	--	0.0002	--	0.0002
			Beryllium	--	9E-12	--	--	9E-12	Lungs	--	0.000002	--	0.000002
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000009	--	0.000009
			Cobalt	--	7E-10	--	--	7E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	8E-09	--	--	8E-09		--	0.0005	--	0.0005
		Exposure Point Total						8E-09					0.0005
	Exposure Medium Total							8E-09					0.0005
Medium Total								6E-05					2

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	7E-07	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Aroclor-1254	9E-08	--	3E-08	--	1E-07	Immune	0.02	--	0.010	0.03
			2,3,7,8-TCDD Equivalents	6E-07	--	5E-08	--	6E-07	Developmental	0.05	--	0.005	0.06
			Aluminum	--	--	--	--	--	CNS	0.10	--	--	0.10
			Arsenic	5E-05	--	4E-06	--	5E-05	Skin, CVS	1	--	0.1	1
			Beryllium	--	--	--	--	--	GS	0.003	--	--	0.003
			Chromium	6E-06	--	--	--	6E-06	Fetotoxicity, GS, Bone	0.05	--	--	0.05
			Cobalt	--	--	--	--	--	Blood	0.7	--	--	0.7
			Chemical Total	6E-05	--	5E-06	--	6E-05		2	--	0.1	2
		Exposure Point Total						6E-05					2
	Exposure Medium Total							6E-05					2
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Aroclor-1254	--	2E-13	--	--	2E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	1E-09	--	--	1E-09	NA	--	0.0002	--	0.0002
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.000002	--	0.000002
			Chromium	--	7E-09	--	--	7E-09	Lungs	--	0.000010	--	0.000010
			Cobalt	--	1E-09	--	--	1E-09	Lungs	--	0.0002	--	0.0002
			Chemical Total	--	9E-09	--	--	9E-09		--	0.0005	--	0.0005
		Exposure Point Total						9E-09					0.0005
	Exposure Medium Total							9E-09					0.0005
Medium Total								6E-05					2

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	5E-07	--	6E-08	--	6E-07	Blood	0.03	--	0.003	0.03
			Aluminum	--	--	--	--	--	CNS	0.1	--	0.0006	0.1
			Arsenic	1E-04	--	5E-07	--	1E-04	Skin, CVS	3	--	0.01	3
			Cobalt	--	--	--	--	--	Blood	6	--	0.03	6
			Iron	--	--	--	--	--	GS	3	--	0.01	3
			Manganese (water)	--	--	--	--	--	CNS	9	--	1	10
			Chemical Total	1E-04	--	5E-07	--	1E-04		21	--	1	22
		Exposure Point Total						1E-04					22
	Exposure Medium Total							1E-04					22
	Air	Tank Farm 5	Benzene	--	5E-07	--	--	5E-07	Blood	--	0.03	--	0.03
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	5E-07	--	--	5E-07		--	0.03	--	0.03
		Exposure Point Total						5E-07					0.03
	Exposure Medium Total							5E-07					0.03
Medium Total								1E-04					22
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-04	Receptor HI Total (Surface Soil and Groundwater)				24
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				2E-04	Receptor HI Total (All Soil and Groundwater)				24

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	7
Total CNS HI	11
Total CVS HI	5
Total Developmental HI	0.1
Total GS HI	3
Total Immune HI	0.07
Total Liver HI	0.00000002
Total Lungs HI	0.0004
Total Skin HI	5
Total Respiratory HI	0.00000002

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	3E-08	--	9E-08	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	4E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	6E-08	--	3E-08	--	8E-08	NA	--	--	--	--
			Aroclor-1254	4E-08	--	2E-08	--	6E-08	Immune	0.003	--	0.001	0.004
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07	Developmental	0.006	--	0.0007	0.006
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	2E-05	--	2E-06	--	2E-05	Skin, CVS	0.1	--	0.01	0.1
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	3E-06	--	--	--	3E-06	Fetotoxicity, GS, Bone	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Blood	0.05	--	--	0.05
			Chemical Total	2E-05	--	3E-06	--	3E-05		0.2	--	0.02	0.2
		Exposure Point Total						3E-05					0.2
	Exposure Medium Total							3E-05					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Aroclor-1254	--	7E-13	--	--	7E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-12	--	--	5E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	3E-09	--	--	3E-09	NA	--	0.0002	--	0.0002
			Beryllium	--	4E-11	--	--	4E-11	Lungs	--	0.000002	--	0.000002
			Chromium	--	3E-08	--	--	3E-08	Lungs	--	0.000009	--	0.000009
			Cobalt	--	3E-09	--	--	3E-09	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	3E-08	--	--	3E-08		--	0.0005	--	0.0005
		Exposure Point Total						3E-08					0.0005
	Exposure Medium Total							3E-08					0.0005
Medium Total								3E-05					0.2

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Aroclor-1254	4E-08	--	2E-08	--	6E-08	Immune	0.003	--	0.001	0.004
			2,3,7,8-TCDD Equivalents	3E-07	--	3E-08	--	3E-07	Developmental	0.006	--	0.0007	0.006
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	2E-05	--	3E-06	--	2E-05	Skin, CVS	0.1	--	0.02	0.2
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Chromium	3E-06	--	--	--	3E-06	Fetoloxicity, GS, Bone	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Blood	0.07	--	--	0.07
			Chemical Total	2E-05	--	3E-06	--	3E-05		0.2	--	0.02	0.2
		Exposure Point Total						3E-05					0.2
	Exposure Medium Total							3E-05					0.2
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	7E-13	--	--	7E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Aroclor-1254	--	7E-13	--	--	7E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-12	--	--	5E-12	Liver, Respiratory, Developmental	--	9E-09	--	9E-09
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Arsenic	--	4E-09	--	--	4E-09	NA	--	0.0002	--	0.0002
			Beryllium	--	3E-11	--	--	3E-11	Lungs	--	0.000002	--	0.000002
			Chromium	--	3E-08	--	--	3E-08	Lungs	--	0.000010	--	0.000010
			Cobalt	--	4E-09	--	--	4E-09	Lungs	--	0.0002	--	0.0002
			Chemical Total	--	4E-08	--	--	4E-08		--	0.0005	--	0.0005
		Exposure Point Total						4E-08					0.0005
	Exposure Medium Total							4E-08					0.0005
Medium Total								3E-05					0.2

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	6E-07	--	9E-08	--	7E-07	Blood	0.008	--	0.001	0.009
			Aluminum	--	--	--	--	--	CNS	0.04	--	0.0002	0.04
			Arsenic	1E-04	--	6E-07	--	t E-04	Skin, CVS	0.8	--	0.004	0.8
			Cobalt	--	--	--	--	--	Blood	2	--	0.009	2
			Iron	--	--	--	--	--	GS	1.0	--	0.005	1.0
			Manganese (water)	--	--	--	--	--	CNS	3	--	0.4	3
			Chemical Total	1E-04	--	7E-07	--	1E-04		6	--	0.4	7
		Exposure Point Total						1E-04					7
	Exposure Medium Total							1E-04					7
	Air	Tank Farm 5	Benzene	--	6E-07	--	--	6E-07	Blood	--	0.008	--	0.008
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	6E-07	--	--	6E-07		--	0.008	--	0.008
		Exposure Point Total						6E-07					0.008
	Exposure Medium Total							6E-07					0.008
Medium Total								1E-04					7
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-04	Receptor HI Total (Surface Soil and Groundwater)				7
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				2E-04	Receptor HI Total (All Soil and Groundwater)				7

Notes:

t - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	2
Total CNS HI	3
Total CVS HI	1
Total Developmental HI	0.01
Total GS HI	1.0
Total Immune HI	0.008
Total Liver HI	0.00000002
Total Lungs HI	0.0004
Total Skin HI	t
Total Respiratory HI	0.00000002

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	5E-07	--	2E-07	--	7E-07					
			Benzo(a)pyrene	6E-06	--	2E-06	--	8E-06					
			Benzo(b)fluoranthene	1E-06	--	4E-07	--	1E-06					
			Dibenzo(a,h)anthracene	1E-06	--	4E-07	--	1E-06					
			Indeno(1,2,3-cd)pyrene	4E-07	--	2E-07	--	6E-07					
			Aroclor-1254	1E-07	--	5E-08	--	2E-07					
			2,3,7,8-TCDD Equivalents	8E-07	--	8E-08	--	9E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-05	--	2E-06	--	2E-05					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-06	--	- -	--	3E-06					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	3E-05	--	6E-06	--	4E-05					
		Exposure Point Total						4E-05					
	Exposure Medium Total							4E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-12	--	--	1E-12					
			Benzo(a)pyrene	--	1E-11	--	--	1E-11					
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12					
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12					
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13					
			Aroclor-1254	--	8E-13	--	--	8E-13					
			2,3,7,8-TCDD Equivalents	--	6E-12	--	--	6E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	4E-09	--	--	4E-09					
			Beryllium	--	4E-11	--	--	4E-11					
			Chromium	--	3E-08	--	--	3E-08					
			Cobalt	--	3E-09	--	--	3E-09					
			Chemical Total	--	3E-08	--	--	3E-08					
		Exposure Point Total						3E-08					
	Exposure Medium Total							3E-08					
Medium Total								4E-05					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-07	--	7E-08	--	2E-07					
			Benzo(a)pyrene	2E-06	--	9E-07	--	3E-06					
			Benzo(b)fluoranthene	4E-07	--	1E-07	--	5E-07					
			Dibenzo(a,h)anthracene	5E-07	--	2E-07	--	7E-07					
			Indeno(1,2,3-cd)pyrene	1E-07	--	6E-08	--	2E-07					
			Aroclor-1254	1E-07	--	5E-08	--	2E-07					
			2,3,7,8-TCDD Equivalents	9E-07	--	8E-08	--	9E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-05	--	3E-06	--	2E-05					
			Beryllium	--	--	--	--	--					
			Chromium	3E-06	--	--	--	3E-06					
			Cobalt	--	--	--	--	--					
			Chemical Total	3E-05	--	4E-06	--	3E-05					
		Exposure Point Total						3E-05					
	Exposure Medium Total							3E-05					
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-13	--	--	4E-13					
			Benzo(a)pyrene	--	5E-12	--	--	5E-12					
			Benzo(b)fluoranthene	--	8E-13	--	--	8E-13					
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12					
			Indeno(1,2,3-cd)pyrene	--	3E-13	--	--	3E-13					
			Aroclor-1254	--	8E-13	--	--	8E-13					
			2,3,7,8-TCDD Equivalents	--	6E-12	--	--	6E-12					
			Aluminum	--	--	--	--	--					
			Arsenic	--	5E-09	--	--	5E-09					
			Beryllium	--	3E-11	--	--	3E-11					
			Chromium	--	3E-08	--	--	3E-08					
			Cobalt	--	4E-09	--	--	4E-09					
			Chemical Total	--	4E-08	--	--	4E-08					
		Exposure Point Total						4E-08					
	Exposure Medium Total							4E-08					
Medium Total								3E-05					

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	1E-06	--	1E-07	--	1E-06					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-04	--	1E-06	--	2E-04					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	2E-04	--	1E-06	--	2E-04					
		Exposure Point Total						2E-04					
	Exposure Medium Total							2E-04					
	Air	Tank Farm 5	Benzene	--	1E-06	--	--	1E-06					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	--	--	--					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	--	1E-06	--	--	1E-06					
		Exposure Point Total						1E-06					
	Exposure Medium Total							1E-06					
Medium Total								2E-04					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				3E-04					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				3E-04					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	7E-10	--	9E-11	--	8E-10	NA	--	--	--	--
			Benzo(a)pyrene	8E-09	--	1E-09	--	9E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	6E-10	--	8E-11	--	7E-10	NA	--	--	--	--
			Aroclor-1254	7E-10	--	1E-10	--	9E-10	Immune	0.001	--	0.0002	0.001
			2,3,7,8-TCDD Equivalents	5E-09	--	2E-10	--	5E-09	Developmental	0.003	--	0.00008	0.003
			Aluminum	--	--	--	--	--	CNS	0.006	--	--	0.006
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.06	--	0.002	0.06
			Beryllium	--	--	--	--	--	GS	0.0002	--	--	0.0002
			Chromium	5E-08	--	--	--	5E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	4E-07	--	1E-08	--	5E-07		0.09	--	0.002	0.10
		Exposure Point Total						5E-07					0.10
	Exposure Medium Total							5E-07					0.10
	Air	Tank Farm 5	Benzo(a)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Aroclor-1254	--	5E-12	--	--	5E-12	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-11	--	--	4E-11	Liver, Respiratory, Developmental	--	0.000002	--	0.000002
			Aluminum	--	--	--	--	--	CNS	--	0.03	--	0.03
			Arsenic	--	3E-08	--	--	3E-08	NA	--	0.03	--	0.03
			Beryllium	--	3E-10	--	--	3E-10	Lungs	--	0.0004	--	0.0004
			Chromium	--	2E-07	--	--	2E-07	Lungs	--	0.002	--	0.002
			Cobalt	--	2E-08	--	--	2E-08	Lungs	--	0.03	--	0.03
			Chemical Total	--	3E-07	--	--	3E-07		--	0.09	--	0.09
		Exposure Point Total						3E-07					0.09
	Exposure Medium Total							3E-07					0.09
Medium Total								7E-07					0.2

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	3E-10	--	3E-11	--	3E-10	NA	--	--	--	--
			Benzo(a)pyrene	3E-09	--	4E-10	--	4E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-10	--	7E-11	--	6E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-10	--	9E-11	--	8E-10	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-10	--	3E-11	--	2E-10	NA	--	--	--	--
			Aroclor-1254	7E-10	--	1E-10	--	9E-10	Immune	0.001	--	0.0002	0.001
			2,3,7,8-TCDD Equivalents	5E-09	--	2E-10	--	5E-09	Developmental	0.003	--	0.00008	0.003
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	4E-07	--	1E-08	--	4E-07	Skin, CVS	0.07	--	0.002	0.07
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	5E-08	--	--	--	5E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.03	--	--	0.03
			Chemical Total	5E-07	--	1E-08	--	5E-07		0.1	--	0.002	0.1
		Exposure Point Total						5E-07					0.1
	Exposure Medium Total							5E-07					0.1
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Aroclor-1254	--	5E-12	--	--	5E-12	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-11	--	--	4E-11	Liver, Respiratory, Developmental	--	0.000002	--	0.000002
			Aluminum	--	--	--	--	--	CNS	--	0.03	--	0.03
			Arsenic	--	3E-08	--	--	3E-08	NA	--	0.03	--	0.03
			Beryllium	--	2E-10	--	--	2E-10	Lungs	--	0.0004	--	0.0004
			Chromium	--	2E-07	--	--	2E-07	Lungs	--	0.002	--	0.002
			Cobalt	--	3E-08	--	--	3E-08	Lungs	--	0.04	--	0.04
			Chemical Total	--	3E-07	--	--	3E-07		--	0.1	--	0.1
		Exposure Point Total						3E-07					0.1
	Exposure Medium Total							3E-07					0.1
Medium Total								8E-07					0.2

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	5E-11	--	4E-10	--	5E-10	Blood	0.00002	--	0.0001	0.0001
			Aluminum	--	--	--	--	--	CNS	0.00008	--	0.00004	0.0001
			Arsenic	3E-09	--	5E-09	--	8E-09	Skin, CVS	0.0005	--	0.0008	0.001
			Cobalt	--	--	--	--	--	Blood	0.002	--	0.002	0.004
			Iron	--	--	--	--	--	GS	0.0008	--	0.0009	0.002
			Manganese (water)	--	--	--	--	--	CNS	0.002	--	0.07	0.07
			Chemical Total	3E-09	--	5E-09	--	9E-09		0.006	--	0.07	0.08
		Exposure Point Total						9E-09					0.08
	Exposure Medium Total							9E-09					0.08
	Air	Tank Farm 5	Benzene	--	1E-10	--	--	1E-10	Blood	--	0.00004	--	0.00004
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	1E-10	--	--	1E-10		--	0.00004	--	0.00004
		Exposure Point Total						1E-10					0.00004
	Exposure Medium Total							1E-10					0.00004
Medium Total								9E-09					0.08
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				7E-07	Receptor HI Total (Surface Soil and Groundwater)				0.3
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				8E-07	Receptor HI Total (All Soil and Groundwater)				0.5

TABLE 9.2.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURES

NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	4E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	8E-09	--	1E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-09	--	2E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-10	--	5E-09	Immune	0.0008	--	0.0002	0.0010
			2,3,7,8-TCDD Equivalents	3E-08	--	1E-09	--	3E-08	Developmental	0.002	--	0.00007	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	9E-08	--	2E-06	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.01	--	--	0.01
			Chemical Total	3E-06	--	1E-07	--	3E-06		0.06	--	0.002	0.06
		Exposure Point Total						3E-06					0.06
	Exposure Medium Total							3E-06					0.06
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aroclor-1254	--	5E-14	--	--	5E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-13	--	--	4E-13	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	3E-10	--	--	3E-10	NA	--	0.00003	--	0.00003
			Beryllium	--	3E-12	--	--	3E-12	Lungs	--	0.0000005	--	0.0000005
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.00003	--	0.00003
			Chemical Total	--	3E-09	--	--	3E-09		--	0.00010	--	0.00010
		Exposure Point Total						3E-09					0.00010
	Exposure Medium Total							3E-09					0.00010
Medium Total								3E-06					0.06

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	1E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-09	--	5E-10	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	8E-10	--	5E-09	Immune	0.0008	--	0.0002	0.0010
			2,3,7,8-TCDD Equivalents	3E-08	--	1E-09	--	3E-08	Developmental	0.002	--	0.00007	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	2E-06	--	1E-07	--	3E-06	Skin, CVS	0.04	--	0.002	0.04
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	3E-06	--	1E-07	--	3E-06		0.07	--	0.002	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
	Air	Tank Farm 5	Benzo(a)anthracene	--	9E-15	--	--	9E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Aroclor-1254	--	5E-14	--	--	5E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-13	--	--	4E-13	Liver, Respiratory, Developmental	--	2E-09	--	2E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Arsenic	--	3E-10	--	--	3E-10	NA	--	0.00004	--	0.00004
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.0000004	--	0.0000004
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000002	--	0.000002
			Cobalt	--	3E-10	--	--	3E-10	Lungs	--	0.00005	--	0.00005
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0001	--	0.0001
		Exposure Point Total						3E-09					0.0001
	Exposure Medium Total							3E-09					0.0001
Medium Total								3E-06					0.07
Receptor Total							Receptor Risk Total (Surface Soil)	3E-06				Receptor HI Total (Surface Soil)	0.06
Receptor Total							Receptor Risk Total (All Soil)	3E-06				Receptor HI Total (All Soil)	0.07

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	1E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	4E-10	--	2E-10	--	6E-10	Immune	0.0001	--	0.00006	0.0002
			2,3,7,8-TCDD Equivalents	3E-09	--	3E-10	--	3E-09	Developmental	0.0003	--	0.00003	0.0003
			Aluminum	--	--	--	--	--	CNS	0.0006	--	--	0.0006
			Arsenic	2E-07	--	2E-08	--	2E-07	Skin, CVS	0.006	--	0.0006	0.006
			Beryllium	--	--	--	--	--	GS	0.00002	--	--	0.00002
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Chemical Total	3E-07	--	3E-08	--	3E-07		0.009	--	0.0006	0.010
		Exposure Point Total						3E-07					0.010
	Exposure Medium Total							3E-07					0.010
	Air	Tank Farm 5	Benzo(a)anthracene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Aroclor-1254	--	4E-15	--	--	4E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-14	--	--	3E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	2E-11	--	--	2E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	2E-10	--	--	2E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000002	--	0.000002
			Chemical Total	--	2E-10	--	--	2E-10		--	0.000005	--	0.000005
		Exposure Point Total						2E-10					0.000005
	Exposure Medium Total							2E-10					0.000005
Medium Total								3E-07					0.010

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	4E-10	--	2E-10	--	6E-10	NA	--	--	--	--
			Benzo(a)pyrene	6E-09	--	2E-09	--	8E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-10	--	4E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-09	--	5E-10	--	2E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-10	--	2E-10	--	5E-10	NA	--	--	--	--
			Aroclor-1254	4E-10	--	2E-10	--	6E-10	Immune	0.0001	--	0.00006	0.0002
			2,3,7,8-TCDD Equivalents	3E-09	--	3E-10	--	3E-09	Developmental	0.0003	--	0.00003	0.0003
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	3E-07	--	2E-08	--	3E-07	Skin, CVS	0.007	--	0.0006	0.007
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.003	--	--	0.003
			Chemical Total	3E-07	--	3E-08	--	3E-07		0.01	--	0.0007	0.01
		Exposure Point Total						3E-07					0.01
	Exposure Medium Total							3E-07					0.01
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-15	--	--	6E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Aroclor-1254	--	4E-15	--	--	4E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-14	--	--	3E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000001	--	0.000001
			Arsenic	--	2E-11	--	--	2E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	2E-13	--	--	2E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	2E-10	--	--	2E-10	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	2E-11	--	--	2E-11	Lungs	--	0.000003	--	0.000003
			Chemical Total	--	2E-10	--	--	2E-10		--	0.000006	--	0.000006
		Exposure Point Total						2E-10					0.000006
	Exposure Medium Total							2E-10					0.000006
Medium Total								3E-07					0.01

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	1E-10	--	1E-10	Liver	--	- -	0.000005	0.000005
			Benzo(a)anthracene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(a)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Benzo(b)fluoranthene	- -	--	- -	--	- -	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -	NA	--	- -	--	--
			Naphthalene	- -	--	- -	--	- -	Body Weight	--	- -	0.00003	0.00003
			Aluminum	- -	--	- -	--	- -	CNS	--	- -	0.000002	0.000002
			Arsenic	- -	--	9E-11	--	9E-11	Skin, CVS	--	- -	0.000002	0.000002
			Iron	- -	--	- -	--	- -	GS	--	- -	0.000004	0.000004
			Chemical Total	- -	--	2E-10	--	2E-10		--	--	0.00004	0.00004
		Exposure Point Total						2E-10					0.00004
	Exposure Medium Total							2E-10					0.00004
Medium Total								2E-10					0.00004
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	5E-09	--	6E-08	--	6E-08	NA	--	- -	--	--
			Benzo(a)pyrene	7E-08	--	7E-07	--	8E-07	NA	--	- -	--	--
			Benzo(b)fluoranthene	7E-09	--	7E-08	--	8E-08	NA	--	- -	--	--
			Chrysene	8E-11	--	8E-10	--	9E-10	NA	--	- -	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-07	--	2E-07	NA	--	- -	--	--
			Indeno(1,2,3-cd)pyrene	5E-09	--	5E-08	--	5E-08	NA	--	- -	--	--
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-08	--	2E-08	Developmental	0.0006	- -	0.001	0.002
			Aluminum	- -	--	- -	--	- -	CNS	0.0007	- -	--	0.0007
			Arsenic	5E-07	--	1E-06	--	2E-06	Skin, CVS	0.01	- -	0.03	0.05
			Beryllium	- -	--	- -	--	- -	GS	0.00002	- -	--	0.00002
			Chromium	5E-08	--	- -	--	5E-08	Fetotoxicity, GS, Bone	0.0004	- -	--	0.0004
			Cobalt	- -	--	- -	--	- -	Blood	0.01	- -	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.008	- -	--	0.008
			Manganese (soil)	- -	--	- -	--	- -	CNS	0.0002	- -	--	0.0002
			Chemical Total	7E-07	--	2E-06	--	3E-06		0.03	--	0.03	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
Medium Total								3E-06					0.07
Receptor Total								3E-06					0.07
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.08
			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.08

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-09	--	8E-10	--	7E-09	NA	--	--	--	--
			Benzo(a)pyrene	7E-08	--	1E-08	--	8E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-09	--	8E-10	--	6E-09	NA	--	--	--	--
			Aroclor-1254	1E-09	--	2E-10	--	1E-09	Immune	0.0009	--	0.0001	0.0010
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	5E-07	--	2E-08	--	5E-07	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	7E-08	--	--	--	7E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	7E-07	--	3E-08	--	7E-07		0.06	--	0.001	0.06
		Exposure Point Total						7E-07					0.06
	Exposure Medium Total							7E-07					0.06
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Aroclor-1254	--	6E-16	--	--	6E-16	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	4E-15	--	--	4E-15	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	3E-12	--	--	3E-12	NA	--	0.000002	--	0.000002
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	3E-12	--	--	3E-12	Lungs	--	0.000002	--	0.000002
			Chemical Total	--	3E-11	--	--	3E-11		--	0.000005	--	0.000005
		Exposure Point Total						3E-11					0.000005
	Exposure Medium Total							3E-11					0.000005
Medium Total								7E-07					0.06

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	3E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	6E-10	--	5E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-09	--	9E-10	--	7E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	3E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	1E-09	--	2E-10	--	1E-09	Immune	0.0009	--	0.0001	0.0010
			2,3,7,8-TCDD Equivalents	7E-09	--	2E-10	--	7E-09	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	6E-07	--	2E-08	--	6E-07	Skin, CVS	0.04	--	0.001	0.05
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	7E-08	--	--	--	7E-08	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	7E-07	--	3E-08	--	7E-07		0.07	--	0.002	0.08
		Exposure Point Total						7E-07					0.08
	Exposure Medium Total							7E-07					0.08
	Air	Tank Farm 5	Benzo(a)anthracene	--	7E-16	--	--	7E-16	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-15	--	--	9E-15	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-16	--	--	6E-16	NA	--	--	--	--
			Aroclor-1254	--	6E-16	--	--	6E-16	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	5E-15	--	--	5E-15	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000001	--	0.000001
			Arsenic	--	4E-12	--	--	4E-12	NA	--	0.000002	--	0.000002
			Beryllium	--	3E-14	--	--	3E-14	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	3E-11	--	--	3E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	4E-12	--	--	4E-12	Lungs	--	0.000003	--	0.000003
			Chemical Total	--	3E-11	--	--	3E-11		--	0.000006	--	0.000006
		Exposure Point Total						3E-11					0.000006
	Exposure Medium Total							3E-11					0.000006
Medium Total								7E-07					0.08

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	1E-10	--	1E-10	Liver	--	--	0.00001	0.00001
			Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Benzo(a)pyrene	--	--	--	--	--	NA	--	--	--	--
			Benzo(b)fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	--	--	--	--	NA	--	--	--	--
			Naphthalene	--	--	--	--	--	Body Weight	--	--	0.00006	0.00006
			Aluminum	--	--	--	--	--	CNS	--	--	0.000005	0.000005
			Arsenic	--	--	7E-11	--	7E-11	Skin, CVS	--	--	0.000006	0.000006
			Iron	--	--	--	--	--	GS	--	--	0.000009	0.000009
			Chemical Total	--	--	2E-10	--	2E-10		--	--	0.00009	0.00009
		Exposure Point Total						2E-10					0.00009
	Exposure Medium Total							2E-10					0.00009
Medium Total								2E-10					0.00009
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	5E-08	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-08	--	5E-09	--	4E-08	NA	--	--	--	--
			Chrysene	4E-10	--	6E-11	--	4E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-08	--	1E-08	--	8E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	3E-08	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	1E-08	--	5E-10	--	2E-08	Developmental	0.004	--	0.0001	0.004
			Aluminum	--	--	--	--	--	CNS	0.005	--	--	0.005
			Arsenic	1E-06	--	4E-08	--	1E-06	Skin, CVS	0.09	--	0.003	0.09
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	1E-07	--	--	--	1E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.07	--	--	0.07
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese (soil)	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chemical Total	2E-06	--	1E-07	--	2E-06		0.2	--	0.003	0.2
		Exposure Point Total						2E-06					0.2
	Exposure Medium Total							2E-06					0.2
Medium Total								2E-06					0.2
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.3
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-06	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.3

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	5E-10	--	8E-11	--	6E-10	NA	--	--	--	--
			Benzo(a)pyrene	6E-09	--	1E-09	--	7E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-09	--	2E-10	--	1E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-10	--	7E-11	--	6E-10	NA	--	--	--	--
			Aroclor-1254	4E-10	--	6E-11	--	4E-10	Immune	0.00009	--	0.00001	0.0001
			2,3,7,8-TCDD Equivalents	3E-09	--	9E-11	--	3E-09	Developmental	0.0002	--	0.000007	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Arsenic	2E-07	--	6E-09	--	2E-07	Skin, CVS	0.004	--	0.0001	0.004
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Chemical Total	2E-07	--	8E-09	--	2E-07		0.007	--	0.0002	0.007
		Exposure Point Total						2E-07					0.007
	Exposure Medium Total							2E-07					0.007
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Aroclor-1254	--	2E-15	--	--	2E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000002	--	0.000002
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	1E-13	--	--	1E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	9E-11	--	--	9E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	9E-12	--	--	9E-12	Lungs	--	0.000002	--	0.000002
			Chemical Total	--	1E-10	--	--	1E-10		--	0.000005	--	0.000005
		Exposure Point Total						1E-10					0.000005
	Exposure Medium Total							1E-10					0.000005
Medium Total								2E-07					0.007

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-10	--	3E-11	--	2E-10	NA	--	--	--	--
			Benzo(a)pyrene	2E-09	--	4E-10	--	3E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-10	--	6E-11	--	5E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-10	--	8E-11	--	6E-10	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-10	--	2E-11	--	2E-10	NA	--	--	--	--
			Aroclor-1254	4E-10	--	6E-11	--	4E-10	Immune	0.00009	--	0.00001	0.0001
			2,3,7,8-TCDD Equivalents	3E-09	--	9E-11	--	3E-09	Developmental	0.0002	--	0.000007	0.0002
			Aluminum	--	--	--	--	--	CNS	0.0004	--	--	0.0004
			Arsenic	2E-07	--	7E-09	--	2E-07	Skin, CVS	0.005	--	0.0002	0.005
			Beryllium	--	--	--	--	--	GS	0.000010	--	--	0.000010
			Chromium	3E-08	--	--	--	3E-08	Fetotoxicity, GS, Bone	0.0002	--	--	0.0002
			Cobalt	--	--	--	--	--	Blood	0.002	--	--	0.002
			Chemical Total	2E-07	--	8E-09	--	3E-07		0.008	--	0.0002	0.008
		Exposure Point Total						3E-07					0.008
	Exposure Medium Total							3E-07					0.008
	Air	Tank Farm 5	Benzo(a)anthracene	--	6E-16	--	--	6E-16	NA	--	--	--	--
			Benzo(a)pyrene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-16	--	--	5E-16	NA	--	--	--	--
			Aroclor-1254	--	2E-15	--	--	2E-15	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14	Liver, Respiratory, Developmental	--	1E-10	--	1E-10
			Aluminum	--	--	--	--	--	CNS	--	0.000001	--	0.000001
			Arsenic	--	1E-11	--	--	1E-11	NA	--	0.000002	--	0.000002
			Beryllium	--	1E-13	--	--	1E-13	Lungs	--	0.00000002	--	0.00000002
			Chromium	--	9E-11	--	--	9E-11	Lungs	--	0.0000001	--	0.0000001
			Cobalt	--	1E-11	--	--	1E-11	Lungs	--	0.000003	--	0.000003
			Chemical Total	--	1E-10	--	--	1E-10		--	0.000006	--	0.000006
		Exposure Point Total						1E-10					0.000006
	Exposure Medium Total							1E-10					0.000006
Medium Total								3E-07					0.008

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	2E-10	--	2E-10	Liver	--	--	0.000006	0.000006
			Benzo(a)anthracene	--	--	--	--	--	NA	--	--	--	--
			Benzo(a)pyrene	--	--	--	--	--	NA	--	--	--	--
			Benzo(b)fluoranthene	--	--	--	--	--	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	--	--	--	--	NA	--	--	--	--
			Naphthalene	--	--	--	--	--	Body Weight	--	--	0.00003	0.00003
			Aluminum	--	--	--	--	--	CNS	--	--	0.000003	0.000003
			Arsenic	--	--	1E-10	--	1E-10	Skin, CVS	--	--	0.000003	0.000003
			Iron	--	--	--	--	--	GS	--	--	0.000005	0.000005
			Chemical Total	--	--	3E-10	--	3E-10		--	--	0.00005	0.00005
		Exposure Point Total						3E-10					0.00005
	Exposure Medium Total							3E-10					0.00005
Medium Total								3E-10					0.00005
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	2E-09	--	2E-09	--	4E-09	NA	--	--	--	--
			Benzo(a)pyrene	3E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-09	--	2E-09	--	5E-09	NA	--	--	--	--
			Chrysene	3E-11	--	2E-11	--	6E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-09	--	5E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	5E-09	--	9E-10	--	6E-09	Developmental	0.0004	--	0.00007	0.0005
			Aluminum	--	--	--	--	--	CNS	0.0005	--	--	0.0005
			Arsenic	4E-07	--	7E-08	--	5E-07	Skin, CVS	0.010	--	0.002	0.01
			Beryllium	--	--	--	--	--	GS	0.00001	--	--	0.00001
			Chromium	4E-08	--	--	--	4E-08	Fetotoxicity, GS, Bone	0.0003	--	--	0.0003
			Cobalt	--	--	--	--	--	Blood	0.007	--	--	0.007
			Iron	--	--	--	--	--	GS	0.006	--	--	0.006
			Manganese (soil)	--	--	--	--	--	CNS	0.0001	--	--	0.0001
			Chemical Total	5E-07	--	1E-07	--	6E-07		0.02	--	0.002	0.03
		Exposure Point Total						6E-07					0.03
	Exposure Medium Total							6E-07					0.03
Medium Total								6E-07					0.03
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					9E-07	Receptor HI Total (Surface Soil, Surface Water, and Sediment)				0.03
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					9E-07	Receptor HI Total (Subsurface Soil, Surface Water, and Sediment)				0.03

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-09	--	9E-10	--	7E-09					
			Benzo(a)pyrene	8E-08	--	1E-08	--	9E-08					
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	2E-08					
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	2E-08					
			Indeno(1,2,3-cd)pyrene	6E-09	--	8E-10	--	7E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	9E-09					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-07	--	6E-09	--	2E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-08	--	- -	--	3E-08					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	3E-07	--	2E-08	--	4E-07					
		Exposure Point Total						4E-07					
	Exposure Medium Total							4E-07					
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-15	--	--	4E-15					
			Benzo(a)pyrene	--	4E-14	--	--	4E-14					
			Benzo(b)fluoranthene	--	8E-15	--	--	8E-15					
			Dibenzo(a,h)anthracene	--	9E-15	--	--	9E-15					
			Indeno(1,2,3-cd)pyrene	--	3E-15	--	--	3E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-11	--	--	1E-11					
			Beryllium	--	2E-13	--	--	2E-13					
			Chromium	--	9E-11	--	--	9E-11					
			Cobalt	--	9E-12	--	--	9E-12					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								4E-07					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	3E-09					
			Benzo(a)pyrene	3E-08	--	4E-09	--	3E-08					
			Benzo(b)fluoranthene	5E-09	--	7E-10	--	5E-09					
			Dibenzo(a,h)anthracene	6E-09	--	9E-10	--	7E-09					
			Indeno(1,2,3-cd)pyrene	2E-09	--	3E-10	--	2E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	1E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-07	--	7E-09	--	2E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-08	--	- -	--	3E-08					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	3E-07	--	1E-08	--	3E-07					
		Exposure Point Total						3E-07					
	Exposure Medium Total							3E-07					
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-15	--	--	1E-15					
			Benzo(a)pyrene	--	2E-14	--	--	2E-14					
			Benzo(b)fluoranthene	--	3E-15	--	--	3E-15					
			Dibenzo(a,h)anthracene	--	4E-15	--	--	4E-15					
			Indeno(1,2,3-cd)pyrene	--	1E-15	--	--	1E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	2E-11	--	--	2E-11					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	9E-11	--	--	9E-11					
			Cobalt	--	1E-11	--	--	1E-11					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								3E-07					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	- -	--	3E-10	--	3E-10					
			Benzo(a)anthracene	- -	--	- -	--	- -					
			Benzo(a)pyrene	- -	--	- -	--	- -					
			Benzo(b)fluoranthene	- -	--	- -	--	- -					
			Indeno(1,2,3-cd)pyrene	- -	--	- -	--	- -					
			Naphthalene	- -	--	- -	--	- -					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	- -	--	2E-10	--	2E-10					
			Iron	- -	--	- -	--	- -					
			Chemical Total	- -	--	5E-10	--	5E-10					
		Exposure Point Total						5E-10					
	Exposure Medium Total							5E-10					
Medium Total								5E-10					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-08	--	6E-09	--	3E-08					
			Benzo(a)pyrene	4E-07	--	7E-08	--	4E-07					
			Benzo(b)fluoranthene	4E-08	--	7E-09	--	4E-08					
			Chrysene	4E-10	--	8E-11	--	5E-10					
			Dibenzo(a,h)anthracene	8E-08	--	2E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-09	--	3E-08					
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-09	--	2E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-06	--	1E-07	--	2E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	1E-07	--	- -	--	1E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese (soil)	- -	--	- -	--	- -					
			Chemical Total	2E-06	--	2E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
Medium Total								3E-06					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					3E-06					
Receptor Total			Receptor Risk Total (Subsurface Soil, Surface Water, and Sediment)					3E-06					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-09	--	9E-10	--	7E-09					
			Benzo(a)pyrene	8E-08	--	1E-08	--	9E-08					
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	2E-08					
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	2E-08					
			Indeno(1,2,3-cd)pyrene	6E-09	--	8E-10	--	7E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	9E-09					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-07	--	6E-09	--	2E-07					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-08	--	- -	--	3E-08					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	3E-07	--	2E-08	--	4E-07					
		Exposure Point Total						4E-07					
	Exposure Medium Total							4E-07					
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-15	--	--	4E-15					
			Benzo(a)pyrene	--	4E-14	--	--	4E-14					
			Benzo(b)fluoranthene	--	8E-15	--	--	8E-15					
			Dibenzo(a,h)anthracene	--	9E-15	--	--	9E-15					
			Indeno(1,2,3-cd)pyrene	--	3E-15	--	--	3E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-11	--	--	1E-11					
			Beryllium	--	2E-13	--	--	2E-13					
			Chromium	--	9E-11	--	--	9E-11					
			Cobalt	--	9E-12	--	--	9E-12					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								4E-07					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	3E-09					
			Benzo(a)pyrene	3E-08	--	4E-09	--	3E-08					
			Benzo(b)fluoranthene	5E-09	--	7E-10	--	5E-09					
			Dibenzo(a,h)anthracene	6E-09	--	9E-10	--	7E-09					
			Indeno(1,2,3-cd)pyrene	2E-09	--	3E-10	--	2E-09					
			Aroclor-1254	1E-09	--	2E-10	--	2E-09					
			2,3,7,8-TCDD Equivalents	9E-09	--	3E-10	--	1E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-07	--	7E-09	--	2E-07					
			Beryllium	--	--	--	--	--					
			Chromium	3E-08	--	--	--	3E-08					
			Cobalt	--	--	--	--	--					
			Chemical Total	3E-07	--	1E-08	--	3E-07					
		Exposure Point Total						3E-07					
	Exposure Medium Total							3E-07					
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-15	--	--	1E-15					
			Benzo(a)pyrene	--	2E-14	--	--	2E-14					
			Benzo(b)fluoranthene	--	3E-15	--	--	3E-15					
			Dibenzo(a,h)anthracene	--	4E-15	--	--	4E-15					
			Indeno(1,2,3-cd)pyrene	--	1E-15	--	--	1E-15					
			Aroclor-1254	--	3E-15	--	--	3E-15					
			2,3,7,8-TCDD Equivalents	--	2E-14	--	--	2E-14					
			Aluminum	--	--	--	--	--					
			Arsenic	--	2E-11	--	--	2E-11					
			Beryllium	--	1E-13	--	--	1E-13					
			Chromium	--	9E-11	--	--	9E-11					
			Cobalt	--	1E-11	--	--	1E-11					
			Chemical Total	--	1E-10	--	--	1E-10					
		Exposure Point Total						1E-10					
	Exposure Medium Total							1E-10					
Medium Total								3E-07					

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Tank Farm 5	Chloroform	--	--	3E-10	--	3E-10					
			Benzo(a)anthracene	--	--	--	--	--					
			Benzo(a)pyrene	--	--	--	--	--					
			Benzo(b)fluoranthene	--	--	--	--	--					
			Indeno(1,2,3-cd)pyrene	--	--	6E-07	--	6E-07					
			Naphthalene	--	--	--	--	--					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	2E-10	--	2E-10					
			Iron	--	--	--	--	--					
			Chemical Total	--	--	6E-07	--	6E-07					
		Exposure Point Total						6E-07					
	Exposure Medium Total							6E-07					
Medium Total								6E-07					
Sediment	Sediment	Tank Farm 5	Benzo(a)anthracene	3E-08	--	6E-09	--	3E-08					
			Benzo(a)pyrene	4E-07	--	7E-08	--	4E-07					
			Benzo(b)fluoranthene	4E-08	--	7E-09	--	4E-08					
			Chrysene	4E-10	--	8E-11	--	5E-10					
			Dibenzo(a,h)anthracene	8E-08	--	2E-08	--	9E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-09	--	3E-08					
			2,3,7,8-TCDD Equivalents	2E-08	--	1E-09	--	2E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	2E-06	--	1E-07	--	2E-06					
			Beryllium	--	--	--	--	--					
			Chromium	1E-07	--	--	--	1E-07					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (soil)	--	--	--	--	--					
			Chemical Total	2E-06	--	2E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
Medium Total								3E-06					
Receptor Total			Receptor Risk Total (Surface Soil, Surface Water, and Sediment)					4E-06					
Receptor Total			Receptor Risk Total (All Soil, Surface Water, and Sediment)					3E-06					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	1E-07	--	8E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	8E-09	--	6E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	1E-09	--	1E-08	Immune	0.008	--	0.001	0.010
			2,3,7,8-TCDD Equivalents	7E-08	--	2E-09	--	7E-08	Developmental	0.02	--	0.0006	0.02
			Aluminum	--	--	--	--	--	CNS	0.04	--	--	0.04
			Arsenic	5E-06	--	2E-07	--	5E-06	Skin, CVS	0.4	--	0.01	0.4
			Beryllium	--	--	--	--	--	GS	0.001	--	--	0.001
			Chromium	7E-07	--	--	--	7E-07	Fetotoxicity, GS, Bone	0.02	--	--	0.02
			Cobalt	--	--	--	--	--	Blood	0.1	--	--	0.1
			Chemical Total	7E-06	--	3E-07	--	7E-06		0.6	--	0.01	0.6
		Exposure Point Total						7E-06					0.6
	Exposure Medium Total							7E-06					0.6
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Aroclor-1254	--	4E-14	--	--	4E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00010	--	0.00010
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	1E-09	--	--	1E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0003	--	0.0003
		Exposure Point Total						2E-09					0.0003
	Exposure Medium Total							2E-09					0.0003
Medium Total								7E-06					0.6

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	4E-08	--	3E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	6E-09	--	5E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	8E-09	--	7E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	2E-08	NA	--	--	--	--
			Aroclor-1254	1E-08	--	1E-09	--	1E-08	Immune	0.008	--	0.001	0.010
			2,3,7,8-TCDD Equivalents	7E-08	--	2E-09	--	7E-08	Developmental	0.02	--	0.0006	0.02
			Aluminum	--	--	--	--	--	CNS	0.03	--	--	0.03
			Arsenic	5E-06	--	2E-07	--	6E-06	Skin, CVS	0.4	--	0.01	0.4
			Beryllium	--	--	--	--	--	GS	0.0009	--	--	0.0009
			Chromium	7E-07	--	--	--	7E-07	Fetotoxicity, GS, Bone	0.02	--	--	0.02
			Cobalt	--	--	--	--	--	Blood	0.2	--	--	0.2
			Chemical Total	7E-06	--	2E-07	--	7E-06		0.7	--	0.02	0.7
		Exposure Point Total						7E-06					0.7
	Exposure Medium Total							7E-06					0.7
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Aroclor-1254	--	4E-14	--	--	4E-14	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	3E-13	--	--	3E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00009	--	0.00009
			Arsenic	--	2E-10	--	--	2E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	2E-12	--	--	2E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	2E-09	--	--	2E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	2E-10	--	--	2E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0004	--	0.0004
		Exposure Point Total						2E-09					0.0004
	Exposure Medium Total							2E-09					0.0004
Medium Total								7E-06					0.7

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	9E-08	--	1E-08	--	1E-07	Blood	0.01	--	0.002	0.02
			Aluminum	--	--	--	--	--	CNS	0.07	--	0.0002	0.07
			Arsenic	6E-06	--	5E-08	--	6E-06	Skin, CVS	0.5	--	0.004	0.5
			Cobalt	--	--	--	--	--	Blood	2	--	0.009	2
			Iron	--	--	--	--	--	GS	0.7	--	0.005	0.8
			Manganese (water)	--	--	--	--	--	CNS	2	--	0.4	3
			Chemical Total	6E-06	--	6E-08	--	6E-06		5	--	0.4	6
		Exposure Point Total						6E-06					6
	Exposure Medium Total							6E-06					6
	Air	Tank Farm 5	Benzene	--	9E-08	--	--	9E-08	Blood	--	0.01	--	0.01
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	9E-08	--	--	9E-08		--	0.01	--	0.01
		Exposure Point Total						9E-08					0.01
	Exposure Medium Total							9E-08					0.01
Medium Total								6E-06					6
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-05	Receptor HI Total (Surface Soil and Groundwater)				6
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				1E-05	Receptor HI Total (All Soil and Groundwater)				6

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	2
Total CNS HI	3
Total CVS HI	1
Total Developmental HI	0.04
Total GS HI	0.8
Total Immune HI	0.02
Total Liver HI	0.00000001
Total Lungs HI	0.0003
Total Skin HI	1
Total Respiratory HI	0.00000001

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	5E-09	--	8E-10	--	6E-09	NA	--	--	--	--
			Benzo(a)pyrene	6E-08	--	9E-09	--	7E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	2E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-09	--	7E-10	--	5E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	6E-10	--	4E-09	Immune	0.0009	--	0.0001	0.001
			2,3,7,8-TCDD Equivalents	2E-08	--	8E-10	--	3E-08	Developmental	0.002	--	0.00006	0.002
			Aluminum	--	--	--	--	--	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	6E-08	--	2E-06	Skin, CVS	0.04	--	0.001	0.04
			Beryllium	--	--	--	--	--	GS	0.0001	--	--	0.0001
			Chromium	2E-07	--	--	--	2E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	2E-06	--	8E-08	--	2E-06		0.06	--	0.002	0.07
		Exposure Point Total						2E-06					0.07
	Exposure Medium Total							2E-06					0.07
	Air	Tank Farm 5	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Aroclor-1254	--	1E-13	--	--	1E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00010	--	0.00010
			Arsenic	--	7E-10	--	--	7E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	7E-12	--	--	7E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	5E-09	--	--	5E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	5E-10	--	--	5E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	6E-09	--	--	6E-09		--	0.0003	--	0.0003
		Exposure Point Total						6E-09					0.0003
	Exposure Medium Total							6E-09					0.0003
Medium Total								2E-06					0.07

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-09	--	3E-10	--	2E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	4E-09	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	6E-10	--	4E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-09	--	8E-10	--	6E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	2E-10	--	2E-09	NA	--	--	--	--
			Aroclor-1254	4E-09	--	6E-10	--	4E-09	Immune	0.0009	--	0.0001	0.001
			2,3,7,8-TCDD Equivalents	3E-08	--	9E-10	--	3E-08	Developmental	0.002	--	0.00007	0.002
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	2E-06	--	7E-08	--	2E-06	Skin, CVS	0.05	--	0.002	0.05
			Beryllium	--	--	--	--	--	GS	0.00009	--	--	0.00009
			Chromium	3E-07	--	--	--	3E-07	Fetotoxicity, GS, Bone	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Blood	0.02	--	--	0.02
			Chemical Total	2E-06	--	8E-08	--	2E-06		0.08	--	0.002	0.08
		Exposure Point Total						2E-06					0.08
	Exposure Medium Total							2E-06					0.08
	Air	Tank Farm 5	Benzo(a)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Aroclor-1254	--	1E-13	--	--	1E-13	NA	--	--	--	--
			2,3,7,8-TCDD Equivalents	--	9E-13	--	--	9E-13	Liver, Respiratory, Developmental	--	6E-09	--	6E-09
			Aluminum	--	--	--	--	--	CNS	--	0.00009	--	0.00009
			Arsenic	--	7E-10	--	--	7E-10	NA	--	0.0001	--	0.0001
			Beryllium	--	6E-12	--	--	6E-12	Lungs	--	0.000001	--	0.000001
			Chromium	--	5E-09	--	--	5E-09	Lungs	--	0.000006	--	0.000006
			Cobalt	--	8E-10	--	--	8E-10	Lungs	--	0.0001	--	0.0001
			Chemical Total	--	7E-09	--	--	7E-09		--	0.0004	--	0.0004
		Exposure Point Total						7E-09					0.0004
	Exposure Medium Total							7E-09					0.0004
Medium Total								2E-06					0.08

TABLE 9.8.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	1E-07	--	2E-08	--	1E-07	Blood	0.005	--	0.0008	0.006
			Aluminum	--	--	--	--	--	CNS	0.03	--	0.00009	0.03
			Arsenic	8E-06	--	8E-08	--	8E-06	Skin, CVS	0.2	--	0.002	0.2
			Cobalt	--	--	--	--	--	Blood	0.7	--	0.004	0.7
			Iron	--	--	--	--	--	GS	0.3	--	0.002	0.3
			Manganese (water)	--	--	--	--	--	CNS	0.9	--	0.2	1
			Chemical Total	8E-06	--	1E-07	--	8E-06		2	--	0.2	2
		Exposure Point Total						8E-06					2
	Exposure Medium Total							8E-06					2
	Air	Tank Farm 5	Benzene	--	1E-07	--	--	1E-07	Blood	--	0.005	--	0.005
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	NA	--	--	--	--
			Cobalt	--	--	--	--	--	Lungs	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese (water)	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	1E-07	--	--	1E-07		--	0.005	--	0.005
		Exposure Point Total						1E-07					0.005
	Exposure Medium Total							1E-07					0.005
Medium Total								8E-06					2
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				1E-05	Receptor HI Total (Surface Soil and Groundwater)				2
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				1E-05	Receptor HI Total (All Soil and Groundwater)				2

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

Total Blood HI	0.7
Total CNS HI	1
Total CVS HI	0.3
Total Developmental HI	0.004
Total GS HI	0.3
Total Immune HI	0.002
Total Liver HI	0.0000000 1
Total Lungs HI	0.0003
Total Skin HI	0.3
Total Respiratory HI	0.0000000 1

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Tank Farm 5	Benzo(a)anthracene	6E-08	--	9E-09	--	7E-08					
			Benzo(a)pyrene	8E-07	--	1E-07	--	9E-07					
			Benzo(b)fluoranthene	1E-07	--	2E-08	--	1E-07					
			Dibenzo(a,h)anthracene	1E-07	--	2E-08	--	2E-07					
			Indeno(1,2,3-cd)pyrene	6E-08	--	8E-09	--	6E-08					
			Aroclor-1254	1E-08	--	2E-09	--	2E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-06	--	6E-08	--	2E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	2E-07	--	- -	--	2E-07					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	3E-06	--	2E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	2E-13	--	--	2E-13					
			Benzo(a)pyrene	--	1E-12	--	--	1E-12					
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13					
			Dibenzo(a,h)anthracene	--	5E-13	--	--	5E-13					
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13					
			Aroclor-1254	--	2E-13	--	--	2E-13					
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	9E-10	--	--	9E-10					
			Beryllium	--	9E-12	--	--	9E-12					
			Chromium	--	5E-09	--	--	5E-09					
			Cobalt	--	5E-10	--	--	5E-10					
			Chemical Total	--	7E-09	--	--	7E-09					
		Exposure Point Total						7E-09					
	Exposure Medium Total							7E-09					
Medium Total								3E-06					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
All Soil	All Soil	Tank Farm 5	Benzo(a)anthracene	2E-08	--	3E-09	--	3E-08					
			Benzo(a)pyrene	3E-07	--	4E-08	--	3E-07					
			Benzo(b)fluoranthene	5E-08	--	7E-09	--	5E-08					
			Dibenzo(a,h)anthracene	6E-08	--	9E-09	--	7E-08					
			Indeno(1,2,3-cd)pyrene	2E-08	--	3E-09	--	2E-08					
			Aroclor-1254	1E-08	--	2E-09	--	2E-08					
			2,3,7,8-TCDD Equivalents	9E-08	--	3E-09	--	9E-08					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-06	--	7E-08	--	2E-06					
			Beryllium	- -	--	- -	--	- -					
			Chromium	3E-07	--	- -	--	3E-07					
			Cobalt	- -	--	- -	--	- -					
			Chemical Total	3E-06	--	1E-07	--	3E-06					
		Exposure Point Total						3E-06					
	Exposure Medium Total							3E-06					
	Air	Tank Farm 5	Benzo(a)anthracene	--	8E-14	--	--	8E-14					
			Benzo(a)pyrene	--	1E-12	--	--	1E-12					
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13					
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13					
			Indeno(1,2,3-cd)pyrene	--	7E-14	--	--	7E-14					
			Aroclor-1254	--	2E-13	--	--	2E-13					
			2,3,7,8-TCDD Equivalents	--	1E-12	--	--	1E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-09	--	--	1E-09					
			Beryllium	--	6E-12	--	--	6E-12					
			Chromium	--	5E-09	--	--	5E-09					
			Cobalt	--	8E-10	--	--	8E-10					
			Chemical Total	--	7E-09	--	--	7E-09					
		Exposure Point Total						7E-09					
	Exposure Medium Total							7E-09					
Medium Total								3E-06					

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tank Farm 5	Benzene	2E-07	--	3E-08	--	2E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	1E-05	--	1E-07	--	1E-05					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	1E-05	--	2E-07	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Tank Farm 5	Benzene	--	2E-07	--	--	2E-07					
			Aluminum	--	--	--	--	--					
			Arsenic	--	--	--	--	--					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese (water)	--	--	--	--	--					
			Chemical Total	--	2E-07	--	--	2E-07					
		Exposure Point Total						2E-07					
	Exposure Medium Total							2E-07					
Medium Total								1E-05					
Receptor Total				Receptor Risk Total (Surface Soil and Groundwater)				2E-05					
Receptor Total				Receptor Risk Total (All Soil and Groundwater)				2E-05					

Notes:

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Inhalation exposures are assumed to be equal to the exposures from ingestion of groundwater.

APPENDIX H.4

SAMPLES USED IN
THE CALCULATION OF THE EPCS

TABLE H.4-1
SAMPLES USED TO CALCULATE EPCs
TANK FARM 4 - SURFACE SOIL

TANK FARM 4	TANK FARM 5
TF4-SB-932-0001	TF5-SB-966-0001
TF4-SB-933-0001	TF5-SB-967-0001
TF4-SB-934-0001	TF5-SB-968-0001
TF4-SB-935-0001	TF5-SB-969-0001
TF4-SB-936-0001	TF5-SB-970-0001
TF4-SB-937-0001	TF5-SB-971-0001
TF4-SB-938-0001	TF5-SB-972-0001
TF4-SB-939-0001	TF5-SB-973-0001
TF4-SB-940-0001	TF5-SB-974-0001
TF4-SB-941-0001	TF5-SB-975-0001
TF4-SB-942-0001	TF5-SB-976-0001
TF4-SB-943-0001	
TF4-SB-920-0001	
TF4-SB-921-0001	
TF4-SB-922-0001	
TF4-SB-923-0001	
TF4-SB-924-0001	
TF4-SB-925-0001	
TF4-SB-926-0001	
TF4-SB-927-0001	
TF4-SB-928-0001	
TF4-SB-929-0001	
TF4-SB-930-0001	
TF4-SB-931-0001	

TABLE H.4-2
SAMPLES USED TO CALCULATE EPCs
SUBSURFACE SOIL

TANK FARM 4

TF4-SB-932-0001
TF4-SB-933-0001
TF4-SB-934-0001
TF4-SB-935-0001
TF4-SB-936-0001
TF4-SB-937-0001
TF4-SB-938-0001
TF4-SB-939-0001
TF4-SB-940-0001
TF4-SB-941-0001
TF4-SB-942-0001
TF4-SB-943-0001
TF4-SB-920-0001
TF4-SB-921-0001
TF4-SB-922-0001
TF4-SB-923-0001
TF4-SB-924-0001
TF4-SB-925-0001
TF4-SB-926-0001
TF4-SB-927-0001
TF4-SB-928-0001
TF4-SB-929-0001
TF4-SB-930-0001
TF4-SB-931-0001
TF4-SB-920-0204
TF4-SB-920-0810
TF4-SB-921-0204
TF4-SB-921-0810-AVG
TF4-SB-922-0204-AVG
TF4-SB-922-0608
TF4-SB-923-0204
TF4-SB-923-0406
TF4-SB-924-0204
TF4-SB-924-0810-AVG
TF4-SB-925-0204
TF4-SB-925-0608
TF4-SB-926-0204-AVG
TF4-SB-926-0406
TF4-SB-928-0204
TF4-SB-928-0810
TF4-SB-929-0204-AVG
TF4-SB-929-0608
TF4-SB-930-0204
TF4-SB-930-0608
TF4-SB-932-0204
TF4-SB-932-0607
TF4-SB-933-0204
TF4-SB-933-0608
TF4-SB-934-0204
TF4-SB-934-0810
TF4-SB-935-0204
TF4-SB-935-0810
TF4-SB-936-0204
TF4-SB-936-0810
TF4-SB-937-0204
TF4-SB-938-0204-AVG
TF4-SB-938-0810
TF4-SB-939-0204
TF4-SB-939-0810
TF4-SB-940-0204
TF4-SB-940-0810
TF4-SB-941-0204
TF4-SB-941-0810-AVG
TF4-SB-942-0204
TF4-SB-943-0204
TF4-SB-943-0810

TANK FARM 5

TF5-SB-966-0001
TF5-SB-967-0001
TF5-SB-968-0001
TF5-SB-969-0001
TF5-SB-970-0001
TF5-SB-971-0001
TF5-SB-972-0001
TF5-SB-973-0001
TF5-SB-974-0001
TF5-SB-975-0001
TF5-SB-976-0001
TF5-SB-966-0406
TF5-SB-966-0608
TF5-SB-967-0204
TF5-SB-968-0204
TF5-SB-968-0810
TF5-SB-969-0204
TF5-SB-969-0810
TF5-SB-970-0204
TF5-SB-970-0810
TF5-SB-971-0204-AVG
TF5-SB-971-0810
TF5-SB-972-0204
TF5-SB-972-0810
TF5-SB-973-0204-AVG
TF5-SB-973-0810
TF5-SB-974-0204
TF5-SB-974-0810-AVG
TF5-SB-975-0204
TF5-SB-975-0810
TF5-SB-976-0204
TF5-SB-976-0810

TABLE H.4-3
SAMPLES USED TO CALCULATE EPCs
GROUNDWATER

TANK FARM 4	TANK FARM 5
TF4-MW-912-0510	TF5-MW-915-0510
TF4-MW-913-0510-AVG	TF5-MW-916-0510
TF4-MW-914-0510	TF5-MW-923-0510
TF4-MW-919-0510	TF5-MW-923-051810
TF4-MW-920-0510	TF5-MW-924-0510
TF4-MW-921-0510	TF5-MW-924-051810
TF4-MW-922-0510	

TABLE H.4-4
SAMPLES USED TO CALCULATE EPCs
SURFACE WATER

TANK FARM 4	TANK FARM 5
TF4-SW-901-0310	TF5-SW-914-0310
TF4-SW-902-0310-AVG	TF5-SW-915-0310
TF4-SW-903-0310	TF5-SW-916-0310
TF4-SW-904-0310	TF5-SW-917-0310
TF4-SW-905-0310	TF5-SW-918-0310
TF4-SW-906-0310	TF5-SW-919-0310
TF4-SW-907-0310	TF5-SW-920-0310
TF4-SW-908-0310	TF5-SW-921-0006
TF4-SW-911-0310-AVG	TF5-SW-922-0006
TF4-SW-912-0310	TF5-SW-923-0006-AVG
	TF5-SW-924-0006

TABLE H.4-5
SAMPLES USED TO CALCULATE EPCs
SEDIMENT

TANK FARM 4	TANK FARM 5
TF4-SD-901-0006	TF5-SD-913-0006
TF4-SD-902-0006-AVG	TF5-SD-914-0006
TF4-SD-903-0006	TF5-SD-915-0006
TF4-SD-904-0006	TF5-SD-916-0006
TF4-SD-905-0006	TF5-SD-917-0006
TF4-SD-906-0006	TF5-SD-918-0006
TF4-SD-907-0006	TF5-SD-919-0006
TF4-SD-908-0006	TF5-SD-920-0006
TF4-SD-909-0006	TF5-SD-921-0006
TF4-SD-910-0006	TF5-SD-922-0006
TF4-SD-911-0006-AVG	TF5-SD-923-0006-AVG
TF4-SD-912-0006	TF5-SD-924-0006

APPENDIX H.5

PROUCL OUTPUTS

Tank Farm 4

Surface Soil

PROUCL OUTPUT - TANK FARM 4 SURFACE SOIL

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Data	24	Number of Detected Data	21
Number of Distinct Detected Data	17	Number of Non-Detect Data	3
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.2	Minimum Detected	2.104
Maximum Detected	54000	Maximum Detected	10.9
Mean of Detected	2636	Mean of Detected	4.068
SD of Detected	11769	SD of Detected	1.875
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.50%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.23	Shapiro Wilk Test Statistic	0.731
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2307	Mean	3.639
SD	11011	SD	2.098
95% DL/2 (t) UCL	6159	95% H-Stat (DL/2) UCL	2213
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1198	Mean in Log Scale	3.6
SD	11649	SD in Log Scale	2.158
95% MLE (t) UCL	5273	Mean in Original Scale	2307
95% MLE (Tiku) UCL	4987	SD in Original Scale	11011
		95% t UCL	6159
		95% Percentile Bootstrap UCL	6798
		95% BCA Bootstrap UCL	9054

BENZO(A)ANTHRACENE (Continued)

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.198
Theta Star	13306
nu star	8.32
A-D Test Statistic	5.291
5% A-D Critical Value	0.893
K-S Test Statistic	0.893
5% K-S Critical Value	0.21
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	1E-12
Maximum	54000
Mean	2307
Median	28.5
SD	11011
k star	0.12
Theta star	19194
Nu star	5.768
AppChi2	1.523
95% Gamma Approximate UCL	8738
95% Adjusted Gamma UCL	9672

Data Distribution Test with Detected Values Only	
Data do not follow a Discernable Distribution (0.05)	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	2308
SD	10779
SE of Mean	2255
95% KM (t) UCL	6172
95% KM (z) UCL	6016
95% KM (jackknife) UCL	6159
95% KM (bootstrap t) UCL	470827
95% KM (BCA) UCL	6799
95% KM (Percentile Bootstrap) UCL	6799
95% KM (Chebyshev) UCL	12135
97.5% KM (Chebyshev) UCL	16387
99% KM (Chebyshev) UCL	24740
Potential UCLs to Use	
99% KM (Chebyshev) UCL	24740

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	21
Number of Distinct Detected Data	14	Number of Non-Detect Data	3
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.5	Minimum Detected	2.14
Maximum Detected	24000	Maximum Detected	10.09
Mean of Detected	1210	Mean of Detected	4.035
SD of Detected	5222	SD of Detected	1.756
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.50%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.235	Shapiro Wilk Test Statistic	0.782
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1059	Mean	3.61
SD	4887	SD	2
95% DL/2 (t) UCL	2769	95% H-Stat (DL/2) UCL	1503
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	568.3	Mean in Log Scale	3.581
SD	5172	SD in Log Scale	2.045
95% MLE (t) UCL	2378	Mean in Original Scale	1059
95% MLE (Tiku) UCL	2251	SD in Original Scale	4887
		95% t UCL	2769
		95% Percentile Bootstrap UCL	3054
		95% BCA Bootstrap UCL	4057

BENZO(A)PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.233	Data do not follow a Discernable Distribution (0.05)	
Theta Star	5203		
nu star	9.768		
A-D Test Statistic	4.64	Nonparametric Statistics	
5% A-D Critical Value	0.875	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.875	Mean	1060
5% K-S Critical Value	0.208	SD	4784
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1001
		95% KM (t) UCL	2775
Assuming Gamma Distribution		95% KM (z) UCL	2706
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2769
Minimum	1E-12	95% KM (bootstrap t) UCL	93955
Maximum	24000	95% KM (BCA) UCL	3068
Mean	1059	95% KM (Percentile Bootstrap) UCL	3050
Median	31	95% KM (Chebyshev) UCL	5421
SD	4887	97.5% KM (Chebyshev) UCL	7309
k star	0.129	99% KM (Chebyshev) UCL	11016
Theta star	8207		
Nu star	6.192	Potential UCLs to Use	
AppChi2	1.739	99% KM (Chebyshev) UCL	11016
95% Gamma Approximate UCL	3770		
95% Adjusted Gamma UCL	4152		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	22
Number of Distinct Detected Data	19	Number of Non-Detect Data	2
		Percent Non-Detects	8.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.3	Minimum Detected	1.459
Maximum Detected	49000	Maximum Detected	10.8
Mean of Detected	2327	Mean of Detected	4.409
SD of Detected	10425	SD of Detected	1.834
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	8.33%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.227	Shapiro Wilk Test Statistic	0.822
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2133	Mean	4.094
SD	9983	SD	2.053
95% DL/2 (t) UCL	5626	95% H-Stat (DL/2) UCL	2950
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1493	Mean in Log Scale	4.085
SD	10280	SD in Log Scale	2.067
95% MLE (t) UCL	5089	Mean in Original Scale	2133
95% MLE (Tiku) UCL	4762	SD in Original Scale	9983
		95% t UCL	5626
		95% Percentile Bootstrap UCL	6199
		95% BCA Bootstrap UCL	10247

BENZO(B)FLUORANTHENE (Conituned)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.218	Data do not follow a Discernable Distribution (0.05)	
Theta Star	10675		
nu star	9.59		
A-D Test Statistic	4.933	Nonparametric Statistics	
5% A-D Critical Value	0.884	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.884	Mean	2133
5% K-S Critical Value	0.205	SD	9773
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2042
		95% KM (t) UCL	5633
Assuming Gamma Distribution		95% KM (z) UCL	5492
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5625
Minimum	1E-12	95% KM (bootstrap t) UCL	257962
Maximum	49000	95% KM (BCA) UCL	6221
Mean	2133	95% KM (Percentile Bootstrap) UCL	6207
Median	56.5	95% KM (Chebyshev) UCL	11033
SD	9983	97.5% KM (Chebyshev) UCL	14884
k star	0.143	99% KM (Chebyshev) UCL	22449
Theta star	14880		
Nu star	6.88	Potential UCLs to Use	
AppChi2	2.105	99% KM (Chebyshev) UCL	22449
95% Gamma Approximate UCL	6971		
95% Adjusted Gamma UCL	7625		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	21
Number of Distinct Detected Data	21	Number of Non-Detect Data	3
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6	Minimum Detected	1.792
Maximum Detected	8500	Maximum Detected	9.048
Mean of Detected	455.5	Mean of Detected	3.718
SD of Detected	1844	SD of Detected	1.631
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.50%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.247	Shapiro Wilk Test Statistic	0.841
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	398.8	Mean	3.333
SD	1726	SD	1.843
95% DL/2 (t) UCL	1003	95% H-Stat (DL/2) UCL	667.4
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	226.5	Mean in Log Scale	3.281
SD	1828	SD in Log Scale	1.926
95% MLE (t) UCL	866	Mean in Original Scale	398.7
95% MLE (Tiku) UCL	821.2	SD in Original Scale	1726
		95% t UCL	1003
		95% Percentile Bootstrap UCL	1098
		95% BCA Bootstrap UCL	1463

BENZO(G,H,I)PERYLENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.279	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1631		
nu star	11.73		
A-D Test Statistic	3.849	Nonparametric Statistics	
5% A-D Critical Value	0.851	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.851	Mean	399.3
5% K-S Critical Value	0.206	SD	1690
Data not Gamma Distributed at 5% Significance Level		SE of Mean	353.4
		95% KM (t) UCL	1005
Assuming Gamma Distribution		95% KM (z) UCL	980.7
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1003
Minimum	1E-12	95% KM (bootstrap t) UCL	16639
Maximum	8500	95% KM (BCA) UCL	1111
Mean	398.6	95% KM (Percentile Bootstrap) UCL	1103
Median	23	95% KM (Chebyshev) UCL	1940
SD	1726	97.5% KM (Chebyshev) UCL	2607
k star	0.139	99% KM (Chebyshev) UCL	3916
Theta star	2867		
Nu star	6.673	Potential UCLs to Use	
AppChi2	1.993	99% KM (Chebyshev) UCL	3916
95% Gamma Approximate UCL	1335		
95% Adjusted Gamma UCL	1463		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	21
Number of Distinct Detected Data	19	Number of Non-Detect Data	3
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	7.4	Minimum Detected	2.001
Maximum Detected	19000	Maximum Detected	9.852
Mean of Detected	974.4	Mean of Detected	3.966
SD of Detected	4131	SD of Detected	1.769
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.50%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.24	Shapiro Wilk Test Statistic	0.82
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	852.8	Mean	3.55
SD	3866	SD	1.997
95% DL/2 (t) UCL	2205	95% H-Stat (DL/2) UCL	1402
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	465.2	Mean in Log Scale	3.496
SD	4092	SD in Log Scale	2.083
95% MLE (t) UCL	1897	Mean in Original Scale	852.7
95% MLE (Tiku) UCL	1796	SD in Original Scale	3866
		95% t UCL	2205
		95% Percentile Bootstrap UCL	2428
		95% BCA Bootstrap UCL	3226

BENZO(K)FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.241	Data do not follow a Discernable Distribution (0.05)	
Theta Star	4038		
nu star	10.14		
A-D Test Statistic	4.219	Nonparametric Statistics	
5% A-D Critical Value	0.87	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.87	Mean	853.5
5% K-S Critical Value	0.208	SD	3785
Data not Gamma Distributed at 5% Significance Level		SE of Mean	791.6
		95% KM (t) UCL	2210
Assuming Gamma Distribution		95% KM (z) UCL	2156
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2206
Minimum	1E-12	95% KM (bootstrap t) UCL	52722
Maximum	19000	95% KM (BCA) UCL	2442
Mean	852.6	95% KM (Percentile Bootstrap) UCL	2428
Median	20.5	95% KM (Chebyshev) UCL	4304
SD	3866	97.5% KM (Chebyshev) UCL	5797
k star	0.131	99% KM (Chebyshev) UCL	8730
Theta star	6504		
Nu star	6.292	Potential UCLs to Use	
AppChi2	1.791	99% KM (Chebyshev) UCL	8730
95% Gamma Approximate UCL	2995		
95% Adjusted Gamma UCL	3295		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

CHRYSENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	21
Number of Distinct Detected Data	18	Number of Non-Detect Data	3
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	12	Minimum Detected	2.485
Maximum Detected	59000	Maximum Detected	10.99
Mean of Detected	2887	Mean of Detected	4.269
SD of Detected	12857	SD of Detected	1.84
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.50%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.231	Shapiro Wilk Test Statistic	0.731
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2527	Mean	3.815
SD	12029	SD	2.11
95% DL/2 (t) UCL	6735	95% H-Stat (DL/2) UCL	2758
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1315	Mean in Log Scale	3.81
SD	12727	SD in Log Scale	2.119
95% MLE (t) UCL	5768	Mean in Original Scale	2527
95% MLE (Tiku) UCL	5455	SD in Original Scale	12029
		95% t UCL	6735
		95% Percentile Bootstrap UCL	7436
		95% BCA Bootstrap UCL	9895

CHRYSENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.202	Data do not follow a Discernable Distribution (0.05)	
Theta Star	14265		
nu star	8.501		
A-D Test Statistic	5.273	Nonparametric Statistics	
5% A-D Critical Value	0.891	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.891	Mean	2528
5% K-S Critical Value	0.21	SD	11775
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2463
		95% KM (t) UCL	6749
Assuming Gamma Distribution		95% KM (z) UCL	6579
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6736
Minimum	1E-12	95% KM (bootstrap t) UCL	511394
Maximum	59000	95% KM (BCA) UCL	7444
Mean	2526	95% KM (Percentile Bootstrap) UCL	7432
Median	32.5	95% KM (Chebyshev) UCL	13264
SD	12029	97.5% KM (Chebyshev) UCL	17909
k star	0.121	99% KM (Chebyshev) UCL	27035
Theta star	20863		
Nu star	5.813	Potential UCLs to Use	
AppChi2	1.545	99% KM (Chebyshev) UCL	27035
95% Gamma Approximate UCL	9506		
95% Adjusted Gamma UCL	10516		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	14
Number of Distinct Detected Data	12	Number of Non-Detect Data	10
		Percent Non-Detects	41.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.8	Minimum Detected	1.335
Maximum Detected	3900	Maximum Detected	8.269
Mean of Detected	300	Mean of Detected	3.253
SD of Detected	1036	SD of Detected	1.657
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.4	Maximum Non-Detect	1.856
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.756
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	175.8	Mean	2.198
SD	793.4	SD	1.787
95% DL/2 (t) UCL	453.4	95% H-Stat (DL/2) UCL	178.8
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.756
		SD in Log Scale	2.209
		Mean in Original Scale	175.3
		SD in Original Scale	793.5
		95% t UCL	452.9
		95% Percentile Bootstrap UCL	498.1
		95% BCA Bootstrap UCL	663.2

DIBENZO(A,H)ANTHRACENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.271	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1108		
nu star	7.58		
A-D Test Statistic	3.155	Nonparametric Statistics	
5% A-D Critical Value	0.839	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.839	Mean	176.6
5% K-S Critical Value	0.249	SD	776.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	164.5
		95% KM (t) UCL	458.5
Assuming Gamma Distribution		95% KM (z) UCL	447.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	453.2
Minimum	1E-12	95% KM (bootstrap t) UCL	11317
Maximum	3900	95% KM (BCA) UCL	506.4
Mean	175	95% KM (Percentile Bootstrap) UCL	499.7
Median	6.2	95% KM (Chebyshev) UCL	893.6
SD	793.6	97.5% KM (Chebyshev) UCL	1204
k star	0.0788	99% KM (Chebyshev) UCL	1813
Theta star	2219		
Nu star	3.784	Potential UCLs to Use	
AppChi2	0.638	99% KM (Chebyshev) UCL	1813
95% Gamma Approximate UCL	1037		
95% Adjusted Gamma UCL	1187		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

FLUORANTHENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	22
Number of Distinct Detected Data	18	Number of Non-Detect Data	2
		Percent Non-Detects	8.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.1	Minimum Detected	1.629
Maximum Detected	83000	Maximum Detected	11.33
Mean of Detected	3887	Mean of Detected	4.532
SD of Detected	17670	SD of Detected	1.906
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	8.33%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.226	Shapiro Wilk Test Statistic	0.796
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3564	Mean	4.206
SD	16920	SD	2.13
95% DL/2 (t) UCL	9483	95% H-Stat (DL/2) UCL	4400
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2477	Mean in Log Scale	4.2
SD	17422	SD in Log Scale	2.141
95% MLE (t) UCL	8572	Mean in Original Scale	3564
95% MLE (Tiku) UCL	8017	SD in Original Scale	16920
		95% t UCL	9483
		95% Percentile Bootstrap UCL	10464
		95% BCA Bootstrap UCL	13934

FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.201	Data do not follow a Discernable Distribution (0.05)	
Theta Star	19352		
nu star	8.839		
A-D Test Statistic	5.242	Nonparametric Statistics	
5% A-D Critical Value	0.893	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.893	Mean	3564
5% K-S Critical Value	0.206	SD	16564
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3461
		95% KM (t) UCL	9495
Assuming Gamma Distribution		95% KM (z) UCL	9256
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9483
Minimum	1E-12	95% KM (bootstrap t) UCL	640111
Maximum	83000	95% KM (BCA) UCL	10488
Mean	3564	95% KM (Percentile Bootstrap) UCL	10467
Median	54.5	95% KM (Chebyshev) UCL	18649
SD	16920	97.5% KM (Chebyshev) UCL	25176
k star	0.137	99% KM (Chebyshev) UCL	37997
Theta star	26033		
Nu star	6.571	Potential UCLs to Use	
AppChi2	1.938	99% KM (Chebyshev) UCL	37997
95% Gamma Approximate UCL	12081		
95% Adjusted Gamma UCL	13254		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	21
Number of Distinct Detected Data	20	Number of Non-Detect Data	3
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.7	Minimum Detected	1.74
Maximum Detected	8500	Maximum Detected	9.048
Mean of Detected	450.4	Mean of Detected	3.615
SD of Detected	1845	SD of Detected	1.646
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.50%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.245	Shapiro Wilk Test Statistic	0.832
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	394.4	Mean	3.243
SD	1727	SD	1.835
95% DL/2 (t) UCL	998.6	95% H-Stat (DL/2) UCL	593.7
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	221.8	Mean in Log Scale	3.176
SD	1829	SD in Log Scale	1.939
95% MLE (t) UCL	861.5	Mean in Original Scale	394.3
95% MLE (Tiku) UCL	816.7	SD in Original Scale	1727
		95% t UCL	998.5
		95% Percentile Bootstrap UCL	1098
		95% BCA Bootstrap UCL	1460

INDENO(1,2,3-CD)PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.271	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1660		
nu star	11.4		
A-D Test Statistic	3.987	Nonparametric Statistics	
5% A-D Critical Value	0.855	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.855	Mean	394.8
5% K-S Critical Value	0.206	SD	1691
Data not Gamma Distributed at 5% Significance Level		SE of Mean	353.6
		95% KM (t) UCL	1001
Assuming Gamma Distribution		95% KM (z) UCL	976.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	998.9
Minimum	1E-12	95% KM (bootstrap t) UCL	18505
Maximum	8500	95% KM (BCA) UCL	1103
Mean	394.1	95% KM (Percentile Bootstrap) UCL	1096
Median	20.5	95% KM (Chebyshev) UCL	1936
SD	1727	97.5% KM (Chebyshev) UCL	2603
k star	0.138	99% KM (Chebyshev) UCL	3913
Theta star	2860		
Nu star	6.614	Potential UCLs to Use	
AppChi2	1.961	99% KM (Chebyshev) UCL	3913
95% Gamma Approximate UCL	1329		
95% Adjusted Gamma UCL	1457		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PYRENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	22
Number of Distinct Detected Data	18	Number of Non-Detect Data	2
		Percent Non-Detects	8.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.4	Minimum Detected	1.482
Maximum Detected	86000	Maximum Detected	11.36
Mean of Detected	4006	Mean of Detected	4.39
SD of Detected	18314	SD of Detected	1.932
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	8.33%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.225	Shapiro Wilk Test Statistic	0.783
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3672	Mean	4.076
SD	17536	SD	2.131
95% DL/2 (t) UCL	9807	95% H-Stat (DL/2) UCL	3874
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2546	Mean in Log Scale	4.057
SD	18055	SD in Log Scale	2.164
95% MLE (t) UCL	8862	Mean in Original Scale	3672
95% MLE (Tiku) UCL	8287	SD in Original Scale	17536
		95% t UCL	9807
		95% Percentile Bootstrap UCL	10818
		95% BCA Bootstrap UCL	14425

PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.194	Data do not follow a Discernable Distribution (0.05)	
Theta Star	20613		
nu star	8.551		
A-D Test Statistic	5.394	Nonparametric Statistics	
5% A-D Critical Value	0.896	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.896	Mean	3672
5% K-S Critical Value	0.206	SD	17167
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3587
		95% KM (t) UCL	9819
Assuming Gamma Distribution		95% KM (z) UCL	9572
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9807
Minimum	1E-12	95% KM (bootstrap t) UCL	806616
Maximum	86000	95% KM (BCA) UCL	10839
Mean	3672	95% KM (Percentile Bootstrap) UCL	10826
Median	47.5	95% KM (Chebyshev) UCL	19306
SD	17536	97.5% KM (Chebyshev) UCL	26071
k star	0.135	99% KM (Chebyshev) UCL	39359
Theta star	27300		
Nu star	6.456	Potential UCLs to Use	
AppChi2	1.877	99% KM (Chebyshev) UCL	39359
95% Gamma Approximate UCL	12629		
95% Adjusted Gamma UCL	13870		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - TANK FARM 4 SURFACE SOIL

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD TEQ

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	24
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.977	Minimum of Log Data	-0.0234
Maximum	7.252	Maximum of Log Data	1.981
Mean	2.608	Mean of log Data	0.858
Median	2.422	SD of log Data	0.45
SD	1.306		
Coefficient of Variation	0.501		
Skewness	2.002		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.065	95% H-UCL	3.132
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.676
95% Adjusted-CLT UCL (Chen-1995)	3.163	97.5% Chebyshev (MVUE) UCL	4.141
95% Modified-t UCL (Johnson-1978)	3.083	99% Chebyshev (MVUE) UCL	5.056

2,3,7,8-TCDD TEQ (Continued)

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.537	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.575		
MLE of Mean	2.608		
MLE of Standard Deviation	1.224		
nu star	217.8		
Approximate Chi Square Value (.05)	184.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0392	95% CLT UCL	3.046
Adjusted Chi Square Value	182.5	95% Jackknife UCL	3.065
		95% Standard Bootstrap UCL	3.036
Anderson-Darling Test Statistic	0.314	95% Bootstrap-t UCL	3.271
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	3.682
Kolmogorov-Smirnov Test Statistic	0.0877	95% Percentile Bootstrap UCL	3.072
Kolmogorov-Smirnov 5% Critical Value	0.178	95% BCA Bootstrap UCL	3.152
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.769
		97.5% Chebyshev(Mean, Sd) UCL	4.272
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	5.26
95% Approximate Gamma UCL	3.076		
95% Adjusted Gamma UCL	3.112		
Potential UCL to Use		Use 95% Approximate Gamma UCL	3.076

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ALUMINUM

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	22
Raw Statistics		**Log-transformed Statistics**	
Minimum	4850	Minimum of Log Data	8.487
Maximum	15200	Maximum of Log Data	9.629
Mean	9664	Mean of log Data	9.141
Median	9770	SD of log Data	0.281
SD	2502		
Coefficient of Variation	0.259		
Skewness	0.0144		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.98	Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	10539	95% H-UCL	10790
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12138
95% Adjusted-CLT UCL (Chen-1995)	10506	97.5% Chebyshev (MVUE) UCL	13199
95% Modified-t UCL (Johnson-1978)	10539	99% Chebyshev (MVUE) UCL	15283
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	12.53	**Data appear Normal at 5% Significance Level**	
Theta Star	771.4		
MLE of Mean	9664		
MLE of Standard Deviation	2730		
nu star	601.3		
Approximate Chi Square Value (.05)	545.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	10504
Adjusted Chi Square Value	541.7	95% Jackknife UCL	10539
		95% Standard Bootstrap UCL	10475
Anderson-Darling Test Statistic	0.369	95% Bootstrap-t UCL	10509
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	10544
Kolmogorov-Smirnov Test Statistic	0.134	95% Percentile Bootstrap UCL	10484
Kolmogorov-Smirnov 5% Critical Value	0.178	95% BCA Bootstrap UCL	10469
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11890
		97.5% Chebyshev(Mean, Sd) UCL	12854
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14746
95% Approximate Gamma UCL	10654		
95% Adjusted Gamma UCL	10727		
Potential UCL to Use		Use 95% Student's-t UCL	10539

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	20
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.2	Minimum of Log Data	1.435
Maximum	59.5	Maximum of Log Data	4.086
Mean	11.76	Mean of log Data	2.3
Median	9.25	SD of log Data	0.495
SD	10.59		
Coefficient of Variation	0.901		
Skewness	4.293		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.465	Shapiro Wilk Test Statistic	0.837
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15.46	95% H-UCL	13.82
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.33
95% Adjusted-CLT UCL (Chen-1995)	17.34	97.5% Chebyshev (MVUE) UCL	18.55
95% Modified-t UCL (Johnson-1978)	15.78	99% Chebyshev (MVUE) UCL	22.91
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.817	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	4.174		
MLE of Mean	11.76		
MLE of Standard Deviation	7.006		
nu star	135.2		
Approximate Chi Square Value (.05)	109.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	15.31
Adjusted Chi Square Value	107.7	95% Jackknife UCL	15.46
		95% Standard Bootstrap UCL	15.17
Anderson-Darling Test Statistic	1.905	95% Bootstrap-t UCL	22.5
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	29.2
Kolmogorov-Smirnov Test Statistic	0.204	95% Percentile Bootstrap UCL	15.85
Kolmogorov-Smirnov 5% Critical Value	0.179	95% BCA Bootstrap UCL	18.33
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.18
		97.5% Chebyshev(Mean, Sd) UCL	25.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	33.27
95% Approximate Gamma UCL	14.54		
95% Adjusted Gamma UCL	14.76		
Potential UCL to Use		Use 95% Student's-t UCL	15.46
		or 95% Modified-t UCL	15.78

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BERYLLIUM

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	19
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.096	Minimum of Log Data	-2.343
Maximum	0.7	Maximum of Log Data	-0.357
Mean	0.361	Mean of log Data	-1.145
Median	0.35	SD of log Data	0.545
SD	0.169		
Coefficient of Variation	0.468		
Skewness	0.299		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Test Statistic	0.94
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.42	95% H-UCL	0.465
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.553
95% Adjusted-CLT UCL (Chen-1995)	0.42	97.5% Chebyshev (MVUE) UCL	0.634
95% Modified-t UCL (Johnson-1978)	0.421	99% Chebyshev (MVUE) UCL	0.792
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.643	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0991		
MLE of Mean	0.361		
MLE of Standard Deviation	0.189		
nu star	174.9		
Approximate Chi Square Value (.05)	145.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	0.418
Adjusted Chi Square Value	143.4	95% Jackknife UCL	0.42
		95% Standard Bootstrap UCL	0.415
Anderson-Darling Test Statistic	0.318	95% Bootstrap-t UCL	0.424
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	0.426
Kolmogorov-Smirnov Test Statistic	0.0984	95% Percentile Bootstrap UCL	0.417
Kolmogorov-Smirnov 5% Critical Value	0.179	95% BCA Bootstrap UCL	0.417
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.512
		97.5% Chebyshev(Mean, Sd) UCL	0.577
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.705
95% Approximate Gamma UCL	0.435		
95% Adjusted Gamma UCL	0.44		
Potential UCL to Use		Use 95% Student's-t UCL	0.42

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaçi (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHROMIUM

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	19
Raw Statistics		**Log-transformed Statistics**	
Minimum	8.4	Minimum of Log Data	2.128
Maximum	20.8	Maximum of Log Data	3.035
Mean	12.09	Mean of log Data	2.47
Median	11.25	SD of log Data	0.209
SD	2.766		
Coefficient of Variation	0.229		
Skewness	1.467		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk Test Statistic	0.947
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	13.06	95% H-UCL	13.06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.34
95% Adjusted-CLT UCL (Chen-1995)	13.2	97.5% Chebyshev (MVUE) UCL	15.32
95% Modified-t UCL (Johnson-1978)	13.08	99% Chebyshev (MVUE) UCL	17.25
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	19.91	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.607		
MLE of Mean	12.09		
MLE of Standard Deviation	2.709		
nu star	955.8		
Approximate Chi Square Value (.05)	885	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	13.02
Adjusted Chi Square Value	880.3	95% Jackknife UCL	13.06
		95% Standard Bootstrap UCL	12.98
Anderson-Darling Test Statistic	0.568	95% Bootstrap-t UCL	13.31
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	13.55
Kolmogorov-Smirnov Test Statistic	0.145	95% Percentile Bootstrap UCL	13.04
Kolmogorov-Smirnov 5% Critical Value	0.178	95% BCA Bootstrap UCL	13.12
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.55
		97.5% Chebyshev(Mean, Sd) UCL	15.61
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17.71
95% Approximate Gamma UCL	13.05		
95% Adjusted Gamma UCL	13.12		
Potential UCL to Use		Use 95% Approximate Gamma UCL	13.05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	21
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.9	Minimum of Log Data	1.589
Maximum	20.5	Maximum of Log Data	3.02
Mean	11.81	Mean of log Data	2.399
Median	12	SD of log Data	0.398
SD	4.27		
Coefficient of Variation	0.361		
Skewness	0.235		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.964	Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	13.31	95% H-UCL	13.95
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.2
95% Adjusted-CLT UCL (Chen-1995)	13.29	97.5% Chebyshev (MVUE) UCL	18.07
95% Modified-t UCL (Johnson-1978)	13.31	99% Chebyshev (MVUE) UCL	21.74
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	6.398	**Data appear Normal at 5% Significance Level**	
Theta Star	1.846		
MLE of Mean	11.81		
MLE of Standard Deviation	4.67		
nu star	307.1		
Approximate Chi Square Value (.05)	267.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	13.25
Adjusted Chi Square Value	264.9	95% Jackknife UCL	13.31
		95% Standard Bootstrap UCL	13.2
Anderson-Darling Test Statistic	0.345	95% Bootstrap-t UCL	13.3
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	13.27
Kolmogorov-Smirnov Test Statistic	0.122	95% Percentile Bootstrap UCL	13.23
Kolmogorov-Smirnov 5% Critical Value	0.178	95% BCA Bootstrap UCL	13.23
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.61
		97.5% Chebyshev(Mean, Sd) UCL	17.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.48
95% Approximate Gamma UCL	13.56		
95% Adjusted Gamma UCL	13.69		
Potential UCL to Use		Use 95% Student's-t UCL	13.31

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

IRON

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	24
Raw Statistics		**Log-transformed Statistics**	
Minimum	18000	Minimum of Log Data	9.798
Maximum	53200	Maximum of Log Data	10.88
Mean	30150	Mean of log Data	10.27
Median	29950	SD of log Data	0.309
SD	9439		
Coefficient of Variation	0.313		
Skewness	0.69		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	33452	95% H-UCL	33992
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	38564
95% Adjusted-CLT UCL (Chen-1995)	33609	97.5% Chebyshev (MVUE) UCL	42207
95% Modified-t UCL (Johnson-1978)	33498	99% Chebyshev (MVUE) UCL	49362
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.72	**Data appear Normal at 5% Significance Level**	
Theta Star	3102		
MLE of Mean	30150		
MLE of Standard Deviation	9671		
nu star	466.5		
Approximate Chi Square Value (.05)	417.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	33319
Adjusted Chi Square Value	414.2	95% Jackknife UCL	33452
		95% Standard Bootstrap UCL	33272
Anderson-Darling Test Statistic	0.366	95% Bootstrap-t UCL	33732
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	33637
Kolmogorov-Smirnov Test Statistic	0.127	95% Percentile Bootstrap UCL	33325
Kolmogorov-Smirnov 5% Critical Value	0.178	95% BCA Bootstrap UCL	33496
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	38549
		97.5% Chebyshev(Mean, Sd) UCL	42183
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	49321
95% Approximate Gamma UCL	33695		
95% Adjusted Gamma UCL	33960		
Potential UCL to Use		Use 95% Student's-t UCL	33452

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

MANGANESE

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	24
Raw Statistics		**Log-transformed Statistics**	
Minimum	144	Minimum of Log Data	4.97
Maximum	818	Maximum of Log Data	6.707
Mean	390.6	Mean of log Data	5.866
Median	352.5	SD of log Data	0.467
SD	179.2		
Coefficient of Variation	0.459		
Skewness	0.811		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Test Statistic	0.975
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	453.3	95% H-UCL	475.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	559.9
95% Adjusted-CLT UCL (Chen-1995)	457.2	97.5% Chebyshev (MVUE) UCL	632.7
95% Modified-t UCL (Johnson-1978)	454.3	99% Chebyshev (MVUE) UCL	775.8
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.489	**Data appear Normal at 5% Significance Level**	
Theta Star	87		
MLE of Mean	390.6		
MLE of Standard Deviation	184.3		
nu star	215.5		
Approximate Chi Square Value (.05)	182.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0392	95% CLT UCL	450.7
Adjusted Chi Square Value	180.4	95% Jackknife UCL	453.3
		95% Standard Bootstrap UCL	450.4
Anderson-Darling Test Statistic	0.22	95% Bootstrap-t UCL	464.4
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	456.2
Kolmogorov-Smirnov Test Statistic	0.106	95% Percentile Bootstrap UCL	450.1
Kolmogorov-Smirnov 5% Critical Value	0.178	95% BCA Bootstrap UCL	455.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	550
		97.5% Chebyshev(Mean, Sd) UCL	619
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	754.5
95% Approximate Gamma UCL	461.1		
95% Adjusted Gamma UCL	466.6		
Potential UCL to Use		Use 95% Student's-t UCL	453.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Tank Farm 4

All Soil

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Data	66	Number of Detected Data	36
Number of Distinct Detected Data	28	Number of Non-Detect Data	30
		Percent Non-Detects	45.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.9	Minimum Detected	1.361
Maximum Detected	54000	Maximum Detected	10.9
Mean of Detected	1557	Mean of Detected	3.567
SD of Detected	8990	SD of Detected	1.761
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	34
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	48.48%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.175	Shapiro Wilk Test Statistic	0.831
5% Shapiro Wilk Critical Value	0.935	5% Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	850.4	Mean	2.233
SD	6643	SD	1.96
95% DL/2 (t) UCL	2215	95% H-Stat (DL/2) UCL	130.7
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.649
		SD in Log Scale	2.567
		Mean in Original Scale	849.9
		SD in Original Scale	6643
		95% t UCL	2214
		95% Percentile Bootstrap UCL	2485
		95% BCA Bootstrap UCL	4116

BENZO(A)ANTHRACENE (Contiuned)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.197	Data do not follow a Discernable Distribution (0.05)	
Theta Star	7888		
nu star	14.22		
A-D Test Statistic	8.485	Nonparametric Statistics	
5% A-D Critical Value	0.903	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.903	Mean	851.3
5% K-S Critical Value	0.163	SD	6593
Data not Gamma Distributed at 5% Significance Level		SE of Mean	823
		95% KM (t) UCL	2225
Assuming Gamma Distribution		95% KM (z) UCL	2205
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2216
Minimum	1E-12	95% KM (bootstrap t) UCL	123205
Maximum	54000	95% KM (BCA) UCL	2485
Mean	951.8	95% KM (Percentile Bootstrap) UCL	2487
Median	13.5	95% KM (Chebyshev) UCL	4439
SD	6642	97.5% KM (Chebyshev) UCL	5991
k star	0.0711	99% KM (Chebyshev) UCL	9040
Theta star	13387		
Nu star	9.385	Potential UCLs to Use	
AppChi2	3.561	97.5% KM (Chebyshev) UCL	5991
95% Gamma Approximate UCL	2508		
95% Adjusted Gamma UCL	2566		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	35
Number of Distinct Detected Data	27	Number of Non-Detect Data	31
		Percent Non-Detects	46.97%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.3	Minimum Detected	1.194
Maximum Detected	24000	Maximum Detected	10.09
Mean of Detected	745.9	Mean of Detected	3.602
SD of Detected	4047	SD of Detected	1.684
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	35
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	31
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.03%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.184	Shapiro Wilk Test Statistic	0.869
5% Shapiro Wilk Critical Value	0.934	5% Shapiro Wilk Critical Value	0.934
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	396.4	Mean	2.206
SD	2951	SD	1.93
95% DL/2 (t) UCL	1002	95% H-Stat (DL/2) UCL	117.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.661
		SD in Log Scale	2.505
		Mean in Original Scale	395.9
		SD in Original Scale	2951
		95% t UCL	1002
		95% Percentile Bootstrap UCL	1122
		95% BCA Bootstrap UCL	1494

BENZO(A)PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.236	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3155		
nu star	16.55		
A-D Test Statistic	6.966	Nonparametric Statistics	
5% A-D Critical Value	0.883	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.883	Mean	397.1
5% K-S Critical Value	0.163	SD	2928
Data not Gamma Distributed at 5% Significance Level		SE of Mean	365.7
		95% KM (t) UCL	1007
Assuming Gamma Distribution		95% KM (z) UCL	998.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1002
Minimum	3.3	95% KM (bootstrap t) UCL	23808
Maximum	24000	95% KM (BCA) UCL	1126
Mean	782	95% KM (Percentile Bootstrap) UCL	1126
Median	240	95% KM (Chebyshev) UCL	1991
SD	2928	97.5% KM (Chebyshev) UCL	2681
k star	0.401	99% KM (Chebyshev) UCL	4036
Theta star	1951		
Nu star	52.91	Potential UCLs to Use	
AppChi2	37.2	97.5% KM (Chebyshev) UCL	2681
95% Gamma Approximate UCL	1112		
95% Adjusted Gamma UCL	1121		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE			
General Statistics			
Number of Valid Data	66	Number of Detected Data	37
Number of Distinct Detected Data	31	Number of Non-Detect Data	29
		Percent Non-Detects	43.94%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.2	Minimum Detected	1.435
Maximum Detected	49000	Maximum Detected	10.8
Mean of Detected	1420	Mean of Detected	4
SD of Detected	8040	SD of Detected	1.745
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	35
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	46.97%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.177	Shapiro Wilk Test Statistic	0.891
5% Shapiro Wilk Critical Value	0.936	5% Shapiro Wilk Critical Value	0.936
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	797.1	Mean	2.519
SD	6026	SD	2.13
95% DL/2 (t) UCL	2035	95% H-Stat (DL/2) UCL	272
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.142
		SD in Log Scale	2.564
		Mean in Original Scale	796.7
		SD in Original Scale	6026
		95% t UCL	2034
		95% Percentile Bootstrap UCL	2281
		95% BCA Bootstrap UCL	3029

BENZO(B)FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.222	Data do not follow a Discernable Distribution (0.05)	
Theta Star	6394		
nu star	16.44		
A-D Test Statistic	7.484	Nonparametric Statistics	
5% A-D Critical Value	0.891	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.891	Mean	798.1
5% K-S Critical Value	0.16	SD	5980
Data not Gamma Distributed at 5% Significance Level		SE of Mean	746.2
		95% KM (t) UCL	2043
Assuming Gamma Distribution		95% KM (z) UCL	2025
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2036
Minimum	1E-12	95% KM (bootstrap t) UCL	60327
Maximum	49000	95% KM (BCA) UCL	2282
Mean	862.3	95% KM (Percentile Bootstrap) UCL	2279
Median	15.5	95% KM (Chebyshev) UCL	4051
SD	6023	97.5% KM (Chebyshev) UCL	5458
k star	0.0684	99% KM (Chebyshev) UCL	8223
Theta star	12613		
Nu star	9.025	Potential UCLs to Use	
AppChi2	3.342	97.5% KM (Chebyshev) UCL	5458
95% Gamma Approximate UCL	2329		
95% Adjusted Gamma UCL	2384		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	33
Number of Distinct Detected Data	32	Number of Non-Detect Data	33
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.2	Minimum Detected	1.435
Maximum Detected	8500	Maximum Detected	9.048
Mean of Detected	303.8	Mean of Detected	3.416
SD of Detected	1472	SD of Detected	1.543
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	37
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	29
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	56.06%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.201	Shapiro Wilk Test Statistic	0.879
5% Shapiro Wilk Critical Value	0.931	5% Shapiro Wilk Critical Value	0.931
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	152.8	Mean	2.03
SD	1044	SD	1.77
95% DL/2 (t) UCL	367.3	95% H-Stat (DL/2) UCL	66.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.447
		SD in Log Scale	2.357
		Mean in Original Scale	152.3
		SD in Original Scale	1044
		95% t UCL	366.8
		95% Percentile Bootstrap UCL	408.6
		95% BCA Bootstrap UCL	543.2

BENZO(G,H,I)PERYLENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.293	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1038		
nu star	19.32		
A-D Test Statistic	5.504	Nonparametric Statistics	
5% A-D Critical Value	0.855	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.855	Mean	154
5% K-S Critical Value	0.166	SD	1036
Data not Gamma Distributed at 5% Significance Level		SE of Mean	129.5
		95% KM (t) UCL	370.1
Assuming Gamma Distribution		95% KM (z) UCL	367
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	368
Minimum	1E-12	95% KM (bootstrap t) UCL	4350
Maximum	8500	95% KM (BCA) UCL	413.1
Mean	278	95% KM (Percentile Bootstrap) UCL	408.8
Median	19	95% KM (Chebyshev) UCL	718.5
SD	1079	97.5% KM (Chebyshev) UCL	962.7
k star	0.0852	99% KM (Chebyshev) UCL	1443
Theta star	3263		
Nu star	11.25	Potential UCLs to Use	
AppChi2	4.735	97.5% KM (Chebyshev) UCL	962.7
95% Gamma Approximate UCL	660.4		
95% Adjusted Gamma UCL	673.8		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	34
Number of Distinct Detected Data	29	Number of Non-Detect Data	32
		Percent Non-Detects	48.48%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.8	Minimum Detected	1.569
Maximum Detected	19000	Maximum Detected	9.852
Mean of Detected	624.5	Mean of Detected	3.592
SD of Detected	3248	SD of Detected	1.665
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	35
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	31
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.03%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.193	Shapiro Wilk Test Statistic	0.866
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	322.6	Mean	2.156
SD	2336	SD	1.908
95% DL/2 (t) UCL	802.4	95% H-Stat (DL/2) UCL	105.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.54
		SD in Log Scale	2.546
		Mean in Original Scale	322.1
		SD in Original Scale	2336
		95% t UCL	801.9
		95% Percentile Bootstrap UCL	893.3
		95% BCA Bootstrap UCL	1198

BENZO(K)FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.247	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2525		
nu star	16.82		
A-D Test Statistic	6.484	Nonparametric Statistics	
5% A-D Critical Value	0.878	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.878	Mean	324
5% K-S Critical Value	0.165	SD	2318
Data not Gamma Distributed at 5% Significance Level		SE of Mean	289.6
		95% KM (t) UCL	807.3
Assuming Gamma Distribution		95% KM (z) UCL	800.4
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	803.5
Minimum	1E-12	95% KM (bootstrap t) UCL	14597
Maximum	19000	95% KM (BCA) UCL	906
Mean	505.9	95% KM (Percentile Bootstrap) UCL	897.7
Median	18.25	95% KM (Chebyshev) UCL	1586
SD	2370	97.5% KM (Chebyshev) UCL	2132
k star	0.0797	99% KM (Chebyshev) UCL	3205
Theta star	6350		
Nu star	10.52	Potential UCLs to Use	
AppChi2	4.267	97.5% KM (Chebyshev) UCL	2132
95% Gamma Approximate UCL	1247		
95% Adjusted Gamma UCL	1273		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

CHRYSENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	36
Number of Distinct Detected Data	31	Number of Non-Detect Data	30
		Percent Non-Detects	45.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.3	Minimum Detected	1.459
Maximum Detected	59000	Maximum Detected	10.99
Mean of Detected	1710	Mean of Detected	3.782
SD of Detected	9822	SD of Detected	1.743
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	34
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	48.48%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.176	Shapiro Wilk Test Statistic	0.846
5% Shapiro Wilk Critical Value	0.935	5% Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	933.7	Mean	2.35
SD	7258	SD	2.034
95% DL/2 (t) UCL	2424	95% H-Stat (DL/2) UCL	178.4
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.874
		SD in Log Scale	2.55
		Mean in Original Scale	933.2
		SD in Original Scale	7258
		95% t UCL	2424
		95% Percentile Bootstrap UCL	2715
		95% BCA Bootstrap UCL	3624

CHRYSENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.203	Data do not follow a Discernable Distribution (0.05)	
Theta Star	8442		
nu star	14.59		
A-D Test Statistic	8.33	Nonparametric Statistics	
5% A-D Critical Value	0.9	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.9	Mean	934.8
5% K-S Critical Value	0.163	SD	7202
Data not Gamma Distributed at 5% Significance Level		SE of Mean	899.1
		95% KM (t) UCL	2435
Assuming Gamma Distribution		95% KM (z) UCL	2414
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2425
Minimum	1E-12	95% KM (bootstrap t) UCL	124463
Maximum	59000	95% KM (BCA) UCL	2726
Mean	1060	95% KM (Percentile Bootstrap) UCL	2722
Median	13.5	95% KM (Chebyshev) UCL	4854
SD	7259	97.5% KM (Chebyshev) UCL	6550
k star	0.0674	99% KM (Chebyshev) UCL	9881
Theta star	15722		
Nu star	8.901	Potential UCLs to Use	
AppChi2	3.267	97.5% KM (Chebyshev) UCL	6550
95% Gamma Approximate UCL	2888		
95% Adjusted Gamma UCL	2957		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	20
Number of Distinct Detected Data	18	Number of Non-Detect Data	46
		Percent Non-Detects	69.70%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.8	Minimum Detected	1.335
Maximum Detected	3900	Maximum Detected	8.269
Mean of Detected	216.4	Mean of Detected	3.102
SD of Detected	867.2	SD of Detected	1.459
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.4	Maximum Non-Detect	1.856
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	49
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	17
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	74.24%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.25	Shapiro Wilk Test Statistic	0.766
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	66.95	Mean	1.408
SD	479.2	SD	1.38
95% DL/2 (t) UCL	165.4	95% H-Stat (DL/2) UCL	15.57
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.0503
		SD in Log Scale	2.401
		Mean in Original Scale	65.92
		SD in Original Scale	479.4
		95% t UCL	164.4
		95% Percentile Bootstrap UCL	183.5
		95% BCA Bootstrap UCL	300.6

DIBENZO(A,H)ANTHRACENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.291	Data do not follow a Discernable Distribution (0.05)	
Theta Star	744.6		
nu star	11.62		
A-D Test Statistic	4.467	Nonparametric Statistics	
5% A-D Critical Value	0.844	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.844	Mean	68.22
5% K-S Critical Value	0.21	SD	475.4
Data not Gamma Distributed at 5% Significance Level		SE of Mean	60.04
		95% KM (t) UCL	168.4
Assuming Gamma Distribution		95% KM (z) UCL	167
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	165.4
Minimum	1E-12	95% KM (bootstrap t) UCL	3074
Maximum	3900	95% KM (BCA) UCL	189.7
Mean	218.4	95% KM (Percentile Bootstrap) UCL	186.9
Median	190.6	95% KM (Chebyshev) UCL	329.9
SD	477.3	97.5% KM (Chebyshev) UCL	443.2
k star	0.299	99% KM (Chebyshev) UCL	665.6
Theta star	731.5		
Nu star	39.41	Potential UCLs to Use	
AppChi2	26.03	95% KM (BCA) UCL	189.7
95% Gamma Approximate UCL	330.6		
95% Adjusted Gamma UCL	333.8		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

FLUORANTHENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	38
Number of Distinct Detected Data	31	Number of Non-Detect Data	28
		Percent Non-Detects	42.42%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.9	Minimum Detected	1.361
Maximum Detected	83000	Maximum Detected	11.33
Mean of Detected	2275	Mean of Detected	3.973
SD of Detected	13450	SD of Detected	1.797
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	35
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	46.97%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.171	Shapiro Wilk Test Statistic	0.87
5% Shapiro Wilk Critical Value	0.938	5% Shapiro Wilk Critical Value	0.938
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1311	Mean	2.556
SD	10210	SD	2.148
95% DL/2 (t) UCL	3408	95% H-Stat (DL/2) UCL	296.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.179
		SD in Log Scale	2.577
		Mean in Original Scale	1310
		SD in Original Scale	10210
		95% t UCL	3408
		95% Percentile Bootstrap UCL	3822
		95% BCA Bootstrap UCL	5098

FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.198	Data do not follow a Discernable Distribution (0.05)	
Theta Star	11462		
nu star	15.08		
A-D Test Statistic	8.56	Nonparametric Statistics	
5% A-D Critical Value	0.904	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.904	Mean	1312
5% K-S Critical Value	0.159	SD	10133
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1264
		95% KM (t) UCL	3421
Assuming Gamma Distribution		95% KM (z) UCL	3391
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3408
Minimum	1E-12	95% KM (bootstrap t) UCL	170566
Maximum	83000	95% KM (BCA) UCL	5071
Mean	1327	95% KM (Percentile Bootstrap) UCL	3826
Median	12.25	95% KM (Chebyshev) UCL	6821
SD	10209	97.5% KM (Chebyshev) UCL	9205
k star	0.0631	99% KM (Chebyshev) UCL	13888
Theta star	21021		
Nu star	8.333	Potential UCLs to Use	
AppChi2	2.929	97.5% KM (Chebyshev) UCL	9205
95% Gamma Approximate UCL	3775		
95% Adjusted Gamma UCL	3869		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	32
Number of Distinct Detected Data	31	Number of Non-Detect Data	34
		Percent Non-Detects	51.52%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.3	Minimum Detected	1.194
Maximum Detected	8500	Maximum Detected	9.048
Mean of Detected	308.7	Mean of Detected	3.373
SD of Detected	1495	SD of Detected	1.545
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	37
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	29
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	56.06%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.202	Shapiro Wilk Test Statistic	0.876
5% Shapiro Wilk Critical Value	0.93	5% Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	150.7	Mean	1.966
SD	1044	SD	1.743
95% DL/2 (t) UCL	365.2	95% H-Stat (DL/2) UCL	58.37
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.33
		SD in Log Scale	2.371
		Mean in Original Scale	150.1
		SD in Original Scale	1044
		95% t UCL	364.6
		95% Percentile Bootstrap UCL	407.5
		95% BCA Bootstrap UCL	540.3

INDENO(1,2,3-CD)PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.287	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1077		
nu star	18.35		
A-D Test Statistic	5.572	Nonparametric Statistics	
5% A-D Critical Value	0.858	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.858	Mean	151.4
5% K-S Critical Value	0.169	SD	1036
Data not Gamma Distributed at 5% Significance Level		SE of Mean	129.6
		95% KM (t) UCL	367.6
Assuming Gamma Distribution		95% KM (z) UCL	364.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	364.7
Minimum	3.3	95% KM (bootstrap t) UCL	4491
Maximum	8500	95% KM (BCA) UCL	413.9
Mean	315.7	95% KM (Percentile Bootstrap) UCL	407.1
Median	171.3	95% KM (Chebyshev) UCL	716.3
SD	1034	97.5% KM (Chebyshev) UCL	960.7
k star	0.523	99% KM (Chebyshev) UCL	1441
Theta star	603.3		
Nu star	69.08	Potential UCLs to Use	
AppChi2	50.95	95% KM (Chebyshev) UCL	716.3
95% Gamma Approximate UCL	428.1		
95% Adjusted Gamma UCL	431		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PYRENE

General Statistics			
Number of Valid Data	66	Number of Detected Data	37
Number of Distinct Detected Data	29	Number of Non-Detect Data	29
		Percent Non-Detects	43.94%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.4	Minimum Detected	1.482
Maximum Detected	86000	Maximum Detected	11.36
Mean of Detected	2406	Mean of Detected	3.932
SD of Detected	14125	SD of Detected	1.777
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	6.1	Maximum Non-Detect	1.808
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	35
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	46.97%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.172	Shapiro Wilk Test Statistic	0.844
5% Shapiro Wilk Critical Value	0.936	5% Shapiro Wilk Critical Value	0.936
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1350	Mean	2.482
SD	10580	SD	2.117
95% DL/2 (t) UCL	3523	95% H-Stat (DL/2) UCL	253.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.089
		SD in Log Scale	2.557
		Mean in Original Scale	1350
		SD in Original Scale	10580
		95% t UCL	3523
		95% Percentile Bootstrap UCL	3950
		95% BCA Bootstrap UCL	5267

PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.195	Data do not follow a Discernable Distribution (0.05)	
Theta Star	12367		
nu star	14.4		
A-D Test Statistic	8.733	Nonparametric Statistics	
5% A-D Critical Value	0.905	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.905	Mean	1351
5% K-S Critical Value	0.161	SD	10500
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1310
		95% KM (t) UCL	3537
Assuming Gamma Distribution		95% KM (z) UCL	3506
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3524
Minimum	1E-12	95% KM (bootstrap t) UCL	208383
Maximum	86000	95% KM (BCA) UCL	3968
Mean	1411	95% KM (Percentile Bootstrap) UCL	3955
Median	12	95% KM (Chebyshev) UCL	7062
SD	10577	97.5% KM (Chebyshev) UCL	9534
k star	0.0631	99% KM (Chebyshev) UCL	14388
Theta star	22357		
Nu star	8.329	Potential UCLs to Use	
AppChi2	2.927	97.5% KM (Chebyshev) UCL	9534
95% Gamma Approximate UCL	4014		
95% Adjusted Gamma UCL	4114		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

THALLIUM

General Statistics			
Number of Valid Data	66	Number of Detected Data	16
Number of Distinct Detected Data	15	Number of Non-Detect Data	50
		Percent Non-Detects	75.76%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.2	Minimum Detected	0.182
Maximum Detected	11.8	Maximum Detected	2.468
Mean of Detected	3.919	Mean of Detected	1.187
SD of Detected	2.8	SD of Detected	0.586
Minimum Non-Detect	0.15	Minimum Non-Detect	-1.897
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	50
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.76%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.765	Shapiro Wilk Test Statistic	0.956
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.039	Mean	-1.352
SD	2.122	SD	1.487
95% DL/2 (t) UCL	1.475	95% H-Stat (DL/2) UCL	1.214
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.468
		SD in Log Scale	1.111
		Mean in Original Scale	1.278
		SD in Original Scale	2.029
		95% t UCL	1.695
		95% Percentile Bootstrap UCL	1.726
		95% BCA Bootstrap UCL	1.792

THALLIUM (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.444	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.604		
nu star	78.2		
A-D Test Statistic	0.65	Nonparametric Statistics	
5% A-D Critical Value	0.745	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.745	Mean	1.859
5% K-S Critical Value	0.217	SD	1.772
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.225
		95% KM (t) UCL	2.235
Assuming Gamma Distribution		95% KM (z) UCL	2.23
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.226
Minimum	1.2	95% KM (bootstrap t) UCL	2.374
Maximum	11.8	95% KM (BCA) UCL	2.842
Mean	3.91	95% KM (Percentile Bootstrap) UCL	2.685
Median	4.001	95% KM (Chebyshev) UCL	2.841
SD	1.522	97.5% KM (Chebyshev) UCL	3.266
k star	7.941	99% KM (Chebyshev) UCL	4.1
Theta star	0.492		
Nu star	1048	Potential UCLs to Use	
AppChi2	974	95% KM (t) UCL	2.235
95% Gamma Approximate UCL	4.208		
95% Adjusted Gamma UCL	4.214		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD TEQ

General Statistics			
Number of Valid Observations	47	Number of Distinct Observations	47
Number of Missing Values	18		

Raw Statistics		Log-transformed Statistics	
Minimum	0.358	Minimum of Log Data	-1.028
Maximum	9.709	Maximum of Log Data	2.273
Mean	2.274	Mean of log Data	0.613
Median	2.043	SD of log Data	0.671
SD	1.639		
Coefficient of Variation	0.721		
Skewness	2.611		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.772	Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical Value	0.946	Shapiro Wilk Critical Value	0.946
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.675	95% H-UCL	2.82
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.362
95% Adjusted-CLT UCL (Chen-1995)	2.764	97.5% Chebyshev (MVUE) UCL	3.822
95% Modified-t UCL (Johnson-1978)	2.69	99% Chebyshev (MVUE) UCL	4.727

2,3,7,8-TCDD TEQ (Continued)

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.403	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.946		
MLE of Mean	2.274		
MLE of Standard Deviation	1.467		
nu star	225.9		
Approximate Chi Square Value (.05)	192.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0449	95% CLT UCL	2.667
Adjusted Chi Square Value	191.1	95% Jackknife UCL	2.675
		95% Standard Bootstrap UCL	2.655
Anderson-Darling Test Statistic	0.64	95% Bootstrap-t UCL	2.844
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	3.214
Kolmogorov-Smirnov Test Statistic	0.103	95% Percentile Bootstrap UCL	2.697
Kolmogorov-Smirnov 5% Critical Value	0.13	95% BCA Bootstrap UCL	2.798
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.316
		97.5% Chebyshev(Mean, Sd) UCL	3.767
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.653
95% Approximate Gamma UCL	2.674		
95% Adjusted Gamma UCL	2.687		
Potential UCL to Use		Use 95% Approximate Gamma UCL	2.674

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ALUMINUM

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	61
Raw Statistics		**Log-transformed Statistics**	
Minimum	697	Minimum of Log Data	6.547
Maximum	17200	Maximum of Log Data	9.753
Mean	8023	Mean of log Data	8.831
Median	8340	SD of log Data	0.663
SD	3686		
Coefficient of Variation	0.459		
Skewness	0.0214		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.0554	Lilliefors Test Statistic	0.173
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	8781	95% H-UCL	10036
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11783
95% Adjusted-CLT UCL (Chen-1995)	8771	97.5% Chebyshev (MVUE) UCL	13207
95% Modified-t UCL (Johnson-1978)	8781	99% Chebyshev (MVUE) UCL	16004
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.165	**Data appear Normal at 5% Significance Level**	
Theta Star	2535		
MLE of Mean	8023		
MLE of Standard Deviation	4510		
nu star	417.8		
Approximate Chi Square Value (.05)	371.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	8770
Adjusted Chi Square Value	370.5	95% Jackknife UCL	8781
		95% Standard Bootstrap UCL	8762
Anderson-Darling Test Statistic	1.473	95% Bootstrap-t UCL	8806
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	8750
Kolmogorov-Smirnov Test Statistic	0.14	95% Percentile Bootstrap UCL	8736
Kolmogorov-Smirnov 5% Critical Value	0.11	95% BCA Bootstrap UCL	8724
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10001
		97.5% Chebyshev(Mean, Sd) UCL	10857
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12538
95% Approximate Gamma UCL	9025		
95% Adjusted Gamma UCL	9049		
Potential UCL to Use		Use 95% Student's-t UCL	8781

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	52
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.2	Minimum of Log Data	1.435
Maximum	59.5	Maximum of Log Data	4.086
Mean	13.93	Mean of log Data	2.463
Median	10.6	SD of log Data	0.55
SD	9.891		
Coefficient of Variation	0.71		
Skewness	2.372		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.241	Lilliefors Test Statistic	0.164
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15.96	95% H-UCL	15.54
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.89
95% Adjusted-CLT UCL (Chen-1995)	16.31	97.5% Chebyshev (MVUE) UCL	19.73
95% Modified-t UCL (Johnson-1978)	16.02	99% Chebyshev (MVUE) UCL	23.36
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.957	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	4.709		
MLE of Mean	13.93		
MLE of Standard Deviation	8.098		
nu star	390.3		
Approximate Chi Square Value (.05)	345.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	15.93
Adjusted Chi Square Value	344.6	95% Jackknife UCL	15.96
		95% Standard Bootstrap UCL	15.92
Anderson-Darling Test Statistic	2.527	95% Bootstrap-t UCL	16.37
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	16.62
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL	15.92
Kolmogorov-Smirnov 5% Critical Value	0.11	95% BCA Bootstrap UCL	16.21
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.23
		97.5% Chebyshev(Mean, Sd) UCL	21.53
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.04
95% Approximate Gamma UCL	15.73		
95% Adjusted Gamma UCL	15.77		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	19.23

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BERYLLIUM

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	40
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.096	Minimum of Log Data	-2.343
Maximum	0.78	Maximum of Log Data	-0.248
Mean	0.359	Mean of log Data	-1.129
Median	0.325	SD of log Data	0.467
SD	0.163		
Coefficient of Variation	0.455		
Skewness	0.772		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.125	Lilliefors Test Statistic	0.0485
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.392	95% H-UCL	0.401
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.454
95% Adjusted-CLT UCL (Chen-1995)	0.394	97.5% Chebyshev (MVUE) UCL	0.495
95% Modified-t UCL (Johnson-1978)	0.392	99% Chebyshev (MVUE) UCL	0.575
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.784	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.0749		
MLE of Mean	0.359		
MLE of Standard Deviation	0.164		
nu star	631.5		
Approximate Chi Square Value (.05)	574.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	0.392
Adjusted Chi Square Value	573	95% Jackknife UCL	0.392
		95% Standard Bootstrap UCL	0.391
Anderson-Darling Test Statistic	0.259	95% Bootstrap-t UCL	0.395
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	0.394
Kolmogorov-Smirnov Test Statistic	0.0778	95% Percentile Bootstrap UCL	0.391
Kolmogorov-Smirnov 5% Critical Value	0.11	95% BCA Bootstrap UCL	0.393
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.446
		97.5% Chebyshev(Mean, Sd) UCL	0.484
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.558
95% Approximate Gamma UCL	0.394		
95% Adjusted Gamma UCL	0.395		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.394

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHROMIUM

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	49
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.3	Minimum of Log Data	1.459
Maximum	24.1	Maximum of Log Data	3.182
Mean	12.07	Mean of log Data	2.438
Median	11.4	SD of log Data	0.33
SD	4.03		
Coefficient of Variation	0.334		
Skewness	1.17		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.152	Lilliefors Test Statistic	0.112
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	12.9	95% H-UCL	13.01
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.28
95% Adjusted-CLT UCL (Chen-1995)	12.97	97.5% Chebyshev (MVUE) UCL	15.23
95% Modified-t UCL (Johnson-1978)	12.91	99% Chebyshev (MVUE) UCL	17.09
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.264	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1.303		
MLE of Mean	12.07		
MLE of Standard Deviation	3.966		
nu star	1223		
Approximate Chi Square Value (.05)	1143	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	12.89
Adjusted Chi Square Value	1141	95% Jackknife UCL	12.9
		95% Standard Bootstrap UCL	12.86
Anderson-Darling Test Statistic	1.273	95% Bootstrap-t UCL	13
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	13.02
Kolmogorov-Smirnov Test Statistic	0.116	95% Percentile Bootstrap UCL	12.88
Kolmogorov-Smirnov 5% Critical Value	0.11	95% BCA Bootstrap UCL	12.93
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.24
		97.5% Chebyshev(Mean, Sd) UCL	15.17
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17.01
95% Approximate Gamma UCL	12.92		
95% Adjusted Gamma UCL	12.94		
Potential UCL to Use		Use 95% Student's-t UCL	12.9
		or 95% Modified-t UCL	12.91

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	54
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.9	Minimum of Log Data	1.589
Maximum	41	Maximum of Log Data	3.714
Mean	17.13	Mean of log Data	2.707
Median	14	SD of log Data	0.526
SD	9.047		
Coefficient of Variation	0.528		
Skewness	0.918		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.175	Lilliefors Test Statistic	0.0855
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	18.99	95% H-UCL	19.46
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	22.29
95% Adjusted-CLT UCL (Chen-1995)	19.1	97.5% Chebyshev (MVUE) UCL	24.51
95% Modified-t UCL (Johnson-1978)	19.01	99% Chebyshev (MVUE) UCL	28.87
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.728	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	4.595		
MLE of Mean	17.13		
MLE of Standard Deviation	8.871		
nu star	492.1		
Approximate Chi Square Value (.05)	441.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	18.96
Adjusted Chi Square Value	440.6	95% Jackknife UCL	18.99
		95% Standard Bootstrap UCL	18.93
Anderson-Darling Test Statistic	0.723	95% Bootstrap-t UCL	19.25
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	19.08
Kolmogorov-Smirnov Test Statistic	0.119	95% Percentile Bootstrap UCL	19.01
Kolmogorov-Smirnov 5% Critical Value	0.11	95% BCA Bootstrap UCL	18.99
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.98
		97.5% Chebyshev(Mean, Sd) UCL	24.08
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.21
95% Approximate Gamma UCL	19.09		
95% Adjusted Gamma UCL	19.13		
Potential UCL to Use		Use 95% Approximate Gamma UCL	19.09

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

IRON

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	65
Raw Statistics		**Log-transformed Statistics**	
Minimum	18000	Minimum of Log Data	9.798
Maximum	76900	Maximum of Log Data	11.25
Mean	38129	Mean of log Data	10.48
Median	35050	SD of log Data	0.367
SD	14101		
Coefficient of Variation	0.37		
Skewness	0.754		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.1	Lilliefors Test Statistic	0.0468
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	41025	95% H-UCL	41430
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	45883
95% Adjusted-CLT UCL (Chen-1995)	41156	97.5% Chebyshev (MVUE) UCL	49231
95% Modified-t UCL (Johnson-1978)	41052	99% Chebyshev (MVUE) UCL	55807
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	7.405	**Data appear Normal at 5% Significance Level**	
Theta Star	5149		
MLE of Mean	38129		
MLE of Standard Deviation	14011		
nu star	977.5		
Approximate Chi Square Value (.05)	905.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	40984
Adjusted Chi Square Value	904.4	95% Jackknife UCL	41025
		95% Standard Bootstrap UCL	41072
Anderson-Darling Test Statistic	0.248	95% Bootstrap-t UCL	41283
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	41123
Kolmogorov-Smirnov Test Statistic	0.0575	95% Percentile Bootstrap UCL	40911
Kolmogorov-Smirnov 5% Critical Value	0.11	95% BCA Bootstrap UCL	41127
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	45695
		97.5% Chebyshev(Mean, Sd) UCL	48969
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	55399
95% Approximate Gamma UCL	41141		
95% Adjusted Gamma UCL	41211		
Potential UCL to Use		Use 95% Student's-t UCL	41025

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

LEAD

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	62
Raw Statistics		**Log-transformed Statistics**	
Minimum	3.1	Minimum of Log Data	1.131
Maximum	63.5	Maximum of Log Data	4.151
Mean	14.59	Mean of log Data	2.477
Median	11.2	SD of log Data	0.64
SD	10.17		
Coefficient of Variation	0.697		
Skewness	2.022		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.146	Lilliefors Test Statistic	0.0824
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.68	95% H-UCL	17.08
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.98
95% Adjusted-CLT UCL (Chen-1995)	16.98	97.5% Chebyshev (MVUE) UCL	22.32
95% Modified-t UCL (Johnson-1978)	16.73	99% Chebyshev (MVUE) UCL	26.93
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.504	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	5.827		
MLE of Mean	14.59		
MLE of Standard Deviation	9.221		
nu star	330.5		
Approximate Chi Square Value (.05)	289.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	16.65
Adjusted Chi Square Value	288.5	95% Jackknife UCL	16.68
		95% Standard Bootstrap UCL	16.63
Anderson-Darling Test Statistic	0.741	95% Bootstrap-t UCL	17.14
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	17.32
Kolmogorov-Smirnov Test Statistic	0.0995	95% Percentile Bootstrap UCL	16.62
Kolmogorov-Smirnov 5% Critical Value	0.111	95% BCA Bootstrap UCL	17.19
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.05
		97.5% Chebyshev(Mean, Sd) UCL	22.41
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27.04
95% Approximate Gamma UCL	16.66		
95% Adjusted Gamma UCL	16.71		
Potential UCL to Use		Use 95% Approximate Gamma UCL	16.66

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

MANGANESE

General Statistics			
Number of Valid Observations	66	Number of Distinct Observations	64
Raw Statistics		**Log-transformed Statistics**	
Minimum	58.3	Minimum of Log Data	4.066
Maximum	4480	Maximum of Log Data	8.407
Mean	648.9	Mean of log Data	6.096
Median	393.5	SD of log Data	0.802
SD	775.4		
Coefficient of Variation	1.195		
Skewness	3.184		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.272	Lilliefors Test Statistic	0.122
Lilliefors Critical Value	0.109	Lilliefors Critical Value	0.109
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	808.2	95% H-UCL	754.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	903.5
95% Adjusted-CLT UCL (Chen-1995)	845.9	97.5% Chebyshev (MVUE) UCL	1031
95% Modified-t UCL (Johnson-1978)	814.4	99% Chebyshev (MVUE) UCL	1282
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.407	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	461.4		
MLE of Mean	648.9		
MLE of Standard Deviation	547.2		
nu star	185.7		
Approximate Chi Square Value (.05)	155.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0464	95% CLT UCL	805.9
Adjusted Chi Square Value	154.5	95% Jackknife UCL	808.2
		95% Standard Bootstrap UCL	801.8
Anderson-Darling Test Statistic	3.213	95% Bootstrap-t UCL	881.7
Anderson-Darling 5% Critical Value	0.77	95% Hall's Bootstrap UCL	884.4
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	820.1
Kolmogorov-Smirnov 5% Critical Value	0.112	95% BCA Bootstrap UCL	838.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1065
		97.5% Chebyshev(Mean, Sd) UCL	1245
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1599
95% Approximate Gamma UCL	776.6		
95% Adjusted Gamma UCL	779.7		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1065

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Tank Farm 4

Surface Water

PROUCL OUTPUT - TANK FARM 4 SURFACE WATER

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Data	10	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	6
		Percent Non-Detects	60.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.19	Minimum Detected	-1.661
Maximum Detected	0.473	Maximum Detected	-0.749
Mean of Detected	0.397	Mean of Detected	-0.988
SD of Detected	0.138	SD of Detected	0.449
Minimum Non-Detect	0.236	Minimum Non-Detect	-1.444
Maximum Non-Detect	0.236	Maximum Non-Detect	-1.444

Warning: There are only 4 Distinct Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.667	Shapiro Wilk Test Statistic	0.654
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

ARSENIC (Continued)

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.23	Mean	-1.677
SD	0.165	SD	0.648
95% DL/2 (t) UCL	0.325	95% H-Stat (DL/2) UCL	0.391
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.466	Mean in Log Scale	-1.361
SD	0.00535	SD in Log Scale	0.471
95% MLE (t) UCL	0.469	Mean in Original Scale	0.283
95% MLE (Tiku) UCL	N/A	SD in Original Scale	0.134
		95% t UCL	0.361
		95% Percentile Bootstrap UCL	0.351
		95% BCA Bootstrap UCL	0.359

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.158	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.184		
nu star	17.26		
A-D Test Statistic	0.895	Nonparametric Statistics	
5% A-D Critical Value	0.658	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.658	Mean	0.273
5% K-S Critical Value	0.395	SD	0.127
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0462
		95% KM (t) UCL	0.357
Assuming Gamma Distribution		95% KM (z) UCL	0.349
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.434
Minimum	0.184	95% KM (bootstrap t) UCL	0.307
Maximum	0.506	95% KM (BCA) UCL	0.467
Mean	0.356	95% KM (Percentile Bootstrap) UCL	0.466
Median	0.383	95% KM (Chebyshev) UCL	0.474
SD	0.124	97.5% KM (Chebyshev) UCL	0.561
k star	5.654	99% KM (Chebyshev) UCL	0.732
Theta star	0.0631		
Nu star	113.1	Potential UCLs to Use	
AppChi2	89.52	95% KM (t) UCL	0.357
95% Gamma Approximate UCL	0.45	95% KM (% Bootstrap) UCL	0.466
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - TANK FARM 4 SURFACE WATER

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

IRON

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	270	Minimum of Log Data	5.598
Maximum	545	Maximum of Log Data	6.301
Mean	371.6	Mean of log Data	5.892
Median	340.5	SD of log Data	0.236
SD	93.15		
Coefficient of Variation	0.251		
Skewness	1.025		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk Test Statistic	0.927
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	425.6	95% H-UCL	432.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	492.2
95% Adjusted-CLT UCL (Chen-1995)	430.3	97.5% Chebyshev (MVUE) UCL	544.6
95% Modified-t UCL (Johnson-1978)	427.2	99% Chebyshev (MVUE) UCL	647.5

IRON (Continued)

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	13.65	Data appear Normal at 5% Significance Level	
Theta Star	27.22		
MLE of Mean	371.6		
MLE of Standard Deviation	100.6		
nu star	273		
Approximate Chi Square Value (.05)	235.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	420.1
Adjusted Chi Square Value	229.7	95% Jackknife UCL	425.6
		95% Standard Bootstrap UCL	416.4
Anderson-Darling Test Statistic	0.416	95% Bootstrap-t UCL	454.6
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	478.3
Kolmogorov-Smirnov Test Statistic	0.169	95% Percentile Bootstrap UCL	420.6
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	429.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	500
		97.5% Chebyshev(Mean, Sd) UCL	555.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	664.7
95% Approximate Gamma UCL	430.3		
95% Adjusted Gamma UCL	441.6		
Potential UCL to Use		Use 95% Student's-t UCL	425.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Tank Farm 4
Sediment

PROUCL OUTPUT - TANK FARM 4 SEDIMENT

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

THALLIUM

General Statistics

Number of Valid Data	12	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
		Percent Non-Detects	16.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	11.5	Maximum Detected	2.442
Mean of Detected	2.817	Mean of Detected	0.504
SD of Detected	3.565	SD of Detected	1.011
Minimum Non-Detect	0.29	Minimum Non-Detect	-1.238
Maximum Non-Detect	0.38	Maximum Non-Detect	-0.968
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	16.67%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.676	Shapiro Wilk Test Statistic	0.913
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.375	Mean	0.12
SD	3.386	SD	1.281
95% DL/2 (t) UCL	4.13	95% H-Stat (DL/2) UCL	9.707
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.01	Mean in Log Scale	0.107
SD	3.661	SD in Log Scale	1.301
95% MLE (t) UCL	3.908	Mean in Original Scale	2.373
95% MLE (Tiku) UCL	3.852	SD in Original Scale	3.387
		95% t UCL	4.129
		95% Percentile Bootstrap UCL	4.091
		95% BCA Bootstrap UCL	4.532

THALLIUM (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.82	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	3.435		
nu star	16.4		
A-D Test Statistic	0.793	Nonparametric Statistics	
5% A-D Critical Value	0.747	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.747	Mean	2.422
5% K-S Critical Value	0.273	SD	3.211
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.977
		95% KM (t) UCL	4.177
Assuming Gamma Distribution		95% KM (z) UCL	4.029
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.128
Minimum	1E-12	95% KM (bootstrap t) UCL	10.04
Maximum	11.5	95% KM (BCA) UCL	4.266
Mean	2.347	95% KM (Percentile Bootstrap) UCL	4.157
Median	0.998	95% KM (Chebyshev) UCL	6.681
SD	3.406	97.5% KM (Chebyshev) UCL	8.524
k star	0.17	99% KM (Chebyshev) UCL	12.14
Theta star	13.83		
Nu star	4.073	Potential UCLs to Use	
AppChi2	0.751	95% KM (Chebyshev) UCL	6.681
95% Gamma Approximate UCL	12.73		
95% Adjusted Gamma UCL	16.94		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - TANK FARM 4 SEDIMENT

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD TEQs

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	0.622	Minimum of Log Data	-0.474
Maximum	7.057	Maximum of Log Data	1.954
Mean	2.92	Mean of log Data	0.762
Median	2.069	SD of log Data	0.846
SD	2.296		
Coefficient of Variation	0.786		
Skewness	0.86		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.111	95% H-UCL	6.015
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.267
95% Adjusted-CLT UCL (Chen-1995)	4.186	97.5% Chebyshev (MVUE) UCL	7.702
95% Modified-t UCL (Johnson-1978)	4.138	99% Chebyshev (MVUE) UCL	10.52

2,3,7,8-TCDD TEQs (Continued)

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.38	Data appear Normal at 5% Significance Level	
Theta Star	2.117		
MLE of Mean	2.92		
MLE of Standard Deviation	2.486		
nu star	33.11		
Approximate Chi Square Value (.05)	20.95	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	4.011
Adjusted Chi Square Value	19.49	95% Jackknife UCL	4.111
		95% Standard Bootstrap UCL	3.974
Anderson-Darling Test Statistic	0.381	95% Bootstrap-t UCL	4.337
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	4.162
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	3.977
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	4.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.81
		97.5% Chebyshev(Mean, Sd) UCL	7.06
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.516
95% Approximate Gamma UCL	4.614		
95% Adjusted Gamma UCL	4.961		
Potential UCL to Use		Use 95% Student's-t UCL	4.111

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	26	Minimum of Log Data	3.258
Maximum	200	Maximum of Log Data	5.298
Mean	67.5	Mean of log Data	3.985
Median	48	SD of log Data	0.674
SD	52.82		
Coefficient of Variation	0.783		
Skewness	1.704		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.793	Shapiro Wilk Test Statistic	0.915
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	94.89	95% H-UCL	109.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	124.3
95% Adjusted-CLT UCL (Chen-1995)	100.6	97.5% Chebyshev (MVUE) UCL	149.5
95% Modified-t UCL (Johnson-1978)	96.14	99% Chebyshev (MVUE) UCL	199
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.821	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	37.06		
MLE of Mean	67.5		
MLE of Standard Deviation	50.01		
nu star	43.71		
Approximate Chi Square Value (.05)	29.55	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	92.58
Adjusted Chi Square Value	27.78	95% Jackknife UCL	94.89
		95% Standard Bootstrap UCL	91.94
Anderson-Darling Test Statistic	0.537	95% Bootstrap-t UCL	117
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	188.4
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL	92.83
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	102.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	134
		97.5% Chebyshev(Mean, Sd) UCL	162.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	219.2
95% Approximate Gamma UCL	99.85		
95% Adjusted Gamma UCL	106.2		
Potential UCL to Use		Use 95% Approximate Gamma UCL	99.85

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	23.5	Minimum of Log Data	3.157
Maximum	210	Maximum of Log Data	5.347
Mean	77.54	Mean of log Data	4.162
Median	58	SD of log Data	0.627
SD	54.06		
Coefficient of Variation	0.697		
Skewness	1.573		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	105.6	95% H-UCL	120.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	139.3
95% Adjusted-CLT UCL (Chen-1995)	110.8	97.5% Chebyshev (MVUE) UCL	166.4
95% Modified-t UCL (Johnson-1978)	106.7	99% Chebyshev (MVUE) UCL	219.6
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.155	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	35.99		
MLE of Mean	77.54		
MLE of Standard Deviation	52.83		
nu star	51.71		
Approximate Chi Square Value (.05)	36.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	103.2
Adjusted Chi Square Value	34.22	95% Jackknife UCL	105.6
		95% Standard Bootstrap UCL	101.7
Anderson-Darling Test Statistic	0.343	95% Bootstrap-t UCL	124.8
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	126.3
Kolmogorov-Smirnov Test Statistic	0.155	95% Percentile Bootstrap UCL	103.3
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	112.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	145.6
		97.5% Chebyshev(Mean, Sd) UCL	175
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	232.8
95% Approximate Gamma UCL	110.8		
95% Adjusted Gamma UCL	117.2		
Potential UCL to Use		Use 95% Approximate Gamma UCL	110.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	25	Minimum of Log Data	3.219
Maximum	240	Maximum of Log Data	5.481
Mean	88.71	Mean of log Data	4.294
Median	65.5	SD of log Data	0.631
SD	62.32		
Coefficient of Variation	0.702		
Skewness	1.591		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.828	Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	121	95% H-UCL	138.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	159.8
95% Adjusted-CLT UCL (Chen-1995)	127.1	97.5% Chebyshev (MVUE) UCL	191.1
95% Modified-t UCL (Johnson-1978)	122.4	99% Chebyshev (MVUE) UCL	252.4
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.135	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	41.54		
MLE of Mean	88.71		
MLE of Standard Deviation	60.71		
nu star	51.25		
Approximate Chi Square Value (.05)	35.81	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	118.3
Adjusted Chi Square Value	33.84	95% Jackknife UCL	121
		95% Standard Bootstrap UCL	117.4
Anderson-Darling Test Statistic	0.398	95% Bootstrap-t UCL	143.5
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	161.6
Kolmogorov-Smirnov Test Statistic	0.185	95% Percentile Bootstrap UCL	120
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	122.9
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	167.1
		97.5% Chebyshev(Mean, Sd) UCL	201.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	267.7
95% Approximate Gamma UCL	127		
95% Adjusted Gamma UCL	134.3		
Potential UCL to Use		Use 95% Approximate Gamma UCL	127

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	6.6	Minimum of Log Data	1.887
Maximum	53	Maximum of Log Data	3.97
Mean	19.4	Mean of log Data	2.768
Median	13	SD of log Data	0.631
SD	13.96		
Coefficient of Variation	0.72		
Skewness	1.527		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.804	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	26.64	95% H-UCL	30.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.76
95% Adjusted-CLT UCL (Chen-1995)	27.93	97.5% Chebyshev (MVUE) UCL	41.54
95% Modified-t UCL (Johnson-1978)	26.93	99% Chebyshev (MVUE) UCL	54.88
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.072	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	9.364		
MLE of Mean	19.4		
MLE of Standard Deviation	13.48		
nu star	49.72		
Approximate Chi Square Value (.05)	34.53	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	26.03
Adjusted Chi Square Value	32.61	95% Jackknife UCL	26.64
		95% Standard Bootstrap UCL	25.67
Anderson-Darling Test Statistic	0.684	95% Bootstrap-t UCL	31.5
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	28.19
Kolmogorov-Smirnov Test Statistic	0.284	95% Percentile Bootstrap UCL	26.08
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	27.35
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	36.97
		97.5% Chebyshev(Mean, Sd) UCL	44.57
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	59.5
95% Approximate Gamma UCL	27.93		
95% Adjusted Gamma UCL	29.58		
Potential UCL to Use		Use 95% Approximate Gamma UCL	27.93

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ALUMINUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	4730	Minimum of Log Data	8.462
Maximum	12900	Maximum of Log Data	9.465
Mean	8851	Mean of log Data	9.047
Median	8805	SD of log Data	0.307
SD	2575		
Coefficient of Variation	0.291		
Skewness	0.0929		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	10186	95% H-UCL	10641
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12316
95% Adjusted-CLT UCL (Chen-1995)	10095	97.5% Chebyshev (MVUE) UCL	13810
95% Modified-t UCL (Johnson-1978)	10189	99% Chebyshev (MVUE) UCL	16743
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.239	**Data appear Normal at 5% Significance Level**	
Theta Star	958		
MLE of Mean	8851		
MLE of Standard Deviation	2912		
nu star	221.7		
Approximate Chi Square Value (.05)	188.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	10074
Adjusted Chi Square Value	183.6	95% Jackknife UCL	10186
		95% Standard Bootstrap UCL	10034
Anderson-Darling Test Statistic	0.226	95% Bootstrap-t UCL	10269
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	10034
Kolmogorov-Smirnov Test Statistic	0.138	95% Percentile Bootstrap UCL	10013
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	9976
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12091
		97.5% Chebyshev(Mean, Sd) UCL	13494
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16248
95% Approximate Gamma UCL	10424		
95% Adjusted Gamma UCL	10691		
Potential UCL to Use		Use 95% Student's-t UCL	10186

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	9.2	Minimum of Log Data	2.219
Maximum	46.6	Maximum of Log Data	3.842
Mean	15.82	Mean of log Data	2.652
Median	12.35	SD of log Data	0.428
SD	10.13		
Coefficient of Variation	0.64		
Skewness	2.992		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.577	Shapiro Wilk Test Statistic	0.764
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	21.07	95% H-UCL	20.27
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23.87
95% Adjusted-CLT UCL (Chen-1995)	23.32	97.5% Chebyshev (MVUE) UCL	27.52
95% Modified-t UCL (Johnson-1978)	21.49	99% Chebyshev (MVUE) UCL	34.71
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.613	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	4.377		
MLE of Mean	15.82		
MLE of Standard Deviation	8.321		
nu star	86.72		
Approximate Chi Square Value (.05)	66.25	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	20.62
Adjusted Chi Square Value	63.53	95% Jackknife UCL	21.07
		95% Standard Bootstrap UCL	20.55
Anderson-Darling Test Statistic	1.417	95% Bootstrap-t UCL	34.8
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	40.64
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	21.2
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	24.03
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.56
		97.5% Chebyshev(Mean, Sd) UCL	34.07
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	44.9
95% Approximate Gamma UCL	20.7		
95% Adjusted Gamma UCL	21.59		
Potential UCL to Use		Use 95% Student's-t UCL	21.07
		or 95% Modified-t UCL	21.49

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BERYLLIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.21	Minimum of Log Data	-1.561
Maximum	0.68	Maximum of Log Data	-0.386
Mean	0.445	Mean of log Data	-0.86
Median	0.455	SD of log Data	0.34
SD	0.138		
Coefficient of Variation	0.311		
Skewness	-0.0155		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.986	Shapiro Wilk Test Statistic	0.961
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.516	95% H-UCL	0.548
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.639
95% Adjusted-CLT UCL (Chen-1995)	0.51	97.5% Chebyshev (MVUE) UCL	0.722
95% Modified-t UCL (Johnson-1978)	0.516	99% Chebyshev (MVUE) UCL	0.886
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	7.754	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0573		
MLE of Mean	0.445		
MLE of Standard Deviation	0.16		
nu star	186.1		
Approximate Chi Square Value (.05)	155.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	0.51
Adjusted Chi Square Value	151.3	95% Jackknife UCL	0.516
		95% Standard Bootstrap UCL	0.507
Anderson-Darling Test Statistic	0.189	95% Bootstrap-t UCL	0.516
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL	0.509
Kolmogorov-Smirnov Test Statistic	0.112	95% Percentile Bootstrap UCL	0.504
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	0.507
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.619
		97.5% Chebyshev(Mean, Sd) UCL	0.694
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.842
95% Approximate Gamma UCL	0.532		
95% Adjusted Gamma UCL	0.547		
Potential UCL to Use		Use 95% Student's-t UCL	0.516

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHROMIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	7.3	Minimum of Log Data	1.988
Maximum	29.2	Maximum of Log Data	3.374
Mean	15.45	Mean of log Data	2.674
Median	13.75	SD of log Data	0.369
SD	6.035		
Coefficient of Variation	0.391		
Skewness	1.205		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.895	Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	18.58	95% H-UCL	19.36
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	22.67
95% Adjusted-CLT UCL (Chen-1995)	18.96	97.5% Chebyshev (MVUE) UCL	25.81
95% Modified-t UCL (Johnson-1978)	18.68	99% Chebyshev (MVUE) UCL	31.98
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	6.056	**Data appear Normal at 5% Significance Level**	
Theta Star	2.551		
MLE of Mean	15.45		
MLE of Standard Deviation	6.278		
nu star	145.4		
Approximate Chi Square Value (.05)	118.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	18.32
Adjusted Chi Square Value	114.8	95% Jackknife UCL	18.58
		95% Standard Bootstrap UCL	18.21
Anderson-Darling Test Statistic	0.381	95% Bootstrap-t UCL	20.01
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	22.55
Kolmogorov-Smirnov Test Statistic	0.169	95% Percentile Bootstrap UCL	18.43
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	19.07
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23.04
		97.5% Chebyshev(Mean, Sd) UCL	26.33
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.78
95% Approximate Gamma UCL	18.95		
95% Adjusted Gamma UCL	19.56		
Potential UCL to Use		Use 95% Student's-t UCL	18.58

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	9.4	Minimum of Log Data	2.241
Maximum	76.2	Maximum of Log Data	4.333
Mean	19.18	Mean of log Data	2.706
Median	12.75	SD of log Data	0.63
SD	19.18		
Coefficient of Variation	1		
Skewness	2.834		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.563	Shapiro Wilk Test Statistic	0.752
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	29.12	95% H-UCL	28.34
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	32.63
95% Adjusted-CLT UCL (Chen-1995)	33.12	97.5% Chebyshev (MVUE) UCL	38.99
95% Modified-t UCL (Johnson-1978)	29.87	99% Chebyshev (MVUE) UCL	51.49
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.687	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	11.37		
MLE of Mean	19.18		
MLE of Standard Deviation	14.76		
nu star	40.48		
Approximate Chi Square Value (.05)	26.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	28.28
Adjusted Chi Square Value	25.22	95% Jackknife UCL	29.12
		95% Standard Bootstrap UCL	28
Anderson-Darling Test Statistic	1.549	95% Bootstrap-t UCL	71.57
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	70.82
Kolmogorov-Smirnov Test Statistic	0.304	95% Percentile Bootstrap UCL	28.6
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	33.78
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	43.31
		97.5% Chebyshev(Mean, Sd) UCL	53.76
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	74.27
95% Approximate Gamma UCL	28.85		
95% Adjusted Gamma UCL	30.78		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	43.31

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

IRON

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	21700	Minimum of Log Data	9.985
Maximum	145000	Maximum of Log Data	11.88
Mean	42283	Mean of log Data	10.49
Median	30900	SD of log Data	0.508
SD	33643		
Coefficient of Variation	0.796		
Skewness	3.032		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.567	Shapiro Wilk Test Statistic	0.79
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	59725	95% H-UCL	57122
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	67194
95% Adjusted-CLT UCL (Chen-1995)	67340	97.5% Chebyshev (MVUE) UCL	78705
95% Modified-t UCL (Johnson-1978)	61141	99% Chebyshev (MVUE) UCL	101314
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.544	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	16619		
MLE of Mean	42283		
MLE of Standard Deviation	26508		
nu star	61.06		
Approximate Chi Square Value (.05)	44.09	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	58258
Adjusted Chi Square Value	41.9	95% Jackknife UCL	59725
		95% Standard Bootstrap UCL	57386
Anderson-Darling Test Statistic	1.316	95% Bootstrap-t UCL	108652
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	125026
Kolmogorov-Smirnov Test Statistic	0.28	95% Percentile Bootstrap UCL	60067
Kolmogorov-Smirnov 5% Critical Value	0.247	95% BCA Bootstrap UCL	70308
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	84616
		97.5% Chebyshev(Mean, Sd) UCL	102934
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	138915
95% Approximate Gamma UCL	58559		
95% Adjusted Gamma UCL	61624		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	84616

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

MANGANESE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	171	Minimum of Log Data	5.142
Maximum	3440	Maximum of Log Data	8.143
Mean	853.6	Mean of log Data	6.269
Median	400	SD of log Data	0.914
SD	1074		
Coefficient of Variation	1.258		
Skewness	2.035		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.615	Shapiro Wilk Test Statistic	0.841
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	1410	95% H-UCL	1716
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1702
95% Adjusted-CLT UCL (Chen-1995)	1558	97.5% Chebyshev (MVUE) UCL	2106
95% Modified-t UCL (Johnson-1978)	1440	99% Chebyshev (MVUE) UCL	2902
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.94	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	908.3		
MLE of Mean	853.6		
MLE of Standard Deviation	880.5		
nu star	22.55		
Approximate Chi Square Value (.05)	12.75	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	1363
Adjusted Chi Square Value	11.64	95% Jackknife UCL	1410
		95% Standard Bootstrap UCL	1349
Anderson-Darling Test Statistic	1.378	95% Bootstrap-t UCL	3893
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	4348
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL	1371
Kolmogorov-Smirnov 5% Critical Value	0.251	95% BCA Bootstrap UCL	1577
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2204
		97.5% Chebyshev(Mean, Sd) UCL	2789
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3937
95% Approximate Gamma UCL	1509		
95% Adjusted Gamma UCL	1653		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	2204

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Tank Farm 5

Surface Soil

PROUCL OUTPUT - TANK FARM 5 SURFACE SOIL

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	11	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	4
		Percent Non-Detects	36.36%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.3	Minimum Detected	1.459
Maximum Detected	57	Maximum Detected	4.043
Mean of Detected	17.43	Mean of Detected	2.451
SD of Detected	18.69	SD of Detected	0.942
Minimum Non-Detect	3.7	Minimum Non-Detect	1.308
Maximum Non-Detect	3.9	Maximum Non-Detect	1.361
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	36.36%

Warning: There are only 7 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.744	Shapiro Wilk Test Statistic	0.922
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	11.78	Mean	1.793
SD	16.46	SD	1.169
95% DL/2 (t) UCL	20.78	95% H-Stat (DL/2) UCL	40.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	6.759	Mean in Log Scale	1.539
SD	21.07	SD in Log Scale	1.483
95% MLE (t) UCL	18.27	Mean in Original Scale	11.46
95% MLE (Tiku) UCL	19.32	SD in Original Scale	16.68
		95% t UCL	20.58
		95% Percentile Bootstrap UCL	19.99
		95% BCA Bootstrap UCL	23.86

DIBENZO(A,H)ANTHRACENE (Continued)

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.879
Theta Star	19.82
nu star	12.31
A-D Test Statistic	0.424
5% A-D Critical Value	0.723
K-S Test Statistic	0.723
5% K-S Critical Value	0.318
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0.881
Maximum	57
Mean	13.06
Median	8.9
SD	15.96
k star	0.748
Theta star	17.46
Nu star	16.45
AppChi2	8.283
95% Gamma Approximate UCL	25.94
95% Adjusted Gamma UCL	29.2

Data Distribution Test with Detected Values Only	
Data appear Gamma Distributed at 5% Significance Level	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	12.65
SD	15.18
SE of Mean	4.944
95% KM (t) UCL	21.62
95% KM (z) UCL	20.79
95% KM (jackknife) UCL	21.33
95% KM (bootstrap t) UCL	33.57
95% KM (BCA) UCL	21.81
95% KM (Percentile Bootstrap) UCL	21.35
95% KM (Chebyshev) UCL	34.21
97.5% KM (Chebyshev) UCL	43.53
99% KM (Chebyshev) UCL	61.85
Potential UCLs to Use	
95% KM (BCA) UCL	21.81

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	11	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	5.9	Minimum of Log Data	1.775
Maximum	230	Maximum of Log Data	5.438
Mean	46.76	Mean of log Data	3.154
Median	17	SD of log Data	1.182
SD	66.59		
Coefficient of Variation	1.424		
Skewness	2.456		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.66	Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

BENZO(A)ANTHRACENE (Continued)

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	83.15	95% H-UCL	165.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	114.2
95% Adjusted-CLT UCL (Chen-1995)	95.67	97.5% Chebyshev (MVUE) UCL	145.1
95% Modified-t UCL (Johnson-1978)	85.63	99% Chebyshev (MVUE) UCL	205.8
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.68	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	68.79		
MLE of Mean	46.76		
MLE of Standard Deviation	56.72		
nu star	14.96		
Approximate Chi Square Value (.05)	7.23	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	79.79
Adjusted Chi Square Value	6.374	95% Jackknife UCL	83.15
		95% Standard Bootstrap UCL	79.19
Anderson-Darling Test Statistic	0.585	95% Bootstrap-t UCL	142.3
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	193.3
Kolmogorov-Smirnov Test Statistic	0.206	95% Percentile Bootstrap UCL	82.38
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	97.08
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	134.3
		97.5% Chebyshev(Mean, Sd) UCL	172.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	246.5
95% Approximate Gamma UCL	96.73		
95% Adjusted Gamma UCL	109.7		
Potential UCL to Use		Use 95% Approximate Gamma UCL	96.73

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	6.4	Minimum of Log Data	1.856
Maximum	300	Maximum of Log Data	5.704
Mean	55.75	Mean of log Data	3.275
Median	21	SD of log Data	1.215
SD	85.95		
Coefficient of Variation	1.542		
Skewness	2.71		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.616	Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	102.7	95% H-UCL	206.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	135.6
95% Adjusted-CLT UCL (Chen-1995)	121	97.5% Chebyshev (MVUE) UCL	172.6
95% Modified-t UCL (Johnson-1978)	106.3	99% Chebyshev (MVUE) UCL	245.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.64	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	87.15		
MLE of Mean	55.75		
MLE of Standard Deviation	69.71		
nu star	14.07		
Approximate Chi Square Value (.05)	6.622	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	98.38
Adjusted Chi Square Value	5.809	95% Jackknife UCL	102.7
		95% Standard Bootstrap UCL	97.79
Anderson-Darling Test Statistic	0.605	95% Bootstrap-t UCL	183.4
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	244.9
Kolmogorov-Smirnov Test Statistic	0.183	95% Percentile Bootstrap UCL	102.7
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	120.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	168.7
		97.5% Chebyshev(Mean, Sd) UCL	217.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	313.6
95% Approximate Gamma UCL	118.5		
95% Adjusted Gamma UCL	135.1		
Potential UCL to Use		Use 95% Approximate Gamma UCL	118.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	10	Minimum of Log Data	2.303
Maximum	530	Maximum of Log Data	6.273
Mean	92.73	Mean of log Data	3.715
Median	28	SD of log Data	1.262
SD	151.8		
Coefficient of Variation	1.638		
Skewness	2.827		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.586	Shapiro Wilk Test Statistic	0.922
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	175.7	95% H-UCL	371.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	226.4
95% Adjusted-CLT UCL (Chen-1995)	209.7	97.5% Chebyshev (MVUE) UCL	289.1
95% Modified-t UCL (Johnson-1978)	182.2	99% Chebyshev (MVUE) UCL	412.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.597	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	155.4		
MLE of Mean	92.73		
MLE of Standard Deviation	120		
nu star	13.13		
Approximate Chi Square Value (.05)	5.977	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	168
Adjusted Chi Square Value	5.211	95% Jackknife UCL	175.7
		95% Standard Bootstrap UCL	163.6
Anderson-Darling Test Statistic	0.695	95% Bootstrap-t UCL	340.6
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	415
Kolmogorov-Smirnov Test Statistic	0.217	95% Percentile Bootstrap UCL	172.3
Kolmogorov-Smirnov 5% Critical Value	0.265	95% BCA Bootstrap UCL	218.8
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	292.3
		97.5% Chebyshev(Mean, Sd) UCL	378.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	548.3
95% Approximate Gamma UCL	203.6		
95% Adjusted Gamma UCL	233.5		
Potential UCL to Use		Use 95% Approximate Gamma UCL	203.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	4	Minimum of Log Data	1.386
Maximum	240	Maximum of Log Data	5.481
Mean	41.36	Mean of log Data	2.947
Median	16	SD of log Data	1.223
SD	68.31		
Coefficient of Variation	1.651		
Skewness	2.922		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.571	Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	78.69	95% H-UCL	152.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	98.96
95% Adjusted-CLT UCL (Chen-1995)	94.63	97.5% Chebyshev (MVUE) UCL	126
95% Modified-t UCL (Johnson-1978)	81.72	99% Chebyshev (MVUE) UCL	179.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.62	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	66.69		
MLE of Mean	41.36		
MLE of Standard Deviation	52.52		
nu star	13.64		
Approximate Chi Square Value (.05)	6.329	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	75.24
Adjusted Chi Square Value	5.537	95% Jackknife UCL	78.69
		95% Standard Bootstrap UCL	73.1
Anderson-Darling Test Statistic	0.615	95% Bootstrap-t UCL	162.4
Anderson-Darling 5% Critical Value	0.762	95% Hall's Bootstrap UCL	192.1
Kolmogorov-Smirnov Test Statistic	0.19	95% Percentile Bootstrap UCL	79.48
Kolmogorov-Smirnov 5% Critical Value	0.265	95% BCA Bootstrap UCL	101.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	131.1
		97.5% Chebyshev(Mean, Sd) UCL	170
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	246.3
95% Approximate Gamma UCL	89.18		
95% Adjusted Gamma UCL	101.9		
Potential UCL to Use		Use 95% Approximate Gamma UCL	89.18

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ALUMINUM

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	5460	Minimum of Log Data	8.605
Maximum	9740	Maximum of Log Data	9.184
Mean	7803	Mean of log Data	8.95
Median	7940	SD of log Data	0.169
SD	1274		
Coefficient of Variation	0.163		
Skewness	-0.139		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Test Statistic	0.956
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	8499	95% H-UCL	8622
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9545
95% Adjusted-CLT UCL (Chen-1995)	8417	97.5% Chebyshev (MVUE) UCL	10298
95% Modified-t UCL (Johnson-1978)	8496	99% Chebyshev (MVUE) UCL	11777
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	28.89	**Data appear Normal at 5% Significance Level**	
Theta Star	270.1		
MLE of Mean	7803		
MLE of Standard Deviation	1452		
nu star	635.5		
Approximate Chi Square Value (.05)	578.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	8435
Adjusted Chi Square Value	569.1	95% Jackknife UCL	8499
		95% Standard Bootstrap UCL	8416
Anderson-Darling Test Statistic	0.238	95% Bootstrap-t UCL	8451
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	8466
Kolmogorov-Smirnov Test Statistic	0.147	95% Percentile Bootstrap UCL	8403
Kolmogorov-Smirnov 5% Critical Value	0.255	95% BCA Bootstrap UCL	8368
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9477
		97.5% Chebyshev(Mean, Sd) UCL	10202
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11625
95% Approximate Gamma UCL	8579		
95% Adjusted Gamma UCL	8714		
Potential UCL to Use		Use 95% Student's-t UCL	8499

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	4.3	Minimum of Log Data	1.459
Maximum	43.7	Maximum of Log Data	3.777
Mean	16.45	Mean of log Data	2.508
Median	13.7	SD of log Data	0.801
SD	13.31		
Coefficient of Variation	0.81		
Skewness	1.124		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.842	Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	23.72	95% H-UCL	33.01
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.31
95% Adjusted-CLT UCL (Chen-1995)	24.5	97.5% Chebyshev (MVUE) UCL	42.09
95% Modified-t UCL (Johnson-1978)	23.95	99% Chebyshev (MVUE) UCL	57.37
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.415	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	11.62		
MLE of Mean	16.45		
MLE of Standard Deviation	13.83		
nu star	31.12		
Approximate Chi Square Value (.05)	19.38	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	23.05
Adjusted Chi Square Value	17.88	95% Jackknife UCL	23.72
		95% Standard Bootstrap UCL	22.79
Anderson-Darling Test Statistic	0.466	95% Bootstrap-t UCL	27.5
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	24.83
Kolmogorov-Smirnov Test Statistic	0.222	95% Percentile Bootstrap UCL	23.23
Kolmogorov-Smirnov 5% Critical Value	0.259	95% BCA Bootstrap UCL	23.83
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	33.94
		97.5% Chebyshev(Mean, Sd) UCL	41.51
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	56.39
95% Approximate Gamma UCL	26.41		
95% Adjusted Gamma UCL	28.63		
Potential UCL to Use		Use 95% Approximate Gamma UCL	26.41

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BERYLLIUM

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.33	Minimum of Log Data	-1.109
Maximum	0.55	Maximum of Log Data	-0.598
Mean	0.451	Mean of log Data	-0.812
Median	0.48	SD of log Data	0.188
SD	0.0804		
Coefficient of Variation	0.178		
Skewness	-0.48		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.879	Shapiro Wilk Test Statistic	0.861
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.495	95% H-UCL	0.504
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.563
95% Adjusted-CLT UCL (Chen-1995)	0.487	97.5% Chebyshev (MVUE) UCL	0.611
95% Modified-t UCL (Johnson-1978)	0.494	99% Chebyshev (MVUE) UCL	0.706
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	23.62	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0191		
MLE of Mean	0.451		
MLE of Standard Deviation	0.0928		
nu star	519.6		
Approximate Chi Square Value (.05)	467.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.491
Adjusted Chi Square Value	459.7	95% Jackknife UCL	0.495
		95% Standard Bootstrap UCL	0.488
Anderson-Darling Test Statistic	0.725	95% Bootstrap-t UCL	0.492
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	0.483
Kolmogorov-Smirnov Test Statistic	0.253	95% Percentile Bootstrap UCL	0.486
Kolmogorov-Smirnov 5% Critical Value	0.255	95% BCA Bootstrap UCL	0.485
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.557
		97.5% Chebyshev(Mean, Sd) UCL	0.602
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.692
95% Approximate Gamma UCL	0.501		
95% Adjusted Gamma UCL	0.51		
Potential UCL to Use		Use 95% Student's-t UCL	0.495

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHROMIUM

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	5.6	Minimum of Log Data	1.723
Maximum	12.8	Maximum of Log Data	2.549
Mean	9.445	Mean of log Data	2.218
Median	9.2	SD of log Data	0.251
SD	2.289		
Coefficient of Variation	0.242		
Skewness	0.148		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	10.7	95% H-UCL	11.03
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.59
95% Adjusted-CLT UCL (Chen-1995)	10.61	97.5% Chebyshev (MVUE) UCL	13.95
95% Modified-t UCL (Johnson-1978)	10.7	99% Chebyshev (MVUE) UCL	16.62
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	13.23	**Data appear Normal at 5% Significance Level**	
Theta Star	0.714		
MLE of Mean	9.445		
MLE of Standard Deviation	2.597		
nu star	291.1		
Approximate Chi Square Value (.05)	252.6	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	10.58
Adjusted Chi Square Value	246.7	95% Jackknife UCL	10.7
		95% Standard Bootstrap UCL	10.52
Anderson-Darling Test Statistic	0.358	95% Bootstrap-t UCL	10.72
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	10.68
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	10.55
Kolmogorov-Smirnov 5% Critical Value	0.255	95% BCA Bootstrap UCL	10.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.45
		97.5% Chebyshev(Mean, Sd) UCL	13.76
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16.31
95% Approximate Gamma UCL	10.89		
95% Adjusted Gamma UCL	11.14		
Potential UCL to Use		Use 95% Student's-t UCL	10.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	2.2	Minimum of Log Data	0.788
Maximum	13.2	Maximum of Log Data	2.58
Mean	8.145	Mean of log Data	1.959
Median	9.2	SD of log Data	0.593
SD	3.94		
Coefficient of Variation	0.484		
Skewness	-0.192		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Test Statistic	0.883
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	10.3	95% H-UCL	13.03
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.96
95% Adjusted-CLT UCL (Chen-1995)	10.03	97.5% Chebyshev (MVUE) UCL	17.84
95% Modified-t UCL (Johnson-1978)	10.29	99% Chebyshev (MVUE) UCL	23.5
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.8	**Data appear Normal at 5% Significance Level**	
Theta Star	2.909		
MLE of Mean	8.145		
MLE of Standard Deviation	4.867		
nu star	61.61		
Approximate Chi Square Value (.05)	44.56	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	10.1
Adjusted Chi Square Value	42.2	95% Jackknife UCL	10.3
		95% Standard Bootstrap UCL	10.01
Anderson-Darling Test Statistic	0.581	95% Bootstrap-t UCL	10.14
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	9.805
Kolmogorov-Smirnov Test Statistic	0.232	95% Percentile Bootstrap UCL	9.9
Kolmogorov-Smirnov 5% Critical Value	0.257	95% BCA Bootstrap UCL	9.882
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	13.32
		97.5% Chebyshev(Mean, Sd) UCL	15.56
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	19.97
95% Approximate Gamma UCL	11.26		
95% Adjusted Gamma UCL	11.89		
Potential UCL to Use		Use 95% Student's-t UCL	10.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

IRON

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	11500	Minimum of Log Data	9.35
Maximum	33700	Maximum of Log Data	10.43
Mean	21818	Mean of log Data	9.939
Median	23700	SD of log Data	0.344
SD	7109		
Coefficient of Variation	0.326		
Skewness	0.124		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	25703	95% H-UCL	27303
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31844
95% Adjusted-CLT UCL (Chen-1995)	25429	97.5% Chebyshev (MVUE) UCL	36165
95% Modified-t UCL (Johnson-1978)	25716	99% Chebyshev (MVUE) UCL	44653
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	7.215	**Data appear Normal at 5% Significance Level**	
Theta Star	3024		
MLE of Mean	21818		
MLE of Standard Deviation	8123		
nu star	158.7		
Approximate Chi Square Value (.05)	130.6	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	25344
Adjusted Chi Square Value	126.4	95% Jackknife UCL	25703
		95% Standard Bootstrap UCL	25209
Anderson-Darling Test Statistic	0.304	95% Bootstrap-t UCL	25848
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	25146
Kolmogorov-Smirnov Test Statistic	0.189	95% Percentile Bootstrap UCL	25136
Kolmogorov-Smirnov 5% Critical Value	0.255	95% BCA Bootstrap UCL	25245
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	31161
		97.5% Chebyshev(Mean, Sd) UCL	35204
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	43145
95% Approximate Gamma UCL	26517		
95% Adjusted Gamma UCL	27389		
Potential UCL to Use		Use 95% Student's-t UCL	25703

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

MANGANESE

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	95.8	Minimum of Log Data	4.562
Maximum	462	Maximum of Log Data	6.136
Mean	273.7	Mean of log Data	5.502
Median	225	SD of log Data	0.511
SD	126.2		
Coefficient of Variation	0.461		
Skewness	0.204		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.923	Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	342.7	95% H-UCL	398.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	465.2
95% Adjusted-CLT UCL (Chen-1995)	338.8	97.5% Chebyshev (MVUE) UCL	547.2
95% Modified-t UCL (Johnson-1978)	343.1	99% Chebyshev (MVUE) UCL	708.2
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.485	**Data appear Normal at 5% Significance Level**	
Theta Star	78.54		
MLE of Mean	273.7		
MLE of Standard Deviation	146.6		
nu star	76.67		
Approximate Chi Square Value (.05)	57.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	336.3
Adjusted Chi Square Value	54.8	95% Jackknife UCL	342.7
		95% Standard Bootstrap UCL	333.9
Anderson-Darling Test Statistic	0.342	95% Bootstrap-t UCL	345.2
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	329.8
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	333.9
Kolmogorov-Smirnov 5% Critical Value	0.256	95% BCA Bootstrap UCL	338.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	439.6
		97.5% Chebyshev(Mean, Sd) UCL	511.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	652.4
95% Approximate Gamma UCL	365		
95% Adjusted Gamma UCL	382.9		
Potential UCL to Use		Use 95% Student's-t UCL	342.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

2,3,7,8-TCDD TEQ

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	1.179	Minimum of Log Data	0.164
Maximum	6.038	Maximum of Log Data	1.798
Mean	3.242	Mean of log Data	1.058
Median	2.801	SD of log Data	0.522
SD	1.602		
Coefficient of Variation	0.494		
Skewness	0.576		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Test Statistic	0.97
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	4.118	95% H-UCL	4.749
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.54
95% Adjusted-CLT UCL (Chen-1995)	4.127	97.5% Chebyshev (MVUE) UCL	6.528
95% Modified-t UCL (Johnson-1978)	4.132	99% Chebyshev (MVUE) UCL	8.469
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.264	**Data appear Normal at 5% Significance Level**	
Theta Star	0.993		
MLE of Mean	3.242		
MLE of Standard Deviation	1.795		
nu star	71.8		
Approximate Chi Square Value (.05)	53.29	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	4.037
Adjusted Chi Square Value	50.7	95% Jackknife UCL	4.118
		95% Standard Bootstrap UCL	4.014
Anderson-Darling Test Statistic	0.184	95% Bootstrap-t UCL	4.312
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	4.145
Kolmogorov-Smirnov Test Statistic	0.112	95% Percentile Bootstrap UCL	4.019
Kolmogorov-Smirnov 5% Critical Value	0.256	95% BCA Bootstrap UCL	4.099
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.348
		97.5% Chebyshev(Mean, Sd) UCL	6.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.05
95% Approximate Gamma UCL	4.368		
95% Adjusted Gamma UCL	4.592		
Potential UCL to Use		Use 95% Student's-t UCL	4.118

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Tank Farm 5

All Soil

PROUCL OUTPUT - TANK FARM 5 ALL SOIL

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Data	32	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	17
		Percent Non-Detects	53.13%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.9	Minimum Detected	1.775
Maximum Detected	230	Maximum Detected	5.438
Mean of Detected	36.54	Mean of Detected	2.872
SD of Detected	58.96	SD of Detected	1.119
Minimum Non-Detect	3.4	Minimum Non-Detect	1.224
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	15
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.13%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.575	Shapiro Wilk Test Statistic	0.872
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	18.11	Mean	1.671
SD	43.35	SD	1.372
95% DL/2 (t) UCL	31.1	95% H-Stat (DL/2) UCL	27.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.18
		SD in Log Scale	1.874
		Mean in Original Scale	17.63
		SD in Original Scale	43.54
		95% t UCL	30.68
		95% Percentile Bootstrap UCL	31.51
		95% BCA Bootstrap UCL	40.51

BENZO(A)ANTHRACENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.696	Data do not follow a Discernable Distribution (0.05)	
Theta Star	52.47		
nu star	20.89		
A-D Test Statistic	1.268	Nonparametric Statistics	
5% A-D Critical Value	0.772	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.772	Mean	20.26
5% K-S Critical Value	0.23	SD	41.89
Data not Gamma Distributed at 5% Significance Level		SE of Mean	7.665
		95% KM (t) UCL	33.26
Assuming Gamma Distribution		95% KM (z) UCL	32.87
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	32.93
Minimum	5.9	95% KM (bootstrap t) UCL	58.97
Maximum	230	95% KM (BCA) UCL	35.59
Mean	36.46	95% KM (Percentile Bootstrap) UCL	33.8
Median	28.94	95% KM (Chebyshev) UCL	53.67
SD	40.8	97.5% KM (Chebyshev) UCL	68.13
k star	1.352	99% KM (Chebyshev) UCL	96.53
Theta star	26.97		
Nu star	86.52	Potential UCLs to Use	
AppChi2	66.08	95% KM (BCA) UCL	35.59
95% Gamma Approximate UCL	47.74		
95% Adjusted Gamma UCL	48.44		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	32	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	17
		Percent Non-Detects	53.13%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.5	Minimum Detected	1.705
Maximum Detected	300	Maximum Detected	5.704
Mean of Detected	43.01	Mean of Detected	2.945
SD of Detected	75.87	SD of Detected	1.181
Minimum Non-Detect	3.4	Minimum Non-Detect	1.224
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	15
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.13%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.539	Shapiro Wilk Test Statistic	0.884
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	21.14	Mean	1.705
SD	55.09	SD	1.426
95% DL/2 (t) UCL	37.65	95% H-Stat (DL/2) UCL	32.65
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.155
		SD in Log Scale	1.982
		Mean in Original Scale	20.62
		SD in Original Scale	55.28
		95% t UCL	37.19
		95% Percentile Bootstrap UCL	38.49
		95% BCA Bootstrap UCL	48.95

BENZO(A)PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.633	Data appear Lognormal at 5% Significance Level	
Theta Star	67.97		
nu star	18.98		
A-D Test Statistic	1.237	Nonparametric Statistics	
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.776	Mean	23.08
5% K-S Critical Value	0.23	SD	53.56
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.801
		95% KM (t) UCL	39.7
Assuming Gamma Distribution		95% KM (z) UCL	39.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	38.98
Minimum	5.5	95% KM (bootstrap t) UCL	73.59
Maximum	300	95% KM (BCA) UCL	45.91
Mean	42.89	95% KM (Percentile Bootstrap) UCL	40.37
Median	34.38	95% KM (Chebyshev) UCL	65.8
SD	51.9	97.5% KM (Chebyshev) UCL	84.29
k star	1.262	99% KM (Chebyshev) UCL	120.6
Theta star	33.99		
Nu star	80.76	Potential UCLs to Use	
AppChi2	61.05	95% KM (BCA) UCL	45.91
95% Gamma Approximate UCL	56.74		
95% Adjusted Gamma UCL	57.61		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	32	Number of Detected Data	16
Number of Distinct Detected Data	13	Number of Non-Detect Data	16
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.2	Minimum Detected	1.649
Maximum Detected	530	Maximum Detected	6.273
Mean of Detected	67.08	Mean of Detected	3.265
SD of Detected	130.1	SD of Detected	1.263
Minimum Non-Detect	3.4	Minimum Non-Detect	1.224
Maximum Non-Detect	4	Maximum Non-Detect	1.386
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	16
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.501	Shapiro Wilk Test Statistic	0.902
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	34.45	Mean	1.934
SD	96.37	SD	1.613
95% DL/2 (t) UCL	63.34	95% H-Stat (DL/2) UCL	65.23
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.522
		SD in Log Scale	2.071
		Mean in Original Scale	34.08
		SD in Original Scale	96.5
		95% t UCL	63.01
		95% Percentile Bootstrap UCL	66.45
		95% BCA Bootstrap UCL	89.31

BENZO(B)FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.569	Data appear Lognormal at 5% Significance Level	
Theta Star	117.8		
nu star	18.22		
A-D Test Statistic	1.353	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	36.14
5% K-S Critical Value	0.225	SD	94.29
Data not Gamma Distributed at 5% Significance Level		SE of Mean	17.21
		95% KM (t) UCL	65.32
Assuming Gamma Distribution		95% KM (z) UCL	64.45
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	63.69
Minimum	5.2	95% KM (bootstrap t) UCL	133.5
Maximum	530	95% KM (BCA) UCL	73.03
Mean	67.08	95% KM (Percentile Bootstrap) UCL	67.08
Median	55.62	95% KM (Chebyshev) UCL	111.2
SD	91.11	97.5% KM (Chebyshev) UCL	143.6
k star	1.087	99% KM (Chebyshev) UCL	207.4
Theta star	61.73		
Nu star	69.54	Potential UCLs to Use	
AppChi2	51.34	95% KM (BCA) UCL	73.03
95% Gamma Approximate UCL	90.85		
95% Adjusted Gamma UCL	92.35		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	32	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	25
		Percent Non-Detects	78.13%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.3	Minimum Detected	1.459
Maximum Detected	57	Maximum Detected	4.043
Mean of Detected	17.43	Mean of Detected	2.451
SD of Detected	18.69	SD of Detected	0.942
Minimum Non-Detect	3.4	Minimum Non-Detect	1.224
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	7
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	78.13%

Warning: There are only 7 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.744	Shapiro Wilk Test Statistic	0.922
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.27	Mean	1.023
SD	10.51	SD	0.874
95% DL/2 (t) UCL	8.419	95% H-Stat (DL/2) UCL	5.834
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.724
		SD in Log Scale	2.08
		Mean in Original Scale	4.107
		SD in Original Scale	10.91
		95% t UCL	7.377
		95% Percentile Bootstrap UCL	7.538
		95% BCA Bootstrap UCL	9.548

DIBENZO(A,H)ANTHRACENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.879	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	19.82		
nu star	12.31		
A-D Test Statistic	0.424	Nonparametric Statistics	
5% A-D Critical Value	0.723	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.723	Mean	7.172
5% K-S Critical Value	0.318	SD	9.745
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.861
		95% KM (t) UCL	10.33
Assuming Gamma Distribution		95% KM (z) UCL	10.23
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.07
Minimum	2.363	95% KM (bootstrap t) UCL	14.62
Maximum	57	95% KM (BCA) UCL	16.15
Mean	19.22	95% KM (Percentile Bootstrap) UCL	11.76
Median	19.39	95% KM (Chebyshev) UCL	15.28
SD	12.2	97.5% KM (Chebyshev) UCL	18.79
k star	2.126	99% KM (Chebyshev) UCL	25.69
Theta star	9.042		
Nu star	136.1	Potential UCLs to Use	
AppChi2	110.1	95% KM (t) UCL	10.33
95% Gamma Approximate UCL	23.75		
95% Adjusted Gamma UCL	24.02		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	32	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	18
		Percent Non-Detects	56.25%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.1	Minimum Detected	1.131
Maximum Detected	240	Maximum Detected	5.481
Mean of Detected	33.7	Mean of Detected	2.67
SD of Detected	61.82	SD of Detected	1.219
Minimum Non-Detect	3.4	Minimum Non-Detect	1.224
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	62.50%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.518	Shapiro Wilk Test Statistic	0.933
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	15.78	Mean	1.511
SD	43.13	SD	1.305
95% DL/2 (t) UCL	28.71	95% H-Stat (DL/2) UCL	20.58
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.188
		SD in Log Scale	1.647
		Mean in Original Scale	15.49
		SD in Original Scale	43.24
		95% t UCL	28.44
		95% Percentile Bootstrap UCL	30.08
		95% BCA Bootstrap UCL	37.08

INDENO(1,2,3-CD)PYRENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.607	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	55.51		
nu star	17		
A-D Test Statistic	0.963	Nonparametric Statistics	
5% A-D Critical Value	0.774	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.774	Mean	16.49
5% K-S Critical Value	0.238	SD	42.23
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	7.746
		95% KM (t) UCL	29.62
Assuming Gamma Distribution		95% KM (z) UCL	29.23
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	28.92
Minimum	3.1	95% KM (bootstrap t) UCL	62.95
Maximum	240	95% KM (BCA) UCL	33.4
Mean	35.27	95% KM (Percentile Bootstrap) UCL	30.83
Median	30.45	95% KM (Chebyshev) UCL	50.25
SD	41.13	97.5% KM (Chebyshev) UCL	64.86
k star	1.274	99% KM (Chebyshev) UCL	93.56
Theta star	27.69		
Nu star	81.51	Potential UCLs to Use	
AppChi2	61.71	95% KM (t) UCL	29.62
95% Gamma Approximate UCL	46.59		
95% Adjusted Gamma UCL	47.29		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PROUCL OUTPUT - TANK FARM 5 ALL SOIL

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ALUMINUM

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	32
Raw Statistics		**Log-transformed Statistics**	
Minimum	876	Minimum of Log Data	6.775
Maximum	14000	Maximum of Log Data	9.547
Mean	6683	Mean of log Data	8.675
Median	7380	SD of log Data	0.609
SD	2780		
Coefficient of Variation	0.416		
Skewness	-0.173		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk Test Statistic	0.803
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	7516	95% H-UCL	8791
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10497
95% Adjusted-CLT UCL (Chen-1995)	7476	97.5% Chebyshev (MVUE) UCL	12010
95% Modified-t UCL (Johnson-1978)	7514	99% Chebyshev (MVUE) UCL	14983

ALUMINUM (Continued)

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.585	Data appear Normal at 5% Significance Level	
Theta Star	1864		
MLE of Mean	6683		
MLE of Standard Deviation	3530		
nu star	229.4		
Approximate Chi Square Value (.05)	195.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0416	95% CLT UCL	7492
Adjusted Chi Square Value	193.7	95% Jackknife UCL	7516
		95% Standard Bootstrap UCL	7470
Anderson-Darling Test Statistic	1.776	95% Bootstrap-t UCL	7507
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	7492
Kolmogorov-Smirnov Test Statistic	0.2	95% Percentile Bootstrap UCL	7495
Kolmogorov-Smirnov 5% Critical Value	0.156	95% BCA Bootstrap UCL	7445
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8825
		97.5% Chebyshev(Mean, Sd) UCL	9752
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11573
95% Approximate Gamma UCL	7849		
95% Adjusted Gamma UCL	7917		
Potential UCL to Use		Use 95% Student's-t UCL	7516

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	30
Raw Statistics		**Log-transformed Statistics**	
Minimum	3.5	Minimum of Log Data	1.253
Maximum	67.2	Maximum of Log Data	4.208
Mean	23.53	Mean of log Data	2.868
Median	20.2	SD of log Data	0.821
SD	16.97		
Coefficient of Variation	0.721		
Skewness	0.811		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	28.62	95% H-UCL	34.24
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	41.38
95% Adjusted-CLT UCL (Chen-1995)	28.93	97.5% Chebyshev (MVUE) UCL	48.76
95% Modified-t UCL (Johnson-1978)	28.69	99% Chebyshev (MVUE) UCL	63.27
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.714	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	13.73		
MLE of Mean	23.53		
MLE of Standard Deviation	17.98		
nu star	109.7		
Approximate Chi Square Value (.05)	86.53	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	28.47
Adjusted Chi Square Value	85.43	95% Jackknife UCL	28.62
		95% Standard Bootstrap UCL	28.51
Anderson-Darling Test Statistic	0.367	95% Bootstrap-t UCL	29.07
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	29.03
Kolmogorov-Smirnov Test Statistic	0.0984	95% Percentile Bootstrap UCL	28.49
Kolmogorov-Smirnov 5% Critical Value	0.158	95% BCA Bootstrap UCL	29.07
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	36.61
		97.5% Chebyshev(Mean, Sd) UCL	42.27
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	53.39
95% Approximate Gamma UCL	29.84		
95% Adjusted Gamma UCL	30.22		
Potential UCL to Use		Use 95% Approximate Gamma UCL	29.84

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BERYLLIUM

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	20
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.11	Minimum of Log Data	-2.207
Maximum	0.55	Maximum of Log Data	-0.598
Mean	0.38	Mean of log Data	-1.021
Median	0.365	SD of log Data	0.365
SD	0.112		
Coefficient of Variation	0.295		
Skewness	-0.476		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Test Statistic	0.849
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.414	95% H-UCL	0.434
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.495
95% Adjusted-CLT UCL (Chen-1995)	0.411	97.5% Chebyshev (MVUE) UCL	0.543
95% Modified-t UCL (Johnson-1978)	0.414	99% Chebyshev (MVUE) UCL	0.637
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	8.454	**Data appear Normal at 5% Significance Level**	
Theta Star	0.045		
MLE of Mean	0.38		
MLE of Standard Deviation	0.131		
nu star	541.1		
Approximate Chi Square Value (.05)	488.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	0.413
Adjusted Chi Square Value	485.4	95% Jackknife UCL	0.414
		95% Standard Bootstrap UCL	0.413
Anderson-Darling Test Statistic	0.916	95% Bootstrap-t UCL	0.413
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	0.412
Kolmogorov-Smirnov Test Statistic	0.125	95% Percentile Bootstrap UCL	0.411
Kolmogorov-Smirnov 5% Critical Value	0.155	95% BCA Bootstrap UCL	0.41
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.467
		97.5% Chebyshev(Mean, Sd) UCL	0.504
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.578
95% Approximate Gamma UCL	0.422		
95% Adjusted Gamma UCL	0.424		
Potential UCL to Use		Use 95% Student's-t UCL	0.414

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHROMIUM

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	27
Raw Statistics		**Log-transformed Statistics**	
Minimum	2.3	Minimum of Log Data	0.833
Maximum	21.7	Maximum of Log Data	3.077
Mean	9.925	Mean of log Data	2.215
Median	9.15	SD of log Data	0.432
SD	3.888		
Coefficient of Variation	0.392		
Skewness	0.907		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.934	Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	11.09	95% H-UCL	11.63
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	13.47
95% Adjusted-CLT UCL (Chen-1995)	11.17	97.5% Chebyshev (MVUE) UCL	14.96
95% Modified-t UCL (Johnson-1978)	11.11	99% Chebyshev (MVUE) UCL	17.89
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.796	**Data appear Normal at 5% Significance Level**	
Theta Star	1.712		
MLE of Mean	9.925		
MLE of Standard Deviation	4.123		
nu star	370.9		
Approximate Chi Square Value (.05)	327.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	11.06
Adjusted Chi Square Value	325.1	95% Jackknife UCL	11.09
		95% Standard Bootstrap UCL	11.06
Anderson-Darling Test Statistic	0.711	95% Bootstrap-t UCL	11.28
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	11.34
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL	11.05
Kolmogorov-Smirnov 5% Critical Value	0.156	95% BCA Bootstrap UCL	11.09
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.92
		97.5% Chebyshev(Mean, Sd) UCL	14.22
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16.76
95% Approximate Gamma UCL	11.25		
95% Adjusted Gamma UCL	11.32		
Potential UCL to Use		Use 95% Student's-t UCL	11.09

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	30
Raw Statistics		**Log-transformed Statistics**	
Minimum	2.2	Minimum of Log Data	0.788
Maximum	32.8	Maximum of Log Data	3.49
Mean	13.2	Mean of log Data	2.422
Median	11.95	SD of log Data	0.605
SD	7.286		
Coefficient of Variation	0.552		
Skewness	0.957		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15.39	95% H-UCL	16.84
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.1
95% Adjusted-CLT UCL (Chen-1995)	15.56	97.5% Chebyshev (MVUE) UCL	22.98
95% Modified-t UCL (Johnson-1978)	15.42	99% Chebyshev (MVUE) UCL	28.65
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.016	**Data appear Normal at 5% Significance Level**	
Theta Star	4.378		
MLE of Mean	13.2		
MLE of Standard Deviation	7.603		
nu star	193.1		
Approximate Chi Square Value (.05)	161.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	15.32
Adjusted Chi Square Value	160.4	95% Jackknife UCL	15.39
		95% Standard Bootstrap UCL	15.29
Anderson-Darling Test Statistic	0.125	95% Bootstrap-t UCL	15.73
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	15.68
Kolmogorov-Smirnov Test Statistic	0.0645	95% Percentile Bootstrap UCL	15.36
Kolmogorov-Smirnov 5% Critical Value	0.156	95% BCA Bootstrap UCL	15.73
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18.82
		97.5% Chebyshev(Mean, Sd) UCL	21.25
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.02
95% Approximate Gamma UCL	15.74		
95% Adjusted Gamma UCL	15.89		
Potential UCL to Use		Use 95% Student's-t UCL	15.39

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

IRON

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	32
Raw Statistics		**Log-transformed Statistics**	
Minimum	11500	Minimum of Log Data	9.35
Maximum	72100	Maximum of Log Data	11.19
Mean	32853	Mean of log Data	10.28
Median	28650	SD of log Data	0.484
SD	16655		
Coefficient of Variation	0.507		
Skewness	0.961		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.878	Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	37845	95% H-UCL	38880
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	45513
95% Adjusted-CLT UCL (Chen-1995)	38231	97.5% Chebyshev (MVUE) UCL	51027
95% Modified-t UCL (Johnson-1978)	37929	99% Chebyshev (MVUE) UCL	61858
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.082	**Data appear Lognormal at 5% Significance Level**	
Theta Star	8049		
MLE of Mean	32853		
MLE of Standard Deviation	16261		
nu star	261.2		
Approximate Chi Square Value (.05)	224.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	37696
Adjusted Chi Square Value	223	95% Jackknife UCL	37845
		95% Standard Bootstrap UCL	37550
Anderson-Darling Test Statistic	0.755	95% Bootstrap-t UCL	38544
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	37972
Kolmogorov-Smirnov Test Statistic	0.17	95% Percentile Bootstrap UCL	37669
Kolmogorov-Smirnov 5% Critical Value	0.156	95% BCA Bootstrap UCL	38247
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	45687
		97.5% Chebyshev(Mean, Sd) UCL	51240
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	62149
95% Approximate Gamma UCL	38177		
95% Adjusted Gamma UCL	38486		

IRON (Continued)		
Potential UCL to Use	Use 95% Student's-t UCL	37845
	or 95% Modified-t UCL	37929
	or 95% H-UCL	38880

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

MANGANESE

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	31
Raw Statistics		**Log-transformed Statistics**	
Minimum	95.8	Minimum of Log Data	4.562
Maximum	4220	Maximum of Log Data	8.348
Mean	486.2	Mean of log Data	5.782
Median	294.5	SD of log Data	0.771
SD	735.8		
Coefficient of Variation	1.513		
Skewness	4.567		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.448	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	706.7	95% H-UCL	590.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	713.4
95% Adjusted-CLT UCL (Chen-1995)	812.3	97.5% Chebyshev (MVUE) UCL	835.4
95% Modified-t UCL (Johnson-1978)	724.2	99% Chebyshev (MVUE) UCL	1075
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.27	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	382.9		
MLE of Mean	486.2		
MLE of Standard Deviation	431.4		
nu star	81.27		
Approximate Chi Square Value (.05)	61.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	700.1
Adjusted Chi Square Value	60.58	95% Jackknife UCL	706.7
		95% Standard Bootstrap UCL	697.1
Anderson-Darling Test Statistic	1.973	95% Bootstrap-t UCL	1230
Anderson-Darling 5% Critical Value	0.767	95% Hall's Bootstrap UCL	1606
Kolmogorov-Smirnov Test Statistic	0.222	95% Percentile Bootstrap UCL	726.4
Kolmogorov-Smirnov 5% Critical Value	0.159	95% BCA Bootstrap UCL	870.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1053
		97.5% Chebyshev(Mean, Sd) UCL	1298
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1780
95% Approximate Gamma UCL	642.5		
95% Adjusted Gamma UCL	652.3		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	1053

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

THALLIUM

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	20
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.18	Minimum of Log Data	-1.715
Maximum	7.4	Maximum of Log Data	2.001
Mean	2.132	Mean of log Data	0.58
Median	1.9	SD of log Data	0.65
SD	1.341		
Coefficient of Variation	0.629		
Skewness	2.166		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.824	Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2.534	95% H-UCL	2.808
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.368
95% Adjusted-CLT UCL (Chen-1995)	2.619	97.5% Chebyshev (MVUE) UCL	3.878
95% Modified-t UCL (Johnson-1978)	2.549	99% Chebyshev (MVUE) UCL	4.879
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.724	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.783		
MLE of Mean	2.132		
MLE of Standard Deviation	1.292		
nu star	174.3		
Approximate Chi Square Value (.05)	144.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0416	95% CLT UCL	2.522
Adjusted Chi Square Value	143.4	95% Jackknife UCL	2.534
		95% Standard Bootstrap UCL	2.511
Anderson-Darling Test Statistic	0.54	95% Bootstrap-t UCL	2.67
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	2.972
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL	2.598
Kolmogorov-Smirnov 5% Critical Value	0.157	95% BCA Bootstrap UCL	2.626
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.166
		97.5% Chebyshev(Mean, Sd) UCL	3.613
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.492
95% Approximate Gamma UCL	2.567		
95% Adjusted Gamma UCL	2.593		
Potential UCL to Use		Use 95% Approximate Gamma UCL	2.567

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

2,3,7,8-TCDD TEQ

General Statistics			
Number of Valid Observations	22	Number of Distinct Observations	22
Number of Missing Values	9		
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.179	Minimum of Log Data	-1.718
Maximum	7.569	Maximum of Log Data	2.024
Mean	3.402	Mean of log Data	0.942
Median	2.807	SD of log Data	0.898
SD	2.184		
Coefficient of Variation	0.642		
Skewness	0.472		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.911	Shapiro Wilk Critical Value	0.911
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	4.203	95% H-UCL	6.204
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.212
95% Adjusted-CLT UCL (Chen-1995)	4.218	97.5% Chebyshev (MVUE) UCL	8.711
95% Modified-t UCL (Johnson-1978)	4.211	99% Chebyshev (MVUE) UCL	11.66
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.69	**Data appear Normal at 5% Significance Level**	
Theta Star	2.013		
MLE of Mean	3.402		
MLE of Standard Deviation	2.617		
nu star	74.36		
Approximate Chi Square Value (.05)	55.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0386	95% CLT UCL	4.168
Adjusted Chi Square Value	54.28	95% Jackknife UCL	4.203
		95% Standard Bootstrap UCL	4.14
Anderson-Darling Test Statistic	0.259	95% Bootstrap-t UCL	4.279
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	4.17
Kolmogorov-Smirnov Test Statistic	0.104	95% Percentile Bootstrap UCL	4.138
Kolmogorov-Smirnov 5% Critical Value	0.188	95% BCA Bootstrap UCL	4.293
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.432
		97.5% Chebyshev(Mean, Sd) UCL	6.31
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.035
95% Approximate Gamma UCL	4.558		
95% Adjusted Gamma UCL	4.66		
Potential UCL to Use		Use 95% Student's-t UCL	4.203

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Tank Farm 5

Surface Water

	General UCL Statistics for Data Sets with Non-Detects
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Data	11	Number of Detected Data	6
Number of Distinct Detected Data	5	Number of Non-Detect Data	5
		Percent Non-Detects	45.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.11	Minimum Detected	-2.207
Maximum Detected	0.2	Maximum Detected	-1.609
Mean of Detected	0.152	Mean of Detected	-1.907
SD of Detected	0.0343	SD of Detected	0.227
Minimum Non-Detect	0.1	Minimum Non-Detect	-2.303
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

Warning: There are only 6 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

BENZO(A)ANTHRACENE (Continued)

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.105	Mean	-2.402
SD	0.0584	SD	0.591
95% DL/2 (t) UCL	0.137	95% H-Stat (DL/2) UCL	0.166
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.109	Mean in Log Scale	-2.209
SD	0.0563	SD in Log Scale	0.402
95% MLE (t) UCL	0.14	Mean in Original Scale	0.118
95% MLE (Tiku) UCL	0.145	SD in Original Scale	0.0466
		95% t UCL	0.143
		95% Percentile Bootstrap UCL	0.141
		95% BCA Bootstrap UCL	0.143
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	11.9	Data appear Normal at 5% Significance Level	
Theta Star	0.0127		
nu star	142.8		
A-D Test Statistic	0.282	Nonparametric Statistics	
5% A-D Critical Value	0.697	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.697	Mean	0.133
5% K-S Critical Value	0.332	SD	0.0311
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0103
		95% KM (t) UCL	0.151
Assuming Gamma Distribution		95% KM (z) UCL	0.15
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.151
Minimum	0.102	95% KM (bootstrap t) UCL	0.154
Maximum	0.2	95% KM (BCA) UCL	0.165
Mean	0.148	95% KM (Percentile Bootstrap) UCL	0.156
Median	0.148	95% KM (Chebyshev) UCL	0.177
SD	0.0306	97.5% KM (Chebyshev) UCL	0.197
k star	18.43	99% KM (Chebyshev) UCL	0.235
Theta star	0.00802		
Nu star	405.6	Potential UCLs to Use	
AppChi2	359.9	95% KM (t) UCL	0.151
95% Gamma Approximate UCL	0.167	95% KM (Percentile Bootstrap) UCL	0.156
95% Adjusted Gamma UCL	0.17		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Data	11	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	7
		Percent Non-Detects	63.64%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.11	Minimum Detected	-2.207
Maximum Detected	0.25	Maximum Detected	-1.386
Mean of Detected	0.158	Mean of Detected	-1.9
SD of Detected	0.0629	SD of Detected	0.357
Minimum Non-Detect	0.1	Minimum Non-Detect	-2.303
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

Warning: There are only 4 Distinct Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.807	Shapiro Wilk Test Statistic	0.87
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0891	Mean	-2.597
SD	0.0643	SD	0.586
95% DL/2 (t) UCL	0.124	95% H-Stat (DL/2) UCL	0.135
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0661	Mean in Log Scale	-2.736
SD	0.0907	SD in Log Scale	0.784
95% MLE (t) UCL	0.116	Mean in Original Scale	0.0853
95% MLE (Tiku) UCL	0.141	SD in Original Scale	0.0685
		95% t UCL	0.123
		95% Percentile Bootstrap UCL	0.121
		95% BCA Bootstrap UCL	0.128

BENZO(B)FLUORANTHENE (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.628	Data appear Normal at 5% Significance Level	
Theta Star	0.0599		
nu star	21.02		
A-D Test Statistic	0.485	Nonparametric Statistics	
5% A-D Critical Value	0.657	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.657	Mean	0.127
5% K-S Critical Value	0.395	SD	0.04
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0139
		95% KM (t) UCL	0.153
Assuming Gamma Distribution		95% KM (z) UCL	0.15
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.149
Minimum	0.0915	95% KM (bootstrap t) UCL	0.179
Maximum	0.293	95% KM (BCA) UCL	0.25
Mean	0.188	95% KM (Percentile Bootstrap) UCL	0.163
Median	0.182	95% KM (Chebyshev) UCL	0.188
SD	0.0693	97.5% KM (Chebyshev) UCL	0.214
k star	5.601	99% KM (Chebyshev) UCL	0.266
Theta star	0.0335		
Nu star	123.2	Potential UCLs to Use	
AppChi2	98.59	95% KM (t) UCL	0.153
95% Gamma Approximate UCL	0.235	95% KM (Percentile Bootstrap) UCL	0.163
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics

Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	4	Number of Non-Detect Data	6
		Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.244	Minimum Detected	-1.411
Maximum Detected	0.299	Maximum Detected	-1.207
Mean of Detected	0.28	Mean of Detected	-1.277
SD of Detected	0.0253	SD of Detected	0.0929
Minimum Non-Detect	0.236	Minimum Non-Detect	-1.444
Maximum Non-Detect	0.236	Maximum Non-Detect	-1.444

Warning: There are only 4 Distinct Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.791	Shapiro Wilk Test Statistic	0.792
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.192	Mean	-1.746
SD	0.086	SD	0.453
95% DL/2 (t) UCL	0.239	95% H-Stat (DL/2) UCL	0.262
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.233	Mean in Log Scale	-1.42
SD	0.0504	SD in Log Scale	0.162
95% MLE (t) UCL	0.261	Mean in Original Scale	0.245
95% MLE (Tiku) UCL	0.269	SD in Original Scale	0.0396
		95% t UCL	0.266
		95% Percentile Bootstrap UCL	0.263
		95% BCA Bootstrap UCL	0.262

ARSENIC (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	59.18	Data appear Normal at 5% Significance Level	
Theta Star	0.00473		
nu star	591.8		
A-D Test Statistic	0.662	Nonparametric Statistics	
5% A-D Critical Value	0.678	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.678	Mean	0.26
5% K-S Critical Value	0.357	SD	0.0235
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.00791
		95% KM (t) UCL	0.275
Assuming Gamma Distribution		95% KM (z) UCL	0.273
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.275
Minimum	0.244	95% KM (bootstrap t) UCL	0.272
Maximum	0.314	95% KM (BCA) UCL	0.297
Mean	0.283	95% KM (Percentile Bootstrap) UCL	0.297
Median	0.296	95% KM (Chebyshev) UCL	0.295
SD	0.0243	97.5% KM (Chebyshev) UCL	0.31
k star	104.7	99% KM (Chebyshev) UCL	0.339
Theta star	0.0027		
Nu star	2302	Potential UCLs to Use	
AppChi2	2192	95% KM (t) UCL	0.275
95% Gamma Approximate UCL	0.297	95% KM (Percentile Bootstrap) UCL	0.297
95% Adjusted Gamma UCL	0.3		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

IRON

General Statistics

Number of Valid Data	11	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	4
		Percent Non-Detects	36.36%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	215	Minimum Detected	5.371
Maximum Detected	2930	Maximum Detected	7.983
Mean of Detected	724.7	Mean of Detected	6.117
SD of Detected	982.6	SD of Detected	0.904
Minimum Non-Detect	174	Minimum Non-Detect	5.159
Maximum Non-Detect	227	Maximum Non-Detect	5.425

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	6
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	45.45%

Warning: There are only 7 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.579	Shapiro Wilk Test Statistic	0.804
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	498.5	Mean	5.574
SD	823.3	SD	1.03
95% DL/2 (t) UCL	948.4	95% H-Stat (DL/2) UCL	1213
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	107	Mean in Log Scale	5.391
SD	1151	SD in Log Scale	1.233
95% MLE (t) UCL	735.9	Mean in Original Scale	484
95% MLE (Tiku) UCL	853.2	SD in Original Scale	831.2
		95% t UCL	938.3
		95% Percentile Bootstrap UCL	938.6
		95% BCA Bootstrap UCL	1211

IRON (Continued)

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.784	Data appear Lognormal at 5% Significance Level	
Theta Star	924.6		
nu star	10.97		
A-D Test Statistic	0.956	Nonparametric Statistics	
5% A-D Critical Value	0.725	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.725	Mean	539.4
5% K-S Critical Value	0.319	SD	766
Data not Gamma Distributed at 5% Significance Level		SE of Mean	249.5
		95% KM (t) UCL	991.5
Assuming Gamma Distribution		95% KM (z) UCL	949.7
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	971.1
Minimum	55.07	95% KM (bootstrap t) UCL	3056
Maximum	2930	95% KM (BCA) UCL	1068
Mean	527.2	95% KM (Percentile Bootstrap) UCL	998.7
Median	308.3	95% KM (Chebyshev) UCL	1627
SD	812.9	97.5% KM (Chebyshev) UCL	2097
k star	0.759	99% KM (Chebyshev) UCL	3021
Theta star	695.1		
Nu star	16.69	Potential UCLs to Use	
AppChi2	8.449	95% KM (BCA) UCL	1068
95% Gamma Approximate UCL	1041		
95% Adjusted Gamma UCL	1171		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Tank Farm 5
Sediment

PROUCL OUTPUT TANK FARM 5 SEDIMENT

	General UCL Statistics for Full Data Sets
User Selected Options	
From File	Converted_Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD TEQs

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	1.031	Minimum of Log Data	0.031
Maximum	14.69	Maximum of Log Data	2.687
Mean	6.569	Mean of log Data	1.597
Median	4.243	SD of log Data	0.839
SD	4.737		
Coefficient of Variation	0.721		
Skewness	0.596		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.025	95% H-UCL	13.67
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.31
95% Adjusted-CLT UCL (Chen-1995)	9.07	97.5% Chebyshev (MVUE) UCL	17.57
95% Modified-t UCL (Johnson-1978)	9.064	99% Chebyshev (MVUE) UCL	23.98

2,3,7,8-TCDD TEQs (COntinued)

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.483	Data appear Normal at 5% Significance Level	
Theta Star	4.431		
MLE of Mean	6.569		
MLE of Standard Deviation	5.395		
nu star	35.58		
Approximate Chi Square Value (.05)	22.93	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	8.819
Adjusted Chi Square Value	21.39	95% Jackknife UCL	9.025
		95% Standard Bootstrap UCL	8.688
Anderson-Darling Test Statistic	0.394	95% Bootstrap-t UCL	9.307
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	8.625
Kolmogorov-Smirnov Test Statistic	0.202	95% Percentile Bootstrap UCL	8.718
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	9.107
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.53
		97.5% Chebyshev(Mean, Sd) UCL	15.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.18
95% Approximate Gamma UCL	10.19		
95% Adjusted Gamma UCL	10.93		
Potential UCL to Use		Use 95% Student's-t UCL	9.025

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	33	Minimum of Log Data	3.497
Maximum	650	Maximum of Log Data	6.477
Mean	279.1	Mean of log Data	5.314
Median	210	SD of log Data	0.888
SD	219.6		
Coefficient of Variation	0.787		
Skewness	0.934		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	393	95% H-UCL	623.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	630.7
95% Adjusted-CLT UCL (Chen-1995)	401.6	97.5% Chebyshev (MVUE) UCL	778.6
95% Modified-t UCL (Johnson-1978)	395.8	99% Chebyshev (MVUE) UCL	1069
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.346	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	207.3		
MLE of Mean	279.1		
MLE of Standard Deviation	240.6		
nu star	32.3		
Approximate Chi Square Value (.05)	20.31	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	383.4
Adjusted Chi Square Value	18.87	95% Jackknife UCL	393
		95% Standard Bootstrap UCL	377.9
Anderson-Darling Test Statistic	0.367	95% Bootstrap-t UCL	420.9
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	374.9
Kolmogorov-Smirnov Test Statistic	0.168	95% Percentile Bootstrap UCL	385.3
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	401.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	555.5
		97.5% Chebyshev(Mean, Sd) UCL	675
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	909.9
95% Approximate Gamma UCL	443.8		
95% Adjusted Gamma UCL	477.7		
Potential UCL to Use		Use 95% Approximate Gamma UCL	443.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	42	Minimum of Log Data	3.738
Maximum	780	Maximum of Log Data	6.659
Mean	348.5	Mean of log Data	5.571
Median	270	SD of log Data	0.847
SD	255.4		
Coefficient of Variation	0.733		
Skewness	0.874		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	480.9	95% H-UCL	739.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	769.9
95% Adjusted-CLT UCL (Chen-1995)	489.6	97.5% Chebyshev (MVUE) UCL	946.4
95% Modified-t UCL (Johnson-1978)	484	99% Chebyshev (MVUE) UCL	1293
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.495	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	233.1		
MLE of Mean	348.5		
MLE of Standard Deviation	285		
nu star	35.88		
Approximate Chi Square Value (.05)	23.17	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	469.8
Adjusted Chi Square Value	21.62	95% Jackknife UCL	480.9
		95% Standard Bootstrap UCL	462.5
Anderson-Darling Test Statistic	0.332	95% Bootstrap-t UCL	506.5
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	466.2
Kolmogorov-Smirnov Test Statistic	0.152	95% Percentile Bootstrap UCL	465.8
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	492.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	669.8
		97.5% Chebyshev(Mean, Sd) UCL	808.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1082
95% Approximate Gamma UCL	539.6		
95% Adjusted Gamma UCL	578.3		
Potential UCL to Use		Use 95% Approximate Gamma UCL	539.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	72	Minimum of Log Data	4.277
Maximum	1000	Maximum of Log Data	6.908
Mean	431.4	Mean of log Data	5.862
Median	402.5	SD of log Data	0.72
SD	269.2		
Coefficient of Variation	0.624		
Skewness	0.875		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	571	95% H-UCL	774.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	863.5
95% Adjusted-CLT UCL (Chen-1995)	580.2	97.5% Chebyshev (MVUE) UCL	1045
95% Modified-t UCL (Johnson-1978)	574.2	99% Chebyshev (MVUE) UCL	1402
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.001	**Data appear Normal at 5% Significance Level**	
Theta Star	215.6		
MLE of Mean	431.4		
MLE of Standard Deviation	305		
nu star	48.02		
Approximate Chi Square Value (.05)	33.11	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	559.2
Adjusted Chi Square Value	31.23	95% Jackknife UCL	571
		95% Standard Bootstrap UCL	555
Anderson-Darling Test Statistic	0.171	95% Bootstrap-t UCL	604.6
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	599.7
Kolmogorov-Smirnov Test Statistic	0.114	95% Percentile Bootstrap UCL	558.5
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	578.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	770.2
		97.5% Chebyshev(Mean, Sd) UCL	916.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1205
95% Approximate Gamma UCL	625.6		
95% Adjusted Gamma UCL	663.3		
Potential UCL to Use		Use 95% Student's-t UCL	571

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHRYSENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	51	Minimum of Log Data	3.932
Maximum	890	Maximum of Log Data	6.791
Mean	410.9	Mean of log Data	5.734
Median	340	SD of log Data	0.852
SD	298.4		
Coefficient of Variation	0.726		
Skewness	0.799		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	565.6	95% H-UCL	878.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	911.9
95% Adjusted-CLT UCL (Chen-1995)	573.9	97.5% Chebyshev (MVUE) UCL	1121
95% Modified-t UCL (Johnson-1978)	569	99% Chebyshev (MVUE) UCL	1533
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.486	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	276.5		
MLE of Mean	410.9		
MLE of Standard Deviation	337.1		
nu star	35.67		
Approximate Chi Square Value (.05)	23	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	552.6
Adjusted Chi Square Value	21.46	95% Jackknife UCL	565.6
		95% Standard Bootstrap UCL	545.6
Anderson-Darling Test Statistic	0.32	95% Bootstrap-t UCL	598.8
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	544.9
Kolmogorov-Smirnov Test Statistic	0.168	95% Percentile Bootstrap UCL	552.6
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	569.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	786.5
		97.5% Chebyshev(Mean, Sd) UCL	948.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1268
95% Approximate Gamma UCL	637.2		
95% Adjusted Gamma UCL	683		
Potential UCL to Use		Use 95% Approximate Gamma UCL	637.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	8.7	Minimum of Log Data	2.163
Maximum	180	Maximum of Log Data	5.193
Mean	91.39	Mean of log Data	4.234
Median	98.5	SD of log Data	0.907
SD	57.2		
Coefficient of Variation	0.626		
Skewness	0.068		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	121	95% H-UCL	220.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	220.1
95% Adjusted-CLT UCL (Chen-1995)	118.9	97.5% Chebyshev (MVUE) UCL	272.3
95% Modified-t UCL (Johnson-1978)	121.1	99% Chebyshev (MVUE) UCL	374.8
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.5	**Data appear Normal at 5% Significance Level**	
Theta Star	60.92		
MLE of Mean	91.39		
MLE of Standard Deviation	74.61		
nu star	36.01		
Approximate Chi Square Value (.05)	23.27	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	118.5
Adjusted Chi Square Value	21.72	95% Jackknife UCL	121
		95% Standard Bootstrap UCL	117.4
Anderson-Darling Test Statistic	0.371	95% Bootstrap-t UCL	122.4
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	116.4
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	118.2
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	117
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	163.4
		97.5% Chebyshev(Mean, Sd) UCL	194.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	255.7
95% Approximate Gamma UCL	141.4		
95% Adjusted Gamma UCL	151.5		
Potential UCL to Use		Use 95% Student's-t UCL	121

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	29	Minimum of Log Data	3.367
Maximum	660	Maximum of Log Data	6.492
Mean	275.7	Mean of log Data	5.306
Median	247.5	SD of log Data	0.919
SD	200.8		
Coefficient of Variation	0.728		
Skewness	0.778		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.927	Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	379.8	95% H-UCL	662.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	654.1
95% Adjusted-CLT UCL (Chen-1995)	384.9	97.5% Chebyshev (MVUE) UCL	810.1
95% Modified-t UCL (Johnson-1978)	381.9	99% Chebyshev (MVUE) UCL	1117
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.364	**Data appear Normal at 5% Significance Level**	
Theta Star	202.1		
MLE of Mean	275.7		
MLE of Standard Deviation	236		
nu star	32.74		
Approximate Chi Square Value (.05)	20.66	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	371
Adjusted Chi Square Value	19.21	95% Jackknife UCL	379.8
		95% Standard Bootstrap UCL	368.4
Anderson-Darling Test Statistic	0.144	95% Bootstrap-t UCL	402.3
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	410.7
Kolmogorov-Smirnov Test Statistic	0.108	95% Percentile Bootstrap UCL	369.5
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	375.8
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	528.4
		97.5% Chebyshev(Mean, Sd) UCL	637.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	852.5
95% Approximate Gamma UCL	436.9		
95% Adjusted Gamma UCL	469.9		
Potential UCL to Use		Use 95% Student's-t UCL	379.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ALUMINUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	4500	Minimum of Log Data	8.412
Maximum	12600	Maximum of Log Data	9.441
Mean	9358	Mean of log Data	9.104
Median	9840	SD of log Data	0.308
SD	2507		
Coefficient of Variation	0.268		
Skewness	-0.632		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	10657	95% H-UCL	11293
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	13076
95% Adjusted-CLT UCL (Chen-1995)	10407	97.5% Chebyshev (MVUE) UCL	14669
95% Modified-t UCL (Johnson-1978)	10635	99% Chebyshev (MVUE) UCL	17799
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.678	**Data appear Normal at 5% Significance Level**	
Theta Star	966.9		
MLE of Mean	9358		
MLE of Standard Deviation	3008		
nu star	232.3		
Approximate Chi Square Value (.05)	198	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	10548
Adjusted Chi Square Value	193.2	95% Jackknife UCL	10657
		95% Standard Bootstrap UCL	10519
Anderson-Darling Test Statistic	0.488	95% Bootstrap-t UCL	10519
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	10405
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	10484
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	10448
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12512
		97.5% Chebyshev(Mean, Sd) UCL	13877
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16558
95% Approximate Gamma UCL	10978		
95% Adjusted Gamma UCL	11252		
Potential UCL to Use		Use 95% Student's-t UCL	10657

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ARSENIC

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	10.5	Minimum of Log Data	2.351
Maximum	121	Maximum of Log Data	4.796
Mean	23.48	Mean of log Data	2.827
Median	13.45	SD of log Data	0.669
SD	31		
Coefficient of Variation	1.32		
Skewness	3.354		

Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.436	Shapiro Wilk Test Statistic	0.651
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	39.55	95% H-UCL	34.08
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	38.77
95% Adjusted-CLT UCL (Chen-1995)	47.46	97.5% Chebyshev (MVUE) UCL	46.59
95% Modified-t UCL (Johnson-1978)	41	99% Chebyshev (MVUE) UCL	61.97
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.304	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	18.01		
MLE of Mean	23.48		
MLE of Standard Deviation	20.57		
nu star	31.29		
Approximate Chi Square Value (.05)	19.51	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	38.2
Adjusted Chi Square Value	18.1	95% Jackknife UCL	39.55
		95% Standard Bootstrap UCL	37.71
Anderson-Darling Test Statistic	2.219	95% Bootstrap-t UCL	157
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	108.9
Kolmogorov-Smirnov Test Statistic	0.382	95% Percentile Bootstrap UCL	40.65
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	50.19
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	62.49
		97.5% Chebyshev(Mean, Sd) UCL	79.37
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	112.5
95% Approximate Gamma UCL	37.66		
95% Adjusted Gamma UCL	40.59		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	62.49

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BERYLLIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	0.24	Minimum of Log Data	-1.427
Maximum	1.1	Maximum of Log Data	0.0953
Mean	0.509	Mean of log Data	-0.754
Median	0.48	SD of log Data	0.406
SD	0.227		
Coefficient of Variation	0.447		
Skewness	1.611		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.861	Shapiro Wilk Test Statistic	0.97
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.627	95% H-UCL	0.656
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.771
95% Adjusted-CLT UCL (Chen-1995)	0.65	97.5% Chebyshev (MVUE) UCL	0.885
95% Modified-t UCL (Johnson-1978)	0.632	99% Chebyshev (MVUE) UCL	1.109
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.926	**Data appear Normal at 5% Significance Level**	
Theta Star	0.103		
MLE of Mean	0.509		
MLE of Standard Deviation	0.229		
nu star	118.2		
Approximate Chi Square Value (.05)	94.11	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	0.617
Adjusted Chi Square Value	90.83	95% Jackknife UCL	0.627
		95% Standard Bootstrap UCL	0.612
Anderson-Darling Test Statistic	0.293	95% Bootstrap-t UCL	0.682
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	1.112
Kolmogorov-Smirnov Test Statistic	0.135	95% Percentile Bootstrap UCL	0.623
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	0.647
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.795
		97.5% Chebyshev(Mean, Sd) UCL	0.919
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.162
95% Approximate Gamma UCL	0.64		
95% Adjusted Gamma UCL	0.663		
Potential UCL to Use		Use 95% Student's-t UCL	0.627

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CHROMIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		**Log-transformed Statistics**	
Minimum	6.9	Minimum of Log Data	1.932
Maximum	18.8	Maximum of Log Data	2.934
Mean	14.99	Mean of log Data	2.668
Median	16.6	SD of log Data	0.312
SD	3.855		
Coefficient of Variation	0.257		
Skewness	-1.118		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.844	Shapiro Wilk Test Statistic	0.793
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.99	95% H-UCL	18.16
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.05
95% Adjusted-CLT UCL (Chen-1995)	16.44	97.5% Chebyshev (MVUE) UCL	23.63
95% Modified-t UCL (Johnson-1978)	16.93	99% Chebyshev (MVUE) UCL	28.71
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.78	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1.533		
MLE of Mean	14.99		
MLE of Standard Deviation	4.794		
nu star	234.7		
Approximate Chi Square Value (.05)	200.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	16.82
Adjusted Chi Square Value	195.4	95% Jackknife UCL	16.99
		95% Standard Bootstrap UCL	16.77
Anderson-Darling Test Statistic	1.028	95% Bootstrap-t UCL	16.66
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	16.45
Kolmogorov-Smirnov Test Statistic	0.304	95% Percentile Bootstrap UCL	16.7
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	16.48
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.84
		97.5% Chebyshev(Mean, Sd) UCL	21.94
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.06
95% Approximate Gamma UCL	17.57		
95% Adjusted Gamma UCL	18.01		
Potential UCL to Use		Use 95% Student's-t UCL	16.99
		or 95% Modified-t UCL	16.93

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

COBALT

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	5.55	Minimum of Log Data	1.714
Maximum	95	Maximum of Log Data	4.554
Mean	16.41	Mean of log Data	2.384
Median	9.15	SD of log Data	0.739
SD	24.89		
Coefficient of Variation	1.517		
Skewness	3.394		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.424	Shapiro Wilk Test Statistic	0.697
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	29.32	95% H-UCL	24.74
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27.36
95% Adjusted-CLT UCL (Chen-1995)	35.75	97.5% Chebyshev (MVUE) UCL	33.2
95% Modified-t UCL (Johnson-1978)	30.49	99% Chebyshev (MVUE) UCL	44.66
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.068	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	15.37		
MLE of Mean	16.41		
MLE of Standard Deviation	15.88		
nu star	25.63		
Approximate Chi Square Value (.05)	15.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	28.23
Adjusted Chi Square Value	13.87	95% Jackknife UCL	29.32
		95% Standard Bootstrap UCL	27.75
Anderson-Darling Test Statistic	2.131	95% Bootstrap-t UCL	111.3
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	81.26
Kolmogorov-Smirnov Test Statistic	0.353	95% Percentile Bootstrap UCL	30.4
Kolmogorov-Smirnov 5% Critical Value	0.25	95% BCA Bootstrap UCL	38.08
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	47.73
		97.5% Chebyshev(Mean, Sd) UCL	61.28
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	87.91
95% Approximate Gamma UCL	27.87		
95% Adjusted Gamma UCL	30.32		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	47.73

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

IRON

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		**Log-transformed Statistics**	
Minimum	15300	Minimum of Log Data	9.636
Maximum	166000	Maximum of Log Data	12.02
Mean	35817	Mean of log Data	10.22
Median	24850	SD of log Data	0.607
SD	41303		
Coefficient of Variation	1.153		
Skewness	3.372		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.443	Shapiro Wilk Test Statistic	0.682
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	57229	95% H-UCL	50320
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	58283
95% Adjusted-CLT UCL (Chen-1995)	67831	97.5% Chebyshev (MVUE) UCL	69405
95% Modified-t UCL (Johnson-1978)	59164	99% Chebyshev (MVUE) UCL	91251
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.604	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	22334		
MLE of Mean	35817		
MLE of Standard Deviation	28283		
nu star	38.49		
Approximate Chi Square Value (.05)	25.28	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	55429
Adjusted Chi Square Value	23.66	95% Jackknife UCL	57229
		95% Standard Bootstrap UCL	54585
Anderson-Darling Test Statistic	2.105	95% Bootstrap-t UCL	164436
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	165940
Kolmogorov-Smirnov Test Statistic	0.366	95% Percentile Bootstrap UCL	59275
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	71775
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	87789
		97.5% Chebyshev(Mean, Sd) UCL	110277
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	154451
95% Approximate Gamma UCL	54530		
95% Adjusted Gamma UCL	58273		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	87789

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

MANGANESE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	112	Minimum of Log Data	4.718
Maximum	982	Maximum of Log Data	6.89
Mean	291.5	Mean of log Data	5.465
Median	209.5	SD of log Data	0.615
SD	244.7		
Coefficient of Variation	0.84		
Skewness	2.418		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.682	Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	418.4	95% H-UCL	437.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	505.2
95% Adjusted-CLT UCL (Chen-1995)	460.4	97.5% Chebyshev (MVUE) UCL	602.4
95% Modified-t UCL (Johnson-1978)	426.6	99% Chebyshev (MVUE) UCL	793.3

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.96	**Data appear Lognormal at 5% Significance Level**	
Theta Star	148.7		
MLE of Mean	291.5		
MLE of Standard Deviation	208.2		
nu star	47.05		
Approximate Chi Square Value (.05)	32.31	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	407.7
Adjusted Chi Square Value	30.45	95% Jackknife UCL	418.4
		95% Standard Bootstrap UCL	399.4
Anderson-Darling Test Statistic	0.859	95% Bootstrap-t UCL	663.7
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	918.1
Kolmogorov-Smirnov Test Statistic	0.261	95% Percentile Bootstrap UCL	415.8
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	464.7
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	599.4
		97.5% Chebyshev(Mean, Sd) UCL	732.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	994.4
95% Approximate Gamma UCL	424.5		
95% Adjusted Gamma UCL	450.4		

MANGANESE (Continued)

Potential UCL to Use	Use 95% H-UCL 437.1

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX H.6

SAMPLE CALCULATIONS

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL CONSTRUCTION WORKERS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew O'Brien	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of surface soil at Tank Farm 4.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1E-06 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	15.8	mg/kg	Chemical: Arsenic
IR	=	330	mg/day	
EF	=	130	days/year	
ED	=	1	years	
FI	=	1		
CF	=	1E-06	kg/mg	
BW	=	70	kg	
ATc	=	25,550	days	
ATnc	=	365	days	
CSFo	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-04	(mg/kg/day)	

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL CONSTRUCTION WORKERS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	CHECKED BY: Martha B. Shaw	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{15.8 \text{ mg/kg} \times 330 \text{ mg/day} \times 130 \text{ days/year} \times 1 \text{ years} \times 1 \times 1E\text{-}06 \text{ kg/mg}}{70 \text{ kg} \times 25550 \text{ days}}$$

IEXc = 3.79E-07 mg/kg/day

ILCR = 3.79E-07 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 5.7E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{15.8 \text{ mg/kg} \times 330 \text{ mg/day} \times 130 \text{ days/year} \times 1 \text{ years} \times 1 \times 1E\text{-}06 \text{ kg/mg}}{70 \text{ kg} \times 365 \text{ days}}$$

IEXnc = 2.65E-05 mg/kg/day

HQ = 2.65E-05 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 8.8E-02

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL CONSTRUCTION WORKERS		
BASED ON: USEPA, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface soil at Tank Farm 4.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
CF	=	conversion factor (1E-06 kg/mg)
SA	=	skin surface available for contact (cm2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	15.8	mg/kg	Chemical: Arsenic
CF	=	1E-06	kg/mg	
SA	=	3,300	cm^2/day	
AF	=	0.3	mg/cm^2	
ABS	=	0.03		
EF	=	130	days/year	
ED	=	1	years	
BW	=	70	kg	
ATc	=	25,550	days	
ATnc	=	365	days	
CSFd	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDd	=	3.0E-04	(mg/kg/day)	

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL CONSTRUCTION WORKERS		
BASED ON: USEPA, JULY 2004		
BY: R. JUPIN	CHECKED BY: [illegible]	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{15.8 \text{ mg/kg} \times 1E\text{-}06 \text{ kg/mg} \times 3300 \text{ cm2/day} \times 0.3 \text{ mg/cm2} \times 0.03 \times 130 \text{ days/year} \times 1 \text{ years}}{70 \text{ kg} \times 25550 \text{ days}}$$

DEXc = 3.41E-08 mg/kg/day

ILCR = 3.41E-08 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 5.1E-08

EXAMPLE NONCARCINOGENIC CALCULATION

$$DEXnc = \frac{15.8 \text{ mg/kg} \times 1E\text{-}06 \text{ kg/mg} \times 3300 \text{ cm2/day} \times 0.3 \text{ mg/cm2} \times 0.03 \times 130 \text{ days/year} \times 1 \text{ years}}{70 \text{ kg} \times 365 \text{ days}}$$

DEXnc = 2.39E-06 mg/kg/day

HQ = 2.39E-06 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 8.0E-03

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGATIVE DUST EMISSIONS CONSTRUCTION WORKERS		
BASED ON: USEPA, JANUARY 2009		
BY: R. JUPIN	CHECKED BY: Matthew J. Kraus	DATE: 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from inhalation of surface soil at Tank Farm 4.

EQUATION:

$$EC = \frac{Ca \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$$

Where:

EC	=	exposure concentration (mg/m3)
Ca	=	exposure point concentration in air (mg/m3)
	=	Cs x 1/PEF
Cs	=	exposure point concentration in soil (mg/kg)
PEF	=	particulate emission factor (m3/kg)
ET	=	exposure time (hrs/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (hours)
IUR	=	inhalation unit risk ($(ug/m3)^{-1}$)
RfC	=	inhalation reference concentration (mg/m3)

RISKS:

ILCR (Carcinogens) = Exposure Concentratin (mg/m3) x IURi (ug/m3)-1 x 1000 ug/mg
HQ (Noncarcinogens) = Exposure Concentration (mg/m3) / RFCi (mg/m3)

ASSUMPTIONS:

Cs	=	15.8	mg/kg	Chemical: Arsenic
PEF	=	1.40E+06	m3/kg	
Ca	=	1.13E-05	mg/m3	
ET	=	8	hours/day	
EF	=	130	days/year	
ED	=	1	years	
ATc	=	25,550	days	
ATnc	=	365	days	
IUR	=	4.3E-03	$(ug/m3)^{-1}$	
RfC	=	1.5E-05	(mg/m3)	

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGATIVE DUST EMISSIONS CONSTRUCTION WORKERS		
BASED ON: USEPA, JANUARY 2009		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{1.13E\text{-}05 \text{ mg/m3} \times 8 \text{ hours/day} \times 130 \text{ days/year} \times 1 \text{ years}}{25550 \text{ days} \times 24 \text{ hours/day}}$$

IEXc = 1.91E-08 mg/m3

ILCR = 1.91E-08 mg/m3 x 4.30E-03 (ug/m3)-1 x 1000 ug/mg = Incremental Lifetime Cancer Risk

ILCR = 8.2E-08

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{1.13E\text{-}05 \text{ mg/m3} \times 8 \text{ hours/day} \times 130 \text{ days/year} \times 1 \text{ years}}{365 \text{ days} \times 24 \text{ hours/day}}$$

IEXnc = 1.34E-06 mg/m3

HQ = 1.34E-06 mg/m3 / 1.50E-05 (mg/m3) = Hazard Quotient

HQ **8.9E-02**

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF PARTICUALATE EMISSION FACTOR FOR CONSTRUCTION WORKERS		
BASED ON: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (USEPA, December 2002)		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

Equation 5-5
Derivation of the Particulate Emission Factor
Construction Scenario - Construction Worker

$$PEF_{sc} = Q/C_{sr} \times \frac{1}{F_D} \times \left[\frac{T \times A_R}{556 \times (W/3)^{0.4} \times \frac{(365d/yr - p)}{365d/yr} \times \Sigma VKT} \right]$$

Parameter/Definition (units)	Default
PEF_{sc}/subchronic road particulate emission factor (m^3/kg)	site-specific
Q/C_{sr}/ inverse of the ratio of the 1-h geometric mean air concentration to the emission flux along a straight road segment bisecting a square site (g/m^2-s per kg/m^3)	23.02[a] (Equation 5-6)
F_D/dispersion correction factor (unitless)	0.185 (Appendix E)
T/total time over which construction occurs (s)	site-specific
A_R/surface area of contaminated road segment (m^2) L_R/length of road segment (ft) W_R/width of road segment (ft)	274.213 ($A_R = L_R \times W_R \times 0.092903 m^2/ft^2$)
W/mean vehicle weight (tons)	site-specific
p/number of days with at least 0.01 inches of precipitation (days/year)	site-specific (Exhibit 5-2)
ΣVKT/sum of fleet vehicle kilometers traveled during the exposure duration (km)	site-specific

[a] Assumes a 0.5 acre site

Calculation of PEF for Construction Workers

Q/C	23.02	(g/m^2-s per kg/m^3)	
Fd	0.185	dispersion correction factor (unitless)	
T	3.74E+06	sec	3600 sec/hr x 8hr/day x 130 days/yr
A_R	274.213	m^2	
W	8	tons	
p	135	day/year	
VKT	175.5	km	30 vehicles x 0.045 km/day x 130 days

PEF = 1.40E+06 m^3/kg

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF THE PARTICULATE EMISSION FACTOR (PEF) FOR RESIDENTIAL AND COMMERCIAL/INDUSTRIAL EXPOSURES		
BASED ON: SUPPLEMENTAL GUIDANCE FOR DEVELOPING SOIL SCREENING LEVELS FOR SUPERFUND SITES (USEPA, DECEMBER, 2002)		
BY: R. JUPIN	**CHECKED BY:** Matthew D. Nelson	**DATE:** 10/6/2010

PURPOSE: To calculate the particulate emission factor for residential and commercial/industrial exposure scenarios.

EQUATIONS:

$$PEF = Q/C_{wind} \times \frac{3600 \text{ sec/hr}}{0.036 \times (1 - V) \times (U_m/U_t)^3 \times F(x)}$$

$$Q/C_{wind} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

Where:

PEF	=	particulate emission factor (m^3/kg)
Q/C_{wind}	=	Inverse of mean conc. at center of source (g/m^2-s per kg/m^3).
V	=	fraction of vegetative cover (unitless)
U_m	=	mean annual windspeed (m/sec)
U_t	=	equivalent threshold value of windspeed at 7m (m/sec)
F(x)	=	function dependent on Um/Ut derived using Cowherd et al. (1985) (unitless)
A,B,C	=	constants based on air dispersion modeling for specific climate zones
A_{site}	=	areal extent of the site or contamination (acres)

ASSUMPTIONS:

V	=	0.5	unitless	
U_m	=	3.84	m/sec	Values are for Hartford, Connecticut.
U_t	=	11.32	m/sec	
F(x)	=	0.0345	unitless	
A	=	12.5907	unitless	
B	=	18.8368	unitless	
C	=	215.4377	unitless	
A_{site}	=	0.5	acres	

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF THE PARTICULATE EMISSION FACTOR (PEF) FOR RESIDENTIAL AND COMMERCIAL/INDUSTRIAL EXPOSURES		
BASED ON: SUPPLEMENTAL GUIDANCE FOR DEVELOPING SOIL SCREENING LEVELS FOR SUPERFUND SITES (USEPA, DECEMBER, 2002)		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

EXAMPLE CALCULATION FOR Q/C_{wind}

Q/C_{wind} = 12.5907 x exp[(ln(0.5) - 18.8368)^2 / 215.4377]

Q/C_{wind} = 73.95045 g/m2-s per kg/m3

EXAMPLE CALCULATION FOR PEF

$$PEF = 73.95045 \times \frac{3600}{0.036 \times (1 - 0.5) \times (3.84/11.32)^3 \times 0.0345}$$

PEF = 1.10E+10 m^3/kg

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FOR MUTAGENIC CHEMICALS - HYPOTHETICAL CHILD RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:** Matthew Rowe	**DATE:** 10/6/2010

PURPOSE: To estimate intake and cancer risks for mutagenic chemicals from incidental ingestion of surface soil at Tank Farm 4

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Benzo(a)pyrene
IR	=	200	mg/day	
EF	=	350	days/year	
ED_1	=	2	years	
ED_2	=	4	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	15	kg	
AT	=	25,550	days	
CSFo	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	10		
$ADAF_2$	=	3		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FOR MUTAGENIC CHEMICALS - HYPOTHETICAL CHILD RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEX_1 = \frac{11 \text{ mg/kg} \times 200 \text{ mg/day} \times 350 \text{ days/year} \times 2 \text{ years} \times 1 \times 1.0\text{E-06 kg/mg}}{15 \text{ kg} \times 25550 \text{ days}} \times 10$$

IEX_1 = 4.02E-05 mg/kg/day

$$IEX_2 = \frac{11 \text{ mg/kg} \times 200 \text{ mg/day} \times 350 \text{ days/year} \times 4 \text{ years} \times 1 \times 1.0\text{E-06 kg/mg}}{15 \text{ kg} \times 25550 \text{ days}} \times 3$$

IEX_2 = 2.41E-05 mg/kg/day

ILCR = (4.02E-05 mg/kg/day + 2.41E-05 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 4.7E-04

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FOR MUTAGENIC CHEMICALS HYPOTHETICAL CHILD RESIDENTS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

PURPOSE: To estimate intake and cancer risks for mutagenic chemicals from dermal contact with surface soil at Tank Farm 4.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT} \times ADAF$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Benzo(a)pyrene
CF	=	1.0E-06	kg/mg	
SA	=	2,800	cm^2/day	
AF	=	0.2	mg/cm^2	
ABS	=	0.13		
EF	=	350	days/year	
ED_1	=	2	years	
ED_2	=	4	years	
BW	=	15	kg	
AT	=	25,550	days	
CSFd	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	10		
$ADAF_2$	=	3		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FOR MUTAGENIC CHEMICALS HYPOTHETICAL CHILD RESIDENTS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 2800\ cm2/day \times 0.2\ mg/cm2 \times 0.13 \times 350\ days/year \times 2\ years}{15\ kg \times 25550\ days} \times 10$$

DEXc = 1.46E-05 mg/kg/day

$$DEXc = \frac{11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 2800\ cm2/day \times 0.2\ mg/cm2 \times 0.13 \times 350\ days/year \times 4\ years}{15\ kg \times 25550\ days} \times 3$$

DEXc = 8.78E-06 mg/kg/day

ILCR = (1.46E-05 mg/kg/day + 8.78E-06 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 1.7E-04

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGATIVE DUST EMISSIONS FOR MUTAGENIC CHEMICALS - HYPOTHETICAL CHILD RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:** Matthew D'Neno	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic risks for mutagenic chemicals from inhalation of surface soil at Tank Farm 4.

EQUATION:

$$EC = \frac{Ca \times ET \times EF \times ED}{AT \times 24\ hours/day} \times ADAF$$

Where:

EC	=	estimated exposure concentration (mg/m3)
Ca	=	exposure point concentration in air (mg/m3)
	=	Cs x 1/PEF
Cs	=	exposure point concentration in soil (mg/kg)
PEF	=	particulate emission factor (m3/kg)
ET	=	exposure time (hrs/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
AT	=	averaging time (hours)
ADAF	=	age-dependent adjustment factor
IUR	=	inhalation unit risk($(ug/mg)^{-1}$)

RISKS:

ILCR = Exposure concentration (mg/m3) x IURi (ug/m3)-1 x 1000 ug/mg

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Benzo(a)pyrene
PEF	=	1.10E+10	m3/kg	
Ca	=	1.00E-09	mg/m3	
ET	=	24	hr/day	
EF	=	350	days/year	
ED_1	=	2	years	
ED_2	=	4	years	
ATc	=	25,550	days	
IUR	=	1.1E-03	$(ug/m3)^{-1}$	
$ADAF_1$	=	10		
$ADAF_2$	=	3		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGATIVE DUST EMISSIONS FOR MUTAGENIC CHEMICALS - HYPOTHETICAL CHILD RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	CHECKED BY: Matthew J Nauss	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$EC = \frac{1.00E\text{-}09\ mg/m3 \times 24\ hr/day \times 350\ days/year \times 2\ years}{25550\ days \times 24\ hours/day} \times 10$$

EC = 2.74E-10 mg/m3

$$EC = \frac{1.00E\text{-}09\ mg/m3 \times 24\ hr/day \times 350\ days/year \times 4\ years}{25550\ days \times 24\ hours/day} \times 3$$

EC = 1.64E-10 mg/m3

ILCR = (2.74E-10 mg/m3 + 1.64E-10 mg/m3) x 1.10E-03 (ug/m3)-1 x 1000 ug/mg

ILCR = 4.8E-10

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FOR MUTAGENIC CHEMICALS - HYPOTHETICAL ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake and cancer risks for mutagenic chemicals from incidental ingestion of surface soil at Tank Farm 4.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Benzo(a)pyrene
IR	=	100	mg/day	
EF	=	350	days/year	
ED_1	=	10	years	
ED_2	=	14	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	70	kg	
AT	=	25,550	days	
CSFo	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	3		
$ADAF_2$	=	1		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FOR MUTAGENIC CHEMICALS - HYPOTHETICAL ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	CHECKED BY: Matthew J. Blake	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEX_1 = \frac{11 \text{ mg/kg} \times 100 \text{ mg/day} \times 350 \text{ days/year} \times 10 \text{ years} \times 1 \times 1.0\text{E-06 kg/mg}}{70 \text{ kg} \times 25550 \text{ days}} \times 3$$

IEX_1 = 6.46E-06 mg/kg/day

$$IEX_2 = \frac{11 \text{ mg/kg} \times 100 \text{ mg/day} \times 350 \text{ days/year} \times 14 \text{ years} \times 1 \times 1.0\text{E-06 kg/mg}}{70 \text{ kg} \times 25550 \text{ days}} \times 1$$

IEX_2 = 3.01E-06 mg/kg/day

ILCR = (6.46E-06 mg/kg/day + 3.01E-06 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 6.9E-05

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FOR MUTAGENIC CHEMICALS HYPOTHETICAL ADULT RESIDENTS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake and cancer risks for mutagenic chemicals from dermal contact with surface soil at Tank Farm 4.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT} \times ADAF$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Benzo(a)pyrene
CF	=	1.0E-06	kg/mg	
SA	=	5,700	cm^2/day	
AF	=	0.07	mg/cm^2	
ABS	=	0.13		
EF	=	350	days/year	
ED_1	=	10	years	
ED_2	=	14	years	
BW	=	70	kg	
AT	=	25,550	days	
CSFd	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	3		
$ADAF_2$	=	1		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FOR MUTAGENIC CHEMICALS HYPOTHETICAL ADULT RESIDENTS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 5700\ cm2/day \times 0.07\ mg/cm2 \times 0.13 \times 350\ days/year \times 10\ years}{70\ kg \times 25550\ days} \times 3$$

DEXc = 3.35E-06 mg/kg/day

$$DEXc = \frac{11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 5700\ cm2/day \times 0.07\ mg/cm2 \times 0.13 \times 350\ days/year \times 14\ years}{70\ kg \times 25550\ days} \times 1$$

DEXc = 1.56E-06 mg/kg/day

ILCR = (3.35E-06 mg/kg/day + 1.56E-06 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 3.6E-05

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGATIVE DUST EMISSIONS FOR MUTAGENIC CHEMICALS - HYPOTHETICAL ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic risks for mutagenic chemicals from inhalation of surface soil at Tank Farm 4.

EQUATION:

$$EC = \frac{Ca \times ET \times EF \times ED}{AT \times 24\ hours/day} \times ADAF$$

Where:

EC	=	estimated exposure intake (mg/kg/day)
Ca	=	exposure point concentration in air (mg/m3)
	=	Cs x 1/PEF
Cs	=	exposure point concentration in soil (mg/kg)
PEF	=	particulate emission factor (m3/kg)
IR	=	inhlation rate (m3/hr)
ET	=	exposure time (hrs/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (hours)
ADAF	=	age-dependent adjustment factor
IURi	=	inhalation unit risk($(ug/mg)^{-1}$)

RISKS:

ILCR = Exposure concentration (mg/m3) x IUR (ug/m3)-1 x 1000 ug/mg

ASSUMPTIONS:

Cs	=	11	mg/kg	Chemical: Benzo(a)pyrene
PEF	=	1.10E+10	m3/kg	
Ca	=	1.00E-09	mg/m3	
ET	=	24	hr/day	
EF	=	350	days/year	
ED_1	=	10	years	
ED_2	=	14	years	
ATc	=	25,550	days	
IUR	=	1.1E-03	$(ug/m3)^{-1}$	
$ADAF_1$	=	3		
$ADAF_2$	=	1		

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGATIVE DUST EMISSIONS FOR MUTAGENIC CHEMICALS - HYPOTHETICAL ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:** Matthew Nagy	**DATE:** 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$EC = \frac{1.00E\text{-}09\ mg/m3 \times 24\ hr/day \times 350\ days/year \times 10\ years}{25550\ days \times 24\ hours/day} \times 3$$

EC = 4.11E-10 mg/m3

$$EC = \frac{1.00E\text{-}09\ mg/m3 \times 24\ hr/day \times 350\ days/year \times 14\ years}{25550\ days \times 24\ hours/day} \times 1$$

EC = 1.92E-10 mg/m3

ILCR = (4.11E-10 mg/m3 + 1.92E-10 mg/m3) x 1.10E-03 (ug/m3)-1 x 1000 ug/mg

ILCR = 6.6E-10

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INGESTION OF GROUNDWATER ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew O'Neill	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from ingestion of groundwater at Tank Farm 5.

EQUATION:

$$IEX = \frac{Cgw \times CF \times IR \times EF \times ED}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cgw	=	exposure point concentration in groundwater (ug/L)
CF	=	conversion factor (1.0E-3 mg/ug)
IR	=	ingestion rate (L/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cgw	=	1.2	ug/L	Chemical: Benzene
IR	=	2	L/day	
CF	=	1.0E-03	mg/ug	
EF	=	350	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25,550	days	
ATnc	=	8,760	days	
CSFo	=	5.5E-02	$(mg/kg/day)^{-1}$	
RfDo	=	4.0E-03	(mg/kg/day)	

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INGESTION OF GROUNDWATER ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{1.2\ ug/L \times 0.001\ mg/ug \times 2\ L/day \times 350\ days/year \times 24\ years}{70\ kg \times 25550\ days}$$

IEXc = 1.13E-05 mg/kg/day

ILCR = 1.13E-05 mg/kg/day x 5.50E-02 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 6.2E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{1.2\ ug/L \times 0.001\ mg/ug \times 2\ L/day \times 350\ days/year \times 24\ years}{70\ kg \times 8760\ days}$$

IEXnc = 3.29E-05 mg/kg/day

$$HQ = \frac{3.29E\text{-}05\ mg/kg/day}{4.00E\text{-}03\ (mg/kg/day)} = \text{Hazard Quotient}$$

HQ = 8.2E-03

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH GROUNDWATER ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with groundwater at Tank Farm 5.

EQUATION:

$$DAD = \frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$$

Where:

DAD	=	dermally absorbed dose (mg/kg/day)
DAevent	=	absorbed does per event (mg/cm^2/event)
EV	=	event frequency (events/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
A	=	skin surface available for contact (cm^2)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = DAD (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = DAD (mg/kg/day) / RFDd (mg/kg/day)

EQUATIONS for DAevent:

For Inorganics:

DAevent = Kp x Cw x CF x tevent

For Organics:

$$\text{If } tevent \le t^*, \text{ then: } DAevent = 2 \times FA \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$$

$$\text{If } tevent > t^*, \text{ then: } DAevent = FA \times Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$$

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH GROUNDWATER ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	CHECKED BY: Matthew Mayer	DATE: 10/6/2010

Where:

Kp	=	permeability coefficient from water (cm/hr)
Cgw	=	concentration of chemical in groundwater (mg/L)
tevent	=	duration of event (hr/event)
CF	=	conversion factor (0.001 L/cm^3)
t*	=	time it takes to reach steady-state (hr/event)
τ	=	lag time (hr/event)
B	=	Bunge Model Constant (dimensionless)

EXAMPLE CALCULATION OF DAevent

ASSUMPTIONS:

Cgw	=	0.0012	mg/L	Chemical: Benzene
Kp	=	1.49E-02	cm/hr	
FA	=	1	unitless	
tevent	=	0.58	hr/event	
CF	=	0.001	L/cm^3	
t*	=	0.70	hr/event	
τ	=	0.29	hr/event	
B	=	0.051		

tevent < t*, therefore,

$$DAevent = (2 \times 0.0149\ cm/hr)\ (1)\ (0.0012\ mg/L)\ (0.001\ L/cm3) \times \sqrt{\frac{6 \times 0.292\ hr/event \times 0.58\ hr/event}{\pi}}$$

DAevent = 2.03E-08 mg/cm^2-event

RISK CALCULATIONS

ASSUMPTIONS:

A	=	18,000	cm^2
EV	=	1	event/day
ED	=	24	years
EF	=	350	days/year
BW	=	70	kg
ATc	=	25,550	days
ATnc	=	8,760	days
CSFd	=	5.5E-02	(mg/kg/day)$^{-1}$
RfDd	=	4.0E-03	(mg/kg/day)

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH GROUNDWATER ADULT RESIDENTS		
BASED ON: USEPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DADc = \frac{2.03E\text{-}08 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 350 \text{ days/year} \times 18000 \text{ cm2}}{70 \text{ kg} \times 25550 \text{ days}}$$

DADc = 1.72E-06 mg/kg/day

DADc = 1.72E-06 mg/kg/day x 5.50E-02 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 9.5E-08

EXAMPLE NONCARCINOGENIC CALCULATION

$$DADnc = \frac{2.03E\text{-}08 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 350 \text{ days/year} \times 18000 \text{ cm2}}{70 \text{ kg} \times 8760 \text{ days}}$$

DADnc = 5.01E-06 mg/kg/day

HQ = 5.01E-06 mg/kg/day / 4.00E-03 (mg/kg/day) = Hazard Quotient

HQ = 1.3E-03

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: ESTIMATION OF AMBIENT AIR CONCENTRATIONS IN A TRENCH RESULTING FROM VOLATILE EMISSIONS FROM GROUNDWATER.		
BASED ON: VDEQ, 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To calculate ambient air concentrations resulting from volatilization of benzene from groundwater at Tank Farm 5.

Ctrench = CGW x VF

Where:

Ctrench = concentration of contaminant in the trench $\mu g/m^3$
CGW = concentration of contaminant in groundwater µg/L
VF = volatilization factor L/m^3

1. Calculate kiG (gas-phase mass transfer coefficient of component i)

$kiG = (MWH2O/MWi)^{0.335} \times (T/298)^{1.005} \times kG, H2O$

Where:

kiG = gas-phase mass transfer coefficient of component i cm/s
MW_{H2O} = molecular weight of water = 18 g/mol
MW_B = molecular weight of benzene = 78.1 g/mol
kG,H_2O = gas-phase mass transfer coefficient of water vapor at 25°C cm/s = 0.833 cm/s
T = average system absolute temperature = 298
The value of kG, H_2O is 0.833 cm/s (Superfund Exposure Assessment Manual, U. S. EPA, April 1988)

$kiG = (18/78.1)^{0.335} \times (298/298)^{1.005} \times 0.833$ cm/s = 5.09E-01 cm/s

2. Calculate kiL (liquid-phase mass transfer coefficient of component i)

$kiL = (MWO_2/MWi)^{0.5} \times (T/298) \times kL, O_2$

Where:
kiL = liquid-phase mass transfer coefficient of component i cm/s
MW_{O2} = molecular weight of O_2 = 32 g/mol
MW_B = molecular weight of benzene = 78.1 g/mol
T = average system absolute temperature = 298
kL, O_2 = liquid-phase mass transfer coefficient of oxygen at 25°C cm/s = 0.002 cm/s

$kiL = (32/78.15)^{0.5} \times (298/298) \times 0.002$ cm/s = 1.28E-03 cm/s

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: ESTIMATION OF AMBIENT AIR CONCENTRATIONS IN A TRENCH RESULTING FROM VOLATILE EMISSIONS FROM GROUNDWATER.		
BASED ON: VDEQ, 2004		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

3. Calculate Ki (overall mass transfer coefficient of contaminant)

Ki = 1 / {(1/kiL) + [(RT) / (Hi x kiG)]}

Where:

kiL = liquid-phase mass transfer coefficient of i cm/s =	1.28E-03
R = ideal gas constant atm-m^3/mole-°K =	8.20E-05
T = average system absolute temperature =	298
Hi = Henry's Law constant of benzene (atm-m^3/mol) =	5.55E-03
KiG = gas-phase mass transfer coefficient of i cm/s	5.09E-01

Ki = 1 / {(1/1.28E-3) + [(298 x 8.2E-5) / (5.55E-3 x 0.509]} = 1.27E-03 cm/s

4. Calculation of VF (Volatilization Factor)

VF = (Ki x A x F x 10^{-3} x 10^4 x 3,600) / (ACH x V)

Where:

VF = volatilization factor (L/m^3)		
Ki = overall mass transfer coefficient of contaminant =		1.27E-03 cm/s
A = area of the trench =		8.18 m^2
F = fraction of floor through which contaminant can enter (unitless) =		1
ACH = air changes per hour =		360 h^{-1}
V = volume of trench =		24.92 m^3
10^{-3} = conversion factor L/cm^3	0.001	
10^4 = conversion factor cm^2/m^2	10000	
3,600 = conversion factor seconds/hr	3600	

VF = (9.82E-4 x 8.18 x 1 x 10^{-3} x 10^4 x 3,600) / (360 x 24.92) = 4.15E-02 L/m^3

5. Calculation of C_{trench} (concentration of contaminant in the trench)

C_{trench} = C_{GW} x VF

Where:

C_{trench} = concentration of contaminant in the trench (µg/m^3)	
C_{GW} = concentration of benzene in groundwater =	1.2 µg/L
VF = volatilization factor =	4.15E-02 L/m^3

C_{trench} = 1.2 µg/L x 4.15E-02 L/m3 = **4.99E-02 µg/m^3**

4.99E-05 mg/m^3

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF VOLATILES FROM GROUNDWATER - CONSTRUCTION WORKERS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew Drake	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from inhalation of volatiles from groundwater at Tank Farm 5.

EQUATION:

$$EC = \frac{Ca \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$$

Where:

EC	=	exposure concentration (mg/m3)
Ca	=	exposure point concentration in air (mg/m3)
ET	=	exposure time (hrs/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
AT	=	averaging time (days)
IURi	=	inhalation unit risk ($(ug/m3)^{-1}$)
RfCi	=	inhalation reference concentration (mg/m3)

RISKS:

ILCR (Carcinogens) = Exposure Concentration (mg/m3) x IURi (ug/m3)-1 x 1000 ug/mg
HQ (Noncarcinogens) = Exposure Concentration (mg/m3) / RFCi (mg/m3)

ASSUMPTIONS:

Ca	=	4.99E-05	mg/m3	Chemical: Benzene
ET	=	8	hr/day	
EF	=	130	days/year	
ED	=	1	years	
ATc	=	25,550	days	
ATnc	=	365	days	
IURi	=	7.8E-06	$(ug/m^3)^{-1}$	
RfCi	=	3.0E-02	mg/m^3	

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF VOLATILES FROM GROUNDWATER - CONSTRUCTION WORKERS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	**CHECKED BY:** Matthew O'Rourke	**DATE:** 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{4.99E\text{-}05 \text{ mg/m3} \times 8 \text{ hr/day} \times 130 \text{ days/year} \times 1 \text{ years}}{25550 \text{ days} \times 24 \text{ hours/day}}$$

IEXc = 8.45E-08 mg/m3

ILCR = 8.45E-08 mg/m3 x 7.80E-06 (ug/m3)-1 x 1000 ug/mg = Incremental Lifetime Cancer Risk

ILCR = 6.6E-10

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{4.99E\text{-}05 \text{ mg/m3} \times 8 \text{ hr/day} \times 130 \text{ days/year} \times 1 \text{ years}}{365 \text{ days} \times 24 \text{ hours/day}}$$

IEXnc = 5.92E-06 mg/m3

HQ = 5.92E-06 mg/m3 / 3.00E-02 mg/m3 = Hazard Quotient

HQ **2.0E-04**

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface water at Tank Farm 5.

EQUATION:

$$DAD = \frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$$

Where:

DAD	=	dermally absorbed dose (mg/kg/day)
DAevent	=	absorbed does per event (mg/cm^2/event)
EV	=	event frequency (events/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
A	=	skin surface available for contact (cm^2)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = DAD (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = DAD (mg/kg/day) / RFDd (mg/kg/day)

EQUATIONS for DAevent:

For Inorganics:

DAevent = Kp x Cw x CF x tevent

For Organics:

$$\text{If } tevent \le t^*, \text{ then: } DAevent = 2 \times FA \times Kp \times Cw \times CF \times \sqrt{\frac{6 \times tau \times tevent}{\pi}}$$

$$\text{If } tevent > t^*, \text{ then: } DAevent = FA \times Kp \times Cw \times CF \times \left[\frac{tevent}{1+B} + 2 \times tau \times \left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$$

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

Where:

Kp	=	permeability coefficient from water (cm/hr)
Cgw	=	concentration of chemical in groundwater (mg/L)
tevent	=	duration of event (hr/event)
CF	=	conversion factor (0.001 L/cm^3)
t*	=	time it takes to reach steady-state (hr/event)
τ	=	lag time (hr/event)
B	=	Bunge Model Constant (dimensionless)

EXAMPLE CALCULATION OF DAevent

ASSUMPTIONS:

Cgw	=	0.001	mg/L	Chemical: Chloroform
Kp	=	6.83E-03	cm/hr	
FA	=	1	unitless	
tevent	=	1	hr/event	
CF	=	0.001	L/cm^3	
t*	=	1.19	hr/event	
τ	=	0.498	hr/event	
B	=	0.0287		

tevent < t*, therefore,

$$DAevent = (2 \times 0.00683 \text{ cm/hr})\ (1)\ (0.001 \text{ mg/L})\ (0.001 \text{ L/cm3}) \times \sqrt{\frac{6 \times 0.498 \text{ hr/event} \times 1 \text{ hr/event}}{\pi}}$$

DAevent = 1.33E-08 mg/cm^2-event

RISK CALCULATIONS

ASSUMPTIONS:

A	=	6,880	cm^2
EV	=	1	event/day
ED	=	24	years
EF	=	48	days/year
BW	=	70	kg
ATc	=	25,550	days
ATnc	=	8,760	days
CSFd	=	3.1E-02	(mg/kg/day)$^{-1}$
RfDd	=	1.0E-02	(mg/kg/day)

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DADc = \frac{1.33E\text{-}08 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 48 \text{ days/year} \times 6880 \text{ cm2}}{70 \text{ kg} \times 25550 \text{ days}}$$

DADc = 5.90E-08 mg/kg/day

DADc = 5.90E-08 mg/kg/day x 3.10E-02 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 1.8E-09

EXAMPLE NONCARCINOGENIC CALCULATION

$$DADnc = \frac{1.33E\text{-}08 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 48 \text{ days/year} \times 6880 \text{ cm2}}{70 \text{ kg} \times 8760 \text{ days}}$$

DADnc = 1.72E-07 mg/kg/day

HQ = 1.72E-07 mg/kg/day / 1.00E-02 (mg/kg/day) = Hazard Quotient

HQ = 1.7E-05

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of sediment at Tank Farm 5.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	62.5	mg/kg	Chemical: Arsenic
IR	=	100	mg/day	
EF	=	48	days/year	
ED	=	24	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	70	kg	
ATc	=	25,550	days	
ATnc	=	8,760	days	
CSFo	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-04	(mg/kg/day)	

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{62.5 \text{ mg/kg} \times 100 \text{ mg/day} \times 48 \text{ days/year} \times 24 \text{ years} \times 1.0\text{E-06 kg/mg}}{70 \text{ kg} \times 25550 \text{ days}}$$

IEXc = 4.03E-06 mg/kg/day

ILCR = 4.03E-06 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 6.0E-06

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{62.5 \text{ mg/kg} \times 100 \text{ mg/day} \times 48 \text{ days/year} \times 24 \text{ years} \times 1.0\text{E-06 kg/mg}}{70 \text{ kg} \times 8760 \text{ days}}$$

IEXnc = 1.17E-05 mg/kg/day

HQ = 1.17E-05 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 3.9E-02

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT ADULT RECREATIONAL USERS		
BASED ON: USEPA, JULY 2004		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with sediment at Tank Farm 5.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	62.5	mg/kg	Chemical: Arsenic
CF	=	1.0E-06	kg/mg	
SA	=	6,880	cm^2/day	
AF	=	0.07	mg/cm^2	
ABS	=	0.03		
EF	=	48	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25,550	days	
ATnc	=	8,760	days	
CSFd	=	1.5E+00	$(mg/kg/day)^{-1}$	
RfDd	=	3.0E-04	(mg/kg/day)	

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT ADULT RECREATIONAL USERS		
BASED ON: USEPA, JULY 2004		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{62.5 \text{ mg/kg} \times 1.0E\text{-}06 \text{ kg/mg} \times 6880 \text{ cm2/day} \times 0.07 \text{ mg/cm2} \times 0.03 \times 48 \text{ days/year} \times 24 \text{ years}}{70 \text{ kg} \times 25550 \text{ days}}$$

DEXc = 5.82E-07 mg/kg/day

ILCR = 5.82E-07 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 8.7E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$DEXnc = \frac{62.5 \text{ mg/kg} \times 1.0E\text{-}06 \text{ kg/mg} \times 6880 \text{ cm2/day} \times 0.07 \text{ mg/cm2} \times 0.03 \times 48 \text{ days/year} \times 24 \text{ years}}{70 \text{ kg} \times 8760 \text{ days}}$$

DEXnc = 1.70E-06 mg/kg/day

HQ = 1.70E-06 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 5.7E-03

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT FOR MUTAGENIC CHEMICALS - CHILD RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

PURPOSE: To estimate intake, carcinogenic risks for mutagenic chemicals from incidental ingestion of sediment at Tank Farm 5.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1

ASSUMPTIONS:

Cs	=	0.11	mg/kg	Chemical: Benzo(a)pyrene
IR	=	200	mg/day	
EF	=	48	days/year	
ED_1	=	2	years	
ED_2	=	4	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	15	kg	
ATc	=	25,550	days	
CSFo	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	10		
$ADAF_2$	=	3		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT FOR MUTAGENIC CHEMICALS - CHILD RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{0.11 \text{ mg/kg} \times 200 \text{ mg/day} \times 48 \text{ days/year} \times 2 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{15 \text{ kg} \times 25550 \text{ days}} \times 10$$

IEXc = 5.51E-08 mg/kg/day

$$IEXc = \frac{0.11 \text{ mg/kg} \times 200 \text{ mg/day} \times 48 \text{ days/year} \times 4 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{15 \text{ kg} \times 25550 \text{ days}} \times 3$$

IEXc = 3.31E-08 mg/kg/day

ILCR = (5.51E-08 mg/kg/day + 3.31E-08 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 6.4E-07

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT FOR MUTAGENIC CHEMICALS - CHILD RECREATIONAL USERS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

PURPOSE: To estimate intake, carcinogenic risks for mutagenic chemicals from dermal contact with sediment at Tank Farm 4.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	0.11	mg/kg	Chemical: Benzo(a)pyrene
CF	=	1.0E-06	kg/mg	
SA	=	2,800	cm^2/day	
AF	=	0.2	mg/cm^2	
ABS	=	0.13		
EF	=	48	days/year	
ED_1	=	2	years	
ED_2	=	4	years	
BW	=	15	kg	
ATc	=	25,550	days	
CSFd	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	10		
$ADAF_2$	=	3		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT FOR MUTAGENIC CHEMICALS - CHILD RECREATIONAL USERS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{0.11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 2800\ cm2/day \times 0.2\ mg/cm2 \times 0.13 \times 48\ days/year \times 2\ years}{15\ kg \times 25550\ days} \times 10$$

DEXc = 2.01E-08 mg/kg/day

$$DEXc = \frac{0.11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 2800\ cm2/day \times 0.2\ mg/cm2 \times 0.13 \times 48\ days/year \times 4\ years}{15\ kg \times 25550\ days} \times 3$$

DEXc = 1.20E-08 mg/kg/day

ILCR = (2.01E-08 mg/kg/day + 1.20E-08 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 2.3E-07

CALCULATION WORKSHEET

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		**JOB NUMBER:** 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT FOR MUTAGENIC CHEMICALS - ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 10/6/2010

PURPOSE: To estimate intake, carcinogenic risks for mutagenic chemicals from incidental ingestion of sediment at Tank Farm 4.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT} \times ADAF$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
IR	=	incidental ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1

ASSUMPTIONS:

Cs	=	0.11	mg/kg	Chemical: Benzo(a)pyrene
IR	=	100	mg/day	
EF	=	48	days/year	
ED_1	=	10	years	
ED_2	=	14	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	70	kg	
ATc	=	25,550	days	
CSFo	=	7.3E+00	$(mg/kg/day)^{-1}$	
$ADAF_1$	=	3		
$ADAF_2$	=	1		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT FOR MUTAGENIC CHEMICALS - ADULT RECREATIONAL USERS		
BASED ON: USEPA, DECEMBER 1989, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{0.11 \text{ mg/kg} \times 100 \text{ mg/day} \times 48 \text{ days/year} \times 10 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{70 \text{ kg} \times 25550 \text{ days}} \times 3$$

IEXc = 8.86E-09 mg/kg/day

$$IEXc = \frac{0.11 \text{ mg/kg} \times 100 \text{ mg/day} \times 48 \text{ days/year} \times 14 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{70 \text{ kg} \times 25550 \text{ days}} \times 1$$

IEXc = 4.13E-09 mg/kg/day

ILCR = (8.86E-09 mg/kg/day + 4.13E-09 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 9.5E-08

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT FOR MUTAGENIC CHEMICALS - ADULT RECREATIONAL USERS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

PURPOSE: To estimate intake, carcinogenic risks for mutagenic chemicals from dermal contact with sediment at Tank Farm 4.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in sediment (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
ADAF	=	age-dependent adjustment factor
CSFd	=	dermal carcinogenic slope factor ((mg/kg/day)$^{-1}$)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	0.11	mg/kg	Chemical: Benzo(a)pyrene
CF	=	1.0E-06	kg/mg	
SA	=	6,880	cm^2/day	
AF	=	0.07	mg/cm^2	
ABS	=	0.13		
EF	=	48	days/year	
ED_1	=	10	years	
ED_2	=	14	years	
BW	=	70	kg	
ATc	=	25,550	days	
CSFd	=	7.3E+00	(mg/kg/day)$^{-1}$	
$ADAF_1$	=	3		
$ADAF_2$	=	1		

CLIENT: NAVSTA NEWPORT, NEWPORT, RHODE ISLAND		JOB NUMBER: 112G02698
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT FOR MUTAGENIC CHEMICALS - ADULT RECREATIONAL USERS		
BASED ON: USEPA, JULY 2004, MARCH 2005		
BY: R. JUPIN	CHECKED BY:	DATE: 10/6/2010

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{0.11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 6880\ cm2/day \times 0.07\ mg/cm2 \times 0.13 \times 48\ days/year \times 10\ years}{70\ kg \times 25550\ days} \times 3$$

DEXc = 5.54E-09 mg/kg/day

$$DEXc = \frac{0.11\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 6880\ cm2/day \times 0.07\ mg/cm2 \times 0.13 \times 48\ days/year \times 14\ years}{70\ kg \times 25550\ days} \times 1$$

DEXc = 2.59E-09 mg/kg/day

ILCR = (5.54E-09 mg/kg/day + 2.59E-09 mg/kg/day) x 7.30E+00 (mg/kg/day)-1

ILCR = 5.9E-08

I ECOLOGICAL RISK CHARACTERIZATION

APPENDIX I

SOIL ECOLOGICAL SCREENING LEVELS
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

	Ecological Screening Level							
	Invertebrates		Plants		Avian		Mammals	
Chemical	Value	Source	Value	Source	Value	Source	Value	Source
Volatile Organics (ug/kg)								
2-BUTANONE	NA	NA	NA	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA	NA	2500	NOAA
BENZENE	31000	Canadian SQG	31000	Canadian SQG	25000	Canadian SQG	25000	Canadian SQG
ISOPROPYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
M+P-XYLENES	95000	Canadian SQG	95000	Canadian SQG	3700000	Canadian SQG	3700000	Canadian SQG
TOLUENE	75000	Canadian SQG	75000	Canadian SQG	1400000	Canadian SQG	1400000	Canadian SQG
TOTAL XYLENES	95000	Canadian SQG	95000	Canadian SQG	3700000	Canadian SQG	3700000	Canadian SQG
Semivolatile Organics (ug/kg)								
2,4-DIMETHYLPHENOL	NA	NA	10	NOAA	NA	NA	NA	NA
2-CHLOROPHENOL	10	NOAA Dutch	10	NOAA Dutch	NA	NA	243	NOAA
2-METHYLNAPHTHALENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
2-METHYLPHENOL	50	NOAA Dutch	50	NOAA Dutch	NA	NA	40400	NOAA
4-METHYLPHENOL	50	NOAA Dutch	50	NOAA Dutch	NA	NA	163000	NOAA
ACENAPHTHENE	29000	EcoSSL	20000	NOAA	NA	NA	100000	EcoSSL
ACENAPHTHYLENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
ANTHRACENE	29000	EcoSSL	2500	Canadian SQG	NA	NA	100000	EcoSSL
BENZO(A)ANTHRACENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(A)PYRENE	18000	EcoSSL	20000	Canadian SQG	NA	NA	1100	EcoSSL
BENZO(B)FLUORANTHENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(G,H,I)PERYLENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(K)FLUORANTHENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BIS(2-ETHYLHEXYL)PHTHALATE	100	NOAA Dutch	100	NOAA Dutch	NA	NA	925	NOAA
CARBAZOLE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
DI-N-BUTYL PHTHALATE	100	NOAA Dutch	200000	NOAA	NA	NA	150	NOAA
DIBENZO(A,H)ANTHRACENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
FLUORANTHENE	29000	EcoSSL	50000	Canadian SQG	NA	NA	100000	EcoSSL
FLUORENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
HIGH MOLECULAR WEIGHT PAH	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
INDENO(1,2,3-CD)PYRENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
LOW MOLECULAR WEIGHT PAHS	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
NAPHTHALENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
PHENANTHRENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
PHENOL	3800	Canadian SQG	3800	Canadian SQG	NA	NA	120000	NOAA
PYRENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
TOTAL PAHS	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (ug/kg)								
4,4'-DDD	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
4,4'-DDE	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
4,4'-DDT	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
AROCLOR-1254	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
AROCLOR-1260	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
AROCLOR-1268	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
BETA-BHC	9	NOAA Dutch	3.98	NOAA	NA	NA	NA	NA
DELTA-BHC	10	NOAA Dutch	10	NOAA Dutch	NA	NA	9940	NOAA
ENDOSULFAN I	0.01	NOAA Dutch	0.01	NOAA Dutch	NA	NA	119	NOAA
ENDOSULFAN SULFATE	0.01	Endosulfan I surrogate	0.01	Endosulfan I surrogate	NA	NA	35.8	NOAA
ENDRIN	0.04	NOAA Dutch	0.04	NOAA Dutch	NA	NA	10.1	NOAA
ENDRIN ALDEHYDE	0.04	Endrin surrogate	0.04	Endrin surrogate	NA	NA	10.5	NOAA
ENDRIN KETONE	0.04	Endrin surrogate	0.04	Endrin surrogate	NA	NA	10.1	Endrin surrogate
GAMMA-BHC (LINDANE)	0.05	NOAA Dutch	5	NOAA	NA	NA	99.4	NOAA
TOTAL AROCLOR	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
TOTAL DDD/DDE/DDT	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
TOXAPHENE	NA	NA	NA	NA	NA	NA	119	NOAA
Dioxins (ng/kg)								
TEQ-bird	NA	NA	NA	NA	NA	NA	NA	NA
TEQ-fish	NA	NA	NA	NA	NA	NA	NA	NA
TEQ-mammal	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)								
ALUMINUM	NA	NA	pH<5.5	EcoSSL	NA	NA	NA	NA
ARSENIC	60	NOAA	18	EcoSSL	43	EcoSSL	46	EcoSSL
BARIUM	330	EcoSSL	500	NOAA	NA	NA	2000	EcoSSL
BERYLLIUM	40	EcoSSL	10	NOAA	NA	NA	21	EcoSSL
CADMIUM	140	EcoSSL	32	EcoSSL	0.77	EcoSSL	0.36	EcoSSL
CHROMIUM	64	Canadian SQG	64	Canadian SQG	26	EcoSSL	34	EcoSSL
COBALT	NA	NA	13	EcoSSL	120	EcoSSL	230	EcoSSL
COPPER	80	EcoSSL	70	EcoSSL	28	EcoSSL	49	EcoSSL
IRON	NA	NA	pH<5, pH>8	EcoSSL	NA	NA	NA	NA
LEAD	1700	EcoSSL	120	EcoSSL	11	EcoSSL	56	EcoSSL
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	450	EcoSSL	220	EcoSSL	4300	EcoSSL	4000	EcoSSL
MERCURY	12	Canadian SQG	12	Canadian SQG	NA	NA	1.58	NOAA
NICKEL	280	EcoSSL	38	EcoSSL	210	EcoSSL	130	EcoSSL
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	4.1	EcoSSL	0.52	EcoSSL	1.2	EcoSSL	0.63	EcoSSL
SILVER	NA	NA	560	EcoSSL	4.2	EcoSSL	14	EcoSSL
THALLIUM	1.4	Canadian SQG	1.4	Canadian SQG	NA	NA	0.0569	NOAA
VANADIUM	130	Canadian SQG	130	Canadian SQG	7.8	EcoSSL	280	EcoSSL
ZINC	120	EcoSSL	160	EcoSSL	46	EcoSSL	79	EcoSSL

Screening Level Sources in the order of Preference:
Eco SSL - EPA Ecological Soil Screening Levels (EPA, 2003, 2005, 2006, 2007, 2008)
Canadian SQG - Canadian Soil Quality Guidelines (CCME, 2006 and supporting documents)
NOAA - Values from sources as compiled in NOAA's Quick Reference Tables (Buchman, 2008)
NOAA Dutch - Dutch target values provided in NOAA's Quick Reference Tables (Buchman, 2008)

FIGURE 1
TANK FARM 4 AERIAL PHOTO
TANK FARMS 4 AND 5
DATA GAPS INVESTIGATION
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Date: 5/10/2011
File Name: I:\02698\SI.DR\ecoFig1.mxd
Author: GJG

FIGURE 2
TANK FARM 5 AERIAL PHOTO
TANK FARMS 4 AND 5
DATA GAPS INVESTIGATION
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

APPENDIX I

SOIL ECOLOGICAL SCREENING LEVELS
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

	Ecological Screening Level							
	Invertebrates		Plants		Avian		Mammals	
Chemical	**Value**	**Source**	**Value**	**Source**	**Value**	**Source**	**Value**	**Source**
Volatile Organics (ug/kg)								
2-BUTANONE	NA	NA	NA	NA	NA	NA	NA	NA
ACETONE	NA	NA	NA	NA	NA	NA	2500	NOAA
BENZENE	31000	Canadian SQG	31000	Canadian SQG	25000	Canadian SQG	25000	Canadian SQG
ISOPROPYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
M+P-XYLENES	95000	Canadian SQG	95000	Canadian SQG	3700000	Canadian SQG	3700000	Canadian SQG
TOLUENE	75000	Canadian SQG	75000	Canadian SQG	1400000	Canadian SQG	1400000	Canadian SQG
TOTAL XYLENES	95000	Canadian SQG	95000	Canadian SQG	3700000	Canadian SQG	3700000	Canadian SQG
Semivolatile Organics (ug/kg)								
2,4-DIMETHYLPHENOL	NA	NA	10	NOAA	NA	NA	NA	NA
2-CHLOROPHENOL	10	NOAA Dutch	10	NOAA Dutch	NA	NA	243	NOAA
2-METHYLNAPHTHALENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
2-METHYLPHENOL	50	NOAA Dutch	50	NOAA Dutch	NA	NA	40400	NOAA
4-METHYLPHENOL	50	NOAA Dutch	50	NOAA Dutch	NA	NA	163000	NOAA
ACENAPHTHENE	29000	EcoSSL	20000	NOAA	NA	NA	100000	EcoSSL
ACENAPHTHYLENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
ANTHRACENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
BENZO(A)ANTHRACENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(A)PYRENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(B)FLUORANTHENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(G,H,I)PERYLENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BENZO(K)FLUORANTHENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
BIS(2-ETHYLHEXYL)PHTHALATE	100	NOAA Dutch	100	NOAA Dutch	NA	NA	925	NOAA
CARBAZOLE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
DI-N-BUTYL PHTHALATE	100	NOAA Dutch	200000	NOAA	NA	NA	150	NOAA
DIBENZO(A,H)ANTHRACENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
FLUORANTHENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
FLUORENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
HIGH MOLECULAR WEIGHT PAH	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
INDENO(1,2,3-CD)PYRENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
LOW MOLECULAR WEIGHT PAHS	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
NAPHTHALENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
PHENANTHRENE	29000	EcoSSL	NA	NA	NA	NA	100000	EcoSSL
PHENOL	3800	Canadian SQG	3800	Canadian SQG	NA	NA	120000	NOAA
PYRENE	18000	EcoSSL	NA	NA	NA	NA	1100	EcoSSL
TOTAL PAHS	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (ug/kg)								
4,4'-DDD	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
4,4'-DDE	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
4,4'-DDT	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
AROCLOR-1254	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
AROCLOR-1260	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
AROCLOR-1268	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
BETA-BHC	9	NOAA Dutch	3.98	NOAA	NA	NA	NA	NA
DELTA-BHC	10	NOAA Dutch	10	NOAA Dutch	NA	NA	9940	NOAA
ENDOSULFAN I	0.01	NOAA Dutch	0.01	NOAA Dutch	NA	NA	119	NOAA
ENDOSULFAN SULFATE	0.01	Endosulfan I surrogate	0.01	Endosulfan I surrogate	NA	NA	35.8	NOAA
ENDRIN	0.04	NOAA Dutch	0.04	NOAA Dutch	NA	NA	10.1	NOAA
ENDRIN ALDEHYDE	0.04	Endrin surrogate	0.04	Endrin surrogate	NA	NA	10.5	NOAA
ENDRIN KETONE	0.04	Endrin surrogate	0.04	Endrin surrogate	NA	NA	10.1	Endrin surrogate
GAMMA-BHC (LINDANE)	0.05	NOAA Dutch	5	NOAA	NA	NA	99.4	NOAA
TOTAL AROCLOR	33000	Canadian SQG	33000	Canadian SQG	1.3	Canadian SQG	1.3	Canadian SQG
TOTAL DDD/DDE/DDT	12000	Canadian SQG	12000	Canadian SQG	93	EcoSSL	21	EcoSSL
TOXAPHENE	NA	NA	NA	NA	NA	NA	119	NOAA
Dioxins (ng/kg)								
TEQ-bird	NA	NA	NA	NA	NA	NA	NA	NA
TEQ-fish	NA	NA	NA	NA	NA	NA	NA	NA
TEQ-mammal	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)								
ALUMINUM	NA	NA	pH<5.5	EcoSSL	NA	NA	NA	NA
ARSENIC	60	NOAA	18	EcoSSL	43	EcoSSL	46	EcoSSL
BARIUM	330	EcoSSL	500	NOAA	NA	NA	2000	EcoSSL
BERYLLIUM	40	EcoSSL	10	NOAA	NA	NA	21	EcoSSL
CADMIUM	140	EcoSSL	32	EcoSSL	0.77	EcoSSL	0.36	EcoSSL
CHROMIUM	64	Canadian SQG	64	Canadian SQG	26	EcoSSL	34	EcoSSL
COBALT	NA	NA	13	EcoSSL	120	EcoSSL	230	EcoSSL
COPPER	80	EcoSSL	70	EcoSSL	28	EcoSSL	49	EcoSSL
IRON	NA	NA	pH<5, pH>8	EcoSSL	NA	NA	NA	NA
LEAD	1700	EcoSSL	120	EcoSSL	11	EcoSSL	56	EcoSSL
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	450	EcoSSL	220	EcoSSL	4300	EcoSSL	4000	EcoSSL
MERCURY	12	Canadian SQG	12	Canadian SQG	NA	NA	1.58	NOAA
NICKEL	280	EcoSSL	38	EcoSSL	210	EcoSSL	130	EcoSSL
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	4.1	EcoSSL	0.52	EcoSSL	1.2	EcoSSL	0.63	EcoSSL
SILVER	NA	NA	560	EcoSSL	4.2	EcoSSL	14	EcoSSL
THALLIUM	1.4	Canadian SQG	1.4	Canadian SQG	NA	NA	0.0569	NOAA
VANADIUM	130	Canadian SQG	130	Canadian SQG	7.8	EcoSSL	280	EcoSSL
ZINC	120	EcoSSL	160	EcoSSL	46	EcoSSL	79	EcoSSL

Screening Level Sources in the order of Preference:
Eco SSL - EPA Ecological Soil Screening Levels (EPA, 2003, 2005, 2006, 2007, 2008)
Canadian SQG - Canadian Soil Quality Guidelines (CCME, 2006 and supporting documents)
NOAA - Values from sources as compiled in NOAA's Quick Reference Tables (Buchman, 2008)
NOAA Dutch - Dutch target values provided in NOAA's Quick Reference Tables (Buchman, 2008)

APPENDIX I
CHEMICAL ECOTOXICITY

This appendix presents a discussion of the different chemical classes detected at the sites, including toxicity information, potential food chain and trophic transfer, and bioaccumulation potential.

Volatile Organic Compounds

VOCs are usually very mobile in the environment because they are poorly adsorbed to soil and sediment particles. Also, because they are very volatile, they typically are only detected in surface water, surface soil, and sediment at low concentrations.

Most VOCs have very little potential to bioaccumulate in ecological receptors; therefore, biomagnification through the food chain does not appear to be significant. VOCs are not expected to biomagnify in plants and are typically only toxic to ecological receptors at relatively high concentrations.

Semivolatile Organic Compounds

The most common semivolatile organic compounds that are found at naval facilities include polynuclear aromatic hydocarbons (PAHs) and phthalates. PAHs are a diverse group of compounds consisting of two or more substituted and unsubstituted polynuclear aromatic rings formed by the incomplete combustion of carbonaceous materials. PAHs are ubiquitous in the modern environment and are common constituents of coal tar, soot, vehicle exhaust, cigarette smoke, certain petroleum products, road tar, mineral oils, creosote, and many cooked foods. PAHs also are released to the environment through natural sources such as volcanoes and forest fires.

PAHs are transferred from surface water by volatilization and sorption to settling particles. The compounds are transformed in surface water by photooxidation, chemical oxidation, and microbial metabolism (ATSDR, 1989a). In soil and sediments, microbial metabolism is the major process for degradation of PAHs (ATSDR, 1989a). Although PAHs accumulate in terrestrial and aquatic plants, many organisms are able to metabolize and eliminate these compounds. Vertebrates can readily metabolize PAHs, but lower forms (insects and worms) cannot metabolize PAHs as quickly. However, food chain uptake does not appear to be a major exposure source to PAHs for aquatic animals (ATSDR, 1989a).

PAHs vary substantially in their toxicity to aquatic organisms. In general, toxicity increases as molecular weight increases, with the exception of some high molecular weight PAHs that have low acute toxicity. Most species of aquatic organisms rapidly accumulate PAHs that occur at low concentrations in the ambient medium. However, uptake of PAHs is highly species-specific, it is higher in algae, mollusks, and other species that are incapable of metabolizing PAHs (Eisler, 1987). The ability of fish to metabolize PAHs may explain why benzo(a)pyrene is frequently not detected or is found at only very low levels in fish from environments heavily contaminated with PAHs (ATSDR, 1989a).

Phthalates are semivolatile organic compounds that are used in production of plastics (ATSDR, 1993). Most phthalates are expected to sorb to soil or sediment particles after their release because of their high Log K_{OC} values (Howard, 1989). Some phthalates may bioconcentrate in aquatic organisms [Spectrum Laboratories, 1999; Howard, 1989; ATSDR, 1989a].

Pesticides

Pesticides are used to control pestiferous invertebrates and, therefore, they are toxic to many soil and aquatic invertebrates. In addition, many pesticides are toxic to ecological receptors at higher trophic levels such as mammals and birds. For example, DDT compounds have been linked to eggshell thinning and subsequent decreased survival of several birds of prey (such as eagles and falcons). Other pesticides such as chlordanes, dieldrin, aldrin, endrin, and heptachlor are also very toxic to mammals and birds (Newell et al., 1987).

Organochlorine insecticides such as DDT, chlordane, aldrin, dieldrin, heptachlor, endosulfan, and endrin and their associated breakdown products generally degrade very slowly and tend to be soluble in lipids. These result in bioaccumulation and possible increases in concentrations through food webs (Newman, 1998). Pesticides have high Log K_{OC} values so they are expected to sorb strongly to soil and sediment particles when released to the environment. Consequently, these compounds may migrate from their site of application when the soil is eroded, although they will not have a tendency to leach to groundwater.

DDT, DDE, and DDD are highly lipid soluble, which combined with an extremely long half-life, results in bioaccumulation (ATSDR, 1989b). When present in ambient water, DDT and its metabolites are concentrated in freshwater and marine plankton, insects, mollusks, and other invertebrates and fish (ATSDR, 1989b). A progressive accumulation of residues may result in high levels of residues in organisms at the top of the food chain (ATSDR, 1989b). Moderate to significant bioconcentration in aquatic species has been reported for dieldrin, with

bioconcentration factors (BCFs) ranging from 100 to 10,000 (Howard, 1991). Heptachlor also has been reported to bioconcentrate in aquatic species, with bioconcentration factors in fish up to about 20,000 (Howard, 1991).

PCBs

The term polychlorinated biphenyls (PCBs) commonly refers to a variety of mixtures of individual biphenyl isomers, each consisting of two joined benzene rings and up to 10 chlorine atoms. Mixtures of these isomers are known by their commercial designation of Aroclor. This trade name is followed by a four-digit number; the first two numbers indicate the type of isomer mixture and the last two numbers indicate the approximate weight percent of chlorine in the mixture (USEPA, 1985).

PCBs released into water adsorb to sediments and other organic matter. Typically, PCB concentrations are greater in the sediment and suspended material than in the water column. Substantial quantities of PCBs in aquatic sediments can act as an environmental reservoir from which PCBs may be released slowly over a long period of time (ATSDR, 1989c). For PCBs that exist in the dissolved state in water, volatilization becomes the primary fate process (USEPA, 1985).

Degradation of PCBs in the environment is dependent upon the degree of chlorination. Generally, the more chlorinated the PCB molecule, the more persistent it will be in the environment. Factors that determine biodegradability include the amount of chlorination, concentration, type of microbial population, available nutrients, and the temperature (ATSDR, 1989c).

Because PCBs are highly lipophilic, they can bioaccumulate in the lipid portions of animals. Bioconcentration factors in the thousands have been reported for various aquatic species (Eisler, 1986a). PCBs can also accumulate in upper trophic level animals such as piscivorous birds and mammals that feed on contaminated prey items (Eisler, 1986a).

Adverse effects of PCBs on terrestrial wildlife include increased mortality, reproductive effects, and behavioral effects (USEPA, 1985). As a group, birds are more resistant to acutely toxic effects of PCBs than mammals (Eisler, 1986a). Among sensitive avian species, PCBs disrupt the normal pattern of growth, reproduction, metabolism, and behavior (Eisler, 1986a). Of the mammals, the mink is the most sensitive wildlife species tested for which data are available (Eisler, 1986a). Impacts to mink include anorexia, weight loss, lethargy, reproductive effects, and death (Eisler, 1986a).

Dioxins

Dioxin and dioxin-like compounds consist of the following chemical classes: polychlorinated dibenzo-p-dioxins (PCDDs or CDDs), polychlorinated dibenzofurans (PCDFs of CDFs), polybrominated dibenzodioxins (PBDDs or BDDs), polybrominated dibenzofurans (PBDFs or BDFs), and PCBs (USEPA, 1998). The CDDs and BDDs each include 75 individual compounds, and the CDFs BDFs each include 135 different compounds (USEPA, 1998). Of all these compounds, only 7 of the 75 congeners of CDDs or BDDs are thought to have dioxin-like toxicity, as are 10 of the 135 congeners of CDFs, or BDFs (USEPA, 1998). These are the ones with chlorine/bromine substitutions in, at least, the 2, 3, 7, and 8 positions (USEPA, 1998). Of the 209 PCB congeners, 13 are thought to have dioxin-like toxicity, which include the PCBs with four or more chlorines with just one or no substitution in the ortho position (USEPA, 1998).

There are very few toxicity data for dioxins except for 2,3,7,8-TCDD, which has been associated with lethal, carcinogenic, teratogenic, reproductive, mutagenic, histopathologic, and immunotoxic effects (Eisler, 1986b). 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is the most toxic congener within these groups of compounds (Van den Berg et al., 1998). Because of this, toxicity equivalency factors (developed to estimate the relative toxicity of the dioxin and dioxin-like compounds to 2,3,7,8-TCDD (Van den Berg et al., 1998). There are substantial inter- and intraspecific differences in sensitivity and toxic responses to 2,3,7,8-TCDD (Eisler, 1986b). Two species of earthworms showed no adverse effects at soil concentrations of 5 mg/kg; however, they died at 10 mg/kg of 2,3,7,8-TCDD (Eisler, 1986b). This indicates that terrestrial invertebrates may be resistant to 2,3,7,8-TCDD.

Although there presently is no evidence of biomagnification of PCDDs in birds, it is suspected that piscivorous birds have a greater potential to accumulate PCDDs than the fish that they eat (Eisler, 1986b).

Metals

Many metals occur naturally at various concentrations in the surface water and sediment primarily to chemical weathering of rocks and fallout from volcanoes. Most metals are toxic to aquatic (i.e., fish, invertebrates) and terrestrial (i.e., plants, invertebrates, vertebrates) ecological receptors above certain concentrations, with some metals being more toxic at lower concentrations than others. Also, different chemical forms of the metals may be more toxic than others. For example, hexavalent chromium is typically more toxic than trivalent chromium, and methylmercury is more toxic than inorganic mercury. In addition, the toxicity of several metals (cadmium, chromium,

copper, lead, nickel, silver, and zinc) to aquatic receptors in freshwater systems decreases with increasing water hardness.

Many factors (e.g., pH, Eh, clay content, organic matter content) influence the bioavailability of metals to invertebrates in sediment. One way to estimate the bioavailable portion of certain divalent metals (cadmium, copper, lead, nickel, and zinc) in sediment is to measure the amount of acid volatile sulfides (AVS) and simultaneously extracted metals (SEM) in a sediment sample. If the molar concentration of AVS is higher than the molar concentration of SEM, than the SEM metals are expected to be unavailable to aquatic invertebrates and, therefore, nontoxic. AVS plays little or no role in determining interstitial water concentrations of metals in aerobic systems or those with low productivity (i.e., where the absence of organic carbon limits sulfate reduction) (Ankley et al., 1995), or when ingestion of sediments is the primary exposure route (Lee et al., 2000).

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APPENDIX I

FOOD CHAIN MODEL RECEPTOR PROFILES

The following sections present the receptor profiles for the short-tailed shrew, American robin, meadow vole, northern bobwhite quail, mink, and green heron. The majority of the information for the profiles was obtained from the Wildlife Exposure Factors Handbook (USEPA, 1993). The data for the incidental soil ingestion rates were obtained from the Estimates of Soil Ingestion by Wildlife (Beyer, 1993) or the USEPA Ecological Soil Screening Guidance (USEPA, 2007).

The food and water ingestion rates are listed in g/g (of body weight)-day on a wet weight basis in USEPA (1993) but were converted to dry weight for the ERA. The home ranges are presented in hectares in USEPA (1993) but were converted to acres by multiplying the number of hectares by 2.471. Also note that the estimated percent of soil in the diets are listed in dry weight. The attached table presents the calculation of the exposure parameters and how the calculations were done.

Short-Tailed Shrew (*Blarina brevicauda*)

Shrews inhabit a wide variety of habitats and are common in areas with abundant vegetative cover. They need cool, moist habitats because of their high metabolic and water-loss rates. The short-tailed shrew is primarily carnivorous, eating insects such as earthworms, slugs, and snails.

The adult body weight for the short-tailed shrew in various habitats ranged from 0.015 to 0.01921 kg with an average of 0.0161 kg. The listed food ingestion rates for shrews are 0.49 and 0.62 g/g-day (wet-weight). The water ingestion rate was listed as 0.223 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in the attached table. The food ingestion rates were then multiplied by 0.16, which is the percent solids of worms (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (assumed 3% for conservative food chain model and 0.9% for the average food chain model) from USEPA (2007). 3% is the 90th percentile value and 0.9% is the 50th percentile value from USEPA (2007). The home range for the shrew (0. 9699 acres) was calculated using data from a tamarek bog in Manitoba (only value available).

American Robin (*Turdus migratorius*)

American robins' habitats include parks, lawns, moist forests, swamps, open woodlands, and orchards. Robins forage on the ground in open areas, along habitat edges, or the edges of streams. They also may forage above ground in shrubs and within the lower branches of trees. In the months preceding and during the breeding season, robins feed primarily on invertebrates and on some fruits. During the rest of the year

their diet consists primarily of fruits.

The adult body weight for the American robin in New York woodlands and forests and in Pennsylvania ranged from 0.0773 to 0.0862 kg with an average of 0.0804 kg. The only listed food ingestion rates were for robins in Kansas (1.52 g/g-day) and California (0.89 g/g-day), with an average of 1.205 g/g-day. Studies calculating ingestion rates for the robin included in the USEPA (December 1993) are based on a diet comprised of berries. Based on these studies, the food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in the attached table. The food ingestion rates were then multiplied by 0.23, which is the percent solids of fruit (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. However, because it is assumed that the robin 100 percent of the robin's diet are worms for the food chain models, the ingestion rate for the robin was calculated using field metabolism scaling as presented on the attached table (Nagy et al., 1999). These are the values that will be used in the food chain model for this site.

The water ingestion rate was estimated as 0.14 g/g-day. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (assumed 16.4% for conservative food chain model and 6.4% for the average food chain model) from USEPA (2007). The 16.4% and 6.4% values are from the American woodcock since it is assumed that both the woodcock and robin are consuming 100% worms, and no incidental soil ingestion rate was available for the robin.

The home range for the robin was calculated using data from Tennessee and a New York dense conifer forest. The values ranged from 0.27 to 1.04 acres with an average home range of 0.6095 acres.

Meadow Vole (*Microtus pennsylvanicus*)

Meadow voles inhabit grassy fields, marshes, and bogs; however, they prefer fields with more grass, more cover, and fewer woody plants. They typically consume green succulent vegetation, sedges, seeds, roots, bark, fungi, insects, and animal matter. However, green succulent vegetation makes up the majority of their diet.

The adult body weight for the vole ranges from 0.017 to 0.0524 kg with an average of 0.0358 kg. The only listed food ingestion rates for voles range from 0.30 to 0.35 g/g-day (wet-weight), with an average of 0.325 g/g-day. The water ingestion rates are 0.14 (estimated) and 0.21 g/g-day, with an average of 0.175 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in the attached table. The food ingestion rates were then multiplied by 0.15, which is the percent solids of plant foilage (USEPA, 2007) to convert the ingestion rate from a wet-weight value to a dry-weight value. Finally, the incidental soil ingestion rate is calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested, which was 3.2% for conservative food chain model and 1.2% for the average food chain

model) from USEPA (2007). The home range for the meadow vole ranges from 0.000494 to 0.2051 acres with an average home range of 0.0659 acres.

Northern Bobwhite Quail (*Colinus virginianus*)

Quails inhabit grasslands, idle fields, pastures, and large clumps of grasses. Bobwhite quails forage in areas with open vegetation, some bare ground, and light litter. Seeds from weeds, woody plants, and grasses comprise the majority of an adult's diet, although green vegetation has been found to dominate the diet of this species in winter in the southern areas of the United States.

The adult body weight for the bobwhite quail ranges from 0.154 to 0.1939 kg with an average of 0.1751 kg. The listed food ingestion rates for quails range from 0.067 to 0.093 g/g-day (dry-weight), with an average of 0.078 g/g-day. The water ingestion rate is estimated as 0.10 and 0.11 g/g-day, and measured as 0.10 to 0.13 g/g-day, for an average water ingestion rate of 0.11 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in the attached table. The food ingestion rates were already dry-weight values. Finally, the incidental soil ingestion rate is calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested, which was 13.9% for conservative food chain model and 6.1% for the average food chain model from USEPA (2007) and was based on the mourning dove.

The home range for the quail ranges from 8.9 to 41.3 acres with an average home range of 18.8 acres.

Mink (Mustela vison)

Minks are the most abundant and widespread carnivorous mammals in North America. They are found associated with every type of aquatic habitat including waterways such as rivers, streams, lakes, ditches, swamps, marshes, and backwater areas. Minks prefer irregular shorelines and tend to use brushy or wooded cover adjacent to the water, where prey is abundant and downfall and debris provide den sites. Mammals are minks' most important prey year round in many parts of their range, but they also hunt aquatic species such as fish, amphibians, and crustaceans.

The adult body weight for the mink in various habitats ranged from 0.55 to 1.734 kg with an average of 1.103 kg. The listed food ingestion rates for minks range from 0.12 to 0.22 g/g-day (wet-weight). The water ingestion rates range from 0.028 to 0.11 g/g-day. The food and water ingestion rates in kg/day and L/day, respectively, were calculated as shown in the attached table. The food ingestion rates were then multiplied by 0.25, which is the percent solids of fish (Sample et al., 1997) to convert the ingestion rate from a wet-weight value to a dry-weight value. The incidental sediment ingestion rate of was calculated by multiplying the ingestion rate by the percentage of sediment that is incidentally ingested (9.4 percent). The 9.4 percent is based on the incidental sediment ingestion rate of a raccoon (Beyer, 1994), which also consumes aquatic

organisms, because an incidental sediment ingestion rate was not available for the mink.

The home range for the mink in riverine areas ranged from 19.3 to 50.4 acres, with an average of 34.85 acres.

Green Heron (*Butorides striatus*)

The green heron is a common bird in wetland thickets throughout the eastern United States. It is typically a bird of swampy thickets where it forages in both fresh and salt water, especially along forested margins of ponds, lakes, rivers, streams, marshes, and swamps. It prefers thick vegetation but will feed in the open when food is available. Small fish are the primary prey, but green herons also consume insects and a variety of aquatic invertebrates. Breeding populations in Mississippi are non-migratory. The green heron is typically a solitary bird, but it nests in colonies with other green herons or with other species (Davis and Kushlan, 1994).

Data for the green heron were not included in USEPA's *Wildlife Exposure Factors Handbook* (USEPA, 1993), so data were obtained elsewhere. The mean adult body weight of 34 green herons in Florida was 212 g (Dunning, 1993). Minimum and maximum body weights were not provided, but the standard deviation was 5.92 g (Dunning, 1993). A value of 0.200 kg was used as the BW term in Equation 1 for the conservative scenario. This value is the mean minus two standard deviations from Dunning's data. The BW term in Equation 1 for the average scenario was the mean (0.212 kg) from Dunning's data.

Food ingestion rates for the green heron were not available. Nagy (1999) provided allometric equations for several orders of birds but not for Ciconiiformes (herons). Dry weight food ingestion in the conservative scenario (0.031 kg/day) was derived using the Nagy (1999) equation for "marine birds" based on a 0.224 kg bird. The 0.224 kg body weight value is the mean plus 2 standard deviations from Dunning's (1993) green heron data (see paragraph immediately above); this value would approximate the 98th percentile, and thus, represents a conservative approach. Dry weight food ingestion in the average scenario (0.030 kg/day) was derived using the Nagy (1999) equation for marine birds based on a 0.212 kg bird, which is the mean body weight value from Dunning's (1993) green heron data.

Water ingestion rates for the green heron were not available. Water ingestion in the conservative scenario (0.022 L/day) was derived using equation 3-15 from the *Wildlife Exposure Factors Handbook* (USEPA, 1993) for a 0.224 kg bird. Water ingestion in the average scenario (0.021 L/day) was derived using equation 3-15 from the *Wildlife Exposure Factors Handbook* (USEPA, 1993) for a 0.212 kg bird.

Sediment ingestion data for fish-eating birds were not available in the literature. However, a 5 percent sediment ingestion rate for piscivorous birds represented by the green heron was assumed. Unlike shorebirds, herons do not probe the sediment. Green herons capture prey with a darting stroke, grasping or spearing with the bill (Davis and Kushlan, 1994). Therefore, an assumed value of 5 percent for incidental

sediment ingestion is probably a conservative estimate. The two sediment ingestion rates (0.0016 kg/day and 0.0015 kg/day) were calculated by multiplying the two food ingestion rates (0.031 kg/day and 0.030 kg/day) by incidentally ingested sediment (5 percent of diet).

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APPENDIX I

EXPOSURE PARAMETERS FOR THE TERRESTRIAL WILDLIFE MODEL
TANK FARMS 4 UNIT 1 AND 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Species/Exposure Inputs	Conservative Inputs		Average Inputs	
	Values	Units	Values	Units
Bobwhite Quail				
Body Weight = BW	1.540E-01	kg	1.751E-01	kg
Food Ingestion Rate = If	1.628E-02	kg/day	1.361E-02	kg/day
Water Ingestion Rate = Iw	2.276E-02	L/day	1.926E-02	L/day
Soil Ingestion Rate = Is	2.263E-03	kg/day	8.304E-04	kg/day
Home Range = HR	Assume 100% on site		1.880E+01	acres
Meadow Vole				
Body Weight = BW	1.700E-02	kg	3.580E-02	kg
Food Ingestion Rate = If	1.878E-03	kg/day	1.744E-03	kg/day
Water Ingestion Rate = Iw	7.513E-03	L/day	6.261E-03	L/day
Soil Ingestion Rate = Is	6.010E-05	kg/day	2.093E-05	kg/day
Home Range = HR	Assume 100% on site		6.590E-02	acres
American Robin				
Body Weight = BW	7.73E-02	kg	8.04E-02	kg
Food Ingestion Rate = If	1.25E-02	kg/day	1.19E-02	kg/day
Water Ingestion Rate = Iw	1.21E-02	L/day	1.13E-02	L/day
Soil Ingestion Rate - Is	2.046E-03	kg/day	7.601E-04	kg/day
Home Range = HR	Assume 100% on site		6.095E-01	acres
Short-Tailed Shrew				
Body Weight = BW	1.500E-02	kg	1.610E-02	kg
Food Ingestion Rate = If	1.600E-03	kg/day	1.433E-03	kg/day
Water Ingestion Rate = Iw	4.280E-03	L/day	3.600E-03	L/day
Soil Ingestion Rate - Is	4.801E-05	kg/day	1.289E-05	kg/day
Home Range = HR	Assume 100% on site		9.699E-01	acres
Mink				
Body Weight = BW	5.500E-01	kg	1.103E+00	kg
Food Ingestion Rate = If	6.067E-02	kg/day	4.504E-02	kg/day
Water Ingestion Rate = Iw	1.213E-01	L/day	7.308E-02	L/day
Sediment Ingestion Rate = Is	5.703E-03	kg/day	4.234E-03	kg/day
Home Range = HR	Assume 100% on site		1.558E+03	acres
Green Heron				
Body Weight = BW	2.00E-01	kg	2.12E-01	kg
Food Ingestion Rate = If	3.10E-02	kg/day	3.00E-02	kg/day
Water Ingestion Rate = Iw	2.20E-02	L/day	2.10E-02	L/day
Sediment Ingestion Rate = Is	1.600E-03	kg/day	1.500E-03	kg/day
Home Range = HR	Assume 100% on site		1.000E+01	km-radius

Notes:
The exposure factors were derived as presented in this Appendix.

The soil/sediment ingestion rates were calculated by multiplying the food ingestion rates by the following incidental soil/sediment ingestion rates:

Receptor	Conservative	Average	Source
Bobwhite quail	13.90%	6.10%	1, 2
Meadow Vole	3.20%	1.20%	1
American Robin	16.40%	6.40%	1,4
Short-tailed Shrew	3%	0.90%	1
Mink	9.4%	9.4%	3, 5
Green Heron	5%	5%	6

1 - USEPA (U.S. Environmental Protection Agency), 2007. Ecological Soil Screening Level Guidance, Office of Emergency and Remedial Response. February.
2 - Based on the mourning dove.
3 - Beyer, N., E. Connor, and S. Gerould. 1994. Estimates of Soil Ingestion by Wildlife. Journal of Wildlife Management 58(2) pp. 375-382.
4 - Based on the American woodcock
5 - Based on the raccoon
6 - Based on piscivorous birds

APPENDIX I

DRY WEIGHT DERIVATION OF BODY WEIGHT, FOOD INTAKE, AND WATER INTAKE FACTORS FOR TERRESTRIAL FOOD CHAIN MODELS

Data from EPA (1993)				Derivation of Factors for Modeling		
Species/Factor	**Age/Sex/ Cond./Seas.**	**Value**	**Study Average**	**Calculation of Values**		**Notes**
American Robin						
Body Weight (g)	A B	77.3	77.3	Minimum Value	0.0773 kg	
				Maximum Value	0.0862 kg	
	A M nonbreeding	86.2		Overall Study Average	0.0804 kg	
	A F nonbreeding	83.6	84.9			
	A M breeding	77.4				
	A F breeding	80.6	79			
Food Ingestion Rate (g/g-day)	B B free-living	0.89		*For Eating Mostly Fruit*		
				Conservative value:	0.0281 kg/day	Maximum ingestion rate * Average Body weight * 0.23[1]
	- B free-living	1.52				
				Average value	0.0223 kg/day	Average ingestion rate * Average Body weight * 0.23[1]
						[1] - 0.23 = percent solids in fruit to convert to a dry weight ingestion rate
	Overall Study Average		1.21			
				Based on Metabolic Scaling		
					0.01247 kg/day	Used maximum body weight in below equation
					0.01188 kg/day	Used average body weight in below equation
						Food ingestion rates were calculated from Nagy et al., (1999) for insectivores as follows: FI = $(9.7*BW(g)^{0.705})/18kJ/g/1000$
Water Ingestion Rate (g/g-day)	A B	0.14		Conservative value:	0.012 L/day	Ingestion rate * Maximum Body weight
				Average value	0.011 L/day	Ingestion rate * Average Body weight
Short-Tailed Shrew						
Body Weight (g)	A B	15	15	Minimum Value	0.0150 kg	
				Maximum Value	0.01921 kg	
	M summer	19.21	17.27	Overall Study Average	0.01613 kg	
	F summer	17.4				
	M fall	16.87				
	M fall	15.58				
Food Ingestion Rate (g/g-day)	A B	0.49		Conservative value:	0.0016 kg/day	Maximum ingestion rate * Average Body weight * 0.16[1]
	A B	0.62		Average value	0.00143 kg/day	Average ingestion rate * Average Body weight * 0.16[1]
	Overall Study Average		0.555			[1] - 0.16 = percent solids in earthworms to convert to a dry weight ingestion rate
Water Ingestion Rate (g/g-day)	A B	0.223		Conservative value:	0.00428 L/day	Ingestion rate * Maximum Body weight
				Average value	0.00360 L/day	Ingestion rate * Average Body weight

APPENDIX I

DRY WEIGHT DERIVATION OF BODY WEIGHT, FOOD INTAKE, AND WATER INTAKE FACTORS FOR TERRESTRIAL FOOD CHAIN MODELS

Data from EPA (1993)				Derivation of Factors for Modeling		
Species/Factor	**Age/Sex/ Cond./Seas.**	**Value**	**Study Average**	**Calculation of Values**		**Notes**
Mink						
Body Weight (g)	A M spring	1734	1354	Minimum Value	0.550 kg	
	A F spring	974		Maximum Value	1.734 kg	
				Overall Study Average	1.1031 kg	
	A M summer	1040	852			
	A M fall	1233				
	A F summer	550				
	A F fall	586				
Food Ingestion Rate (g/g-day)	A M summer	0.13	0.13	Conservative value:	0.0607 kg/day	Maximum ingestion rate * Average Body weight * 0.25[1]
	A M winter	0.12	0.14	Average value	0.04504 kg/day	Average ingestion rate * Average Body weight * 0.25[1]
	A F winter	0.16				
	A M yr-round	0.22	0.22			
	Overall Study Average		0.163			[1] - 0.25 = percent solids in fish to convert to a dry weight ingestion rate
Water Ingestion Rate (g/g-day)	A F	0.11	0.105	Conservative value:	0.1213 kg/day	Maximum ingestion rate * Average Body weight
	A M	0.099				
				Average value	0.07308 kg/day	Average ingestion rate * Average Body weight
	A F	0.028	0.028			
	Overall Study Average		0.0663			
Meadow Vole						
Body Weight (g)	A M summer	40	36.7	Minimum Value	0.017 kg	
	A F summer	33.4		Maximum Value	0.052 kg	
				Overall Study Average	0.0358 kg	
	A M spring	52.4	48.0			
	A F spring	43.5				
	A B spring	26	21.2			
	A B summer	24.3				
	A B fall	17				
	A B winter	17.5				
	A M	35.5	37.3			
	A F	39				
Food Ingestion Rate (g/g-day)		0.3	0.33	Conservative value:	0.001878 kg/day	Maximum ingestion rate * Average Body weight * 0.15 [1]
		0.35				
				Average value	0.001744 kg/day	Average ingestion rate * Average Body weight * 0.15[1]
						[1] - 0.15 = percent solids in plant foilage to convert to a dry weight ingestion rate
Water Ingestion Rate	A B	0.21	0.18	Conservative value:	0.007513 L/day	Maximum ingestion rate * Average Body weight
	A B	0.14		Average value	0.006261 L/day	Average ingestion rate * Average Body weight

APPENDIX I

DRY WEIGHT DERIVATION OF BODY WEIGHT, FOOD INTAKE, AND WATER INTAKE FACTORS FOR TERRESTRIAL FOOD CHAIN MODELS

	Data from EPA (1993)			Derivation of Factors for Modeling		
Species/Factor	**Age/Sex/ Cond./Seas.**	**Value**	**Study Average**	**Calculation of Values**		**Notes**
Northern Bobwhite Quail						
Body Weight (g)	A B fall	189.9	191	Minimum Value	0.154 kg	
	A B winter	193.9		Maximum Value	0.194 kg	
	A B spring	190		Overall Study Average	0.1751 kg	
	A M winter	181	177			
	A M summer	163				
	A F winter	183				
	A F summer	180				
	A M winter	161	157			
	A M summer	154				
	A F winter	157				
	A F summer	157				
Food Ingestion Rate (g/g-day)	A B winter	0.093	0.078	Conservative value:	0.01628 kg/day	Maximum ingestion rate * Average Body weight
	A B spring	0.067				
	A B summer	0.079		Average value	0.01361 kg/day	Average ingestion rate * Average Body weight
	A B fall	0.072				
						Dry weight to wet weight conversion factor not needed because food items on a dry weight basis in the wildlife exposure factors handbook.
Water Ingestion Rate (g/g-day)	A M summer	0.1	0.11	Conservative value:	0.022762 L/day	Maximum ingestion rate * Average Body weight
	A F summer	0.13				
	A M summer	0.11		Average value	0.01926 L/day	Average ingestion rate * Average Body weight
	A F summer	0.1				
Green Heron						
Body Weight (g)	AB	212	212	Mean of 34 adults from Florida = 212 g, standard deviation = 5.92 g (Dunning, 1993)		
				Conservative value:	0.200 kg	Mean minus 2 standard deviations (Dunning, 1993)
				Average value	0.212 kg	Mean (Dunning, 1993)
Food Ingestion Rate (g/g-day)				Conservative value:	0.031 kg/day	Using allometric equation from Nagy (2001) for 0.224 kg marine bird (0.224 kg = mean plus 2 standard deviations from Dunning (1993) green heron data)
				Average value	0.030 kg/day	Using allometric equation from Nagy (2001) for 0.212 kg marine bird
Water Ingestion Rate (L/day)				Conservative value:	0.022 L/day	Using equation 3-15 from USEPA (1993) for 0.224 kg bird
				Average value	0.021 L/day	Using equation 3-15 from USEPA (1993) for 0.212 kg bird

Notes:
A = Adult
F = Female, M = Male, B = Both
BW = Body Weight

APPENDIX I

BIOACCUMULATION FACTORS

This attachment presents the bioaccumulation factors (BAFs) that were used in the food chain models. The following sources of BAFs were used in the ecological risk assessment for most of the chemicals:

- Plant and Soil Invertebrate BAFs: EPA Guidance for Developing Ecological Soil Screening Levels, Attachment 4-1 (USEPA, 2007).

- Plant BAFs (organic chemicals): Toxicity and Chemical-Specific Factors Database (ORNL, 2009).

- Plant BAFs (metals): Empirical Model for the Uptake of Inorganic Chemicals from Soil by Plants (ORNL, 1998a).

- Soil Invertebrate BAFs: Development and Validation of Bioaccumulation Models for Earthworms (Sample et al., 1998).

- Fish BSAFs: The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey: Second Edition. (USEPA, 2004).

- Sediment Invertebrate BSAFs: Biota Sediment Accumulation Factors for Invertebrates (ORNL, 1998b).

The BAF/BSAF Table in this Appendix presents the BAFs/BSAFs that were used in the food-chain models for the individual constituents that were detected at Tank Farms 4-1 and 5-1. Note that dry weight BAFs were used for this ERA.

The EPA Guidance for Developing Ecological Soil Screening Levels (Eco SSLs) was the source of the BAFs for some of the chemicals. The majority of these BAFs are actually regression or BAF equations that are used to calculate the tissue concentration from the soil concentration.

BSAFs for fish were obtained from USEPA (2004). BSAFs for metals were not available from USEPA (2004), so BSAFs from ORNL (1998b) for sediment invertebrates were used to estimate

tissue concentrations of metals in food items of piscivorous birds and mammals. A default value of 1.0 was used for the BSAF if chemical-specific data were not available.

The average BAFs for pesticides were calculated from field studies summarized in various studies. BAFs were calculated by dividing the worm concentration by the soil concentration (if the BAFs were not calculated within the study). The BAFs were either presented on a wet-weight or dry weight basis. Wet weight BAFs were derived by multiplying the dry weight BAF by 0.16, which is the percent solids of soil invertebrates (Sample et. al., 1997), while dry-weight BAFs were derived by dividing the dry weight BAF by 0.16. For this ERA, the dry-weight BAFs were used in the food chain model.

An average BAF was calculated for each pesticide, when data from more than one study were available. The compost studies (from Beyer 1990) were not used in the calculation of the average BAFs because properties of the compost may be different than soil. The average BAF was used for both the conservative and average food chain models.

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APPENDIX I

BIOACCUMULATION FACTORS

PARAMETER	Plant BAFs[1,2,3]		Earthworm BAFs[3,4]		Fish BSAFs[5]		Sediment Invertebrate BSAFs[6]	
	Conservative	Average	Conservative	Average	Conservative	Average	Conservative	Average
VOLATILES								
1,2-Dichlorobenzene	NA	NA	NA	NA	1	1	1	1
2-Butanone	1	1	1	1	NA	NA	NA	NA
Acetone	5.2	5.2	1	1	1	1	1	1
Carbon Disulfide	NA	NA	NA	NA	1	1	1	1
Chloroform	1	1	1	1	1	1	1	1
Isopropylbenzene	1	1	1	1	NA	NA	NA	NA
SEMIVOLATILES								
2,4-Dimethylphenol	1.76	1.76	1	1	1	1	1	1
2-Chlorophenol	2.01	2.01	1	1	NA	NA	NA	NA
2-Methylnaphthalene	Regression from Eco SSL		3.04	3.04	1	1	1	1
2-Methylphenol	3	3	1	1	1	1	1	1
4-Methylphenol	1	1	1	1	1	1	1	1
Acenaphthene	Regression from Eco SSL		1.47	1.47	0.29	0.29	1	1
Acenaphthylene	Regression from Eco SSL		22.9	22.9	0.29	0.29	1	1
Anthracene	Regression from Eco SSL		2.42	2.42	0.29	0.29	1	1
Atrazine	NA	NA	NA	NA	1	1	1	1
Benzaldehyde	1.76	1.76	1	1	1	1	1	1
Benzo(a)anthracene	Regression from Eco SSL		1.59	1.59	0.29	0.29	1	1
Benzo(a)pyrene	Regression from Eco SSL		1.33	1.33	0.29	0.29	1	1
Benzo(b)fluoranthene	0.31	0.31	2.6	2.6	0.29	0.29	1	1
Benzo(g,h,i)perylene	Regression from Eco SSL		2.94	2.94	0.29	0.29	1	1
Benzo(k)fluoranthene	Regression from Eco SSL		2.6	2.6	0.29	0.29	1	1
Bis(2-Ethylhexyl)phthalate	0.055	0.055	1	1	1	1	1	1
Carbazole	0.24	0.24	1	1	NA	NA	NA	NA
Chrysene	Regression from Eco SSL		2.29	2.29	0.29	0.29	1	1
Dibenzo(a,h)anthracene	0.13	0.13	2.31	2.31	0.29	0.29	1	1
Di-n-butyl phthalate	0.55	0.55	1	1	1	1	1	1
Fluoranthene	0.5	0.5	3.04	3.04	0.29	0.29	1	1
Fluorene	Regression from Eco SSL		9.57	9.57	0.29	0.29	1	1
Indeno(1,2,3-cd)pyrene	0.11	0.11	2.86	2.86	0.29	0.29	1	1
Naphthalene	12.2	12.2	4.4	4.4	0.29	0.29	1	1
Pentachlorophenol	NA	NA	NA	NA	1	1	1	1
Phenanthrene	Regression from Eco SSL		1.72	1.72	0.29	0.29	1	1
Phenol	5.1	5.1	1	1	1	1	1	1
Pyrene	0.72	0.72	1.75	1.75	0.29	0.29	1	1
PCBs								
4,4'-DDD	Regression from Eco SSL		Regression from Eco SSL		0.28	0.28	1	1
4,4'-DDE	NA	NA	NA	NA	7.7	7.7	1	1
4,4'-DDT	NA	NA	NA	NA	1.67	1.67	1	1
Aldrin	NA	NA	NA	NA	1.8	1.8	1	1
Alpha-BHC	NA	NA	NA	NA	1.8	1.8	1	1
Aroclor-1254	0.013	0.013	15.9	6.67	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	1.85	1.85	64.122	36.215
beta-BHC	0.18	0.18	5	5	NA	NA	NA	NA
delta-BHC	0.9	0.9	5	5	NA	NA	NA	NA
Endosulfan I	0.33	0.33	1	1	NA	NA	NA	NA
Endosulfan Sulfate	0.33	0.33	1	1	NA	NA	NA	NA
Endrin	0.082	0.082	3.6	3.6	NA	NA	NA	NA
Endrin Aldehyde	0.082	0.082	3.6	3.6	1.8	1.8	1	1
Endrin Ketone	0.082	0.082	3.6	3.6	1.8	1.8	1	1
Gamma-BHC (Lindane)	0.27	0.27	5	5	NA	NA	NA	NA
Gamma-Chlordane	NA	NA	NA	NA	2.22	2.22	1	1
Toxaphene	0.062	0.062	1	1	NA	NA	NA	NA
Total Aroclor	0.0029	0.0029	15.9	6.67	1.85	1.85	64.122	36.215
TOTAL DDD/DDE/DDT	Regression from Eco SSL		11.2	11.2	7.7	7.7	1	1
DIOXINS AND FURANS								
TEQ mammal	0.0043	0.0043	22.2	11	NA	NA	NA	NA
TEQ bird	0.0043	0.0043	22.2	11	NA	NA	NA	NA
TEQ Fish	NA	NA	NA	NA	0.025	0.025	1	1
INORGANICS								
Aluminum	0.005	0.00287	0.118	0.043	1	1	1	1
Arsenic	0.03752	0.03752	Regression from Eco SSL		1	1	0.69	0.143
Barium	0.156	0.156	0.091	0.091	1	1	1	1
Beryllium	Regression from Eco SSL		0.045	0.045	1	1	1	1
Cadmium	Regression from Eco SSL		Regression from Eco SSL		1	1	7.99	0.6
Chromium	NA	NA	NA	NA	1	1	0.468	0.1
Cobalt	0.0075	0.0075	0.122	0.122	1	1	1	1
Copper	Regression from Eco SSL		0.515	0.515	1	1	5.25	1.556
Iron	0.01	0.00425	0.078	0.036	1	1	1	1
Lead	Regression from Eco SSL		Regression from Eco SSL		1	1	0.607	0.071
Manganese	NA	NA	NA	NA	1	1	1	1
Mercury	5	0.652	Regression - Sample et al., (1998)		1	1	2.868	1.136
Nickel	Regression from Eco SSL		BAF - Sample et al., (1998)		1	1	2.32	0.486
Selenium	Regression from Eco SSL		Regression or BAF from Eco SSL		1	1	1	1
Silver	NA	NA	NA	NA	1	1	1	1
Thallium	0.004	0.004	1	1	1	1	1	1
Vanadium	0.0485	0.0485	0.042	0.042	1	1	1	1
Zinc	Regression from Eco SSL		Regression from Eco SSL		1	1	7.527	1.936

Notes:
BAF - Bioaccumulation Factor
BSAF - Biota Sediment Accumulation Factor
NA - Not Applicable, not used for food chain modeling
Conservative and average refers to the exposure scenarios for which the uptake factors are used
Default value of 1 is assigned to parameters without uptake factors

Footnotes:
1 - ORNL (2009) for organics; only one value is available for conservative and average exposures
2 - ORNL (September, 1998) for inorganics; conservative value is 90th percentile; average value is the median value.
3 - Where "Eco-SSL" is given, values were calculated using equations from USEPA (2007), Attachment 4-1, Tables 4a (for inorganics) and 4b (for organics).
4 - Sample et al., (1998); conservative value is 90th percentile; average value is median value.
5 - USEPA, 2004; only one value is available for conservative and average exposures. Values for organic chemicals are the same for wet-weight and dry weight.
6 - ORNL (August, 1998) for all chemicals; conservative value is 90th percentile; average value is median value

APPENDIX I

EARTHWORM BAFS FOR PESTICIDES

Parameter	Study Values					Calculated Values		Reference	Comments
	Worm Concentration		Soil Conc. (dry weight)	Dry Weight BAF	Wet Weight BAF	Final Dry Weight[1] BAF	Final Wet Weight[2] BAF		
	Dry Weight	Wet Weight							
Endrin	NA	NA	NA	3.6	NA	3.6	0.576	1	from data collected in 26 agricultural fields

Notes:
BAF - bioaccumulation factor = worm concentration/soil concentration
NA - Not applicable
The percent solids of earthworms is assummed to be 0.16 [Sample et al., 1997])
1 - The calculated dry weight BAF was either obtained directly from the study or was calculated by dividing the wet weight BAF by 0.16
2 - The calculated wet weight BAF was either obtained directly from the study or was calculated by multiplying the dry weight BAF by 0.16

References

1 - Gish, 1970

APPENDIX I

WILDLIFE TOXICITY REFERENCE VALUES

PARAMETER	Mammal		Bird	
	NOAEL	LOAEL	NOAEL	LOAEL
VOLATILES				
1,2-Dichlorobenzene	120	1200	NV	NV
2-Butanone	1771	4571	NV	NV
Acetone	10	50	20089	200890
Carbon Disulfide	12.6	25.6	NV	NV
Chloroform	15	41	NV	NV
Isopropylbenzene	11	33.1	NV	NV
M+P-Xylenes	2.06	2.58	107	1070
Toluene	26	260	NV	NV
SEMIVOLATILES				
2,4-Dimethylphenol	5	25	NV	NV
2-Chlorophenol	0.5	5	NV	NV
2-Methylnaphthalene	65.6	356	2	20
2-Methylphenol	5	15	NV	NV
4-Methylphenol	NV	NV	NV	NV
7,12-Dimethylbenz(a)anthracene	NV	NV	2	20
Acenaphthene	65.6	356	2	20
Acenaphthylene	65.6	356	2	20
Anthracene	65.6	356	2	20
Atrazine	3.5	25	NV	NV
Benzaldehyde	20	40	NV	NV
Benzo(a)anthracene	0.615	38.4	2	20
Benzo(a)pyrene	0.615	38.4	2	20
Benzo(b)fluoranthene	0.615	38.4	2	20
Benzo(g,h,i)perylene	0.615	38.4	2	20
Benzo(k)fluoranthene	0.615	38.4	2	20
Bis(2-Ethylhexyl)phthalate	18.3	183	1.11	11.1
Carbazole	0.615	38.4	2	20
Chrysene	0.615	38.4	2	20
Dibenzo(a,h)anthracene	0.615	38.4	2	20
Di-n-butyl phthalate	550	1833	0.111	1.11
Fluoranthene	65.6	356	2	20
Fluorene	65.6	356	2	20
Indeno(1,2,3-cd)pyrene	0.615	38.4	2	20
Naphthalene	65.6	356	2	20
Pentachlorophenol	8.42	22.65	6.73	52.01
Phenanthrene	65.6	356	2	20
Phenol	6	12	NV	NV
Pyrene	0.615	38.4	2	20
PCBs				
4,4'-DDD	0.147	5.56	0.227	2.7
4,4'-DDE	0.147	5.56	0.227	2.7
4,4'-DDT	0.147	5.56	0.227	2.7
Aldrin	0.2	1	NV	NV
Alpha-BHC	0.014	0.14	0.56	2.25
Alpha-Chlordane	4.58	9.16	2.14	10.7
Aroclor-1254	0.068	0.68	0.18	1.8
Aroclor-1260	0.068	0.68	0.18	1.8
beta-BHC	0.4	2	0.56	2.25
delta-BHC	0.014	0.14	0.56	2.25
Endosulfan I	0.15	1.5	10	100
Endosulfan Sulfate	0.15	1.5	10	100
Endrin	0.092	0.92	0.01035	0.1035
Endrin Aldehyde	0.092	0.92	0.01	0.1
Endrin Ketone	0.092	0.92	0.01	0.1
Gamma-BHC (Lindane)	8	80	2	20

APPENDIX I

WILDLIFE TOXICITY REFERENCE VALUES

PARAMETER	Mammal		Bird	
	NOAEL	LOAEL	NOAEL	LOAEL
Gamma-Chlordane	4.58	9.16	2.14	10.7
Toxaphene	8	80	NV	NV
Total Aroclor	0.068	0.68	0.18	1.8
TOTAL DDD/DDE/DDT	0.147	5.56	0.227	2.7
DIOXINS AND FURANS				
TEQ mammal	0.000001	0.00001	NV	NV
TEQ bird	NV	NV	0.000014	0.00014
TEQ Fish	0.000001	0.00001	0.000014	0.00014
INORGANICS				
Aluminum	1.93	19.3	109.7	1097
Arsenic	1.04	4.55	2.24	4.51
Barium	51.8	82.7	20.8	41.7
Beryllium	0.532	0.673	NV	NV
Cadmium	0.77	6.9	1.47	6.35
Chromium	2.40	58.17	2.66	15.63
Cobalt	7.33	18.90	7.61	18.34
Copper	5.6	82.7	4.05	34.87
Iron	50	500	100	1000
Lead	4.7	186.4	1.63	44.63
Manganese	51.5	145.67	179	376.6
Mercury	0.032	0.16	0.0064	0.064
Nickel	1.70	14.77	6.71	18.57
Selenium	0.143	0.661	0.29	0.819
Silver	6.02	118.6	2.02	60.47
Thallium	0.0074	0.074	NV	NV
Vanadium	4.16	9.44	0.34	1.69
Zinc	75.4	297.58	66.1	171.44

Notes:

The sources of these NOAELS and LOAELS are presented in the table titled "Sources and Endpoints for NOAELS and LOAELS for Terrestrial Wildlife" in this appendix.

The NOAELS and LOAELS in the source table were divided by 10 if a subchronic study was the basis for the value. Also, if only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL. If only a LOAEL was available, the value was divided by 10 to estimate the NOAEL.

APPENDIX I
SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Volatile Organics							
1,2-Dichlorobenzene	120	NOAEL	systemic	chronic	rat	NTP, 1985b	IRIS, 2002
2-Butanone	4571	LOAEL	reproduction	chronic	rat	Cox et al., 1975	Sample et.al., 1996
2-Butanone	1771	NOAEL	reproduction	chronic	rat	Cox et al., 1975	Sample et.al., 1996
Acetone	500	LOAEL	systemic	subchronic	rat	USEPA, 1986	Sample et.al., 1996
Acetone	20089	NOAEL	mortality	chronic	Japanese quail	Hill, 1986	LANL, 2000
Acetone	100	NOEL	systemic	subchronic	rat	USEPA, 1986	Sample et.al., 1996
Carbon Disulfide	256	LOAEL	systemic	subchronic	rat	Hoffman and Klapperstuck, 1990	ASTDR, 1994
Carbon Disulfide	126	NOAEL	systemic	subchronic	rat	Hoffman and Klapperstuck, 1990	ASTDR, 1994
Chloroform	410	LOAEL	systemic	subchronic	rat	Palmer et al., 1979	Sample et.al., 1996
Chloroform	150	NOAEL	systemic	subchronic	rat	Palmer et al., 1979	Sample et.al., 1996
Isopropylbenzene	110	NOAEL	systemic	subchronic	rat	Wolf, 1956	IRIS, 2009
Isopropylbenzene	331	LOAEL	systemic	subchronic	rat	Wolf, 1956	IRIS, 2009
Toluene	260	LOAEL	reproductive	chronic	mouse	Nawrot and Staples, 1989	Sample et.al., 1996
Xylene	2.58	LOAEL	reproduction	chronic	mouse	Marks et al., 1982	Sample et.al., 1996
Xylene	2.06	NOAEL	reproduction	chronic	mouse	Marks et al., 1982	Sample et.al., 1996
Xylene	107	NOAEL	mortality	chronic	Japanese quail	Gallegos, 1997	LANL, 2002
Semivolatiles Organics							
2,4-Dimethylphenol	250	LOAEL	systemic	subchronic	mouse	USEPA, 1989	IRIS, 2007
2,4-Dimethylphenol	50	NOAEL	systemic	subchronic	mouse	USEPA, 1989	IRIS, 2007
2-Chlorophenol	5	NOAEL	reproduction	subchronic	rat	Exon and Koller, 1982	IRIS, 2010
2-Chlorophenol	50	LOAEL	reproduction	subchronic	rat	Exon and Koller, 1982	IRIS, 2010
2-Methylphenol	150	LOAEL	neurotoxicity	Subchronic	rat	USEPA, 1986 and 1987	IRIS, 2002
2-Methylphenol	50	NOAEL	neurotoxicity	subchronic	rat	USEPA, 1986 and 1987	IRIS, 2002
7,12-Dimethylbenz(a)anthracene	20	LOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
7,12-Dimethylbenz(a)anthracene	2	NOAEL	systemic	chronic	nestling/starlings	Trust et al., 1994	
Atrazine	3.5	NOAEL	growth	chronic	rat	Ciba-Geigy Corp., 1986	IRIS, 2010
Atrazine	25	LOAEL	growth	chronic	rat	Ciba-Geigy Corp., 1986	IRIS, 2010
Benzaldehyde	200	NOAEL	systemic	subchronic	rat	Kluwe et al., 1983	IRIS, 2009
Benzaldehyde	400	LOAEL	systemic	subchronic	rat	Kluwe et al., 1983	IRIS, 2009
Bis(2-ethylhexyl)phthalate	183.3	LOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Bis(2-ethylhexyl)phthalate	18.33	NOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Bis(2-ethylhexyl)phthalate	1.11	NOAEL	reproductive	chronic	ringed dove	Peakall, 1974	Sample et.al., 1996
Carbazole	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Carbazole	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Di-n-butylphthalate	1833	LOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Di-n-butylphthalate	1.11	LOAEL	reproductive	chronic	ringed dove	Peakall, 1974	Sample et.al., 1996
Di-n-butylphthalate	550	NOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
High Molecular Weight PAHs	38.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
High Molecular Weight PAHs	0.615	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Low Molecular Weight PAHs	356	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Low Molecular Weight PAHs	65.6	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Pentachlorophenol	22.65	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Pentachlorophenol	52.01	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Pentachlorophenol	8.42	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Pentachlorophenol	6.73	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Phenol	157	LOAEL	reproduction & growth	chronic	rat	Argus Research Laboratories, 1997	IRIS, 2009
Phenol	93	NOAEL	reproduction & growth	chronic	rat	Argus Research Laboratories, 1997	IRIS, 2009
Pesticides							
4,4'-DDT	5.56	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
4,4'-DDT	2.7	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
4,4'-DDT	0.147	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
4,4'-DDT	0.227	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Aldrin	1	LOAEL	reproductive	chronic	rat	Treon and Cleveland, 1955	Sample et.al., 1996
Aldrin	0.2	NOAEL	reproductive	chronic	rat	Treon and Cleveland, 1955	Sample et.al., 1996
Aroclor-1254	1.8	LOAEL	reproductive	chronic	pheasant	Dahlgren et al., 1972	Sample et.al., 1996
Aroclor-1254	0.68	LOAEL	reproduction	chronic	mouse	McCoy et al., 1995	Sample et.al., 1996
beta-BHC	20	LOAEL	systemic	subchronic	rat	Van Velsen et al., 1986	Sample et.al., 1996
beta-BHC	4	NOAEL	systemic	subchronic	rat	Van Velsen et al., 1986	Sample et.al., 1996
BHC (mixed isomers)	0.137	LOAEL	reproductive	chronic	mink	Bleavins et al., 1984	Sample et.al., 1996

APPENDIX I
SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
BHC (mixed isomers)	2.25	LOAEL	reproductive	chronic	Japanese quail	Vos et al., 1971	Sample et.al., 1996
BHC (mixed isomers)	0.563	NOAEL	reproductive	chronic	Japanese quail	Vos et al., 1971	Sample et.al., 1996
Chlordane	10.7	LOAEL	mortality	chronic	red-winged blackbird	Stickel et al., 1983	Sample et.al., 1996
Chlordane	9.16	LOAEL	reproduction	chronic	mouse	WHO, 1984	Sample et.al., 1996
Chlordane	2.14	NOAEL	mortality	chronic	red-winged blackbird	Stickel et al., 1983	Sample et.al., 1996
Chlordane	4.58	NOAEL	reproduction	chronic	mouse	WHO, 1984	Sample et.al., 1996
Endosulfan	1.5	NOAEL	reproduction	subchronic	rat	Dikshith et al., 1984	ATSDR, 1993
Endosulfan	10	NOAEL	reproduction	chronic	gray partridge	Abiola, 1992	Sample et.al., 1996
Endrin	0.92	LOAEL	reproduction	chronic	mouse	Good and Ware, 1969	Sample et.al., 1996
Endrin	0.1035	LOAEL	reproduction	chronic	screech owl	Fleming et al., 1982	Sample et.al., 1996
gamma-BHC (lindane)	20	LOAEL	reproductive	chronic	mallard duck	Chakravarty and Lahiri, 1986	Sample et.al., 1996
gamma-BHC (lindane)	8	NOAEL	reproductive	chronic	rat	Palmer et al., 1978	Sample et.al., 1996
Toxaphene	8	NOAEL	reproduction	chronic	rat	Kennedy et al., 1973	Sample et.al., 1996
Dioxins/Furans							
2,3,7,8-TCDD	0.000001	NOAEL	reproduction	chronic	rat	Murray et al., 1979	Sample et.al., 1996
2,3,7,8-TCDD	0.00001	LOAEL	reproduction	chronic	rat	Murray et al., 1979	Sample et.al., 1996
2,3,7,8-TCDD	0.000014	NOAEL	reproduction	chronic	pheasant	Nosek et al., 1992	Sample et.al., 1996
2,3,7,8-TCDD	0.00014	LOAEL	reproduction	chronic	pheasant	Nosek et al., 1992	Sample et.al., 1996
Inorganics							
Aluminum	19.3	LOAEL	reproductive	chronic	mouse	Ondreicka et al., 1966	Sample et.al., 1996
Aluminum	109.7	NOAEL	reproductive	chronic	ringed dove	Carriere et al., 1986	Sample et.al., 1996
Arsenic	4.51	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Arsenic	4.55	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Arsenic	2.24	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2005	
Arsenic	1.04	NOAEL	reproduction & growth	chronic	dog	USEPA, 2005	
Barium	82.7	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Barium	416.53	LOAEL	Survival	subchronic	chicks	Johnson et al., 1960	Sample et.al., 1996
Barium	51.8	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Barium	208.26	NOAEL	Survival	subchronic	chicks	Johnson et al., 1960	Sample et.al., 1996
Beryllium	0.673	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Beryllium	0.532	NOAEL	Survival	chronic	rat	USEPA, 2005	
Cadmium	6.35	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Cadmium	6.9	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Cadmium	1.47	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Cadmium	0.77	NOAEL	reproduction & growth	chronic	rat	USEPA, 2005	
Chromium(III)	15.63	LOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
Chromium(III)	58.17	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(III)	2.66	NOAEL	reproduction & growth	chronic	birds	USEPA, 2008	
Chromium(III)	2.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(VI)	38.37	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Chromium(VI)	9.24	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2008	
Cobalt	18.34	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Cobalt	18.9	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Cobalt	7.61	NOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Cobalt	7.33	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Copper	34.87	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Copper	82.7	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Copper	4.05	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2007	
Copper	5.6	NOAEL	reproduction & growth	chronic	pig	USEPA, 2007	
Cyanide	68.7	NOAEL	reproductive	chronic	rat	Tewe and Maner, 1981	Sample et.al., 1996
Iron	500	LOAEL	unknown	chronic	rabbit	NAS, 1980	

APPENDIX I
SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Iron	1000	LOAEL	unknown	chronic	poultry	NAS, 1980	
Lead	44.6	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Lead	186.4	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Lead	1.63	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2005	
Lead	4.7	NOAEL	reproduction & growth	chronic	rat	USEPA, 2005	
Manganese	376.6	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Manganese	145.67	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Manganese	179	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Manganese	51.5	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Mercury	0.064	LOAEL	reproductive	chronic	mallard duck	Heinz, 1979	Sample et.al., 1996
Mercury	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Nickel	18.57	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Nickel	14.77	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Nickel	6.71	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Nickel	1.7	NOAEL	reproduction & growth	chronic	mouse	USEPA, 2007	
Selenium	0.819	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Selenium	0.661	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Selenium	0.29	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2007	
Selenium	0.143	NOAEL	reproduction & growth	chronic	pig	USEPA, 2007	
Silver	60.47	LOAEL	reproduction & growth	chronic	birds	USEPA, 2006	
Silver	118.62	LOAEL	reproduction & growth	subchronic*	mammals	USEPA, 2006	
Silver	2.02	NOAEL	reproduction & growth	subchronic*	turkey	USEPA, 2006	
Silver	6.02	NOAEL	reproduction & growth	chronic	pig	USEPA, 2006	
Thallium	0.74	LOAEL	reproductive	subchronic	rat	Formigli et al., 1986	Sample et.al., 1996
Vanadium	1.686	LOAEL	reproduction & growth	chronic	birds	USEPA, 2005	
Vanadium	9.436	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2005	
Vanadium	0.344	NOAEL	reproduction & growth	chronic	chicken	USEPA, 2005	
Vanadium	4.16	NOAEL	reproduction & growth	chronic	mouse	USEPA, 2005	
Zinc	297.58	LOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Zinc	171.44	LOAEL	reproduction & growth	chronic	birds	USEPA, 2007	
Zinc	75.4	NOAEL	reproduction & growth	chronic	mammals	USEPA, 2007	
Zinc	66.1	NOAEL	reproduction & growth	chronic	birds	USEPA, 2007	

Notes:
NOAEL = No Observed Adverse Effects Level
LOAEL = Lowest Observed Adverse Effects Level
The NOAELs and LOAELs for the following PAHs are based on the Low Molecular Weight PAH values: acenapthylene, acenaphthene, anthracene, fluoranthene, fluorene, phenanthrene, 2-methylnaphthalene, and naphthalene.
The NOAELs and LOAELs for the following PAHs are based on the High Molecular Weight PAH values: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-c,d)pyrene, and pyrene.
The NOAELs and LOAELs for the PAHs for birds were based on 7,12-dimethylbenz(a)anthracene.
The LOAELs for Aroclor-1254 were used as surrogates for Aroclors.
The NOAELs and LOAELs for alpha-BHC were used as surrogatea for delta-BHC.
The NOAELs and LOAELs for 4,4-DDT were used as surrogates for 4,4'-DDD, 4,4'-DDE, and total DDD/DDE/DDT.
The LOAELs for endrin were used as surrogates for endrin aldehyde and endrin ketone.
The NOAELs and LOAELs for 2,3,7,8-TCDD were used as surrogates for TEQ bird, mammal, and fish.
The LOAELs used for several metals were calculated as the geometric mean of growth and reproduction data from the Ecological Soil Screening Levels (U.S. EPA, 2005, 2006, 2007).
References for the NOAELS and LOAELs are presented in this Attachment and Titled "TRV Source and Endpoint References".
* Value has been adjusted for chronic effects.

APPENDIX I
SOURCES AND ENPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

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APPENDIX I

CHEMICAL CONCENTRATIONS IN SURFACE SOIL AND TISSUE
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Surface Soil Concentrations (mg/kg)				Surface Water Concentrations (mg/L)		Earthworm Bioaccumulation Factors		Earthworm Concentrations (mg/kg)		Plant Bioaccumulation Factors		Plant Concentrations (mg/kg)	
	Maximum Detection	95% UCL	Average of Positive Detections	95% UCL or Average (1)	Maximum Detection	Average Concentration(1)	Conservative	Average	Maximum Detection	95% UCL or Average	Conservative	Average	Maximum Detection	95% UCL or Average
Volatile Organics														
2-BUTANONE	1.50E-01	2.23E-02	3.51E-02	2.23E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.50E-01	2.23E-02	1.00E+00	1.00E+00	1.50E-01	2.23E-02
ACETONE	1.60E-01	3.78E-02	3.48E-02	3.78E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.60E-01	3.78E-02	5.20E+00	5.20E+00	8.32E-01	1.96E-01
Semivolatile Organics														
2,4-DIMETHYLPHENOL	3.90E-02	NA	3.90E-02	3.90E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	3.90E-02	3.90E-02	1.76E+00	1.76E+00	6.86E-02	6.86E-02
2-CHLOROPHENOL	8.00E-03	6.64E-03	6.58E-03	6.64E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	8.00E-03	6.64E-03	2.01E+00	2.01E+00	1.61E-02	1.33E-02
2-METHYLNAPHTHALENE	4.70E-02	1.99E-02	1.83E-02	1.99E-02	0.00E+00	0.00E+00	3.04E+00	3.04E+00	1.43E-01	6.04E-02	Regression from Eco SSL		6.65E-02	4.50E-02
2-METHYLPHENOL	3.00E-02	3.00E-02	1.72E-02	3.00E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	3.00E-02	3.00E-02	3.00E+00	3.00E+00	9.00E-02	9.00E-02
4-METHYLPHENOL	8.10E-02	1.80E-02	4.73E-02	1.80E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	8.10E-02	1.80E-02	1.00E+00	1.00E+00	8.10E-02	1.80E-02
ACENAPHTHENE	1.00E-01	1.00E-01	2.54E-02	1.00E-01	0.00E+00	0.00E+00	1.47E+00	1.47E+00	1.47E-01	1.47E-01	Regression from Eco SSL		2.75E-02	2.75E-02
ACENAPHTHYLENE	2.50E+00	7.73E-01	1.85E-01	7.73E-01	0.00E+00	0.00E+00	2.29E+01	2.29E+01	5.73E+01	1.77E+01	Regression from Eco SSL		6.58E-01	2.60E-01
ANTHRACENE	8.80E+00	4.07E+00	5.73E-01	4.07E+00	0.00E+00	0.00E+00	2.42E+00	2.42E+00	2.13E+01	9.84E+00	Regression from Eco SSL		2.02E+00	1.11E+00
BENZO(A)ANTHRACENE	5.40E+01	2.47E+01	2.64E+00	2.47E+01	1.70E-04	1.35E-04	1.59E+00	1.59E+00	8.59E+01	3.93E+01	Regression from Eco SSL		7.14E-01	4.49E-01
BENZO(A)PYRENE	2.40E+01	1.10E+01	1.21E+00	1.10E+01	0.00E+00	0.00E+00	1.33E+00	1.33E+00	3.19E+01	1.47E+01	Regression from Eco SSL		2.82E+00	1.32E+00
BENZO(B)FLUORANTHENE	4.90E+01	2.24E+01	2.33E+00	2.24E+01	0.00E+00	0.00E+00	2.60E+00	2.60E+00	1.27E+02	5.84E+01	3.10E-01	3.10E-01	1.52E+01	6.96E+00
BENZO(G,H,I)PERYLENE	8.50E+00	3.92E+00	4.56E-01	3.92E+00	0.00E+00	0.00E+00	2.94E+00	2.94E+00	2.50E+01	1.15E+01	Regression from Eco SSL		4.95E+00	1.98E+00
BENZO(K)FLUORANTHENE	1.90E+01	8.73E+00	9.74E-01	8.73E+00	0.00E+00	0.00E+00	2.60E+00	2.60E+00	4.94E+01	2.27E+01	Regression from Eco SSL		1.45E+00	7.44E-01
BIS(2-ETHYLHEXYL)PHTHALATE	3.20E-01	1.97E-01	1.26E-01	1.97E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	3.20E-01	1.97E-01	5.50E-02	5.50E-02	1.76E-02	1.08E-02
CARBAZOLE	7.40E-01	NA	7.40E-01	7.40E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	7.40E-01	7.40E-01	2.40E-01	2.40E-01	1.78E-01	1.78E-01
CHRYSENE	5.90E+01	2.70E+01	2.89E+00	2.70E+01	1.10E-04	1.10E-04	2.29E+00	2.29E+00	1.35E+02	6.19E+01	Regression from Eco SSL		7.53E-01	4.73E-01
DI-N-BUTYL PHTHALATE	7.80E-02	NA	7.80E-02	7.80E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	7.80E-02	7.80E-02	5.50E-01	5.50E-01	4.29E-02	4.29E-02
DIBENZO(A,H)ANTHRACENE	3.90E+00	1.81E+00	3.00E-01	1.81E+00	0.00E+00	0.00E+00	2.31E+00	2.31E+00	9.01E+00	4.19E+00	1.30E-01	1.30E-01	5.07E-01	2.36E-01
FLUORANTHENE	8.30E+01	3.80E+01	3.89E+00	3.80E+01	1.60E-04	1.60E-04	3.04E+00	3.04E+00	2.52E+02	1.16E+02	5.00E-01	5.00E-01	4.15E+01	1.90E+01
FLUORENE	4.70E-01	8.48E-02	6.18E-02	8.48E-02	0.00E+00	0.00E+00	9.57E+00	9.57E+00	4.50E+00	8.12E-01	Regression from Eco SSL		7.33E-03	3.17E-02
INDENO(1,2,3-CD)PYRENE	8.50E+00	3.91E+00	4.50E-01	3.91E+00	0.00E+00	0.00E+00	2.86E+00	2.86E+00	2.43E+01	1.12E+01	1.10E-01	1.10E-01	9.35E-01	4.30E-01
NAPHTHALENE	2.10E-02	7.45E-03	8.70E-03	7.45E-03	0.00E+00	0.00E+00	4.40E+00	4.40E+00	9.24E-02	3.28E-02	1.22E+01	1.22E+01	2.56E-01	9.08E-02
PHENANTHRENE	4.40E-01	1.82E-01	7.00E-02	1.82E-01	1.20E-04	1.20E-04	1.72E+00	1.72E+00	7.57E-01	3.12E-01	Regression from Eco SSL		5.09E-01	2.94E-01
PHENOL	6.80E-02	3.12E-02	3.41E-02	3.12E-02	1.00E-04	1.00E-04	1.00E+00	1.00E+00	6.80E-02	3.12E-02	5.10E+00	5.10E+00	3.47E-01	1.59E-01
PYRENE	8.60E+01	3.94E+01	4.01E+00	3.94E+01	2.30E-04	2.30E-04	1.75E+00	1.75E+00	1.51E+02	6.89E+01	7.20E-01	7.20E-01	6.19E+01	2.83E+01
Pesticides/PCBs														
4,4'-DDD	4.90E-02	3.68E-02	2.41E-02	3.68E-02	0.00E+00	0.00E+00	Regression from Eco SSL		3.90E-01	3.19E-01	Regression from Eco SSL		8.39E-03	6.75E-03
BETA-BHC	1.40E-02	7.21E-03	1.00E-02	7.21E-03	0.00E+00	0.00E+00	5.00E+00	5.00E+00	7.00E-02	3.61E-02	1.80E-01	1.80E-01	2.52E-03	1.30E-03
DELTA-BHC	3.90E-03	NA	3.90E-03	3.90E-03	0.00E+00	0.00E+00	5.00E+00	5.00E+00	1.95E-02	1.95E-02	9.00E-01	9.00E-01	3.51E-03	3.51E-03
ENDOSULFAN I	2.50E-03	NA	2.50E-03	2.50E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.50E-03	2.50E-03	3.30E-01	3.30E-01	8.25E-04	8.25E-04
ENDOSULFAN SULFATE	2.20E-02	2.20E-02	1.34E-02	2.20E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.20E-02	2.20E-02	3.30E-01	3.30E-01	7.26E-03	7.26E-03
ENDRIN	7.90E-03	NA	7.90E-03	7.90E-03	0.00E+00	0.00E+00	3.60E+00	3.60E+00	2.84E-02	2.84E-02	8.20E-02	8.20E-02	6.48E-04	6.48E-04
ENDRIN ALDEHYDE	3.50E-02	NA	3.50E-02	3.50E-02	0.00E+00	0.00E+00	3.60E+00	3.60E+00	1.26E-01	1.26E-01	8.20E-02	8.20E-02	2.87E-03	2.87E-03
ENDRIN KETONE	6.90E-02	4.39E-02	3.64E-02	4.39E-02	0.00E+00	0.00E+00	3.60E+00	3.60E+00	2.48E-01	1.58E-01	8.20E-02	8.20E-02	5.66E-03	3.60E-03
GAMMA-BHC (LINDANE)	3.40E-03	NA	3.40E-03	3.40E-03	0.00E+00	0.00E+00	5.00E+00	5.00E+00	1.70E-02	1.70E-02	2.70E-01	2.70E-01	9.18E-04	9.18E-04
TOTAL DDD/DDE/DDT	5.90E-02	1.64E-02	2.19E-02	1.64E-02	0.00E+00	0.00E+00	1.12E+01	1.12E+01	6.61E-01	1.83E-01	Regression from Eco SSL		9.64E-03	3.67E-03
TOXAPHENE	2.40E-01	NA	2.40E-01	2.40E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.40E-01	2.40E-01	6.20E-02	6.20E-02	2.77E-02	2.77E-02
Dioxins														
TEQ BIRD	2.76E-06	1.55E-06	1.05E-06	1.55E-06	0.00E+00	0.00E+00	2.22E+01	1.10E+01	6.14E-05	1.71E-05	4.30E-03	4.30E-03	1.19E-08	6.67E-09
TEQ MAMMAL	7.18E-06	2.97E-06	3.43E-06	2.97E-06	0.00E+00	0.00E+00	2.22E+01	1.10E+01	1.60E-04	3.27E-05	4.30E-03	4.30E-03	3.09E-08	1.28E-08
Inorganics														
ALUMINUM	1.52E+04	1.05E+04	9.66E+03	1.05E+04	0.00E+00	0.00E+00	1.18E-01	4.30E-02	1.79E+03	4.53E+02	5.00E-03	2.87E-03	7.60E+01	3.02E+01
ARSENIC	5.95E+01	1.58E+01	1.18E+01	1.58E+01	4.73E-04	3.97E-04	Regression from Eco SSL		4.32E+00	1.69E+00	3.75E-02	3.75E-02	2.23E+00	5.92E-01
BARIUM	5.67E+01	3.29E+01	2.96E+01	3.29E+01	1.04E-02	9.28E-03	9.10E-02	9.10E-02	5.16E+00	2.99E+00	1.56E-01	1.56E-01	8.85E+00	5.13E+00
BERYLLIUM	7.00E-01	4.20E-01	3.61E-01	4.20E-01	0.00E+00	0.00E+00	4.50E-02	4.50E-02	3.15E-02	1.89E-02	Regression from Eco SSL		4.50E-01	3.09E-01
CADMIUM	4.80E-01	2.31E-01	2.08E-01	2.31E-01	0.00E+00	0.00E+00	Regression from Eco SSL		4.62E+00	2.58E+00	Regression from Eco SSL		4.17E-01	2.79E-01
COBALT	2.05E+01	1.33E+01	1.18E+01	1.33E+01	9.31E-04	4.53E-04	1.22E-01	1.22E-01	2.50E+00	1.62E+00	7.50E-03	7.50E-03	1.54E-01	9.98E-02
COPPER	2.52E+01	1.68E+01	1.49E+01	1.68E+01	3.70E-03	1.86E-03	5.15E-01	5.15E-01	1.30E+01	8.65E+00	Regression from Eco SSL		6.95E+00	5.93E+00
IRON	5.32E+04	3.35E+04	3.02E+04	3.35E+04	5.45E-01	3.72E-01	7.80E-02	3.60E-02	4.15E+03	1.20E+03	1.00E-02	4.25E-03	5.32E+02	1.42E+02
LEAD	6.35E+01	2.62E+01	2.18E+01	2.62E+01	9.28E-04	3.82E-04	Regression from Eco SSL		2.29E+01	1.12E+01	Regression from Eco SSL		2.72E+00	1.65E+00
MERCURY	1.40E-01	6.75E-02	6.30E-02	6.75E-02	0.00E+00	0.00E+00	Regression - Sample et al., (1998)		5.58E-01	4.36E-01	5.00E+00	6.52E-01	7.00E-01	4.40E-02
NICKEL	3.71E+01	2.53E+01	2.26E+01	2.53E+01	3.50E-03	2.29E-03	BAF - Sample et al., (1998)		3.93E+01	2.68E+01	Regression rom Eco SSL		1.62E+00	1.21E+00
SELENIUM	3.50E+00	1.50E+00	1.39E+00	1.50E+00	2.31E-04	1.99E-04	Regression or BAF from Eco SSL		2.32E+00	1.25E+00	Regression from Eco SSL		2.03E+00	7.95E-01
THALLIUM	5.30E+00	3.32E+00	3.58E+00	3.32E+00	0.00E+00	0.00E+00	1.00E+00	1.00E+00	5.30E+00	3.32E+00	4.00E-03	4.00E-03	2.12E-02	1.33E-02
VANADIUM	3.76E+01	2.27E+01	2.08E+01	2.27E+01	0.00E+00	0.00E+00	4.20E-02	4.20E-02	1.58E+00	9.52E-01	4.85E-02	4.85E-02	1.82E-01	1.10E-01
ZINC	1.25E+02	7.79E+01	6.76E+01	7.79E+01	0.00E+00	0.00E+00	Regression from Eco SSL		4.17E+02	3.57E+02	Regression from Eco SSL		7.01E+01	5.39E+01

1 - The average positive detections value was used only if a 95% UCL was not able to be calculated.

APPENDIX I

MEADOW VOLE - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
2-BUTANONE	1.50E-01	0.00E+00	1.50E-01	5.30E-04	0.00E+00	1.66E-02	1.71E-02	1.77E+03	4.57E+03	9.66E-06	3.74E-06
ACETONE	1.60E-01	0.00E+00	8.32E-01	5.66E-04	0.00E+00	9.19E-02	9.25E-02	1.00E+01	5.00E+01	9.25E-03	1.85E-03
Semivolatile Organics											
2,4-DIMETHYLPHENOL	3.90E-02	0.00E+00	6.86E-02	1.38E-04	0.00E+00	7.58E-03	7.72E-03	5.00E+00	2.50E+01	1.5E-03	3.1E-04
2-CHLOROPHENOL	8.00E-03	0.00E+00	1.61E-02	2.83E-05	0.00E+00	1.78E-03	1.80E-03	5.00E-01	5.00E+00	3.6E-03	3.6E-04
2-METHYLNAPHTHALENE	4.70E-02	0.00E+00	6.65E-02	1.66E-04	0.00E+00	7.35E-03	7.52E-03	6.56E+01	3.56E+02	1.1E-04	2.1E-05
2-METHYLPHENOL	3.00E-02	0.00E+00	9.00E-02	1.06E-04	0.00E+00	9.94E-03	1.00E-02	5.00E+00	1.50E+01	2.0E-03	6.7E-04
4-METHYLPHENOL	8.10E-02	0.00E+00	8.10E-02	2.86E-04	0.00E+00	8.95E-03	9.24E-03	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	1.00E-01	0.00E+00	2.75E-02	3.54E-04	0.00E+00	3.04E-03	3.40E-03	6.56E+01	3.56E+02	5.2E-05	9.5E-06
ACENAPHTHYLENE	2.50E+00	0.00E+00	6.58E-01	8.84E-03	0.00E+00	7.26E-02	8.15E-02	6.56E+01	3.56E+02	1.2E-03	2.3E-04
ANTHRACENE	8.80E+00	0.00E+00	2.02E+00	3.11E-02	0.00E+00	2.23E-01	2.55E-01	6.56E+01	3.56E+02	3.9E-03	7.1E-04
BENZO(A)ANTHRACENE	5.40E+01	1.70E-04	7.14E-01	1.91E-01	7.51E-05	7.89E-02	2.70E-01	6.15E-01	3.84E+01	4.4E-01	7.0E-03
BENZO(A)PYRENE	2.40E+01	0.00E+00	2.82E+00	8.48E-02	0.00E+00	3.12E-01	3.97E-01	6.15E-01	3.84E+01	6.4E-01	1.0E-02
BENZO(B)FLUORANTHENE	4.90E+01	0.00E+00	1.52E+01	1.73E-01	0.00E+00	1.68E+00	1.85E+00	6.15E-01	3.84E+01	3.0E+00	4.8E-02
BENZO(G,H,I)PERYLENE	8.50E+00	0.00E+00	4.95E+00	3.01E-02	0.00E+00	5.47E-01	5.77E-01	6.15E-01	3.84E+01	9.4E-01	1.5E-02
BENZO(K)FLUORANTHENE	1.90E+01	0.00E+00	1.45E+00	6.72E-02	0.00E+00	1.60E-01	2.28E-01	6.15E-01	3.84E+01	3.7E-01	5.9E-03
BIS(2-ETHYLHEXYL)PHTHALATE	3.20E-01	0.00E+00	1.76E-02	1.13E-03	0.00E+00	1.94E-03	3.08E-03	1.83E+01	1.83E+02	1.7E-04	1.7E-05
CARBAZOLE	7.40E-01	0.00E+00	1.78E-01	2.62E-03	0.00E+00	1.96E-02	2.22E-02	6.56E+01	3.56E+02	3.4E-04	6.2E-05
CHRYSENE	5.90E+01	1.10E-04	7.53E-01	2.09E-01	4.86E-05	8.32E-02	2.92E-01	6.15E-01	3.84E+01	4.7E-01	7.6E-03
DI-N-BUTYL PHTHALATE	7.80E-02	0.00E+00	4.29E-02	2.76E-04	0.00E+00	4.74E-03	5.02E-03	5.50E+02	1.83E+03	9.1E-06	2.7E-06
DIBENZO(A,H)ANTHRACENE	3.90E+00	0.00E+00	5.07E-01	1.38E-02	0.00E+00	5.60E-02	6.98E-02	6.15E-01	3.84E+01	1.1E-01	1.8E-03
FLUORANTHENE	8.30E+01	1.60E-04	4.15E+01	2.93E-01	7.07E-05	4.58E+00	4.88E+00	6.56E+01	3.56E+02	7.4E-02	1.4E-02
FLUORENE	4.70E-01	0.00E+00	7.33E-03	1.66E-03	0.00E+00	8.10E-04	2.47E-03	6.56E+01	3.56E+02	3.8E-05	6.9E-06
INDENO(1,2,3-CD)PYRENE	8.50E+00	0.00E+00	9.35E-01	3.01E-02	0.00E+00	1.03E-01	1.33E-01	6.15E-01	3.84E+01	2.2E-01	3.5E-03
NAPHTHALENE	2.10E-02	0.00E+00	2.56E-01	7.42E-05	0.00E+00	2.83E-02	2.84E-02	6.56E+01	3.56E+02	4.3E-04	8.0E-05
PHENANTHRENE	4.40E-01	1.20E-04	5.09E-01	1.56E-03	5.30E-05	5.62E-02	5.78E-02	6.56E+01	3.56E+02	8.8E-04	1.6E-04
PHENOL	6.80E-02	1.00E-04	3.47E-01	2.40E-04	4.42E-05	3.83E-02	3.86E-02	9.30E+01	1.57E+02	4.2E-04	2.5E-04
PYRENE	8.60E+01	2.30E-04	6.19E+01	3.04E-01	1.02E-04	6.84E+00	7.15E+00	6.15E-01	3.84E+01	1.2E+01	1.9E-01
Pesticides/PCBs											
4,4'-DDD	4.90E-02	0.00E+00	8.39E-03	1.73E-04	0.00E+00	9.27E-04	1.10E-03	1.47E-01	5.56E+00	7.5E-03	2.0E-04
BETA-BHC	1.40E-02	0.00E+00	2.52E-03	4.95E-05	0.00E+00	2.78E-04	3.28E-04	4.00E-01	2.00E+00	8.2E-04	1.6E-04
DELTA-BHC	3.90E-03	0.00E+00	3.51E-03	1.38E-05	0.00E+00	3.88E-04	4.02E-04	1.40E-02	1.40E-01	2.9E-02	2.9E-03
ENDOSULFAN I	2.50E-03	0.00E+00	8.25E-04	8.84E-06	0.00E+00	9.11E-05	1.00E-04	1.50E-01	1.50E+00	6.7E-04	6.7E-05
ENDOSULFAN SULFATE	2.20E-02	0.00E+00	7.26E-03	7.78E-05	0.00E+00	8.02E-04	8.80E-04	1.50E-01	1.50E+00	5.9E-03	5.9E-04
ENDRIN	7.90E-03	0.00E+00	6.48E-04	2.79E-05	0.00E+00	7.16E-05	9.95E-05	9.20E-02	9.20E-01	1.1E-03	1.1E-04
ENDRIN ALDEHYDE	3.50E-02	0.00E+00	2.87E-03	1.24E-04	0.00E+00	3.17E-04	4.41E-04	9.20E-02	9.20E-01	4.8E-03	4.8E-04
ENDRIN KETONE	6.90E-02	0.00E+00	5.66E-03	2.44E-04	0.00E+00	6.25E-04	8.69E-04	9.20E-02	9.20E-01	9.4E-03	9.4E-04
GAMMA-BHC (LINDANE)	3.40E-03	0.00E+00	9.18E-04	1.20E-05	0.00E+00	1.01E-04	1.13E-04	8.00E+00	8.00E+01	1.4E-05	1.4E-06
TOTAL DDD/DDE/DDT	5.90E-02	0.00E+00	9.64E-03	2.09E-04	0.00E+00	1.07E-03	1.27E-03	1.47E-01	5.56E+00	8.7E-03	2.3E-04
TOXAPHENE	2.40E-01	0.00E+00	2.77E-02	8.48E-04	0.00E+00	3.06E-03	3.91E-03	8.00E+00	8.00E+01	4.9E-04	4.9E-05
Dioxins											
TEQ MAMMAL	7.18E-06	0.00E+00	3.09E-08	2.54E-08	0.00E+00	3.41E-09	2.88E-08	1.00E-06	1.00E-05	2.9E-02	2.9E-03
Inorganics											
ALUMINUM	1.52E+04	0.00E+00	7.60E+01	5.37E+01	0.00E+00	8.40E+00	6.21E+01	1.93E+00	1.93E+01	3.2E+01	3.2E+00
ARSENIC	5.95E+01	4.73E-04	2.23E+00	2.10E-01	2.09E-04	2.47E-01	4.57E-01	1.04E+00	4.55E+00	4.4E-01	1.0E-01
BARIUM	5.67E+01	1.04E-02	8.85E+00	2.00E-01	4.60E-03	9.77E-01	1.18E+00	5.18E+01	8.27E+01	2.3E-02	1.4E-02
BERYLLIUM	7.00E-01	0.00E+00	4.50E-01	2.47E-03	0.00E+00	4.97E-02	5.22E-02	5.32E-01	6.73E-01	9.8E-02	7.8E-02
CADMIUM	4.80E-01	0.00E+00	4.17E-01	1.70E-03	0.00E+00	4.60E-02	4.77E-02	7.70E-01	6.90E+00	6.2E-02	6.9E-03
COBALT	2.05E+01	9.31E-04	1.54E-01	7.25E-02	4.11E-04	1.70E-02	8.99E-02	7.33E+00	1.89E+01	1.2E-02	4.8E-03
COPPER	2.52E+01	3.70E-03	6.95E+00	8.91E-02	1.64E-03	7.68E-01	8.59E-01	5.60E+00	8.27E+01	1.5E-01	1.0E-02
IRON	5.32E+04	5.45E-01	5.32E+02	1.88E+02	2.41E-01	5.88E+01	2.47E+02	5.00E+01	5.00E+02	4.9E+00	4.9E-01
LEAD	6.35E+01	9.28E-04	2.72E+00	2.24E-01	4.10E-04	3.01E-01	5.25E-01	4.70E+00	1.86E+02	1.1E-01	2.8E-03
MERCURY	1.40E-01	0.00E+00	7.00E-01	4.95E-04	0.00E+00	7.73E-02	7.78E-02	3.20E-02	1.60E-01	2.4E+00	4.9E-01
NICKEL	3.71E+01	3.50E-03	1.62E+00	1.31E-01	1.55E-03	1.79E-01	3.11E-01	1.70E+00	1.48E+01	1.8E-01	2.1E-02
SELENIUM	3.50E+00	2.31E-04	2.03E+00	1.24E-02	1.02E-04	2.24E-01	2.36E-01	1.43E-01	6.61E-01	1.7E+00	3.6E-01
THALLIUM	5.30E+00	0.00E+00	2.12E-02	1.87E-02	0.00E+00	2.34E-03	2.11E-02	7.40E-03	7.40E-02	2.8E+00	2.8E-01
VANADIUM	3.76E+01	0.00E+00	1.82E-01	1.33E-01	0.00E+00	2.01E-02	1.53E-01	4.16E+00	9.44E+00	3.7E-02	1.6E-02
ZINC	1.25E+02	0.00E+00	7.01E+01	4.42E-01	0.00E+00	7.74E+00	8.19E+00	7.54E+01	2.98E+02	1.1E-01	2.8E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.70E-02	kg
Food Ingestion Rate = (If)	1.88E-03	kg/day
Water Ingestion Rate = (Iw)	7.51E-03	L/day
Soil Ingestion Rate = (Is)	6.01E-05	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

MEADOW VOLE - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Semivolatile Organics											
BENZO(B)FLUORANTHENE	2.24E+01	0.00E+00	6.96E+00	1.31E-02	0.00E+00	3.39E-01	3.52E-01	6.15E-01	3.84E+01	5.7E-01	9.2E-03
PYRENE	3.94E+01	2.30E-04	2.83E+01	2.30E-02	4.02E-05	1.38E+00	1.40E+00	6.15E-01	3.84E+01	2.3E+00	3.7E-02
Pesticides/PCBs											
4,4'-DDD	3.68E-02	0.00E+00	6.75E-03	2.15E-05	0.00E+00	3.29E-04	3.51E-04	1.47E-01	5.56E+00	2.4E-03	6.3E-05
BETA-BHC	7.21E-03	0.00E+00	1.30E-03	4.21E-06	0.00E+00	6.32E-05	6.74E-05	4.00E-01	2.00E+00	1.7E-04	3.4E-05
DELTA-BHC	3.90E-03	0.00E+00	3.51E-03	2.28E-06	0.00E+00	1.71E-04	1.73E-04	1.40E-02	1.40E-01	1.2E-02	1.2E-03
ENDOSULFAN I	2.50E-03	0.00E+00	8.25E-04	1.46E-06	0.00E+00	4.02E-05	4.17E-05	1.50E-01	1.50E+00	2.8E-04	2.8E-05
ENDOSULFAN SULFATE	2.20E-02	0.00E+00	7.26E-03	1.29E-05	0.00E+00	3.54E-04	3.67E-04	1.50E-01	1.50E+00	2.4E-03	2.4E-04
ENDRIN	7.90E-03	0.00E+00	6.48E-04	4.62E-06	0.00E+00	3.16E-05	3.62E-05	9.20E-02	9.20E-01	3.9E-04	3.9E-05
ENDRIN ALDEHYDE	3.50E-02	0.00E+00	2.87E-03	2.05E-05	0.00E+00	1.40E-04	1.60E-04	9.20E-02	9.20E-01	1.7E-03	1.7E-04
ENDRIN KETONE	4.39E-02	0.00E+00	3.60E-03	2.57E-05	0.00E+00	1.75E-04	2.01E-04	9.20E-02	9.20E-01	2.2E-03	2.2E-04
GAMMA-BHC (LINDANE)	3.40E-03	0.00E+00	9.18E-04	1.99E-06	0.00E+00	4.47E-05	4.67E-05	8.00E+00	8.00E+01	5.8E-06	5.8E-07
TOTAL DDD/DDE/DDT	1.64E-02	0.00E+00	3.67E-03	9.56E-06	0.00E+00	1.79E-04	1.88E-04	1.47E-01	5.56E+00	1.3E-03	3.4E-05
TOXAPHENE	2.40E-01	0.00E+00	2.77E-02	1.40E-04	0.00E+00	1.35E-03	1.49E-03	8.00E+00	8.00E+01	1.9E-04	1.9E-05
Inorganics											
IRON	3.35E+04	3.72E-01	1.42E+02	1.96E+01	6.51E-02	6.93E+00	2.65E+01	5.00E+01	5.00E+02	5.3E-01	5.3E-02
MERCURY	6.75E-02	0.00E+00	4.40E-02	3.95E-05	0.00E+00	2.14E-03	2.18E-03	3.20E-02	1.60E-01	6.8E-02	1.4E-02
SELENIUM	1.50E+00	1.99E-04	7.95E-01	8.77E-04	3.48E-05	3.87E-02	3.96E-02	1.43E-01	6.61E-01	2.8E-01	6.0E-02
THALLIUM	3.32E+00	0.00E+00	1.33E-02	1.94E-03	0.00E+00	6.46E-04	2.59E-03	7.40E-03	7.40E-02	3.5E-01	3.5E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	3.58E-02	kg
Food Ingestion Rate = (If)	1.74E-03	kg/day
Water Ingestion Rate = (Iw)	6.26E-03	L/day
Soil Ingestion Rate = (Is)	2.09E-05	kg/day
Home Range = (HR)	6.59E-02	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

BOBWHITE QUAIL - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
2-BUTANONE	1.50E-01	0.00E+00	1.50E-01	2.20E-03	0.00E+00	1.59E-02	1.81E-02	NV	NV	#VALUE!	#VALUE!
ACETONE	1.60E-01	0.00E+00	8.32E-01	2.35E-03	0.00E+00	8.80E-02	9.03E-02	2.01E+04	2.01E+05	4.5E-06	4.5E-07
Semivolatile Organics											
2,4-DIMETHYLPHENOL	3.90E-02	0.00E+00	6.86E-02	5.73E-04	0.00E+00	7.26E-03	7.83E-03	NV	NV	#VALUE!	#VALUE!
2-CHLOROPHENOL	8.00E-03	0.00E+00	1.61E-02	1.18E-04	0.00E+00	1.70E-03	1.82E-03	NV	NV	#VALUE!	#VALUE!
2-METHYLNAPHTHALENE	4.70E-02	0.00E+00	6.65E-02	6.91E-04	0.00E+00	7.04E-03	7.73E-03	2.00E+00	2.00E+01	3.9E-03	3.9E-04
2-METHYLPHENOL	3.00E-02	0.00E+00	9.00E-02	4.41E-04	0.00E+00	9.52E-03	9.96E-03	NV	NV	#VALUE!	#VALUE!
4-METHYLPHENOL	8.10E-02	0.00E+00	8.10E-02	1.19E-03	0.00E+00	8.56E-03	9.76E-03	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	1.00E-01	0.00E+00	2.75E-02	1.47E-03	0.00E+00	2.91E-03	4.38E-03	2.00E+00	2.00E+01	2.2E-03	2.2E-04
ACENAPHTHYLENE	2.50E+00	0.00E+00	6.58E-01	3.67E-02	0.00E+00	6.95E-02	1.06E-01	2.00E+00	2.00E+01	5.3E-02	5.3E-03
ANTHRACENE	8.80E+00	0.00E+00	2.02E+00	1.29E-01	0.00E+00	2.14E-01	3.43E-01	2.00E+00	2.00E+01	1.7E-01	1.7E-02
BENZO(A)ANTHRACENE	5.40E+01	1.70E-04	7.14E-01	7.94E-01	2.51E-05	7.55E-02	8.69E-01	2.00E+00	2.00E+01	4.3E-01	4.3E-02
BENZO(A)PYRENE	2.40E+01	0.00E+00	2.82E+00	3.53E-01	0.00E+00	2.98E-01	6.51E-01	2.00E+00	2.00E+01	3.3E-01	3.3E-02
BENZO(B)FLUORANTHENE	4.90E+01	0.00E+00	1.52E+01	7.20E-01	0.00E+00	1.61E+00	2.33E+00	2.00E+00	2.00E+01	1.2E+00	1.2E-01
BENZO(G,H,I)PERYLENE	8.50E+00	0.00E+00	4.95E+00	1.25E-01	0.00E+00	5.24E-01	6.49E-01	2.00E+00	2.00E+01	3.2E-01	3.2E-02
BENZO(K)FLUORANTHENE	1.90E+01	0.00E+00	1.45E+00	2.79E-01	0.00E+00	1.54E-01	4.33E-01	2.00E+00	2.00E+01	2.2E-01	2.2E-02
BIS(2-ETHYLHEXYL)PHTHALATE	3.20E-01	0.00E+00	1.76E-02	4.70E-03	0.00E+00	1.86E-03	6.56E-03	1.11E+00	1.11E+01	5.9E-03	5.9E-04
CARBAZOLE	7.40E-01	0.00E+00	1.78E-01	1.09E-02	0.00E+00	1.88E-02	2.97E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
CHRYSENE	5.90E+01	1.10E-04	7.53E-01	8.67E-01	1.63E-05	7.96E-02	9.47E-01	2.00E+00	2.00E+01	4.7E-01	4.7E-02
DI-N-BUTYL PHTHALATE	7.80E-02	0.00E+00	4.29E-02	1.15E-03	0.00E+00	4.54E-03	5.68E-03	1.11E-01	1.11E+00	5.1E-02	5.1E-03
DIBENZO(A,H)ANTHRACENE	3.90E+00	0.00E+00	5.07E-01	5.73E-02	0.00E+00	5.36E-02	1.11E-01	2.00E+00	2.00E+01	5.5E-02	5.5E-03
FLUORANTHENE	8.30E+01	1.60E-04	4.15E+01	1.22E+00	2.36E-05	4.39E+00	5.61E+00	2.00E+00	2.00E+01	2.8E+00	2.8E-01
FLUORENE	4.70E-01	0.00E+00	7.33E-03	6.91E-03	0.00E+00	7.75E-04	7.68E-03	2.00E+00	2.00E+01	3.8E-03	3.8E-04
INDENO(1,2,3-CD)PYRENE	8.50E+00	0.00E+00	9.35E-01	1.25E-01	0.00E+00	9.89E-02	2.24E-01	2.00E+00	2.00E+01	1.1E-01	1.1E-02
NAPHTHALENE	2.10E-02	0.00E+00	2.56E-01	3.09E-04	0.00E+00	2.71E-02	2.74E-02	2.00E+00	2.00E+01	1.4E-02	1.4E-03
PHENANTHRENE	4.40E-01	1.20E-04	5.09E-01	6.47E-03	1.77E-05	5.38E-02	6.03E-02	2.00E+00	2.00E+01	3.0E-02	3.0E-03
PHENOL	6.80E-02	1.00E-04	3.47E-01	9.99E-04	1.48E-05	3.67E-02	3.77E-02	NV	NV	#VALUE!	#VALUE!
PYRENE	8.60E+01	2.30E-04	6.19E+01	1.26E+00	3.40E-05	6.55E+00	7.81E+00	2.00E+00	2.00E+01	3.9E+00	3.9E-01
Pesticides/PCBs											
4,4'-DDD	4.90E-02	0.00E+00	8.39E-03	7.20E-04	0.00E+00	8.87E-04	1.61E-03	2.27E-01	2.70E+00	7.1E-03	6.0E-04
BETA-BHC	1.40E-02	0.00E+00	2.52E-03	2.06E-04	0.00E+00	2.66E-04	4.72E-04	5.60E-01	2.25E+00	8.4E-04	2.1E-04
DELTA-BHC	3.90E-03	0.00E+00	3.51E-03	5.73E-05	0.00E+00	3.71E-04	4.28E-04	5.60E-01	2.25E+00	7.7E-04	1.9E-04
ENDOSULFAN I	2.50E-03	0.00E+00	8.25E-04	3.67E-05	0.00E+00	8.72E-05	1.24E-04	1.00E+01	1.00E+02	1.2E-05	1.2E-06
ENDOSULFAN SULFATE	2.20E-02	0.00E+00	7.26E-03	3.23E-04	0.00E+00	7.68E-04	1.09E-03	1.00E+01	1.00E+02	1.1E-04	1.1E-05
ENDRIN	7.90E-03	0.00E+00	6.48E-04	1.16E-04	0.00E+00	6.85E-05	1.85E-04	1.04E-02	1.04E-01	1.8E-02	1.8E-03
ENDRIN ALDEHYDE	3.50E-02	0.00E+00	2.87E-03	5.14E-04	0.00E+00	3.03E-04	8.18E-04	1.00E-02	1.00E-01	8.2E-02	8.2E-03
ENDRIN KETONE	6.90E-02	0.00E+00	5.66E-03	1.01E-03	0.00E+00	5.98E-04	1.61E-03	1.00E-02	1.00E-01	1.6E-01	1.6E-02
GAMMA-BHC (LINDANE)	3.40E-03	0.00E+00	9.18E-04	5.00E-05	0.00E+00	9.71E-05	1.47E-04	2.00E+00	2.00E+01	7.4E-05	7.4E-06
TOTAL DDD/DDE/DDT	5.90E-02	0.00E+00	9.64E-03	8.67E-04	0.00E+00	1.02E-03	1.89E-03	2.27E-01	2.70E+00	8.3E-03	7.0E-04
TOXAPHENE	2.40E-01	0.00E+00	2.77E-02	3.53E-03	0.00E+00	2.93E-03	6.46E-03	NV	NV	#VALUE!	#VALUE!
Dioxins											
TEQ BIRD	2.76E-06	0.00E+00	1.19E-08	4.06E-08	0.00E+00	1.25E-09	4.18E-08	1.40E-05	1.40E-04	3.0E-03	3.0E-04
Inorganics											
ALUMINUM	1.52E+04	0.00E+00	7.60E+01	2.23E+02	0.00E+00	8.04E+00	2.31E+02	1.10E+02	1.10E+03	2.1E+00	2.1E-01
ARSENIC	5.95E+01	4.73E-04	2.23E+00	8.74E-01	6.99E-05	2.36E-01	1.11E+00	2.24E+00	4.51E+00	5.0E-01	2.5E-01
BARIUM	5.67E+01	1.04E-02	8.85E+00	8.33E-01	1.54E-03	9.35E-01	1.77E+00	2.08E+01	4.17E+01	8.5E-02	4.2E-02
BERYLLIUM	7.00E-01	0.00E+00	4.50E-01	1.03E-02	0.00E+00	4.76E-02	5.79E-02	NV	NV	#VALUE!	#VALUE!
CADMIUM	4.80E-01	0.00E+00	4.17E-01	7.05E-03	0.00E+00	4.40E-02	5.11E-02	1.47E+00	6.35E+00	3.5E-02	8.0E-03
COBALT	2.05E+01	9.31E-04	1.54E-01	3.01E-01	1.38E-04	1.63E-02	3.18E-01	7.61E+00	1.83E+01	4.2E-02	1.7E-02
COPPER	2.52E+01	3.70E-03	6.95E+00	3.70E-01	5.47E-04	7.35E-01	1.11E+00	4.05E+00	3.49E+01	2.7E-01	3.2E-02
IRON	5.32E+04	5.45E-01	5.32E+02	7.82E+02	8.06E-02	5.63E+01	8.38E+02	1.00E+02	1.00E+03	8.4E+00	8.4E-01
LEAD	6.35E+01	9.28E-04	2.72E+00	9.33E-01	1.37E-04	2.88E-01	1.22E+00	1.63E+00	4.46E+01	7.5E-01	2.7E-02
MERCURY	1.40E-01	0.00E+00	7.00E-01	2.06E-03	0.00E+00	7.40E-02	7.61E-02	6.40E-03	6.40E-02	1.2E+01	1.2E+00
NICKEL	3.71E+01	3.50E-03	1.62E+00	5.45E-01	5.17E-04	1.71E-01	7.17E-01	6.71E+00	1.86E+01	1.1E-01	3.9E-02
SELENIUM	3.50E+00	2.31E-04	2.03E+00	5.14E-02	3.41E-05	2.14E-01	2.66E-01	2.90E-01	8.19E-01	9.2E-01	3.2E-01
THALLIUM	5.30E+00	0.00E+00	2.12E-02	7.79E-02	0.00E+00	2.24E-03	8.01E-02	NV	NV	#VALUE!	#VALUE!
VANADIUM	3.76E+01	0.00E+00	1.82E-01	5.53E-01	0.00E+00	1.93E-02	5.72E-01	3.44E-01	1.69E+00	1.7E+00	3.4E-01
ZINC	1.25E+02	0.00E+00	7.01E+01	1.84E+00	0.00E+00	7.41E+00	9.25E+00	6.61E+01	1.71E+02	1.4E-01	5.4E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.54E-01	kg
Food Ingestion Rate = (If)	1.63E-02	kg/day
Water Ingestion Rate = (Iw)	2.28E-02	L/day
Soil Ingestion Rate = (Is)	2.26E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

BOBWHITE QUAIL - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Semivolatile Organics											
BENZO(B)FLUORANTHENE	2.24E+01	0.00E+00	6.96E+00	1.06E-01	0.00E+00	5.41E-01	6.48E-01	2.00E+00	2.00E+01	3.2E-01	3.2E-02
FLUORANTHENE	3.80E+01	1.60E-04	1.90E+01	1.80E-01	1.76E-05	1.48E+00	1.66E+00	2.00E+00	2.00E+01	8.3E-01	8.3E-02
PYRENE	3.94E+01	2.30E-04	2.83E+01	1.87E-01	2.53E-05	2.20E+00	2.39E+00	2.00E+00	2.00E+01	1.2E+00	1.2E-01
Inorganics											
IRON	3.35E+04	3.72E-01	1.42E+02	1.59E+02	4.09E-02	1.11E+01	1.70E+02	1.00E+02	1.00E+03	1.7E+00	1.7E-01
MERCURY	6.75E-02	0.00E+00	4.40E-02	3.20E-04	0.00E+00	3.42E-03	3.74E-03	6.40E-03	6.40E-02	5.8E-01	5.8E-02
VANADIUM	2.27E+01	0.00E+00	1.10E-01	1.08E-01	0.00E+00	8.55E-03	1.16E-01	3.44E-01	1.69E+00	3.4E-01	6.9E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.75E-01	kg
Food Ingestion Rate = (If)	1.36E-02	kg/day
Water Ingestion Rate = (Iw)	1.93E-02	L/day
Soil Ingestion Rate = (Is)	8.30E-04	kg/day
Home Range = (HR)	1.88E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

SHORT-TAILED SHREW - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
2-BUTANONE	1.50E-01	0.00E+00	1.50E-01	4.80E-04	0.00E+00	1.60E-02	1.65E-02	1.77E+03	4.57E+03	9.3E-06	3.6E-06
ACETONE	1.60E-01	0.00E+00	1.60E-01	5.12E-04	0.00E+00	1.71E-02	1.76E-02	1.00E+01	5.00E+01	1.8E-03	3.5E-04
Semivolatile Organics											
2,4-DIMETHYLPHENOL	3.90E-02	0.00E+00	3.90E-02	1.25E-04	0.00E+00	4.16E-03	4.29E-03	5.00E+00	2.50E+01	8.6E-04	1.7E-04
2-CHLOROPHENOL	8.00E-03	0.00E+00	8.00E-03	2.56E-05	0.00E+00	8.54E-04	8.79E-04	5.00E-01	5.00E+00	1.8E-03	1.8E-04
2-METHYLNAPHTHALENE	4.70E-02	0.00E+00	1.43E-01	1.50E-04	0.00E+00	1.52E-02	1.54E-02	6.56E+01	3.56E+02	2.3E-04	4.3E-05
2-METHYLPHENOL	3.00E-02	0.00E+00	3.00E-02	9.60E-05	0.00E+00	3.20E-03	3.30E-03	5.00E+00	1.50E+01	6.6E-04	2.2E-04
4-METHYLPHENOL	8.10E-02	0.00E+00	8.10E-02	2.59E-04	0.00E+00	8.64E-03	8.90E-03	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	1.00E-01	0.00E+00	1.47E-01	3.20E-04	0.00E+00	1.57E-02	1.60E-02	6.56E+01	3.56E+02	2.4E-04	4.5E-05
ACENAPHTHYLENE	2.50E+00	0.00E+00	5.73E+01	8.00E-03	0.00E+00	6.11E+00	6.12E+00	6.56E+01	3.56E+02	9.3E-02	1.7E-02
ANTHRACENE	8.80E+00	0.00E+00	2.13E+01	2.82E-02	0.00E+00	2.27E+00	2.30E+00	6.56E+01	3.56E+02	3.5E-02	6.5E-03
BENZO(A)ANTHRACENE	5.40E+01	1.70E-04	8.59E+01	1.73E-01	4.85E-05	9.16E+00	9.33E+00	6.15E-01	3.84E+01	1.5E+01	2.4E-01
BENZO(A)PYRENE	2.40E+01	0.00E+00	3.19E+01	7.68E-02	0.00E+00	3.41E+00	3.48E+00	6.15E-01	3.84E+01	5.7E+00	9.1E-02
BENZO(B)FLUORANTHENE	4.90E+01	0.00E+00	1.27E+02	1.57E-01	0.00E+00	1.36E+01	1.37E+01	6.15E-01	3.84E+01	2.2E+01	3.6E-01
BENZO(G,H,I)PERYLENE	8.50E+00	0.00E+00	2.50E+01	2.72E-02	0.00E+00	2.67E+00	2.69E+00	6.15E-01	3.84E+01	4.4E+00	7.0E-02
BENZO(K)FLUORANTHENE	1.90E+01	0.00E+00	4.94E+01	6.08E-02	0.00E+00	5.27E+00	5.33E+00	6.15E-01	3.84E+01	8.7E+00	1.4E-01
BIS(2-ETHYLHEXYL)PHTHALATE	3.20E-01	0.00E+00	3.20E-01	1.02E-03	0.00E+00	3.41E-02	3.52E-02	1.83E+01	1.83E+02	1.9E-03	1.9E-04
CARBAZOLE	7.40E-01	0.00E+00	7.40E-01	2.37E-03	0.00E+00	7.90E-02	8.13E-02	6.56E+01	3.56E+02	1.2E-03	2.3E-04
CHRYSENE	5.90E+01	1.10E-04	1.35E+02	1.89E-01	3.14E-05	1.44E+01	1.46E+01	6.15E-01	3.84E+01	2.4E+01	3.8E-01
DI-N-BUTYL PHTHALATE	7.80E-02	0.00E+00	7.80E-02	2.50E-04	0.00E+00	8.32E-03	8.57E-03	5.50E+02	1.83E+03	1.6E-05	4.7E-06
DIBENZO(A,H)ANTHRACENE	3.90E+00	0.00E+00	9.01E+00	1.25E-02	0.00E+00	9.61E-01	9.74E-01	6.15E-01	3.84E+01	1.6E+00	2.5E-02
FLUORANTHENE	8.30E+01	1.60E-04	2.52E+02	2.66E-01	4.57E-05	2.69E+01	2.72E+01	6.56E+01	3.56E+02	4.1E-01	7.6E-02
FLUORENE	4.70E-01	0.00E+00	4.50E+00	1.50E-03	0.00E+00	4.80E-01	4.81E-01	6.56E+01	3.56E+02	7.3E-03	1.4E-03
INDENO(1,2,3-CD)PYRENE	8.50E+00	0.00E+00	2.43E+01	2.72E-02	0.00E+00	2.59E+00	2.62E+00	6.15E-01	3.84E+01	4.3E+00	6.8E-02
NAPHTHALENE	2.10E-02	0.00E+00	9.24E-02	6.72E-05	0.00E+00	9.86E-03	9.93E-03	6.56E+01	3.56E+02	1.5E-04	2.8E-05
PHENANTHRENE	4.40E-01	1.20E-04	7.57E-01	1.41E-03	3.42E-05	8.07E-02	8.22E-02	6.56E+01	3.56E+02	1.3E-03	2.3E-04
PHENOL	6.80E-02	1.00E-04	6.80E-02	2.18E-04	2.85E-05	7.25E-03	7.50E-03	9.30E+01	1.57E+02	8.1E-05	4.8E-05
PYRENE	8.60E+01	2.30E-04	1.51E+02	2.75E-01	6.56E-05	1.61E+01	1.63E+01	6.15E-01	3.84E+01	2.7E+01	4.3E-01
Pesticides/PCBs											
4,4'-DDD	4.90E-02	0.00E+00	3.90E-01	1.57E-04	0.00E+00	4.16E-02	4.17E-02	1.47E-01	5.56E+00	2.8E-01	7.5E-03
BETA-BHC	1.40E-02	0.00E+00	7.00E-02	4.48E-05	0.00E+00	7.47E-03	7.51E-03	4.00E-01	2.00E+00	1.9E-02	3.8E-03
DELTA-BHC	3.90E-03	0.00E+00	1.95E-02	1.25E-05	0.00E+00	2.08E-03	2.09E-03	1.40E-02	1.40E-01	1.5E-01	1.5E-02
ENDOSULFAN I	2.50E-03	0.00E+00	2.50E-03	8.00E-06	0.00E+00	2.67E-04	2.75E-04	1.50E-01	1.50E+00	1.8E-03	1.8E-04
ENDOSULFAN SULFATE	2.20E-02	0.00E+00	2.20E-02	7.04E-05	0.00E+00	2.35E-03	2.42E-03	1.50E-01	1.50E+00	1.6E-02	1.6E-03
ENDRIN	7.90E-03	0.00E+00	2.84E-02	2.53E-05	0.00E+00	3.03E-03	3.06E-03	9.20E-02	9.20E-01	3.3E-02	3.3E-03
ENDRIN ALDEHYDE	3.50E-02	0.00E+00	1.26E-01	1.12E-04	0.00E+00	1.34E-02	1.36E-02	9.20E-02	9.20E-01	1.5E-01	1.5E-02
ENDRIN KETONE	6.90E-02	0.00E+00	2.48E-01	2.21E-04	0.00E+00	2.65E-02	2.67E-02	9.20E-02	9.20E-01	2.9E-01	2.9E-02
GAMMA-BHC (LINDANE)	3.40E-03	0.00E+00	1.70E-02	1.09E-05	0.00E+00	1.81E-03	1.82E-03	8.00E+00	8.00E+01	2.3E-04	2.3E-05
TOTAL DDD/DDE/DDT	5.90E-02	0.00E+00	6.61E-01	1.89E-04	0.00E+00	7.05E-02	7.07E-02	1.47E-01	5.56E+00	4.8E-01	1.3E-02
TOXAPHENE	2.40E-01	0.00E+00	2.40E-01	7.68E-04	0.00E+00	2.56E-02	2.64E-02	8.00E+00	8.00E+01	3.3E-03	3.3E-04
Dioxins											
TEQ MAMMAL	7.18E-06	0.00E+00	1.60E-04	2.30E-08	0.00E+00	1.70E-05	1.71E-05	1.00E-06	1.00E-05	1.7E+01	1.7E+00
Inorganics											
ALUMINUM	1.52E+04	0.00E+00	1.79E+03	4.87E+01	0.00E+00	1.91E+02	2.40E+02	1.93E+00	1.93E+01	1.2E+02	1.2E+01
ARSENIC	5.95E+01	4.73E-04	4.32E+00	1.90E-01	1.35E-04	4.61E-01	6.52E-01	1.04E+00	4.55E+00	6.3E-01	1.4E-01
BARIUM	5.67E+01	1.04E-02	5.16E+00	1.81E-01	2.97E-03	5.50E-01	7.35E-01	5.18E+01	8.27E+01	1.4E-02	8.9E-03
BERYLLIUM	7.00E-01	0.00E+00	3.15E-02	2.24E-03	0.00E+00	3.36E-03	5.60E-03	5.32E-01	6.73E-01	1.1E-02	8.3E-03
CADMIUM	4.80E-01	0.00E+00	4.62E+00	1.54E-03	0.00E+00	4.93E-01	4.94E-01	7.70E-01	6.90E+00	6.4E-01	7.2E-02
COBALT	2.05E+01	9.31E-04	2.50E+00	6.56E-02	2.66E-04	2.67E-01	3.33E-01	7.33E+00	1.89E+01	4.5E-02	1.8E-02
COPPER	2.52E+01	3.70E-03	1.30E+01	8.07E-02	1.06E-03	1.38E+00	1.47E+00	5.60E+00	8.27E+01	2.6E-01	1.8E-02
IRON	5.32E+04	5.45E-01	4.15E+03	1.70E+02	1.56E-01	4.43E+02	6.13E+02	5.00E+01	5.00E+02	1.2E+01	1.2E+00
LEAD	6.35E+01	9.28E-04	2.29E+01	2.03E-01	2.65E-04	2.45E+00	2.65E+00	4.70E+00	1.86E+02	5.6E-01	1.4E-02
MERCURY	1.40E-01	0.00E+00	5.58E-01	4.48E-04	0.00E+00	5.95E-02	5.99E-02	3.20E-02	1.60E-01	1.9E+00	3.7E-01
NICKEL	3.71E+01	3.50E-03	3.93E+01	1.19E-01	9.99E-04	4.19E+00	4.31E+00	1.70E+00	1.48E+01	2.5E+00	2.9E-01
SELENIUM	3.50E+00	2.31E-04	2.32E+00	1.12E-02	6.59E-05	2.48E-01	2.59E-01	1.43E-01	6.61E-01	1.8E+00	3.9E-01
THALLIUM	5.30E+00	0.00E+00	5.30E+00	1.70E-02	0.00E+00	5.65E-01	5.82E-01	7.40E-03	7.40E-02	7.9E+01	7.9E+00
VANADIUM	3.76E+01	0.00E+00	1.58E+00	1.20E-01	0.00E+00	1.68E-01	2.89E-01	4.16E+00	9.44E+00	6.9E-02	3.1E-02
ZINC	1.25E+02	0.00E+00	4.17E+02	4.00E-01	0.00E+00	4.45E+01	4.49E+01	7.54E+01	2.98E+02	6.0E-01	1.5E-01

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.50E-02	kg	Dose (soil) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.60E-03	kg/day	Dose (invertebrate) = (Ci * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	4.28E-03	L/day	Dose (water) = (Cw * Iw)(H)/BW	NOAEL = No Observed Adverse Effects Concentration
Soil Ingestion Rate = (Is)	4.80E-05	kg/day	Ci = Contaminant concentration in invertebrate	SW = Surface Water
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in soil	
Contaminated Area = (CA)	Assume equal to home range		Cw = Contaminant concentration in water	
			Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)	
			H=CA/HR (Assume = to 1)	

APPENDIX I

SHORT-TAILED SHREW - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Semivolatile Organics											
BENZO(A)ANTHRACENE	2.47E+01	1.35E-04	3.93E+01	1.98E-02	3.02E-05	3.50E+00	3.52E+00	6.15E-01	3.84E+01	5.7E+00	9.2E-02
BENZO(A)PYRENE	1.10E+01	0.00E+00	1.47E+01	8.82E-03	0.00E+00	1.30E+00	1.31E+00	6.15E-01	3.84E+01	2.1E+00	3.4E-02
BENZO(B)FLUORANTHENE	2.24E+01	0.00E+00	5.84E+01	1.80E-02	0.00E+00	5.19E+00	5.21E+00	6.15E-01	3.84E+01	8.5E+00	1.4E-01
BENZO(G,H,I)PERYLENE	3.92E+00	0.00E+00	1.15E+01	3.14E-03	0.00E+00	1.02E+00	1.03E+00	6.15E-01	3.84E+01	1.7E+00	2.7E-02
BENZO(K)FLUORANTHENE	8.73E+00	0.00E+00	2.27E+01	6.99E-03	0.00E+00	2.02E+00	2.03E+00	6.15E-01	3.84E+01	3.3E+00	5.3E-02
CHRYSENE	2.70E+01	1.10E-04	6.19E+01	2.16E-02	2.46E-05	5.51E+00	5.53E+00	6.15E-01	3.84E+01	9.0E+00	1.4E-01
DIBENZO(A,H)ANTHRACENE	1.81E+00	0.00E+00	4.19E+00	1.45E-03	0.00E+00	3.73E-01	3.74E-01	6.15E-01	3.84E+01	6.1E-01	9.7E-03
INDENO(1,2,3-CD)PYRENE	3.91E+00	0.00E+00	1.12E+01	3.13E-03	0.00E+00	9.96E-01	9.99E-01	6.15E-01	3.84E+01	1.6E+00	2.6E-02
PYRENE	3.94E+01	2.30E-04	6.89E+01	3.15E-02	5.14E-05	6.13E+00	6.16E+00	6.15E-01	3.84E+01	1.0E+01	1.6E-01
Dioxins											
TEQ MAMMAL	2.97E-06	0.00E+00	3.27E-05	2.38E-09	0.00E+00	2.91E-06	2.91E-06	1.00E-06	1.00E-05	2.9E+00	2.9E-01
Inorganics											
IRON	3.35E+04	3.72E-01	1.20E+03	2.68E+01	8.32E-02	1.07E+02	1.34E+02	5.00E+01	5.00E+02	2.7E+00	2.7E-01
MERCURY	6.75E-02	0.00E+00	4.36E-01	5.41E-05	0.00E+00	3.88E-02	3.89E-02	3.20E-02	1.60E-01	1.2E+00	2.4E-01
NICKEL	2.53E+01	2.29E-03	2.68E+01	2.02E-02	5.12E-04	2.38E+00	2.40E+00	1.70E+00	1.48E+01	1.4E+00	1.6E-01
SELENIUM	1.50E+00	1.99E-04	1.25E+00	1.20E-03	4.45E-05	1.11E-01	1.12E-01	1.43E-01	6.61E-01	7.9E-01	1.7E-01
THALLIUM	3.32E+00	0.00E+00	3.32E+00	2.66E-03	0.00E+00	2.95E-01	2.98E-01	7.40E-03	7.40E-02	4.0E+01	4.0E+00

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.61E-02	kg
Food Ingestion Rate = (If)	1.43E-03	kg/day
Water Ingestion Rate = (Iw)	3.60E-03	L/day
Soil Ingestion Rate = (Is)	1.29E-05	kg/day
Home Range = (HR)	9.70E-01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (invertebrate) = (Ci * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Ci = Contaminant concentration in invertebrate
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

AMERICAN ROBIN - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
2-BUTANONE	1.50E-01	0.00E+00	1.50E-01	3.97E-03	0.00E+00	2.42E-02	2.82E-02	NV	NV	#VALUE!	#VALUE!
ACETONE	1.60E-01	0.00E+00	1.60E-01	4.23E-03	0.00E+00	2.58E-02	3.01E-02	2.01E+04	2.01E+05	1.5E-06	1.5E-07
Semivolatile Organics											
2,4-DIMETHYLPHENOL	3.90E-02	0.00E+00	3.90E-02	1.03E-03	0.00E+00	6.29E-03	7.33E-03	NV	NV	#VALUE!	#VALUE!
2-CHLOROPHENOL	8.00E-03	0.00E+00	8.00E-03	2.12E-04	0.00E+00	1.29E-03	1.50E-03	NV	NV	#VALUE!	#VALUE!
2-METHYLNAPHTHALENE	4.70E-02	0.00E+00	1.43E-01	1.24E-03	0.00E+00	2.31E-02	2.43E-02	2.00E+00	2.00E+01	1.2E-02	1.2E-03
2-METHYLPHENOL	3.00E-02	0.00E+00	3.00E-02	7.94E-04	0.00E+00	4.84E-03	5.64E-03	NV	NV	#VALUE!	#VALUE!
4-METHYLPHENOL	8.10E-02	0.00E+00	8.10E-02	2.14E-03	0.00E+00	1.31E-02	1.52E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	1.00E-01	0.00E+00	1.47E-01	2.65E-03	0.00E+00	2.37E-02	2.64E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
ACENAPHTHYLENE	2.50E+00	0.00E+00	5.73E+01	6.62E-02	0.00E+00	9.24E+00	9.31E+00	2.00E+00	2.00E+01	4.7E+00	4.7E-01
ANTHRACENE	8.80E+00	0.00E+00	2.13E+01	2.33E-01	0.00E+00	3.44E+00	3.67E+00	2.00E+00	2.00E+01	1.8E+00	1.8E-01
BENZO(A)ANTHRACENE	5.40E+01	1.70E-04	8.59E+01	1.43E+00	2.65E-05	1.39E+01	1.53E+01	2.00E+00	2.00E+01	7.6E+00	7.6E-01
BENZO(A)PYRENE	2.40E+01	0.00E+00	3.19E+01	6.35E-01	0.00E+00	5.15E+00	5.79E+00	2.00E+00	2.00E+01	2.9E+00	2.9E-01
BENZO(B)FLUORANTHENE	4.90E+01	0.00E+00	1.27E+02	1.30E+00	0.00E+00	2.06E+01	2.19E+01	2.00E+00	2.00E+01	1.1E+01	1.1E+00
BENZO(G,H,I)PERYLENE	8.50E+00	0.00E+00	2.50E+01	2.25E-01	0.00E+00	4.03E+00	4.26E+00	2.00E+00	2.00E+01	2.1E+00	2.1E-01
BENZO(K)FLUORANTHENE	1.90E+01	0.00E+00	4.94E+01	5.03E-01	0.00E+00	7.97E+00	8.48E+00	2.00E+00	2.00E+01	4.2E+00	4.2E-01
BIS(2-ETHYLHEXYL)PHTHALATE	3.20E-01	0.00E+00	3.20E-01	8.47E-03	0.00E+00	5.16E-02	6.01E-02	1.11E+00	1.11E+01	5.4E-02	5.4E-03
CARBAZOLE	7.40E-01	0.00E+00	7.40E-01	1.96E-02	0.00E+00	1.19E-01	1.39E-01	2.00E+00	2.00E+01	7.0E-02	7.0E-03
CHRYSENE	5.90E+01	1.10E-04	1.35E+02	1.56E+00	1.72E-05	2.18E+01	2.34E+01	2.00E+00	2.00E+01	1.2E+01	1.2E+00
DI-N-BUTYL PHTHALATE	7.80E-02	0.00E+00	7.80E-02	2.06E-03	0.00E+00	1.26E-02	1.47E-02	1.11E-01	1.11E+00	1.3E-01	1.3E-02
DIBENZO(A,H)ANTHRACENE	3.90E+00	0.00E+00	9.01E+00	1.03E-01	0.00E+00	1.45E+00	1.56E+00	2.00E+00	2.00E+01	7.8E-01	7.8E-02
FLUORANTHENE	8.30E+01	1.60E-04	2.52E+02	2.20E+00	2.50E-05	4.07E+01	4.29E+01	2.00E+00	2.00E+01	2.1E+01	2.1E+00
FLUORENE	4.70E-01	0.00E+00	4.50E+00	1.24E-02	0.00E+00	7.26E-01	7.38E-01	2.00E+00	2.00E+01	3.7E-01	3.7E-02
INDENO(1,2,3-CD)PYRENE	8.50E+00	0.00E+00	2.43E+01	2.25E-01	0.00E+00	3.92E+00	4.15E+00	2.00E+00	2.00E+01	2.1E+00	2.1E-01
NAPHTHALENE	2.10E-02	0.00E+00	9.24E-02	5.56E-04	0.00E+00	1.49E-02	1.55E-02	2.00E+00	2.00E+01	7.7E-03	7.7E-04
PHENANTHRENE	4.40E-01	1.20E-04	7.57E-01	1.16E-02	1.87E-05	1.22E-01	1.34E-01	2.00E+00	2.00E+01	6.7E-02	6.7E-03
PHENOL	6.80E-02	1.00E-04	6.80E-02	1.80E-03	1.56E-05	1.10E-02	1.28E-02	NV	NV	#VALUE!	#VALUE!
PYRENE	8.60E+01	2.30E-04	1.51E+02	2.28E+00	3.59E-05	2.43E+01	2.66E+01	2.00E+00	2.00E+01	1.3E+01	1.3E+00
Pesticides/PCBs											
4,4'-DDD	4.90E-02	0.00E+00	3.90E-01	1.30E-03	0.00E+00	6.29E-02	6.42E-02	2.27E-01	2.70E+00	2.8E-01	2.4E-02
BETA-BHC	1.40E-02	0.00E+00	7.00E-02	3.71E-04	0.00E+00	1.13E-02	1.17E-02	5.60E-01	2.25E+00	2.1E-02	5.2E-03
DELTA-BHC	3.90E-03	0.00E+00	1.95E-02	1.03E-04	0.00E+00	3.15E-03	3.25E-03	5.60E-01	2.25E+00	5.8E-03	1.4E-03
ENDOSULFAN I	2.50E-03	0.00E+00	2.50E-03	6.62E-05	0.00E+00	4.03E-04	4.70E-04	1.00E+01	1.00E+02	4.7E-05	4.7E-06
ENDOSULFAN SULFATE	2.20E-02	0.00E+00	2.20E-02	5.82E-04	0.00E+00	3.55E-03	4.13E-03	1.00E+01	1.00E+02	4.1E-04	4.1E-05
ENDRIN	7.90E-03	0.00E+00	2.84E-02	2.09E-04	0.00E+00	4.59E-03	4.80E-03	1.04E-02	1.04E-01	4.6E-01	4.6E-02
ENDRIN ALDEHYDE	3.50E-02	0.00E+00	1.26E-01	9.26E-04	0.00E+00	2.03E-02	2.13E-02	1.00E-02	1.00E-01	2.1E+00	2.1E-01
ENDRIN KETONE	6.90E-02	0.00E+00	2.48E-01	1.83E-03	0.00E+00	4.01E-02	4.19E-02	1.00E-02	1.00E-01	4.2E+00	4.2E-01
GAMMA-BHC (LINDANE)	3.40E-03	0.00E+00	1.70E-02	9.00E-05	0.00E+00	2.74E-03	2.83E-03	2.00E+00	2.00E+01	1.4E-03	1.4E-04
TOTAL DDD/DDE/DDT	5.90E-02	0.00E+00	6.61E-01	1.56E-03	0.00E+00	1.07E-01	1.08E-01	2.27E-01	2.70E+00	4.8E-01	4.0E-02
TOXAPHENE	2.40E-01	0.00E+00	2.40E-01	6.35E-03	0.00E+00	3.87E-02	4.51E-02	NV	NV	#VALUE!	#VALUE!
Dioxins											
TEQ BIRD	2.76E-06	0.00E+00	6.14E-05	7.30E-08	0.00E+00	9.90E-06	9.97E-06	1.40E-05	1.40E-04	7.1E-01	7.1E-02
Inorganics											
ALUMINUM	1.52E+04	0.00E+00	1.79E+03	4.02E+02	0.00E+00	2.89E+02	6.92E+02	1.10E+02	1.10E+03	6.3E+00	6.3E-01
ARSENIC	5.95E+01	4.73E-04	4.32E+00	1.57E+00	7.38E-05	6.97E-01	2.27E+00	2.24E+00	4.51E+00	1.0E+00	5.0E-01
BARIUM	5.67E+01	1.04E-02	5.16E+00	1.50E+00	1.62E-03	8.33E-01	2.33E+00	2.08E+01	4.17E+01	1.1E-01	5.6E-02
BERYLLIUM	7.00E-01	0.00E+00	3.15E-02	1.85E-02	0.00E+00	5.08E-03	2.36E-02	NV	NV	#VALUE!	#VALUE!
CADMIUM	4.80E-01	0.00E+00	4.62E+00	1.27E-02	0.00E+00	7.46E-01	7.58E-01	1.47E+00	6.35E+00	5.2E-01	1.2E-01
COBALT	2.05E+01	9.31E-04	2.50E+00	5.43E-01	1.45E-04	4.04E-01	9.46E-01	7.61E+00	1.83E+01	1.2E-01	5.2E-02
COPPER	2.52E+01	3.70E-03	1.30E+01	6.67E-01	5.78E-04	2.09E+00	2.76E+00	4.05E+00	3.49E+01	6.8E-01	7.9E-02
IRON	5.32E+04	5.45E-01	4.15E+03	1.41E+03	8.51E-02	6.70E+02	2.08E+03	1.00E+02	1.00E+03	2.1E+01	2.1E+00
LEAD	6.35E+01	9.28E-04	2.29E+01	1.68E+00	1.45E-04	3.70E+00	5.38E+00	1.63E+00	4.46E+01	3.3E+00	1.2E-01
MERCURY	1.40E-01	0.00E+00	5.58E-01	3.71E-03	0.00E+00	9.00E-02	9.37E-02	6.40E-03	6.40E-02	1.5E+01	1.5E+00
NICKEL	3.71E+01	3.50E-03	3.93E+01	9.82E-01	5.46E-04	6.34E+00	7.32E+00	6.71E+00	1.86E+01	1.1E+00	3.9E-01
SELENIUM	3.50E+00	2.31E-04	2.32E+00	9.26E-02	3.61E-05	3.75E-01	4.68E-01	2.90E-01	8.19E-01	1.6E+00	5.7E-01
THALLIUM	5.30E+00	0.00E+00	5.30E+00	1.40E-01	0.00E+00	8.55E-01	9.96E-01	NV	NV	#VALUE!	#VALUE!
VANADIUM	3.76E+01	0.00E+00	1.58E+00	9.95E-01	0.00E+00	2.55E-01	1.25E+00	3.44E-01	1.69E+00	3.6E+00	7.4E-01
ZINC	1.25E+02	0.00E+00	4.17E+02	3.31E+00	0.00E+00	6.73E+01	7.06E+01	6.61E+01	1.71E+02	1.1E+00	4.1E-01

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	7.73E-02	kg	Dose (soil) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.25E-02	kg/day	Dose (invertebrate) = (Ci * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	1.21E-02	L/day	Dose (water) = (Cw * Iw)(H)/BW	NOAEL = No Observed Adverse Effects Concentration
Soil Ingestion Rate = (Is)	2.05E-03	kg/day	Ci = Contaminant concentration in invertebrate	SW = Surface Water
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in soil	
Contaminated Area = (CA)	Assume equal to home range		Cw = Contaminant concentration in water	
			Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)	
			H=CA/HR (Assume = to 1)	

APPENDIX I

AMERICAN ROBIN - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Semivolatile Organics											
ACENAPHTHYLENE	7.73E-01	0.00E+00	1.77E+01	7.31E-03	0.00E+00	2.61E+00	2.62E+00	2.00E+00	2.00E+01	1.3E+00	1.3E-01
ANTHRACENE	4.07E+00	0.00E+00	9.84E+00	3.84E-02	0.00E+00	1.45E+00	1.49E+00	2.00E+00	2.00E+01	7.5E-01	7.5E-02
BENZO(A)ANTHRACENE	2.47E+01	1.35E-04	3.93E+01	2.34E-01	1.90E-05	5.81E+00	6.04E+00	2.00E+00	2.00E+01	3.0E+00	3.0E-01
BENZO(A)PYRENE	1.10E+01	0.00E+00	1.47E+01	1.04E-01	0.00E+00	2.16E+00	2.27E+00	2.00E+00	2.00E+01	1.1E+00	1.1E-01
BENZO(B)FLUORANTHENE	2.24E+01	0.00E+00	5.84E+01	2.12E-01	0.00E+00	8.62E+00	8.83E+00	2.00E+00	2.00E+01	4.4E+00	4.4E-01
BENZO(G,H,I)PERYLENE	3.92E+00	0.00E+00	1.15E+01	3.70E-02	0.00E+00	1.70E+00	1.74E+00	2.00E+00	2.00E+01	8.7E-01	8.7E-02
BENZO(K)FLUORANTHENE	8.73E+00	0.00E+00	2.27E+01	8.25E-02	0.00E+00	3.35E+00	3.44E+00	2.00E+00	2.00E+01	1.7E+00	1.7E-01
CHRYSENE	2.70E+01	1.10E-04	6.19E+01	2.56E-01	1.55E-05	9.15E+00	9.40E+00	2.00E+00	2.00E+01	4.7E+00	4.7E-01
FLUORANTHENE	3.80E+01	1.60E-04	1.16E+02	3.59E-01	2.26E-05	1.71E+01	1.74E+01	2.00E+00	2.00E+01	8.7E+00	8.7E-01
INDENO(1,2,3-CD)PYRENE	3.91E+00	0.00E+00	1.12E+01	3.70E-02	0.00E+00	1.65E+00	1.69E+00	2.00E+00	2.00E+01	8.5E-01	8.5E-02
PYRENE	3.94E+01	2.30E-04	6.89E+01	3.72E-01	3.24E-05	1.02E+01	1.05E+01	2.00E+00	2.00E+01	5.3E+00	5.3E-01
Pesticides/PCBs											
ENDRIN ALDEHYDE	3.50E-02	0.00E+00	1.26E-01	3.31E-04	0.00E+00	1.86E-02	1.89E-02	1.00E-02	1.00E-01	1.9E+00	1.9E-01
ENDRIN KETONE	4.39E-02	0.00E+00	1.58E-01	4.15E-04	0.00E+00	2.33E-02	2.38E-02	1.00E-02	1.00E-01	2.4E+00	2.4E-01
Inorganics											
ARSENIC	1.58E+01	3.97E-04	1.69E+00	1.49E-01	5.60E-05	2.50E-01	3.99E-01	2.24E+00	4.51E+00	1.8E-01	8.9E-02
IRON	3.35E+04	3.72E-01	1.20E+03	3.16E+02	5.25E-02	1.78E+02	4.94E+02	1.00E+02	1.00E+03	4.9E+00	4.9E-01
LEAD	2.62E+01	3.82E-04	1.12E+01	2.48E-01	5.39E-05	1.66E+00	1.90E+00	1.63E+00	4.46E+01	1.2E+00	4.3E-02
MERCURY	6.75E-02	0.00E+00	4.36E-01	6.38E-04	0.00E+00	6.44E-02	6.50E-02	6.40E-03	6.40E-02	1.0E+01	1.0E+00
NICKEL	2.53E+01	2.29E-03	2.68E+01	2.39E-01	3.23E-04	3.95E+00	4.19E+00	6.71E+00	1.86E+01	6.3E-01	2.3E-01
SELENIUM	1.50E+00	1.99E-04	1.25E+00	1.42E-02	2.81E-05	1.84E-01	1.99E-01	2.90E-01	8.19E-01	6.9E-01	2.4E-01
VANADIUM	2.27E+01	0.00E+00	9.52E-01	2.14E-01	0.00E+00	1.41E-01	3.55E-01	3.44E-01	1.69E+00	1.0E+00	2.1E-01
ZINC	7.79E+01	0.00E+00	3.57E+02	7.36E-01	0.00E+00	5.27E+01	5.35E+01	6.61E+01	1.71E+02	8.1E-01	3.1E-01

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	8.04E-02	kg	Dose (soil) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.19E-02	kg/day	Dose (invertebrate) = (Ci * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	1.13E-02	L/day	Dose (water) = (Cw * Iw)(H)/BW	NOAEL = No Observed Adverse Effects Concentration
Soil Ingestion Rate = (Is)	7.60E-04	kg/day	Ci = Contaminant concentration in invertebrate	SW = Surface Water
Home Range = (HR)	6.10E-01	acres	Cs = Contaminant concentration in soil	
Contaminated Area = (CA)	Assume equal to home range		Cw = Contaminant concentration in water	
			Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)	
			H=CA/HR (Assume = to 1)	

APPENDIX I
CHEMICAL CONCENTRATIONS IN SURFACE SOIL AND TISSUE
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Surface Soil Concentrations (mg/kg)				Surface Water Concentrations (mg/L)		Earthworm Bioaccumulation Factors		Earthworm Concentrations (mg/kg)		Plant Bioaccumulation Factors		Plant Concentrations (mg/kg)	
	Maximum Detection	95% UCL	Average of Positive Detections	95% UCL or Average (1)	Maximum Detection	Average Concentration(1)	Conservative	Average	Maximum Detection	95% UCL or Average	Conservative	Average	Maximum Detection	95% UCL or Average
Volatile Organics														
ACETONE	6.50E-02	3.73E-02	3.33E-02	3.73E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	6.50E-02	3.73E-02	5.20E+00	5.20E+00	3.38E-01	1.94E-01
CHLOROFORM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-03	1.00E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	1.00E+00	0.00E+00	0.00E+00
ISOPROPYLBENZENE	6.20E-03	NV	6.20E-03	6.20E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	6.20E-03	6.20E-03	1.00E+00	1.00E+00	6.20E-03	6.20E-03
Semivolatile Organics														
2-METHYLNAPHTHALENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-03	1.78E-03	3.04E+00	3.04E+00	0.00E+00	0.00E+00	Regression from Eco SSL		0.00E+00	0.00E+00
ACENAPHTHENE	7.70E-03	7.70E-03	5.70E-03	7.70E-03	3.60E-04	3.60E-04	1.47E+00	1.47E+00	1.13E-02	1.13E-02	Regression from Eco SSL		2.47E-01	2.47E-01
ACENAPHTHYLENE	2.60E-02	1.58E-02	1.44E-02	1.58E-02	8.20E-04	8.20E-04	2.29E+01	2.29E+01	5.95E-01	3.62E-01	Regression from Eco SSL		1.78E-02	1.20E-02
ANTHRACENE	2.70E-02	1.49E-02	1.29E-02	1.49E-02	1.10E-04	1.10E-04	2.42E+00	2.42E+00	6.53E-02	3.59E-02	Regression from Eco SSL		2.24E-02	1.40E-02
BENZALDEHYDE	7.30E-02	NV	7.30E-02	7.30E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	7.30E-02	7.30E-02	1.76E+00	1.76E+00	1.28E-01	1.28E-01
BENZO(A)ANTHRACENE	2.30E-01	9.67E-02	4.68E-02	9.67E-02	2.00E-04	1.52E-04	1.59E+00	1.59E+00	3.66E-01	1.54E-01	Regression from Eco SSL		2.78E-02	1.66E-02
BENZO(A)PYRENE	3.00E-01	1.19E-01	5.58E-02	1.19E-01	1.60E-04	1.45E-04	1.33E+00	1.33E+00	3.99E-01	1.58E-01	Regression from Eco SSL		3.93E-02	1.59E-02
BENZO(B)FLUORANTHENE	5.30E-01	2.04E-01	9.27E-02	2.04E-01	2.50E-04	1.58E-04	2.60E+00	2.60E+00	1.38E+00	5.29E-01	3.10E-01	3.10E-01	1.64E-01	6.31E-02
BENZO(G,H,I)PERYLENE	2.70E-01	1.01E-01	4.80E-02	1.01E-01	1.30E-04	1.30E-04	2.94E+00	2.94E+00	7.94E-01	2.98E-01	Regression from Eco SSL		8.37E-02	2.63E-02
BENZO(K)FLUORANTHENE	2.00E-01	7.43E-02	3.64E-02	7.43E-02	1.50E-04	1.50E-04	2.60E+00	2.60E+00	5.20E-01	1.93E-01	Regression from Eco SSL		2.90E-02	1.24E-02
BIS(2-ETHYLHEXYL)PHTHALATE	5.80E-02	NV	5.80E-02	5.80E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	5.80E-02	5.80E-02	5.50E-02	5.50E-02	3.19E-03	3.19E-03
CHRYSENE	3.00E-01	1.23E-01	6.03E-02	1.23E-01	1.80E-04	1.38E-04	2.29E+00	2.29E+00	6.87E-01	2.81E-01	Regression from Eco SSL		3.26E-02	1.92E-02
DIBENZO(A,H)ANTHRACENE	5.70E-02	2.18E-02	1.74E-02	2.18E-02	0.00E+00	0.00E+00	2.31E+00	2.31E+00	1.32E-01	5.03E-02	1.30E-01	1.30E-01	7.41E-03	2.83E-03
FLUORANTHENE	6.00E-01	2.37E-01	1.12E-01	2.37E-01	3.60E-04	2.40E-04	3.04E+00	3.04E+00	1.82E+00	7.22E-01	5.00E-01	5.00E-01	3.00E-01	1.19E-01
FLUORENE	1.10E-02	1.10E-02	8.73E-03	1.10E-02	1.30E-03	1.30E-03	9.57E+00	9.57E+00	1.05E-01	1.05E-01	Regression from Eco SSL		1.82E-01	1.82E-01
INDENO(1,2,3-CD)PYRENE	2.40E-01	8.92E-02	4.14E-02	8.92E-02	1.10E-04	1.10E-04	2.86E+00	2.86E+00	6.86E-01	2.55E-01	1.10E-01	1.10E-01	2.64E-02	9.81E-03
NAPHTHALENE	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-03	1.04E-03	4.40E+00	4.40E+00	0.00E+00	0.00E+00	1.22E+01	1.22E+01	0.00E+00	0.00E+00
PHENANTHRENE	2.00E-01	8.99E-02	4.49E-02	8.99E-02	1.10E-03	2.50E-04	1.72E+00	1.72E+00	3.44E-01	1.55E-01	Regression from Eco SSL		3.12E-01	1.90E-01
PYRENE	4.30E-01	1.80E-01	8.74E-02	1.80E-01	3.00E-04	2.24E-04	1.75E+00	1.75E+00	7.53E-01	3.15E-01	7.20E-01	7.20E-01	3.10E-01	1.29E-01
Pesticides/PCBs														
AROCLOR-1254	3.90E-02	NV	3.90E-02	3.90E-02	0.00E+00	0.00E+00	1.59E+01	6.67E+00	6.20E-01	2.60E-01	1.30E-02	1.30E-02	5.07E-04	5.07E-04
TOTAL AROCLOR	3.90E-02	NV	3.90E-02	3.90E-02	0.00E+00	0.00E+00	1.59E+01	6.67E+00	6.20E-01	2.60E-01	2.90E-03	2.90E-03	1.13E-04	1.13E-04
Dioxins														
TEQ BIRD	4.62E-06	2.45E-06	1.76E-06	2.45E-06	0.00E+00	0.00E+00	2.22E+01	1.10E+01	1.03E-04	2.70E-05	4.30E-03	4.30E-03	1.99E-08	1.05E-08
TEQ MAMMAL	5.98E-06	4.03E-06	3.13E-06	4.03E-06	0.00E+00	0.00E+00	2.22E+01	1.10E+01	1.33E-04	4.44E-05	4.30E-03	4.30E-03	2.57E-08	1.73E-08
Inorganics														
ALUMINUM	9.74E+03	8.50E+03	7.80E+03	8.50E+03	8.52E-01	8.52E-01	1.18E-01	4.30E-02	1.15E+03	3.65E+02	5.00E-03	2.87E-03	4.87E+01	2.44E+01
ARSENIC	4.37E+01	2.64E+01	1.64E+01	2.64E+01	2.99E-04	2.80E-04	Regression from Eco SSL		3.48E+00	2.44E+00	3.75E-02	3.75E-02	1.64E+00	9.91E-01
BARIUM	2.37E+01	1.84E+01	1.58E+01	1.84E+01	1.10E-02	9.16E-03	9.10E-02	9.10E-02	2.16E+00	1.67E+00	1.56E-01	1.56E-01	3.70E+00	2.86E+00
BERYLLIUM	5.50E-01	4.95E-01	4.51E-01	4.95E-01	0.00E+00	0.00E+00	4.50E-02	4.50E-02	2.48E-02	2.23E-02	Regression from Eco SSL		3.77E-01	3.49E-01
COBALT	1.32E+01	1.03E+01	8.15E+00	1.03E+01	5.64E-04	3.64E-04	1.22E-01	1.22E-01	1.61E+00	1.26E+00	7.50E-03	7.50E-03	9.90E-02	7.73E-02
COPPER	2.42E+01	1.55E+01	1.29E+01	1.55E+01	3.30E-03	1.80E-03	5.15E-01	5.15E-01	1.25E+01	7.99E+00	Regression from Eco SSL		6.84E+00	5.74E+00
IRON	3.37E+04	2.57E+04	2.18E+04	2.57E+04	2.93E+00	7.25E-01	7.80E-02	3.60E-02	2.63E+03	9.25E+02	1.00E-02	4.25E-03	3.37E+02	1.09E+02
LEAD	3.33E+01	2.67E+01	2.17E+01	2.67E+01	5.33E-04	2.89E-04	Regression from Eco SSL		1.36E+01	1.14E+01	Regression from Eco SSL		1.89E+00	1.67E+00
MERCURY	1.20E-01	1.20E-01	6.95E-02	1.20E-01	0.00E+00	0.00E+00	Regression - Sample et al., (1998)		5.29E-01	5.29E-01	5.00E+00	6.52E-01	6.00E-01	7.82E-02
NICKEL	2.26E+01	1.90E+01	1.60E+01	1.90E+01	5.40E-03	3.23E-03	BAF - Sample et al., (1998)		2.39E+01	2.01E+01	Regression rom Eco SSL		1.12E+00	9.80E-01
SELENIUM	4.20E+00	3.64E+00	3.55E+00	3.64E+00	2.56E-04	2.10E-04	Regression or BAF from Eco SSL		2.66E+00	2.39E+00	Regression from Eco SSL		2.48E+00	2.11E+00
THALLIUM	2.50E+00	2.07E+00	1.72E+00	2.07E+00	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.50E+00	2.07E+00	4.00E-03	4.00E-03	1.00E-02	8.26E-03
VANADIUM	2.40E+01	1.74E+01	1.53E+01	1.74E+01	0.00E+00	0.00E+00	4.20E-02	4.20E-02	1.01E+00	7.32E-01	4.85E-02	4.85E-02	1.16E-01	8.45E-02
ZINC	6.95E+01	5.05E+01	4.20E+01	5.05E+01	0.00E+00	0.00E+00	Regression from Eco SSL		3.44E+02	3.10E+02	Regression from Eco SSL		5.06E+01	4.24E+01

1 - The average positive detections value was used only if a 95% UCL was not able to be calculated.

APPENDIX I

MEADOW VOLE - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
ACETONE	6.50E-02	0.00E+00	3.38E-01	2.30E-04	0.00E+00	3.73E-02	3.76E-02	1.00E+01	5.00E+01	3.76E-03	7.51E-04
CHLOROFORM	0.00E+00	1.00E-03	0.00E+00	0.00E+00	4.42E-04	0.00E+00	4.42E-04	1.50E+01	4.10E+01	2.95E-05	1.08E-05
ISOPROPYLBENZENE	6.20E-03	0.00E+00	6.20E-03	2.19E-05	0.00E+00	6.85E-04	7.07E-04	1.10E+01	3.31E+01	6.4E-05	2.1E-05
Semivolatile Organics											
2-METHYLNAPHTHALENE	0.00E+00	3.30E-03	0.00E+00	0.00E+00	1.46E-03	0.00E+00	1.46E-03	6.56E+01	3.56E+02	2.2E-05	4.1E-06
ACENAPHTHENE	7.70E-03	3.60E-04	2.47E-01	2.72E-05	1.59E-04	2.73E-02	2.75E-02	6.56E+01	3.56E+02	4.2E-04	7.7E-05
ACENAPHTHYLENE	2.60E-02	8.20E-04	1.78E-02	9.19E-05	3.62E-04	1.96E-03	2.42E-03	6.56E+01	3.56E+02	3.7E-05	6.8E-06
ANTHRACENE	2.70E-02	1.10E-04	2.24E-02	9.55E-05	4.86E-05	2.47E-03	2.62E-03	6.56E+01	3.56E+02	4.0E-05	7.3E-06
BENZALDEHYDE	7.30E-02	0.00E+00	1.28E-01	2.58E-04	0.00E+00	1.42E-02	1.45E-02	2.00E+01	4.00E+01	7.2E-04	3.6E-04
BENZO(A)ANTHRACENE	2.30E-01	2.00E-04	2.78E-02	8.13E-04	8.84E-05	3.08E-03	3.98E-03	6.15E-01	3.84E+01	6.5E-03	1.0E-04
BENZO(A)PYRENE	3.00E-01	1.60E-04	3.93E-02	1.06E-03	7.07E-05	4.35E-03	5.48E-03	6.15E-01	3.84E+01	8.9E-03	1.4E-04
BENZO(B)FLUORANTHENE	5.30E-01	2.50E-04	1.64E-01	1.87E-03	1.10E-04	1.82E-02	2.01E-02	6.15E-01	3.84E+01	3.3E-02	5.2E-04
BENZO(G,H,I)PERYLENE	2.70E-01	1.30E-04	8.37E-02	9.55E-04	5.75E-05	9.25E-03	1.03E-02	6.15E-01	3.84E+01	1.7E-02	2.7E-04
BENZO(K)FLUORANTHENE	2.00E-01	1.50E-04	2.90E-02	7.07E-04	6.63E-05	3.20E-03	3.97E-03	6.15E-01	3.84E+01	6.5E-03	1.0E-04
BIS(2-ETHYLHEXYL)PHTHALATE	5.80E-02	0.00E+00	3.19E-03	2.05E-04	0.00E+00	3.52E-04	5.57E-04	1.83E+01	1.83E+02	3.0E-05	3.0E-06
CHRYSENE	3.00E-01	1.80E-04	3.26E-02	1.06E-03	7.95E-05	3.60E-03	4.74E-03	6.15E-01	3.84E+01	7.7E-03	1.2E-04
DIBENZO(A,H)ANTHRACENE	5.70E-02	0.00E+00	7.41E-03	2.02E-04	0.00E+00	8.19E-04	1.02E-03	6.15E-01	3.84E+01	1.7E-03	2.7E-05
FLUORANTHENE	6.00E-01	3.60E-04	3.00E-01	2.12E-03	1.59E-04	3.31E-02	3.54E-02	6.56E+01	3.56E+02	5.4E-04	1.0E-04
FLUORENE	1.10E-02	1.30E-03	1.82E-01	3.89E-05	5.75E-04	2.01E-02	2.07E-02	6.56E+01	3.56E+02	3.2E-04	5.8E-05
INDENO(1,2,3-CD)PYRENE	2.40E-01	1.10E-04	2.64E-02	8.48E-04	4.86E-05	2.92E-03	3.81E-03	6.15E-01	3.84E+01	6.2E-03	9.9E-05
NAPHTHALENE	0.00E+00	1.50E-03	0.00E+00	0.00E+00	6.63E-04	0.00E+00	6.63E-04	6.56E+01	3.56E+02	1.0E-05	1.9E-06
PHENANTHRENE	2.00E-01	1.10E-03	3.12E-01	7.07E-04	4.86E-04	3.45E-02	3.57E-02	6.56E+01	3.56E+02	5.4E-04	1.0E-04
PYRENE	4.30E-01	3.00E-04	3.10E-01	1.52E-03	1.33E-04	3.42E-02	3.59E-02	6.15E-01	3.84E+01	5.8E-02	9.3E-04
Pesticides/PCBs											
AROCLOR-1254	3.90E-02	0.00E+00	5.07E-04	1.38E-04	0.00E+00	5.60E-05	1.94E-04	6.80E-02	6.80E-01	2.9E-03	2.9E-04
TOTAL AROCLOR	3.90E-02	0.00E+00	1.13E-04	1.38E-04	0.00E+00	1.25E-05	1.50E-04	6.80E-02	6.80E-01	2.2E-03	2.2E-04
Dioxins											
TEQ MAMMAL	5.98E-06	0.00E+00	2.57E-08	2.11E-08	0.00E+00	2.84E-09	2.40E-08	1.00E-06	1.00E-05	2.4E-02	2.4E-03
Inorganics											
ALUMINUM	9.74E+03	8.52E-01	4.87E+01	3.44E+01	3.77E-01	5.38E+00	4.02E+01	1.93E+00	1.93E+01	2.1E+01	2.1E+00
ARSENIC	4.37E+01	2.99E-04	1.64E+00	1.54E-01	1.32E-04	1.81E-01	3.36E-01	1.04E+00	4.55E+00	3.2E-01	7.4E-02
BARIUM	2.37E+01	1.10E-02	3.70E+00	8.38E-02	4.86E-03	4.08E-01	4.97E-01	5.18E+01	8.27E+01	9.6E-03	6.0E-03
BERYLLIUM	5.50E-01	0.00E+00	3.77E-01	1.94E-03	0.00E+00	4.17E-02	4.36E-02	5.32E-01	6.73E-01	8.2E-02	6.5E-02
COBALT	1.32E+01	5.64E-04	9.90E-02	4.67E-02	2.49E-04	1.09E-02	5.79E-02	7.33E+00	1.89E+01	7.9E-03	3.1E-03
COPPER	2.42E+01	3.30E-03	6.84E+00	8.56E-02	1.46E-03	7.56E-01	8.43E-01	5.60E+00	8.27E+01	1.5E-01	1.0E-02
IRON	3.37E+04	2.93E+00	3.37E+02	1.19E+02	1.29E+00	3.72E+01	1.58E+02	5.00E+01	5.00E+02	3.2E+00	3.2E-01
LEAD	3.33E+01	5.33E-04	1.89E+00	1.18E-01	2.36E-04	2.09E-01	3.27E-01	4.70E+00	1.86E+02	7.0E-02	1.8E-03
MERCURY	1.20E-01	0.00E+00	6.00E-01	4.24E-04	0.00E+00	6.63E-02	6.67E-02	3.20E-02	1.60E-01	2.1E+00	4.2E-01
NICKEL	2.26E+01	5.40E-03	1.12E+00	7.99E-02	2.39E-03	1.23E-01	2.06E-01	1.70E+00	1.48E+01	1.2E-01	1.4E-02
SELENIUM	4.20E+00	2.56E-04	2.48E+00	1.48E-02	1.13E-04	2.74E-01	2.89E-01	1.43E-01	6.61E-01	2.0E+00	4.4E-01
THALLIUM	2.50E+00	0.00E+00	1.00E-02	8.84E-03	0.00E+00	1.10E-03	9.94E-03	7.40E-03	7.40E-02	1.3E+00	1.3E-01
VANADIUM	2.40E+01	0.00E+00	1.16E-01	8.48E-02	0.00E+00	1.29E-02	9.77E-02	4.16E+00	9.44E+00	2.3E-02	1.0E-02
ZINC	6.95E+01	0.00E+00	5.06E+01	2.46E-01	0.00E+00	5.59E+00	5.84E+00	7.54E+01	2.98E+02	7.7E-02	2.0E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.70E-02	kg
Food Ingestion Rate = (If)	1.88E-03	kg/day
Water Ingestion Rate = (Iw)	7.51E-03	L/day
Soil Ingestion Rate = (Is)	6.01E-05	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

MEADOW VOLE - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Inorganics											
IRON	2.57E+04	7.25E-01	1.09E+02	1.50E+01	1.27E-01	5.32E+00	2.05E+01	5.00E+01	5.00E+02	4.1E-01	4.1E-02
MERCURY	1.20E-01	0.00E+00	7.82E-02	7.02E-05	0.00E+00	3.81E-03	3.88E-03	3.20E-02	1.60E-01	1.2E-01	2.4E-02
SELENIUM	3.64E+00	2.10E-04	2.11E+00	2.13E-03	3.67E-05	1.03E-01	1.05E-01	1.43E-01	6.61E-01	7.3E-01	1.6E-01
THALLIUM	2.07E+00	0.00E+00	8.26E-03	1.21E-03	0.00E+00	4.02E-04	1.61E-03	7.40E-03	7.40E-02	2.2E-01	2.2E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	3.58E-02	kg
Food Ingestion Rate = (If)	1.74E-03	kg/day
Water Ingestion Rate = (Iw)	6.26E-03	L/day
Soil Ingestion Rate = (Is)	2.09E-05	kg/day
Home Range = (HR)	6.59E-02	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

BOBWHITE QUAIL - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
ACETONE	6.50E-02	0.00E+00	3.38E-01	9.55E-04	0.00E+00	3.57E-02	3.67E-02	2.01E+04	2.01E+05	1.8E-06	1.8E-07
CHLOROFORM	0.00E+00	1.00E-03	0.00E+00	0.00E+00	1.48E-04	0.00E+00	1.48E-04	NV	NV	#VALUE!	#VALUE!
ISOPROPYLBENZENE	6.20E-03	0.00E+00	6.20E-03	9.11E-05	0.00E+00	6.56E-04	7.47E-04	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics											
2-METHYLNAPHTHALENE	0.00E+00	3.30E-03	0.00E+00	0.00E+00	4.88E-04	0.00E+00	4.88E-04	2.00E+00	2.00E+01	2.4E-04	2.4E-05
ACENAPHTHENE	7.70E-03	3.60E-04	2.47E-01	1.13E-04	5.32E-05	2.61E-02	2.63E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
ACENAPHTHYLENE	2.60E-02	8.20E-04	1.78E-02	3.82E-04	1.21E-04	1.88E-03	2.38E-03	2.00E+00	2.00E+01	1.2E-03	1.2E-04
ANTHRACENE	2.70E-02	1.10E-04	2.24E-02	3.97E-04	1.63E-05	2.36E-03	2.78E-03	2.00E+00	2.00E+01	1.4E-03	1.4E-04
BENZALDEHYDE	7.30E-02	0.00E+00	1.28E-01	1.07E-03	0.00E+00	1.36E-02	1.47E-02	NV	NV	#VALUE!	#VALUE!
BENZO(A)ANTHRACENE	2.30E-01	2.00E-04	2.78E-02	3.38E-03	2.96E-05	2.94E-03	6.35E-03	2.00E+00	2.00E+01	3.2E-03	3.2E-04
BENZO(A)PYRENE	3.00E-01	1.60E-04	3.93E-02	4.41E-03	2.36E-05	4.16E-03	8.59E-03	2.00E+00	2.00E+01	4.3E-03	4.3E-04
BENZO(B)FLUORANTHENE	5.30E-01	2.50E-04	1.64E-01	7.79E-03	3.70E-05	1.74E-02	2.52E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
BENZO(G,H,I)PERYLENE	2.70E-01	1.30E-04	8.37E-02	3.97E-03	1.92E-05	8.85E-03	1.28E-02	2.00E+00	2.00E+01	6.4E-03	6.4E-04
BENZO(K)FLUORANTHENE	2.00E-01	1.50E-04	2.90E-02	2.94E-03	2.22E-05	3.06E-03	6.03E-03	2.00E+00	2.00E+01	3.0E-03	3.0E-04
BIS(2-ETHYLHEXYL)PHTHALATE	5.80E-02	0.00E+00	3.19E-03	8.52E-04	0.00E+00	3.37E-04	1.19E-03	1.11E+00	1.11E+01	1.1E-03	1.1E-04
CHRYSENE	3.00E-01	1.80E-04	3.26E-02	4.41E-03	2.66E-05	3.45E-03	7.88E-03	2.00E+00	2.00E+01	3.9E-03	3.9E-04
DIBENZO(A,H)ANTHRACENE	5.70E-02	0.00E+00	7.41E-03	8.38E-04	0.00E+00	7.84E-04	1.62E-03	2.00E+00	2.00E+01	8.1E-04	8.1E-05
FLUORANTHENE	6.00E-01	3.60E-04	3.00E-01	8.82E-03	5.32E-05	3.17E-02	4.06E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
FLUORENE	1.10E-02	1.30E-03	1.82E-01	1.62E-04	1.92E-04	1.93E-02	1.96E-02	2.00E+00	2.00E+01	9.8E-03	9.8E-04
INDENO(1,2,3-CD)PYRENE	2.40E-01	1.10E-04	2.64E-02	3.53E-03	1.63E-05	2.79E-03	6.34E-03	2.00E+00	2.00E+01	3.2E-03	3.2E-04
NAPHTHALENE	0.00E+00	1.50E-03	0.00E+00	0.00E+00	2.22E-04	0.00E+00	2.22E-04	2.00E+00	2.00E+01	1.1E-04	1.1E-05
PHENANTHRENE	2.00E-01	1.10E-03	3.12E-01	2.94E-03	1.63E-04	3.30E-02	3.61E-02	2.00E+00	2.00E+01	1.8E-02	1.8E-03
PYRENE	4.30E-01	3.00E-04	3.10E-01	6.32E-03	4.43E-05	3.27E-02	3.91E-02	2.00E+00	2.00E+01	2.0E-02	2.0E-03
Pesticides/PCBs											
AROCLOR-1254	3.90E-02	0.00E+00	5.07E-04	5.73E-04	0.00E+00	5.36E-05	6.27E-04	1.80E-01	1.80E+00	3.5E-03	3.5E-04
TOTAL AROCLOR	3.90E-02	0.00E+00	1.13E-04	5.73E-04	0.00E+00	1.20E-05	5.85E-04	1.80E-01	1.80E+00	3.3E-03	3.3E-04
Dioxins											
TEQ BIRD	4.62E-06	0.00E+00	1.99E-08	6.79E-08	0.00E+00	2.10E-09	7.00E-08	1.40E-05	1.40E-04	5.0E-03	5.0E-04
Inorganics											
ALUMINUM	9.74E+03	8.52E-01	4.87E+01	1.43E+02	1.26E-01	5.15E+00	1.48E+02	1.10E+02	1.10E+03	1.4E+00	1.4E-01
ARSENIC	4.37E+01	2.99E-04	1.64E+00	6.42E-01	4.42E-05	1.73E-01	8.16E-01	2.24E+00	4.51E+00	3.6E-01	1.8E-01
BARIUM	2.37E+01	1.10E-02	3.70E+00	3.48E-01	1.63E-03	3.91E-01	7.41E-01	2.08E+01	4.17E+01	3.6E-02	1.8E-02
BERYLLIUM	5.50E-01	0.00E+00	3.77E-01	8.08E-03	0.00E+00	3.99E-02	4.80E-02	NV	NV	#VALUE!	#VALUE!
COBALT	1.32E+01	5.64E-04	9.90E-02	1.94E-01	8.34E-05	1.05E-02	2.05E-01	7.61E+00	1.83E+01	2.7E-02	1.1E-02
COPPER	2.42E+01	3.30E-03	6.84E+00	3.56E-01	4.88E-04	7.24E-01	1.08E+00	4.05E+00	3.49E+01	2.7E-01	3.1E-02
IRON	3.37E+04	2.93E+00	3.37E+02	4.95E+02	4.33E-01	3.56E+01	5.31E+02	1.00E+02	1.00E+03	5.3E+00	5.3E-01
LEAD	3.33E+01	5.33E-04	1.89E+00	4.89E-01	7.88E-05	2.00E-01	6.90E-01	1.63E+00	4.46E+01	4.2E-01	1.5E-02
MERCURY	1.20E-01	0.00E+00	6.00E-01	1.76E-03	0.00E+00	6.34E-02	6.52E-02	6.40E-03	6.40E-02	1.0E+01	1.0E+00
NICKEL	2.26E+01	5.40E-03	1.12E+00	3.32E-01	7.98E-04	1.18E-01	4.51E-01	6.71E+00	1.86E+01	6.7E-02	2.4E-02
SELENIUM	4.20E+00	2.56E-04	2.48E+00	6.17E-02	3.78E-05	2.62E-01	3.24E-01	2.90E-01	8.19E-01	1.1E+00	4.0E-01
THALLIUM	2.50E+00	0.00E+00	1.00E-02	3.67E-02	0.00E+00	1.06E-03	3.78E-02	NV	NV	#VALUE!	#VALUE!
VANADIUM	2.40E+01	0.00E+00	1.16E-01	3.53E-01	0.00E+00	1.23E-02	3.65E-01	3.44E-01	1.69E+00	1.1E+00	2.2E-01
ZINC	6.95E+01	0.00E+00	5.06E+01	1.02E+00	0.00E+00	5.35E+00	6.38E+00	6.61E+01	1.71E+02	9.6E-02	3.7E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.54E-01	kg
Food Ingestion Rate = (If)	1.63E-02	kg/day
Water Ingestion Rate = (Iw)	2.28E-02	L/day
Soil Ingestion Rate = (Is)	2.26E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (vegetation) = (Cv * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cv = Contaminant concentration in vegetation
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

BOBWHITE QUAIL - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Vegetation Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Veget.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Inorganics											
IRON	2.57E+04	7.25E-01	1.09E+02	1.22E+02	7.97E-02	8.49E+00	1.30E+02	1.00E+02	1.00E+03	1.3E+00	1.3E-01
MERCURY	1.20E-01	0.00E+00	7.82E-02	5.69E-04	0.00E+00	6.08E-03	6.65E-03	6.40E-03	6.40E-02	1.0E+00	1.0E-01
SELENIUM	3.64E+00	2.10E-04	2.11E+00	1.72E-02	2.31E-05	1.64E-01	1.82E-01	2.90E-01	8.19E-01	6.3E-01	2.2E-01
VANADIUM	1.74E+01	0.00E+00	8.45E-02	8.26E-02	0.00E+00	6.57E-03	8.92E-02	3.44E-01	1.69E+00	2.6E-01	5.3E-02

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.75E-01	kg	Dose (soil) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.36E-02	kg/day	Dose (vegetation) = (Cv * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	1.93E-02	L/day	Dose (water) = (Cw * Iw)(H)/BW	NOAEL = No Observed Adverse Effects Concentration
Soil Ingestion Rate = (Is)	8.30E-04	kg/day	Cv = Contaminant concentration in vegetation	SW = Surface Water
Home Range = (HR)	1.88E+01	acres	Cs = Contaminant concentration in soil	
Contaminated Area = (CA)	Assume equal to home range		Cw = Contaminant concentration in water	
			Total Dose = Dose (soil) + Dose (vegetation) + Dose (water)	
			H=CA/HR (Assume = to 1)	

APPENDIX I

SHORT-TAILED SHREW - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
ACETONE	6.50E-02	0.00E+00	6.50E-02	2.08E-04	0.00E+00	6.93E-03	7.14E-03	1.00E+01	5.00E+01	7.1E-04	1.4E-04
CHLOROFORM	0.00E+00	1.00E-03	0.00E+00	0.00E+00	2.85E-04	0.00E+00	2.85E-04	1.50E+01	4.10E+01	1.9E-05	7.0E-06
ISOPROPYLBENZENE	6.20E-03	0.00E+00	6.20E-03	1.98E-05	0.00E+00	6.61E-04	6.81E-04	1.10E+01	3.31E+01	6.2E-05	2.1E-05
Semivolatile Organics											
2-METHYLNAPHTHALENE	0.00E+00	3.30E-03	0.00E+00	0.00E+00	9.42E-04	0.00E+00	9.42E-04	6.56E+01	3.56E+02	1.4E-05	2.6E-06
ACENAPHTHENE	7.70E-03	3.60E-04	1.13E-02	2.46E-05	1.03E-04	1.21E-03	1.33E-03	6.56E+01	3.56E+02	2.0E-05	3.7E-06
ACENAPHTHYLENE	2.60E-02	8.20E-04	5.95E-01	8.32E-05	2.34E-04	6.35E-02	6.38E-02	6.56E+01	3.56E+02	9.7E-04	1.8E-04
ANTHRACENE	2.70E-02	1.10E-04	6.53E-02	8.64E-05	3.14E-05	6.97E-03	7.09E-03	6.56E+01	3.56E+02	1.1E-04	2.0E-05
BENZALDEHYDE	7.30E-02	0.00E+00	7.30E-02	2.34E-04	0.00E+00	7.79E-03	8.02E-03	2.00E+01	4.00E+01	4.0E-04	2.0E-04
BENZO(A)ANTHRACENE	2.30E-01	2.00E-04	3.66E-01	7.36E-04	5.71E-05	3.90E-02	3.98E-02	6.15E-01	3.84E+01	6.5E-02	1.0E-03
BENZO(A)PYRENE	3.00E-01	1.60E-04	3.99E-01	9.60E-04	4.57E-05	4.26E-02	4.36E-02	6.15E-01	3.84E+01	7.1E-02	1.1E-03
BENZO(B)FLUORANTHENE	5.30E-01	2.50E-04	1.38E+00	1.70E-03	7.13E-05	1.47E-01	1.49E-01	6.15E-01	3.84E+01	2.4E-01	3.9E-03
BENZO(G,H,I)PERYLENE	2.70E-01	1.30E-04	7.94E-01	8.64E-04	3.71E-05	8.47E-02	8.56E-02	6.15E-01	3.84E+01	1.4E-01	2.2E-03
BENZO(K)FLUORANTHENE	2.00E-01	1.50E-04	5.20E-01	6.40E-04	4.28E-05	5.55E-02	5.62E-02	6.15E-01	3.84E+01	9.1E-02	1.5E-03
BIS(2-ETHYLHEXYL)PHTHALATE	5.80E-02	0.00E+00	5.80E-02	1.86E-04	0.00E+00	6.19E-03	6.37E-03	1.83E+01	1.83E+02	3.5E-04	3.5E-05
CHRYSENE	3.00E-01	1.80E-04	6.87E-01	9.60E-04	5.14E-05	7.33E-02	7.43E-02	6.15E-01	3.84E+01	1.2E-01	1.9E-03
DIBENZO(A,H)ANTHRACENE	5.70E-02	0.00E+00	1.32E-01	1.82E-04	0.00E+00	1.40E-02	1.42E-02	6.15E-01	3.84E+01	2.3E-02	3.7E-04
FLUORANTHENE	6.00E-01	3.60E-04	1.82E+00	1.92E-03	1.03E-04	1.95E-01	1.97E-01	6.56E+01	3.56E+02	3.0E-03	5.5E-04
FLUORENE	1.10E-02	1.30E-03	1.05E-01	3.52E-05	3.71E-04	1.12E-02	1.16E-02	6.56E+01	3.56E+02	1.8E-04	3.3E-05
INDENO(1,2,3-CD)PYRENE	2.40E-01	1.10E-04	6.86E-01	7.68E-04	3.14E-05	7.32E-02	7.40E-02	6.15E-01	3.84E+01	1.2E-01	1.9E-03
NAPHTHALENE	0.00E+00	1.50E-03	0.00E+00	0.00E+00	4.28E-04	0.00E+00	4.28E-04	6.56E+01	3.56E+02	6.5E-06	1.2E-06
PHENANTHRENE	2.00E-01	1.10E-03	3.44E-01	6.40E-04	3.14E-04	3.67E-02	3.77E-02	6.56E+01	3.56E+02	5.7E-04	1.1E-04
PYRENE	4.30E-01	3.00E-04	7.53E-01	1.38E-03	8.56E-05	8.03E-02	8.17E-02	6.15E-01	3.84E+01	1.3E-01	2.1E-03
Pesticides/PCBs											
AROCLOR-1254	3.90E-02	0.00E+00	6.20E-01	1.25E-04	0.00E+00	6.62E-02	6.63E-02	6.80E-02	6.80E-01	9.8E-01	9.8E-02
TOTAL AROCLOR	3.90E-02	0.00E+00	6.20E-01	1.25E-04	0.00E+00	6.62E-02	6.63E-02	6.80E-02	6.80E-01	9.8E-01	9.8E-02
Dioxins											
TEQ MAMMAL	5.98E-06	0.00E+00	1.33E-04	1.91E-08	0.00E+00	1.42E-05	1.42E-05	1.00E-06	1.00E-05	1.4E+01	1.4E+00
Inorganics											
ALUMINUM	9.74E+03	8.52E-01	1.15E+03	3.12E+01	2.43E-01	1.23E+02	1.54E+02	1.93E+00	1.93E+01	8.0E+01	8.0E+00
ARSENIC	4.37E+01	2.99E-04	3.48E+00	1.40E-01	8.53E-05	3.71E-01	5.11E-01	1.04E+00	4.55E+00	4.9E-01	1.1E-01
BARIUM	2.37E+01	1.10E-02	2.16E+00	7.59E-02	3.14E-03	2.30E-01	3.09E-01	5.18E+01	8.27E+01	6.0E-03	3.7E-03
BERYLLIUM	5.50E-01	0.00E+00	2.48E-02	1.76E-03	0.00E+00	2.64E-03	4.40E-03	5.32E-01	6.73E-01	8.3E-03	6.5E-03
COBALT	1.32E+01	5.64E-04	1.61E+00	4.22E-02	1.61E-04	1.72E-01	2.14E-01	7.33E+00	1.89E+01	2.9E-02	1.1E-02
COPPER	2.42E+01	3.30E-03	1.25E+01	7.75E-02	9.42E-04	1.33E+00	1.41E+00	5.60E+00	8.27E+01	2.5E-01	1.7E-02
IRON	3.37E+04	2.93E+00	2.63E+03	1.08E+02	8.36E-01	2.80E+02	3.89E+02	5.00E+01	5.00E+02	7.8E+00	7.8E-01
LEAD	3.33E+01	5.33E-04	1.36E+01	1.07E-01	1.52E-04	1.45E+00	1.56E+00	4.70E+00	1.86E+02	3.3E-01	8.4E-03
MERCURY	1.20E-01	0.00E+00	5.29E-01	3.84E-04	0.00E+00	5.65E-02	5.69E-02	3.20E-02	1.60E-01	1.8E+00	3.6E-01
NICKEL	2.26E+01	5.40E-03	2.39E+01	7.23E-02	1.54E-03	2.55E+00	2.63E+00	1.70E+00	1.48E+01	1.5E+00	1.8E-01
SELENIUM	4.20E+00	2.56E-04	2.66E+00	1.34E-02	7.30E-05	2.83E-01	2.97E-01	1.43E-01	6.61E-01	2.1E+00	4.5E-01
THALLIUM	2.50E+00	0.00E+00	2.50E+00	8.00E-03	0.00E+00	2.67E-01	2.75E-01	7.40E-03	7.40E-02	3.7E+01	3.7E+00
VANADIUM	2.40E+01	0.00E+00	1.01E+00	7.68E-02	0.00E+00	1.08E-01	1.84E-01	4.16E+00	9.44E+00	4.4E-02	2.0E-02
ZINC	6.95E+01	0.00E+00	3.44E+02	2.22E-01	0.00E+00	3.67E+01	3.69E+01	7.54E+01	2.98E+02	4.9E-01	1.2E-01

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.50E-02	kg	Dose (soil) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.60E-03	kg/day	Dose (invertebrate) = (Ci * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	4.28E-03	L/day	Dose (water) = (Cw * Iw)(H)/BW	NOAEL = No Observed Adverse Effects Concentration
Soil Ingestion Rate = (Is)	4.80E-05	kg/day	Ci = Contaminant concentration in invertebrate	SW = Surface Water
Home Range = (HR)	Assume 100% on site		Cs = Contaminant concentration in soil	
Contaminated Area = (CA)	Assume equal to home range		Cw = Contaminant concentration in water	
			Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)	
			H=CA/HR (Assume = to 1)	

APPENDIX I

SHORT-TAILED SHREW - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Dioxins											
TEQ MAMMAL	4.03E-06	0.00E+00	4.44E-05	3.23E-09	0.00E+00	3.95E-06	3.95E-06	1.00E-06	1.00E-05	4.0E+00	4.0E-01
Inorganics											
IRON	2.57E+04	7.25E-01	9.25E+02	2.06E+01	1.62E-01	8.23E+01	1.03E+02	5.00E+01	5.00E+02	2.1E+00	2.1E-01
MERCURY	1.20E-01	0.00E+00	5.29E-01	9.61E-05	0.00E+00	4.71E-02	4.72E-02	3.20E-02	1.60E-01	1.5E+00	2.9E-01
NICKEL	1.90E+01	3.23E-03	2.01E+01	1.52E-02	7.22E-04	1.79E+00	1.81E+00	1.70E+00	1.48E+01	1.1E+00	1.2E-01
SELENIUM	3.64E+00	2.10E-04	2.39E+00	2.91E-03	4.70E-05	2.13E-01	2.16E-01	1.43E-01	6.61E-01	1.5E+00	3.3E-01
THALLIUM	2.07E+00	0.00E+00	2.07E+00	1.65E-03	0.00E+00	1.84E-01	1.85E-01	7.40E-03	7.40E-02	2.5E+01	2.5E+00

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.61E-02	kg
Food Ingestion Rate = (If)	1.43E-03	kg/day
Water Ingestion Rate = (Iw)	3.60E-03	L/day
Soil Ingestion Rate = (Is)	1.29E-05	kg/day
Home Range = (HR)	9.70E-01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (invertebrate) = (Ci * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Ci = Contaminant concentration in invertebrate
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

AMERICAN ROBIN - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Soil Conc. (mg/kg)	Max SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
ACETONE	6.50E-02	0.00E+00	6.50E-02	1.72E-03	0.00E+00	1.05E-02	1.22E-02	2.01E+04	2.01E+05	6.1E-07	6.1E-08
CHLOROFORM	0.00E+00	1.00E-03	0.00E+00	0.00E+00	1.56E-04	0.00E+00	1.56E-04	NV	NV	#VALUE!	#VALUE!
ISOPROPYLBENZENE	6.20E-03	0.00E+00	6.20E-03	1.64E-04	0.00E+00	1.00E-03	1.16E-03	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics											
2-METHYLNAPHTHALENE	0.00E+00	3.30E-03	0.00E+00	0.00E+00	5.15E-04	0.00E+00	5.15E-04	2.00E+00	2.00E+01	2.6E-04	2.6E-05
ACENAPHTHENE	7.70E-03	3.60E-04	1.13E-02	2.04E-04	5.62E-05	1.83E-03	2.09E-03	2.00E+00	2.00E+01	1.0E-03	1.0E-04
ACENAPHTHYLENE	2.60E-02	8.20E-04	5.95E-01	6.88E-04	1.28E-04	9.61E-02	9.69E-02	2.00E+00	2.00E+01	4.8E-02	4.8E-03
ANTHRACENE	2.70E-02	1.10E-04	6.53E-02	7.15E-04	1.72E-05	1.05E-02	1.13E-02	2.00E+00	2.00E+01	5.6E-03	5.6E-04
BENZALDEHYDE	7.30E-02	0.00E+00	7.30E-02	1.93E-03	0.00E+00	1.18E-02	1.37E-02	NV	NV	#VALUE!	#VALUE!
BENZO(A)ANTHRACENE	2.30E-01	2.00E-04	3.66E-01	6.09E-03	3.12E-05	5.90E-02	6.51E-02	2.00E+00	2.00E+01	3.3E-02	3.3E-03
BENZO(A)PYRENE	3.00E-01	1.60E-04	3.99E-01	7.94E-03	2.50E-05	6.44E-02	7.24E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
BENZO(B)FLUORANTHENE	5.30E-01	2.50E-04	1.38E+00	1.40E-02	3.90E-05	2.22E-01	2.36E-01	2.00E+00	2.00E+01	1.2E-01	1.2E-02
BENZO(G,H,I)PERYLENE	2.70E-01	1.30E-04	7.94E-01	7.15E-03	2.03E-05	1.28E-01	1.35E-01	2.00E+00	2.00E+01	6.8E-02	6.8E-03
BENZO(K)FLUORANTHENE	2.00E-01	1.50E-04	5.20E-01	5.29E-03	2.34E-05	8.39E-02	8.92E-02	2.00E+00	2.00E+01	4.5E-02	4.5E-03
BIS(2-ETHYLHEXYL)PHTHALATE	5.80E-02	0.00E+00	5.80E-02	1.54E-03	0.00E+00	9.36E-03	1.09E-02	1.11E+00	1.11E+01	9.8E-03	9.8E-04
CHRYSENE	3.00E-01	1.80E-04	6.87E-01	7.94E-03	2.81E-05	1.11E-01	1.19E-01	2.00E+00	2.00E+01	5.9E-02	5.9E-03
DIBENZO(A,H)ANTHRACENE	5.70E-02	0.00E+00	1.32E-01	1.51E-03	0.00E+00	2.12E-02	2.28E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
FLUORANTHENE	6.00E-01	3.60E-04	1.82E+00	1.59E-02	5.62E-05	2.94E-01	3.10E-01	2.00E+00	2.00E+01	1.6E-01	1.6E-02
FLUORENE	1.10E-02	1.30E-03	1.05E-01	2.91E-04	2.03E-04	1.70E-02	1.75E-02	2.00E+00	2.00E+01	8.7E-03	8.7E-04
INDENO(1,2,3-CD)PYRENE	2.40E-01	1.10E-04	6.86E-01	6.35E-03	1.72E-05	1.11E-01	1.17E-01	2.00E+00	2.00E+01	5.9E-02	5.9E-03
NAPHTHALENE	0.00E+00	1.50E-03	0.00E+00	0.00E+00	2.34E-04	0.00E+00	2.34E-04	2.00E+00	2.00E+01	1.2E-04	1.2E-05
PHENANTHRENE	2.00E-01	1.10E-03	3.44E-01	5.29E-03	1.72E-04	5.55E-02	6.10E-02	2.00E+00	2.00E+01	3.0E-02	3.0E-03
PYRENE	4.30E-01	3.00E-04	7.53E-01	1.14E-02	4.68E-05	1.21E-01	1.33E-01	2.00E+00	2.00E+01	6.6E-02	6.6E-03
Pesticides/PCBs											
AROCLOR-1254	3.90E-02	0.00E+00	6.20E-01	1.03E-03	0.00E+00	1.00E-01	1.01E-01	1.80E-01	1.80E+00	5.6E-01	5.6E-02
TOTAL AROCLOR	3.90E-02	0.00E+00	6.20E-01	1.03E-03	0.00E+00	1.00E-01	1.01E-01	1.80E-01	1.80E+00	5.6E-01	5.6E-02
Dioxins											
TEQ BIRD	4.62E-06	0.00E+00	1.03E-04	1.22E-07	0.00E+00	1.66E-05	1.67E-05	1.40E-05	1.40E-04	1.2E+00	1.2E-01
Inorganics											
ALUMINUM	9.74E+03	8.52E-01	1.15E+03	2.58E+02	1.33E-01	1.85E+02	4.43E+02	1.10E+02	1.10E+03	4.0E+00	4.0E-01
ARSENIC	4.37E+01	2.99E-04	3.48E+00	1.16E+00	4.67E-05	5.61E-01	1.72E+00	2.24E+00	4.51E+00	7.7E-01	3.8E-01
BARIUM	2.37E+01	1.10E-02	2.16E+00	6.27E-01	1.72E-03	3.48E-01	9.77E-01	2.08E+01	4.17E+01	4.7E-02	2.3E-02
BERYLLIUM	5.50E-01	0.00E+00	2.48E-02	1.46E-02	0.00E+00	3.99E-03	1.86E-02	NV	NV	#VALUE!	#VALUE!
COBALT	1.32E+01	5.64E-04	1.61E+00	3.49E-01	8.81E-05	2.60E-01	6.09E-01	7.61E+00	1.83E+01	8.0E-02	3.3E-02
COPPER	2.42E+01	3.30E-03	1.25E+01	6.40E-01	5.15E-04	2.01E+00	2.65E+00	4.05E+00	3.49E+01	6.5E-01	7.6E-02
IRON	3.37E+04	2.93E+00	2.63E+03	8.92E+02	4.57E-01	4.24E+02	1.32E+03	1.00E+02	1.00E+03	1.3E+01	1.3E+00
LEAD	3.33E+01	5.33E-04	1.36E+01	8.81E-01	8.32E-05	2.20E+00	3.08E+00	1.63E+00	4.46E+01	1.9E+00	6.9E-02
MERCURY	1.20E-01	0.00E+00	5.29E-01	3.18E-03	0.00E+00	8.54E-02	8.86E-02	6.40E-03	6.40E-02	1.4E+01	1.4E+00
NICKEL	2.26E+01	5.40E-03	2.39E+01	5.98E-01	8.43E-04	3.86E+00	4.46E+00	6.71E+00	1.86E+01	6.7E-01	2.4E-01
SELENIUM	4.20E+00	2.56E-04	2.66E+00	1.11E-01	4.00E-05	4.29E-01	5.40E-01	2.90E-01	8.19E-01	1.9E+00	6.6E-01
THALLIUM	2.50E+00	0.00E+00	2.50E+00	6.62E-02	0.00E+00	4.03E-01	4.70E-01	NV	NV	#VALUE!	#VALUE!
VANADIUM	2.40E+01	0.00E+00	1.01E+00	6.35E-01	0.00E+00	1.63E-01	7.98E-01	3.44E-01	1.69E+00	2.3E+00	4.7E-01
ZINC	6.95E+01	0.00E+00	3.44E+02	1.84E+00	0.00E+00	5.55E+01	5.73E+01	6.61E+01	1.71E+02	8.7E-01	3.3E-01

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	7.73E-02	kg
Food Ingestion Rate = (If)	1.25E-02	kg/day
Water Ingestion Rate = (Iw)	1.21E-02	L/day
Soil Ingestion Rate = (Is)	2.05E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (soil) = (Cs * Is)(H)/BW
Dose (invertebrate) = (Ci * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Ci = Contaminant concentration in invertebrate
Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
SW = Surface Water

APPENDIX I

AMERICAN ROBIN - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Soil Conc. (mg/kg)	Avg SW Conc. (mg/L)	Invertebrate Conc. (mg/kg)	Dose (mg/kg/d) from: Soil	Surface Water	Invert.	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Dioxins											
TEQ BIRD	2.45E-06	0.00E+00	2.70E-05	2.32E-08	0.00E+00	3.99E-06	4.01E-06	1.40E-05	1.40E-04	2.9E-01	2.9E-02
Inorganics											
IRON	2.57E+04	7.25E-01	9.25E+02	2.43E+02	1.02E-01	1.37E+02	3.80E+02	1.00E+02	1.00E+03	3.8E+00	3.8E-01
LEAD	2.67E+01	2.89E-04	1.14E+01	2.52E-01	4.08E-05	1.68E+00	1.93E+00	1.63E+00	4.46E+01	1.2E+00	4.3E-02
MERCURY	1.20E-01	0.00E+00	5.29E-01	1.13E-03	0.00E+00	7.82E-02	7.93E-02	6.40E-03	6.40E-02	1.2E+01	1.2E+00
SELENIUM	3.64E+00	2.10E-04	2.39E+00	3.44E-02	2.96E-05	3.53E-01	3.87E-01	2.90E-01	8.19E-01	1.3E+00	4.7E-01
VANADIUM	1.74E+01	0.00E+00	7.32E-01	1.65E-01	0.00E+00	1.08E-01	2.73E-01	3.44E-01	1.69E+00	7.9E-01	1.6E-01

Surface water samples were not collected so this exposure pathway is not included in the food chain model.
Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	8.04E-02	kg	Dose (soil) = (Cs * Is)(H)/BW	Conc = Concentration
Food Ingestion Rate = (If)	1.19E-02	kg/day	Dose (invertebrate) = (Ci * If)(H)/BW	LOAEL = Lowest Observed Adverse Effects Concentration
Water Ingestion Rate = (Iw)	1.13E-02	L/day	Dose (water) = (Cw * Iw)(H)/BW	NOAEL = No Observed Adverse Effects Concentration
Soil Ingestion Rate = (Is)	7.60E-04	kg/day	Ci = Contaminant concentration in invertebrate	SW = Surface Water
Home Range = (HR)	6.10E-01	acres	Cs = Contaminant concentration in soil	
Contaminated Area = (CA)	Assume equal to home range		Cw = Contaminant concentration in water	
			Total Dose = Dose (soil) + Dose (invertebrate) + Dose (water)	
			H=CA/HR (Assume = to 1)	

APPENDIX I

CHEMICAL CONCENTRATIONS IN SEDIMENT AND TISSUE
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Sediment Concentrations (mg/kg)				Surface Water Concentrations (mg/L)		Fish/Invertebrate Bioaccumulation Factors		Fish Concentrations (mg/kg)	
	Maximum Detection	95% UCL	Average of Positive Detections	Average (1)	Maximum Detection	Average Concentration(1)	Conservative	Average	Maximum Detection	95% UCL or Average
Volatile Organics										
ACETONE	2.40E-01	1.11E-01	9.34E-02	1.11E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.12E+00	5.16E-01
CARBON DISULFIDE	1.50E-02	1.50E-02	8.45E-03	1.50E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	6.99E-02	6.99E-02
Semivolatile Organics										
2-METHYLNAPHTHALENE	1.00E-02	5.78E-03	5.38E-03	5.78E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	4.66E-02	2.69E-02
2-METHYLPHENOL	1.20E-02	1.06E-02	1.10E-02	1.06E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	5.59E-02	4.95E-02
4-METHYLPHENOL	1.60E-02	8.67E-03	8.12E-03	8.67E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	7.46E-02	4.04E-02
ACENAPHTHENE	1.90E-02	1.09E-02	1.01E-02	1.09E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	2.57E-02	1.47E-02
ACENAPHTHYLENE	2.80E-02	1.11E-02	8.54E-03	1.11E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	3.78E-02	1.50E-02
ANTHRACENE	1.20E-01	5.23E-02	2.53E-02	5.23E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	1.62E-01	7.07E-02
BENZALDEHYDE	1.82E-01	1.78E-01	1.44E-01	1.78E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	8.48E-01	8.30E-01
BENZO(A)ANTHRACENE	2.00E-01	9.99E-02	6.75E-02	9.99E-02	1.70E-04	1.35E-04	2.90E-01	2.90E-01	2.70E-01	1.35E-01
BENZO(A)PYRENE	2.10E-01	1.11E-01	7.75E-02	1.11E-01	0.00E+00	0.00E+00	2.90E-01	2.90E-01	2.84E-01	1.50E-01
BENZO(B)FLUORANTHENE	2.40E-01	1.27E-01	8.87E-02	1.27E-01	0.00E+00	0.00E+00	2.90E-01	2.90E-01	3.24E-01	1.72E-01
BENZO(G,H,I)PERYLENE	1.50E-01	8.76E-02	6.10E-02	8.76E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	2.03E-01	1.18E-01
BENZO(K)FLUORANTHENE	2.00E-01	1.26E-01	8.76E-02	1.26E-01	0.00E+00	0.00E+00	2.90E-01	2.90E-01	2.70E-01	1.70E-01
BIS(2-ETHYLHEXYL)PHTHALATE	2.20E-01	1.71E-01	1.24E-01	1.71E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.03E+00	7.98E-01
CHRYSENE	2.90E-01	1.35E-01	9.31E-02	1.35E-01	1.10E-04	1.10E-04	2.90E-01	2.90E-01	3.92E-01	1.83E-01
DIBENZO(A,H)ANTHRACENE	5.30E-02	2.79E-02	1.94E-02	2.79E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	7.16E-02	3.77E-02
FLUORANTHENE	3.30E-01	1.92E-01	1.37E-01	1.92E-01	1.60E-04	1.60E-04	2.90E-01	2.90E-01	4.46E-01	2.60E-01
FLUORENE	2.40E-02	1.01E-02	8.35E-03	1.01E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	3.24E-02	1.36E-02
INDENO(1,2,3-CD)PYRENE	1.20E-01	7.29E-02	5.09E-02	7.29E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	1.62E-01	9.85E-02
NAPHTHALENE	6.00E-03	5.20E-03	5.04E-03	5.20E-03	0.00E+00	0.00E+00	2.90E-01	2.90E-01	8.11E-03	7.03E-03
PHENANTHRENE	1.90E-01	1.15E-01	7.78E-02	1.15E-01	1.20E-04	1.20E-04	2.90E-01	2.90E-01	2.57E-01	1.55E-01
PHENOL	1.50E-02	6.60E-03	7.77E-03	6.60E-03	1.00E-04	1.00E-04	1.00E+00	1.00E+00	6.99E-02	3.08E-02
PYRENE	2.60E-01	1.53E-01	1.10E-01	1.53E-01	2.30E-04	2.30E-04	2.90E-01	2.90E-01	3.51E-01	2.07E-01
TOTAL PAHs	2.40E+00	1.32E+00	9.16E-01	1.32E+00	7.90E-04	4.45E-04	2.90E-01	2.90E-01	3.24E+00	1.78E+00
Pesticides/PCBs										
4,4'-DDD	3.40E-03	NV	3.40E-03	3.40E-03	0.00E+00	0.00E+00	2.80E-01	2.80E-01	4.44E-03	4.44E-03
4,4'-DDE	1.50E-02	NV	1.50E-02	1.50E-02	0.00E+00	0.00E+00	7.70E+00	7.70E+00	5.38E-01	5.38E-01
4,4'-DDT	6.70E-03	NV	6.70E-03	6.70E-03	0.00E+00	0.00E+00	1.67E+00	1.67E+00	5.21E-02	5.21E-02
ENDRIN ALDEHYDE	2.72E-03	NV	2.72E-03	2.72E-03	0.00E+00	0.00E+00	1.80E+00	1.80E+00	2.28E-02	2.28E-02
ENDRIN KETONE	2.08E-02	NV	2.08E-02	2.08E-02	0.00E+00	0.00E+00	1.80E+00	1.80E+00	1.74E-01	1.74E-01
TOTAL DDD/DDE/DDT	2.51E-02	NV	2.51E-02	2.51E-02	0.00E+00	0.00E+00	7.70E+00	7.70E+00	9.01E-01	9.01E-01
Dioxins										
TEQ FISH	4.26E-06	2.68E-06	1.68E-06	2.68E-06	0.00E+00	0.00E+00	2.50E-02	2.50E-02	4.96E-07	3.12E-07
Inorganics										
ALUMINUM	1.29E+04	1.02E+04	8.85E+03	1.02E+04	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.29E+04	1.02E+04
ARSENIC	4.66E+01	2.11E+01	1.58E+01	2.11E+01	4.73E-04	3.97E-04	6.90E-01	1.43E-01	3.22E+01	3.01E+00
BARIUM	6.47E+01	4.27E+01	3.39E+01	4.27E+01	1.04E-02	9.28E-03	1.00E+00	1.00E+00	6.47E+01	4.27E+01
BERYLLIUM	6.80E-01	5.16E-01	4.45E-01	5.16E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	6.80E-01	5.16E-01
CADMIUM	1.20E+00	5.80E-01	4.15E-01	5.80E-01	0.00E+00	0.00E+00	7.99E+00	6.00E-01	9.59E+00	3.48E-01
CHROMIUM	2.92E+01	1.86E+01	1.54E+01	1.86E+01	0.00E+00	0.00E+00	4.68E-01	1.00E-01	1.37E+01	1.86E+00
COBALT	7.62E+01	4.33E+01	1.92E+01	4.33E+01	9.31E-04	4.53E-04	1.00E+00	1.00E+00	7.62E+01	4.33E+01
COPPER	2.49E+01	1.93E+01	1.68E+01	1.93E+01	3.70E-03	1.86E-03	5.25E+00	1.56E+00	1.31E+02	3.01E+01
IRON	1.45E+05	8.46E+04	4.23E+04	8.46E+04	5.45E-01	3.72E-01	1.00E+00	1.00E+00	1.45E+05	8.46E+04
LEAD	9.62E+01	5.28E+01	3.97E+01	5.28E+01	9.28E-04	3.82E-04	6.07E-01	7.10E-02	5.84E+01	3.75E+00
MANGANESE	3.44E+03	2.20E+03	8.54E+02	2.20E+03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	3.44E+03	2.20E+03
MERCURY	1.70E-01	9.05E-02	6.96E-02	9.05E-02	0.00E+00	0.00E+00	2.87E+00	1.14E+00	4.88E-01	1.03E-01
NICKEL	1.32E+02	7.36E+01	3.26E+01	7.36E+01	3.50E-03	2.29E-03	2.32E+00	4.86E-01	3.06E+02	3.58E+01
SILVER	1.20E-01	NA	1.20E-01	1.20E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.20E-01	1.20E-01
THALLIUM	1.15E+01	6.68E+00	2.82E+00	6.68E+00	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.15E+01	6.68E+00
VANADIUM	2.72E+01	2.06E+01	1.76E+01	2.06E+01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.72E+01	2.06E+01
ZINC	1.99E+02	1.21E+02	9.68E+01	1.21E+02	0.00E+00	0.00E+00	7.53E+00	1.94E+00	1.50E+03	2.34E+02

Percent TOC 3.09E+00
percent Lipids 1.44E+01
Invertebrate BSAFs used for inorganics

1 - The average positive detections value was used only if a 95% UCL was not able to be calculated.

APPENDIX I

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Sed Conc. (mg/kg)	Max SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
ACETONE	2.40E-01	0.00E+00	1.12E+00	2.49E-03	0.00E+00	1.23E-01	1.26E-01	1.00E+01	5.00E+01	1.3E-02	2.5E-03
CARBON DISULFIDE	1.50E-02	0.00E+00	6.99E-02	1.56E-04	0.00E+00	7.71E-03	7.87E-03	1.26E+01	2.56E+01	6.2E-04	3.1E-04
Semivolatile Organics											
2-METHYLNAPHTHALENE	1.00E-02	0.00E+00	4.66E-02	1.04E-04	0.00E+00	5.14E-03	5.24E-03	6.56E+01	3.56E+02	8.0E-05	1.5E-05
2-METHYLPHENOL	1.20E-02	0.00E+00	5.59E-02	1.24E-04	0.00E+00	6.17E-03	6.29E-03	5.00E+00	1.50E+01	1.3E-03	4.2E-04
4-METHYLPHENOL	1.60E-02	0.00E+00	7.46E-02	1.66E-04	0.00E+00	8.23E-03	8.39E-03	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	1.90E-02	0.00E+00	2.57E-02	1.97E-04	0.00E+00	2.83E-03	3.03E-03	6.56E+01	3.56E+02	4.6E-05	8.5E-06
ACENAPHTHYLENE	2.80E-02	0.00E+00	3.78E-02	2.90E-04	0.00E+00	4.17E-03	4.46E-03	6.56E+01	3.56E+02	6.8E-05	1.3E-05
ANTHRACENE	1.20E-01	0.00E+00	1.62E-01	1.24E-03	0.00E+00	1.79E-02	1.91E-02	6.56E+01	3.56E+02	2.9E-04	5.4E-05
BENZALDEHYDE	1.82E-01	0.00E+00	8.48E-01	1.89E-03	0.00E+00	9.36E-02	9.54E-02	2.00E+01	4.00E+01	4.8E-03	2.4E-03
BENZO(A)ANTHRACENE	2.00E-01	1.70E-04	2.70E-01	2.07E-03	3.75E-05	2.98E-02	3.19E-02	6.15E-01	3.84E+01	5.2E-02	8.3E-04
BENZO(A)PYRENE	2.10E-01	0.00E+00	2.84E-01	2.18E-03	0.00E+00	3.13E-02	3.35E-02	6.15E-01	3.84E+01	5.4E-02	8.7E-04
BENZO(B)FLUORANTHENE	2.40E-01	0.00E+00	3.24E-01	2.49E-03	0.00E+00	3.58E-02	3.83E-02	6.15E-01	3.84E+01	6.2E-02	1.0E-03
BENZO(G,H,I)PERYLENE	1.50E-01	0.00E+00	2.03E-01	1.56E-03	0.00E+00	2.24E-02	2.39E-02	6.15E-01	3.84E+01	3.9E-02	6.2E-04
BENZO(K)FLUORANTHENE	2.00E-01	0.00E+00	2.70E-01	2.07E-03	0.00E+00	2.98E-02	3.19E-02	6.15E-01	3.84E+01	5.2E-02	8.3E-04
BIS(2-ETHYLHEXYL)PHTHALATE	2.20E-01	0.00E+00	1.03E+00	2.28E-03	0.00E+00	1.13E-01	1.15E-01	1.83E+01	1.83E+02	6.3E-03	6.3E-04
CHRYSENE	2.90E-01	1.10E-04	3.92E-01	3.01E-03	2.43E-05	4.32E-02	4.63E-02	6.15E-01	3.84E+01	7.5E-02	1.2E-03
DIBENZO(A,H)ANTHRACENE	5.30E-02	0.00E+00	7.16E-02	5.50E-04	0.00E+00	7.90E-03	8.45E-03	6.15E-01	3.84E+01	1.4E-02	2.2E-04
FLUORANTHENE	3.30E-01	1.60E-04	4.46E-01	3.42E-03	3.53E-05	4.92E-02	5.27E-02	6.56E+01	3.56E+02	8.0E-04	1.5E-04
FLUORENE	2.40E-02	0.00E+00	3.24E-02	2.49E-04	0.00E+00	3.58E-03	3.83E-03	6.56E+01	3.56E+02	5.8E-05	1.1E-05
INDENO(1,2,3-CD)PYRENE	1.20E-01	0.00E+00	1.62E-01	1.24E-03	0.00E+00	1.79E-02	1.91E-02	6.15E-01	3.84E+01	3.1E-02	5.0E-04
NAPHTHALENE	6.00E-03	0.00E+00	8.11E-03	6.22E-05	0.00E+00	8.94E-04	9.57E-04	6.56E+01	3.56E+02	1.5E-05	2.7E-06
PHENANTHRENE	1.90E-01	1.20E-04	2.57E-01	1.97E-03	2.65E-05	2.83E-02	3.03E-02	6.56E+01	3.56E+02	4.6E-04	8.5E-05
PHENOL	1.50E-02	1.00E-04	6.99E-02	1.56E-04	2.21E-05	7.71E-03	7.89E-03	9.30E+01	1.57E+02	8.5E-05	5.0E-05
PYRENE	2.60E-01	2.30E-04	3.51E-01	2.70E-03	5.07E-05	3.88E-02	4.15E-02	6.15E-01	3.84E+01	6.7E-02	1.1E-03
Pesticides/PCBs											
4,4'-DDD	3.40E-03	0.00E+00	4.44E-03	3.53E-05	0.00E+00	4.89E-04	5.25E-04	1.47E-01	5.56E+00	3.6E-03	9.4E-05
4,4'-DDE	1.50E-02	0.00E+00	5.38E-01	1.56E-04	0.00E+00	5.94E-02	5.95E-02	1.47E-01	5.56E+00	4.0E-01	1.1E-02
4,4'-DDT	6.70E-03	0.00E+00	5.21E-02	6.95E-05	0.00E+00	5.75E-03	5.82E-03	1.47E-01	5.56E+00	4.0E-02	1.0E-03
ENDRIN ALDEHYDE	2.72E-03	0.00E+00	2.28E-02	2.82E-05	0.00E+00	2.52E-03	2.55E-03	9.20E-02	9.20E-01	2.8E-02	2.8E-03
ENDRIN KETONE	2.08E-02	0.00E+00	1.74E-01	2.16E-04	0.00E+00	1.92E-02	1.95E-02	9.20E-02	9.20E-01	2.1E-01	2.1E-02
TOTAL DDD/DDE/DDT	2.51E-02	0.00E+00	9.01E-01	2.60E-04	0.00E+00	9.94E-02	9.96E-02	1.47E-01	5.56E+00	6.8E-01	1.8E-02
Dioxins											
TEQ MAMMAL	7.06E-06	0.00E+00	8.23E-07	7.32E-08	0.00E+00	9.07E-08	1.64E-07	1.00E-06	1.00E-05	1.6E-01	1.6E-02
Inorganics											
ALUMINUM	1.29E+04	0.00E+00	1.29E+04	1.34E+02	0.00E+00	1.42E+03	1.56E+03	1.93E+00	1.93E+01	8.1E+02	8.1E+01
ARSENIC	4.66E+01	4.73E-04	3.22E+01	4.83E-01	1.04E-04	3.55E+00	4.03E+00	1.04E+00	4.55E+00	3.9E+00	8.9E-01
BARIUM	6.47E+01	1.04E-02	6.47E+01	6.71E-01	2.29E-03	7.14E+00	7.81E+00	5.18E+01	8.27E+01	1.5E-01	9.4E-02
BERYLLIUM	6.80E-01	0.00E+00	6.80E-01	7.05E-03	0.00E+00	7.50E-02	8.21E-02	5.32E-01	6.73E-01	1.5E-01	1.2E-01
CADMIUM	1.20E+00	0.00E+00	9.59E+00	1.24E-02	0.00E+00	1.06E+00	1.07E+00	7.70E-01	6.90E+00	1.4E+00	1.6E-01
CHROMIUM	2.92E+01	0.00E+00	1.37E+01	3.03E-01	0.00E+00	1.51E+00	1.81E+00	2.40E+00	5.82E+01	7.5E-01	3.1E-02
COBALT	7.62E+01	9.31E-04	7.62E+01	7.90E-01	2.05E-04	8.41E+00	9.20E+00	7.33E+00	1.89E+01	1.3E+00	4.9E-01
COPPER	2.49E+01	3.70E-03	1.31E+02	2.58E-01	8.16E-04	1.44E+01	1.47E+01	5.60E+00	8.27E+01	2.6E+00	1.8E-01
IRON	1.45E+05	5.45E-01	1.45E+05	1.50E+03	1.20E-01	1.60E+04	1.75E+04	5.00E+01	5.00E+02	3.5E+02	3.5E+01
LEAD	9.62E+01	9.28E-04	5.84E+01	9.98E-01	2.05E-04	6.44E+00	7.44E+00	4.70E+00	1.86E+02	1.6E+00	4.0E-02
MANGANESE	3.44E+03	0.00E+00	3.44E+03	3.57E+01	0.00E+00	3.79E+02	4.15E+02	5.15E+01	1.46E+02	8.1E+00	2.8E+00
MERCURY	1.70E-01	0.00E+00	4.88E-01	1.76E-03	0.00E+00	5.38E-02	5.55E-02	3.20E-02	1.60E-01	1.7E+00	3.5E-01
NICKEL	1.32E+02	3.50E-03	3.06E+02	1.37E+00	7.72E-04	3.38E+01	3.52E+01	1.70E+00	1.48E+01	2.1E+01	2.4E+00
SILVER	1.20E-01	0.00E+00	1.20E-01	1.24E-03	0.00E+00	1.32E-02	1.45E-02	6.02E+00	1.19E+02	2.4E-03	1.2E-04
THALLIUM	1.15E+01	0.00E+00	1.15E+01	1.19E-01	0.00E+00	1.27E+00	1.39E+00	7.40E-03	7.40E-02	1.9E+02	1.9E+01
VANADIUM	2.72E+01	0.00E+00	2.72E+01	2.82E-01	0.00E+00	3.00E+00	3.28E+00	4.16E+00	9.44E+00	7.9E-01	3.5E-01
ZINC	1.99E+02	0.00E+00	1.50E+03	2.06E+00	0.00E+00	1.65E+02	1.67E+02	7.54E+01	2.98E+02	2.2E+00	5.6E-01

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	5.50E-01	kg
Food Ingestion Rate = (If)	6.07E-02	kg/day
Water Ingestion Rate = (Iw)	1.21E-01	L/day
Sediment Ingestion Rate = (Is)	5.70E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (fish) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Sed. Conc. (mg/kg)	Avg SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Inorganics											
ALUMINUM	1.02E+04	0.00E+00	1.02E+04	3.91E+01	0.00E+00	4.16E+02	4.55E+02	1.93E+00	1.93E+01	2.4E+02	2.4E+01
ARSENIC	2.11E+01	3.97E-04	3.01E+00	8.09E-02	2.63E-05	1.23E-01	2.04E-01	1.04E+00	4.55E+00	2.0E-01	4.5E-02
CADMIUM	5.80E-01	0.00E+00	3.48E-01	2.23E-03	0.00E+00	1.42E-02	1.64E-02	7.70E-01	6.90E+00	2.1E-02	2.4E-03
COBALT	4.33E+01	4.53E-04	4.33E+01	1.66E-01	3.00E-05	1.77E+00	1.93E+00	7.33E+00	1.89E+01	2.6E-01	1.0E-01
COPPER	1.93E+01	1.86E-03	3.01E+01	7.42E-02	1.23E-04	1.23E+00	1.30E+00	5.60E+00	8.27E+01	2.3E-01	1.6E-02
IRON	8.46E+04	3.72E-01	8.46E+04	3.25E+02	2.46E-02	3.46E+03	3.78E+03	5.00E+01	5.00E+02	7.6E+01	7.6E+00
LEAD	5.28E+01	3.82E-04	3.75E+00	2.03E-01	2.53E-05	1.53E-01	3.56E-01	4.70E+00	1.86E+02	7.6E-02	1.9E-03
MANGANESE	2.20E+03	0.00E+00	2.20E+03	8.46E+00	0.00E+00	9.00E+01	9.85E+01	5.15E+01	1.46E+02	1.9E+00	6.8E-01
MERCURY	9.05E-02	0.00E+00	1.03E-01	3.47E-04	0.00E+00	4.20E-03	4.55E-03	3.20E-02	1.60E-01	1.4E-01	2.8E-02
NICKEL	7.36E+01	2.29E-03	3.58E+01	2.82E-01	1.52E-04	1.46E+00	1.74E+00	1.70E+00	1.48E+01	1.0E+00	1.2E-01
THALLIUM	6.68E+00	0.00E+00	6.68E+00	2.56E-02	0.00E+00	2.73E-01	2.98E-01	7.40E-03	7.40E-02	4.0E+01	4.0E+00
ZINC	1.21E+02	0.00E+00	2.34E+02	4.64E-01	0.00E+00	9.55E+00	1.00E+01	7.54E+01	2.98E+02	1.3E-01	3.4E-02

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.10E+00	kg
Food Ingestion Rate = (If)	4.50E-02	kg/day
Water Ingestion Rate = (Iw)	7.31E-02	L/day
Sediment Ingestion Rate = (Is)	4.23E-03	kg/day
Home Range = (HR)	3.49E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (fish) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

GREEN HERON - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Sed. Conc. (mg/kg)	Max SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
ACETONE	2.40E-01	0.00E+00	1.12E+00	1.92E-03	0.00E+00	1.73E-01	1.75E-01	2.01E+04	2.01E+05	8.7E-06	8.7E-07
CARBON DISULFIDE	1.50E-02	0.00E+00	6.99E-02	1.20E-04	0.00E+00	1.08E-02	1.10E-02	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics											
2-METHYLNAPHTHALENE	1.00E-02	0.00E+00	4.66E-02	8.00E-05	0.00E+00	7.22E-03	7.30E-03	2.00E+00	2.00E+01	3.7E-03	3.7E-04
2-METHYLPHENOL	1.20E-02	0.00E+00	5.59E-02	9.60E-05	0.00E+00	8.67E-03	8.76E-03	NV	NV	#VALUE!	#VALUE!
4-METHYLPHENOL	1.60E-02	0.00E+00	7.46E-02	1.28E-04	0.00E+00	1.16E-02	1.17E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	1.90E-02	0.00E+00	2.57E-02	1.52E-04	0.00E+00	3.98E-03	4.13E-03	2.00E+00	2.00E+01	2.1E-03	2.1E-04
ACENAPHTHYLENE	2.80E-02	0.00E+00	3.78E-02	2.24E-04	0.00E+00	5.87E-03	6.09E-03	2.00E+00	2.00E+01	3.0E-03	3.0E-04
ANTHRACENE	1.20E-01	0.00E+00	1.62E-01	9.60E-04	0.00E+00	2.51E-02	2.61E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
BENZALDEHYDE	1.82E-01	0.00E+00	8.48E-01	1.46E-03	0.00E+00	1.31E-01	1.33E-01	NV	NV	#VALUE!	#VALUE!
BENZO(A)ANTHRACENE	2.00E-01	1.70E-04	2.70E-01	1.60E-03	1.87E-05	4.19E-02	4.35E-02	2.00E+00	2.00E+01	2.2E-02	2.2E-03
BENZO(A)PYRENE	2.10E-01	0.00E+00	2.84E-01	1.68E-03	0.00E+00	4.40E-02	4.57E-02	2.00E+00	2.00E+01	2.3E-02	2.3E-03
BENZO(B)FLUORANTHENE	2.40E-01	0.00E+00	3.24E-01	1.92E-03	0.00E+00	5.03E-02	5.22E-02	2.00E+00	2.00E+01	2.6E-02	2.6E-03
BENZO(G,H,I)PERYLENE	1.50E-01	0.00E+00	2.03E-01	1.20E-03	0.00E+00	3.14E-02	3.26E-02	2.00E+00	2.00E+01	1.6E-02	1.6E-03
BENZO(K)FLUORANTHENE	2.00E-01	0.00E+00	2.70E-01	1.60E-03	0.00E+00	4.19E-02	4.35E-02	2.00E+00	2.00E+01	2.2E-02	2.2E-03
BIS(2-ETHYLHEXYL)PHTHALATE	2.20E-01	0.00E+00	1.03E+00	1.76E-03	0.00E+00	1.59E-01	1.61E-01	1.11E+00	1.11E+01	1.4E-01	1.4E-02
CHRYSENE	2.90E-01	1.10E-04	3.92E-01	2.32E-03	1.21E-05	6.07E-02	6.31E-02	2.00E+00	2.00E+01	3.2E-02	3.2E-03
DIBENZO(A,H)ANTHRACENE	5.30E-02	0.00E+00	7.16E-02	4.24E-04	0.00E+00	1.11E-02	1.15E-02	2.00E+00	2.00E+01	5.8E-03	5.8E-04
FLUORANTHENE	3.30E-01	1.60E-04	4.46E-01	2.64E-03	1.76E-05	6.91E-02	7.18E-02	2.00E+00	2.00E+01	3.6E-02	3.6E-03
FLUORENE	2.40E-02	0.00E+00	3.24E-02	1.92E-04	0.00E+00	5.03E-03	5.22E-03	2.00E+00	2.00E+01	2.6E-03	2.6E-04
INDENO(1,2,3-CD)PYRENE	1.20E-01	0.00E+00	1.62E-01	9.60E-04	0.00E+00	2.51E-02	2.61E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
NAPHTHALENE	6.00E-03	0.00E+00	8.11E-03	4.80E-05	0.00E+00	1.26E-03	1.30E-03	2.00E+00	2.00E+01	6.5E-04	6.5E-05
PHENANTHRENE	1.90E-01	1.20E-04	2.57E-01	1.52E-03	1.32E-05	3.98E-02	4.13E-02	2.00E+00	2.00E+01	2.1E-02	2.1E-03
PHENOL	1.50E-02	1.00E-04	6.99E-02	1.20E-04	1.10E-05	1.08E-02	1.10E-02	NV	NV	#VALUE!	#VALUE!
PYRENE	2.60E-01	2.30E-04	3.51E-01	2.08E-03	2.53E-05	5.45E-02	5.66E-02	2.00E+00	2.00E+01	2.8E-02	2.8E-03
Pesticides/PCBs											
4,4'-DDD	3.40E-03	0.00E+00	4.44E-03	2.72E-05	0.00E+00	6.88E-04	7.15E-04	2.27E-01	2.70E+00	3.1E-03	2.6E-04
4,4'-DDE	1.50E-02	0.00E+00	5.38E-01	1.20E-04	0.00E+00	8.34E-02	8.35E-02	2.27E-01	2.70E+00	3.7E-01	3.1E-02
4,4'-DDT	6.70E-03	0.00E+00	5.21E-02	5.36E-05	0.00E+00	8.08E-03	8.14E-03	2.27E-01	2.70E+00	3.6E-02	3.0E-03
ENDRIN ALDEHYDE	2.72E-03	0.00E+00	2.28E-02	2.18E-05	0.00E+00	3.54E-03	3.56E-03	1.00E-02	1.00E-01	3.6E-01	3.6E-02
ENDRIN KETONE	2.08E-02	0.00E+00	1.74E-01	1.66E-04	0.00E+00	2.70E-02	2.72E-02	1.00E-02	1.00E-01	2.7E+00	2.7E-01
TOTAL DDD/DDE/DDT	2.51E-02	0.00E+00	9.01E-01	2.01E-04	0.00E+00	1.40E-01	1.40E-01	2.27E-01	2.70E+00	6.2E-01	5.2E-02
Dioxins											
TEQ BIRD	5.81E-06	0.00E+00	6.77E-07	4.65E-08	0.00E+00	1.05E-07	1.51E-07	1.40E-05	1.40E-04	1.1E-02	1.1E-03
Inorganics											
ALUMINUM	1.29E+04	0.00E+00	1.29E+04	1.03E+02	0.00E+00	2.00E+03	2.10E+03	1.10E+02	1.10E+03	1.9E+01	1.9E+00
ARSENIC	4.66E+01	4.73E-04	3.22E+01	3.73E-01	5.20E-05	4.98E+00	5.36E+00	2.24E+00	4.51E+00	2.4E+00	1.2E+00
BARIUM	6.47E+01	1.04E-02	6.47E+01	5.18E-01	1.14E-03	1.00E+01	1.05E+01	2.08E+01	4.17E+01	5.1E-01	2.5E-01
BERYLLIUM	6.80E-01	0.00E+00	6.80E-01	5.44E-03	0.00E+00	1.05E-01	1.11E-01	NV	NV	#VALUE!	#VALUE!
CADMIUM	1.20E+00	0.00E+00	9.59E+00	9.60E-03	0.00E+00	1.49E+00	1.50E+00	1.47E+00	6.35E+00	1.0E+00	2.4E-01
CHROMIUM	2.92E+01	0.00E+00	1.37E+01	2.34E-01	0.00E+00	2.12E+00	2.35E+00	2.66E+00	1.56E+01	8.8E-01	1.5E-01
COBALT	7.62E+01	9.31E-04	7.62E+01	6.10E-01	1.02E-04	1.18E+01	1.24E+01	7.61E+00	1.83E+01	1.6E+00	6.8E-01
COPPER	2.49E+01	3.70E-03	1.31E+02	1.99E-01	4.07E-04	2.03E+01	2.05E+01	4.05E+00	3.49E+01	5.1E+00	5.9E-01
IRON	1.45E+05	5.45E-01	1.45E+05	1.16E+03	6.00E-02	2.25E+04	2.36E+04	1.00E+02	1.00E+03	2.4E+02	2.4E+01
LEAD	9.62E+01	9.28E-04	5.84E+01	7.70E-01	1.02E-04	9.05E+00	9.82E+00	1.63E+00	4.46E+01	6.0E+00	2.2E-01
MANGANESE	3.44E+03	0.00E+00	3.44E+03	2.75E+01	0.00E+00	5.33E+02	5.61E+02	1.79E+02	3.77E+02	3.1E+00	1.5E+00
MERCURY	1.70E-01	0.00E+00	4.88E-01	1.36E-03	0.00E+00	7.56E-02	7.69E-02	6.40E-03	6.40E-02	1.2E+01	1.2E+00
NICKEL	1.32E+02	3.50E-03	3.06E+02	1.06E+00	3.85E-04	4.75E+01	4.85E+01	6.71E+00	1.86E+01	7.2E+00	2.6E+00
SILVER	1.20E-01	0.00E+00	1.20E-01	9.60E-04	0.00E+00	1.86E-02	1.96E-02	2.02E+00	6.05E+01	9.7E-03	3.2E-04
THALLIUM	1.15E+01	0.00E+00	1.15E+01	9.20E-02	0.00E+00	1.78E+00	1.87E+00	NV	NV	#VALUE!	#VALUE!
VANADIUM	2.72E+01	0.00E+00	2.72E+01	2.18E-01	0.00E+00	4.22E+00	4.43E+00	3.44E-01	1.69E+00	1.3E+01	2.6E+00
ZINC	1.99E+02	0.00E+00	1.50E+03	1.59E+00	0.00E+00	2.32E+02	2.34E+02	6.61E+01	1.71E+02	3.5E+00	1.4E+00

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.00E-01	kg
Food Ingestion Rate = (If)	3.10E-02	kg/day
Water Ingestion Rate = (Iw)	2.20E-02	L/day
Sediment Ingestion Rate = (Is)	1.60E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (invertebrate) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

GREEN HERON - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 4 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Sed. Conc. (mg/kg)	Avg SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Pesticides/PCBs											
ENDRIN KETONE	2.08E-02	0.00E+00	1.74E-01	1.47E-04	0.00E+00	2.47E-02	2.48E-02	1.00E-02	1.00E-01	2.5E+00	2.5E-01
Inorganics											
ALUMINUM	1.02E+04	0.00E+00	1.02E+04	7.21E+01	0.00E+00	1.44E+03	1.51E+03	1.10E+02	1.10E+03	1.4E+01	1.4E+00
ARSENIC	2.11E+01	3.97E-04	3.01E+00	1.49E-01	3.93E-05	4.26E-01	5.75E-01	2.24E+00	4.51E+00	2.6E-01	1.3E-01
CADMIUM	5.80E-01	0.00E+00	3.48E-01	4.10E-03	0.00E+00	4.92E-02	5.33E-02	1.47E+00	6.35E+00	3.6E-02	8.4E-03
COBALT	4.33E+01	4.53E-04	4.33E+01	3.06E-01	4.49E-05	6.13E+00	6.44E+00	7.61E+00	1.83E+01	8.5E-01	3.5E-01
COPPER	1.93E+01	1.86E-03	3.01E+01	1.37E-01	1.84E-04	4.26E+00	4.39E+00	4.05E+00	3.49E+01	1.1E+00	1.3E-01
IRON	8.46E+04	3.72E-01	8.46E+04	5.99E+02	3.68E-02	1.20E+04	1.26E+04	1.00E+02	1.00E+03	1.3E+02	1.3E+01
LEAD	5.28E+01	3.82E-04	3.75E+00	3.73E-01	3.78E-05	5.30E-01	9.04E-01	1.63E+00	4.46E+01	5.5E-01	2.0E-02
MANGANESE	2.20E+03	0.00E+00	2.20E+03	1.56E+01	0.00E+00	3.12E+02	3.27E+02	1.79E+02	3.77E+02	1.8E+00	8.7E-01
MERCURY	9.05E-02	0.00E+00	1.03E-01	6.40E-04	0.00E+00	1.45E-02	1.52E-02	6.40E-03	6.40E-02	2.4E+00	2.4E-01
NICKEL	7.36E+01	2.29E-03	3.58E+01	5.21E-01	2.27E-04	5.06E+00	5.58E+00	6.71E+00	1.86E+01	8.3E-01	3.0E-01
THALLIUM	6.68E+00	0.00E+00	6.68E+00	4.73E-02	0.00E+00	9.45E-01	9.93E-01	NV	NV	#VALUE!	#VALUE!
VANADIUM	2.06E+01	0.00E+00	2.06E+01	1.46E-01	0.00E+00	2.91E+00	3.06E+00	3.44E-01	1.69E+00	8.9E+00	1.8E+00
ZINC	1.21E+02	0.00E+00	2.34E+02	8.55E-01	0.00E+00	3.31E+01	3.39E+01	6.61E+01	1.71E+02	5.1E-01	2.0E-01

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.12E-01	kg
Food Ingestion Rate = (If)	3.00E-02	kg/day
Water Ingestion Rate = (Iw)	2.10E-02	L/day
Sediment Ingestion Rate = (Is)	1.50E-03	kg/day
Home Range = (HR)	1.00E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (fish) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

CHEMICAL CONCENTRATIONS IN SEDIMENT AND TISSUE
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Sediment Concentrations (mg/kg)				Surface Water Concentrations (mg/L)		Fish/Invertebrate Bioaccumulation Factors		Fish Concentrations (mg/kg)	
	Maximum Detection	95% UCL	Average of Positive Detections	Average [1]	Maximum Detection	Average Concentration[1]	Conservative	Average	Maximum Detection	95% UCL or Average
Volatile Organics										
1,2-DICHLOROBENZENE	1.60E-03	NV	1.60E-03	1.60E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	5.75E-03	5.75E-03
ACETONE	2.00E-01	1.15E-01	8.80E-02	1.15E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	7.18E-01	4.12E-01
CHLOROFORM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-03	1.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CARBON DISULFIDE	3.90E-03	NV	3.90E-03	3.90E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.40E-02	1.40E-02
Semivolatile Organics										
2,4-DIMETHYLPHENOL	3.50E-03	NV	3.50E-03	3.50E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.26E-02	1.26E-02
2-METHYLNAPHTHALENE	2.10E-01	1.01E-01	3.20E-02	1.01E-01	3.30E-03	1.78E-03	1.00E+00	1.00E+00	7.54E-01	3.63E-01
2-METHYLPHENOL	1.20E-02	5.93E-03	7.75E-03	5.93E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	4.31E-02	2.13E-02
4-METHYLPHENOL	2.10E-02	9.74E-03	8.31E-03	9.74E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	7.54E-02	3.50E-02
ACENAPHTHENE	4.80E-02	3.00E-02	2.10E-02	3.00E-02	3.60E-04	3.60E-04	2.90E-01	2.90E-01	5.00E-02	3.12E-02
ACENAPHTHYLENE	1.10E-01	4.98E-02	3.20E-02	4.98E-02	8.20E-04	8.20E-04	2.90E-01	2.90E-01	1.15E-01	5.19E-02
ANTHRACENE	1.50E-01	1.02E-01	7.27E-02	1.02E-01	1.10E-04	1.10E-04	2.90E-01	2.90E-01	1.56E-01	1.06E-01
ATRAZINE	4.60E-03	NV	4.60E-03	4.60E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.65E-02	1.65E-02
BENZO(A)ANTHRACENE	6.50E-01	4.44E-01	2.79E-01	4.44E-01	2.00E-04	1.52E-04	2.90E-01	2.90E-01	6.77E-01	4.62E-01
BENZO(A)PYRENE	7.80E-01	5.40E-01	3.48E-01	5.40E-01	1.60E-04	1.45E-04	2.90E-01	2.90E-01	8.12E-01	5.62E-01
BENZO(B)FLUORANTHENE	1.00E+00	5.71E-01	4.31E-01	5.71E-01	2.50E-04	1.58E-04	2.90E-01	2.90E-01	1.04E+00	5.95E-01
BENZO(G,H,I)PERYLENE	6.30E-01	3.87E-01	2.86E-01	3.87E-01	1.30E-04	1.30E-04	2.90E-01	2.90E-01	6.56E-01	4.03E-01
BENZO(K)FLUORANTHENE	8.60E-01	4.77E-01	3.34E-01	4.77E-01	1.50E-04	1.50E-04	2.90E-01	2.90E-01	8.96E-01	4.97E-01
BIS(2-ETHYLHEXYL)PHTHALATE	4.10E-01	2.39E-01	1.82E-01	2.39E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.47E+00	8.57E-01
CARBAZOLE	1.00E-01	8.41E-02	6.51E-02	8.41E-02	0.00E+00	0.00E+00	2.90E-01	2.90E-01	1.04E-01	8.75E-02
CHRYSENE	8.90E-01	6.37E-01	4.11E-01	6.37E-01	1.80E-04	1.38E-04	2.90E-01	2.90E-01	9.27E-01	6.64E-01
DIBENZO(A,H)ANTHRACENE	1.80E-01	1.21E-01	9.14E-02	1.21E-01	0.00E+00	0.00E+00	2.90E-01	2.90E-01	1.87E-01	1.26E-01
FLUORANTHENE	1.80E+00	1.09E+00	7.80E-01	1.09E+00	3.60E-04	2.40E-04	2.90E-01	2.90E-01	1.87E+00	1.14E+00
FLUORENE	1.20E-01	5.78E-02	3.96E-02	5.78E-02	1.30E-03	1.30E-03	2.90E-01	2.90E-01	1.25E-01	6.02E-02
INDENO(1,2,3-CD)PYRENE	6.60E-01	3.80E-01	2.76E-01	3.80E-01	1.10E-04	1.10E-04	2.90E-01	2.90E-01	6.87E-01	3.96E-01
NAPHTHALENE	1.30E-01	6.46E-02	2.17E-02	6.46E-02	1.50E-03	1.04E-03	2.90E-01	2.90E-01	1.35E-01	6.73E-02
PENTACHLOROPHENOL	3.40E-02	NV	3.40E-02	3.40E-02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.22E-01	1.22E-01
PHENANTHRENE	6.90E-01	4.44E-01	3.44E-01	4.44E-01	1.10E-03	2.50E-04	2.90E-01	2.90E-01	7.19E-01	4.63E-01
PHENOL	8.70E-03	6.98E-03	6.30E-03	6.98E-03	0.00E+00	0.00E+00	1.00E+00	1.00E+00	3.12E-02	2.50E-02
PYRENE	1.30E+00	8.16E-01	5.98E-01	8.16E-01	3.00E-04	2.24E-04	2.90E-01	2.90E-01	1.35E+00	8.50E-01
TOTAL PAHs	9.29E+00	5.92E+00	4.39E+00	5.92E+00	9.26E-03	1.60E-03	2.90E-01	2.90E-01	9.67E+00	6.16E+00
Pesticides/PCBs										
4,4'-DDD	3.62E-03	3.62E-03	3.51E-03	3.62E-03	0.00E+00	0.00E+00	2.80E-01	2.80E-01	3.64E-03	3.64E-03
4,4'-DDE	5.40E-03	4.88E-03	4.70E-03	4.88E-03	0.00E+00	0.00E+00	7.70E+00	7.70E+00	1.49E-01	1.35E-01
4,4'-DDT	1.50E-02	1.50E-02	7.57E-03	1.50E-02	0.00E+00	0.00E+00	1.67E+00	1.67E+00	9.00E-02	9.00E-02
ALDRIN	2.60E-03	NV	2.60E-03	2.60E-03	0.00E+00	0.00E+00	1.80E+00	1.80E+00	1.68E-02	1.68E-02
ALPHA-BHC	2.10E-03	NV	2.10E-03	2.10E-03	0.00E+00	0.00E+00	1.80E+00	1.80E+00	1.36E-02	1.36E-02
AROCLOR-1260	7.80E-02	5.93E-02	5.80E-02	5.93E-02	0.00E+00	0.00E+00	1.85E+00	1.85E+00	5.18E-01	3.94E-01
ENDRIN ALDEHYDE	3.50E-03	3.09E-03	3.21E-03	3.09E-03	0.00E+00	0.00E+00	1.80E+00	1.80E+00	2.26E-02	1.99E-02
ENDRIN KETONE	1.10E-02	1.10E-02	5.74E-03	1.10E-02	0.00E+00	0.00E+00	1.80E+00	1.80E+00	7.11E-02	7.11E-02
GAMMA-CHLORDANE	4.90E-03	NV	4.90E-03	4.90E-03	0.00E+00	0.00E+00	2.22E+00	2.22E+00	3.91E-02	3.91E-02
TOTAL AROCLOR	7.80E-02	5.97E-02	5.80E-02	5.97E-02	0.00E+00	0.00E+00	1.85E+00	1.85E+00	5.18E-01	3.97E-01
TOTAL CHLORDANE	4.90E-03	NV	4.90E-03	4.90E-03	0.00E+00	0.00E+00	2.22E+00	2.22E+00	3.91E-02	3.91E-02
TOTAL DDD/DDE/DDT	2.04E-02	8.44E-03	8.09E-03	8.44E-03	0.00E+00	0.00E+00	7.70E+00	7.70E+00	5.64E-01	2.33E-01
Dioxins										
TEQ FISH	1.09E-05	6.32E-06	4.55E-06	6.32E-06	0.00E+00	0.00E+00	2.50E-02	2.50E-02	9.79E-07	5.67E-07
Inorganics										
ALUMINUM	1.26E+04	1.07E+04	9.36E+03	1.07E+04	8.52E-01	8.52E-01	1.00E+00	1.00E+00	1.26E+04	1.07E+04
ARSENIC	1.21E+02	6.25E+01	2.35E+01	6.25E+01	2.99E-04	2.80E-04	6.90E-01	1.43E-01	8.35E+01	8.94E+00
BARIUM	4.72E+01	3.44E+01	2.89E+01	3.44E+01	1.10E-02	9.16E-03	1.00E+00	1.00E+00	4.72E+01	3.44E+01
BERYLLIUM	1.10E+00	6.27E-01	5.09E-01	6.27E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.10E+00	6.27E-01
CADMIUM	2.00E+00	8.71E-01	6.12E-01	8.71E-01	0.00E+00	0.00E+00	7.99E+00	6.00E-01	1.60E+01	5.23E-01
CALCIUM	3.68E+03	2.30E+03	1.94E+03	2.30E+03	1.77E+01	1.50E+01	1.00E+00	1.00E+00	3.68E+03	2.30E+03
CHROMIUM	1.88E+01	1.70E+01	1.50E+01	1.70E+01	0.00E+00	0.00E+00	4.68E-01	1.00E-01	8.80E+00	1.70E+00
COBALT	9.50E+01	4.77E+01	1.64E+01	4.77E+01	5.64E-04	3.64E-04	1.00E+00	1.00E+00	9.50E+01	4.77E+01
COPPER	4.30E+01	3.24E+01	2.61E+01	3.24E+01	3.30E-03	1.80E-03	5.25E+00	1.56E+00	2.26E+02	5.04E+01
IRON	1.66E+05	8.78E+04	3.58E+04	8.78E+04	2.93E+00	7.25E-01	1.00E+00	1.00E+00	1.66E+05	8.78E+04
LEAD	9.58E+01	6.24E+01	4.99E+01	6.24E+01	5.33E-04	2.89E-04	6.07E-01	7.10E-02	5.82E+01	4.43E+00
MAGNESIUM	3.05E+03	2.66E+03	2.29E+03	2.66E+03	8.25E+00	6.40E+00	1.00E+00	1.00E+00	3.05E+03	2.66E+03
MANGANESE	9.82E+02	4.37E+02	2.92E+02	4.37E+02	0.00E+00	0.00E+00	1.00E+00	1.00E+00	9.82E+02	4.37E+02
MERCURY	1.90E-01	1.14E-01	8.77E-02	1.14E-01	0.00E+00	0.00E+00	2.87E+00	1.14E+00	5.45E-01	1.30E-01
NICKEL	1.27E+02	7.21E+01	3.42E+01	7.21E+01	5.40E-03	3.23E-03	2.32E+00	4.86E-01	2.95E+02	3.51E+01
POTASSIUM	5.46E+02	4.02E+02	3.39E+02	4.02E+02	2.76E+00	2.05E+00	1.00E+00	1.00E+00	5.46E+02	4.02E+02
SELENIUM	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.56E-04	2.10E-04	1.00E+00	1.00E+00	0.00E+00	0.00E+00
SILVER	2.78E-01	1.83E-01	2.09E-01	1.83E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.78E-01	1.83E-01
SODIUM	2.52E+02	1.59E+02	1.19E+02	1.59E+02	3.96E+01	3.06E+01	1.00E+00	1.00E+00	2.52E+02	1.59E+02
THALLIUM	1.70E+00	8.87E-01	7.95E-01	8.87E-01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	1.70E+00	8.87E-01
VANADIUM	2.73E+01	2.21E+01	1.86E+01	2.21E+01	0.00E+00	0.00E+00	1.00E+00	1.00E+00	2.73E+01	2.21E+01
ZINC	1.90E+02	1.32E+02	1.12E+02	1.32E+02	0.00E+00	0.00E+00	7.53E+00	1.94E+00	1.43E+03	2.56E+02

Percent TOC 4.01E+00
percent Lipids 1.44E+01
Invertebrate BSAFs used for inorganics

1 - The average positive detections value was used only if a 95% UCL was not able to be calculated.

APPENDIX I

MINK - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Sed Conc. (mg/kg)	Max SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
1,2-DICHLOROBENZENE	1.60E-03	0.00E+00	5.75E-03	1.66E-05	0.00E+00	6.34E-04	6.50E-04	1.20E+02	1.20E+03	5.4E-06	5.4E-07
ACETONE	2.00E-01	0.00E+00	7.18E-01	2.07E-03	0.00E+00	7.92E-02	8.13E-02	1.00E+01	5.00E+01	8.1E-03	1.6E-03
CHLOROFORM	0.00E+00	1.00E-03	0.00E+00	0.00E+00	2.21E-04	0.00E+00	2.21E-04	1.50E+01	4.10E+01	1.5E-05	5.4E-06
CARBON DISULFIDE	3.90E-03	0.00E+00	1.40E-02	4.04E-05	0.00E+00	1.54E-03	1.59E-03	1.26E+01	2.56E+01	1.3E-04	6.2E-05
Semivolatile Organics											
2,4-DIMETHYLPHENOL	3.50E-03	0.00E+00	1.26E-02	3.63E-05	0.00E+00	1.39E-03	1.42E-03	5.00E+00	2.50E+01	2.8E-04	5.7E-05
2-METHYLNAPHTHALENE	2.10E-01	3.30E-03	7.54E-01	2.18E-03	7.28E-04	8.32E-02	8.61E-02	6.56E+01	3.56E+02	1.3E-03	2.4E-04
2-METHYLPHENOL	1.20E-02	0.00E+00	4.31E-02	1.24E-04	0.00E+00	4.75E-03	4.88E-03	5.00E+00	1.50E+01	9.8E-04	3.3E-04
4-METHYLPHENOL	2.10E-02	0.00E+00	7.54E-02	2.18E-04	0.00E+00	8.32E-03	8.54E-03	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	4.80E-02	3.60E-04	5.00E-02	4.98E-04	7.94E-05	5.51E-03	6.09E-03	6.56E+01	3.56E+02	9.3E-05	1.7E-05
ACENAPHTHYLENE	1.10E-01	8.20E-04	1.15E-01	1.14E-03	1.81E-04	1.26E-02	1.40E-02	6.56E+01	3.56E+02	2.1E-04	3.9E-05
ANTHRACENE	1.50E-01	1.10E-04	1.56E-01	1.56E-03	2.43E-05	1.72E-02	1.88E-02	6.56E+01	3.56E+02	2.9E-04	5.3E-05
ATRAZINE	4.60E-03	0.00E+00	1.65E-02	4.77E-05	0.00E+00	1.82E-03	1.87E-03	3.50E+00	2.50E+01	5.3E-04	7.5E-05
BENZO(A)ANTHRACENE	6.50E-01	2.00E-04	6.77E-01	6.74E-03	4.41E-05	7.47E-02	8.15E-02	6.15E-01	3.84E+01	1.3E-01	2.1E-03
BENZO(A)PYRENE	7.80E-01	1.60E-04	8.12E-01	8.09E-03	3.53E-05	8.96E-02	9.77E-02	6.15E-01	3.84E+01	1.6E-01	2.5E-03
BENZO(B)FLUORANTHENE	1.00E+00	2.50E-04	1.04E+00	1.04E-02	5.52E-05	1.15E-01	1.25E-01	6.15E-01	3.84E+01	2.0E-01	3.3E-03
BENZO(G,H,I)PERYLENE	6.30E-01	1.30E-04	6.56E-01	6.53E-03	2.87E-05	7.24E-02	7.89E-02	6.15E-01	3.84E+01	1.3E-01	2.1E-03
BENZO(K)FLUORANTHENE	8.60E-01	1.50E-04	8.96E-01	8.92E-03	3.31E-05	9.88E-02	1.08E-01	6.15E-01	3.84E+01	1.8E-01	2.8E-03
BIS(2-ETHYLHEXYL)PHTHALATE	4.10E-01	0.00E+00	1.47E+00	4.25E-03	0.00E+00	1.62E-01	1.67E-01	1.83E+01	1.83E+02	9.1E-03	9.1E-04
CARBAZOLE	1.00E-01	0.00E+00	1.04E-01	1.04E-03	0.00E+00	1.15E-02	1.25E-02	6.56E+01	3.56E+02	1.9E-04	3.5E-05
CHRYSENE	8.90E-01	1.80E-04	9.27E-01	9.23E-03	3.97E-05	1.02E-01	1.12E-01	6.15E-01	3.84E+01	1.8E-01	2.9E-03
DIBENZO(A,H)ANTHRACENE	1.80E-01	0.00E+00	1.87E-01	1.87E-03	0.00E+00	2.07E-02	2.25E-02	6.15E-01	3.84E+01	3.7E-02	5.9E-04
FLUORANTHENE	1.80E+00	3.60E-04	1.87E+00	1.87E-02	7.94E-05	2.07E-01	2.26E-01	6.56E+01	3.56E+02	3.4E-03	6.3E-04
FLUORENE	1.20E-01	1.30E-03	1.25E-01	1.24E-03	2.87E-04	1.38E-02	1.53E-02	6.56E+01	3.56E+02	2.3E-04	4.3E-05
INDENO(1,2,3-CD)PYRENE	6.60E-01	1.10E-04	6.87E-01	6.84E-03	2.43E-05	7.58E-02	8.27E-02	6.15E-01	3.84E+01	1.3E-01	2.2E-03
NAPHTHALENE	1.30E-01	1.50E-03	1.35E-01	1.35E-03	3.31E-04	1.49E-02	1.66E-02	6.56E+01	3.56E+02	2.5E-04	4.7E-05
PENTACHLOROPHENOL	3.40E-02	0.00E+00	1.22E-01	3.53E-04	0.00E+00	1.35E-02	1.38E-02	8.42E+00	2.27E+01	1.6E-03	6.1E-04
PHENANTHRENE	6.90E-01	1.10E-03	7.19E-01	7.15E-03	2.43E-04	7.93E-02	8.67E-02	6.56E+01	3.56E+02	1.3E-03	2.4E-04
PHENOL	8.70E-03	0.00E+00	3.12E-02	9.02E-05	0.00E+00	3.45E-03	3.54E-03	9.30E+01	1.57E+02	3.8E-05	2.3E-05
PYRENE	1.30E+00	3.00E-04	1.35E+00	1.35E-02	6.62E-05	1.49E-01	1.63E-01	6.15E-01	3.84E+01	2.6E-01	4.2E-03
Pesticides/PCBs											
4,4'-DDD	3.62E-03	0.00E+00	3.64E-03	3.75E-05	0.00E+00	4.02E-04	4.39E-04	1.47E-01	5.56E+00	3.0E-03	7.9E-05
4,4'-DDE	5.40E-03	0.00E+00	1.49E-01	5.60E-05	0.00E+00	1.65E-02	1.65E-02	1.47E-01	5.56E+00	1.1E-01	3.0E-03
4,4'-DDT	1.50E-02	0.00E+00	9.00E-02	1.56E-04	0.00E+00	9.92E-03	1.01E-02	1.47E-01	5.56E+00	6.9E-02	1.8E-03
ALDRIN	2.60E-03	0.00E+00	1.68E-02	2.70E-05	0.00E+00	1.85E-03	1.88E-03	2.00E-01	1.00E+00	9.4E-03	1.9E-03
ALPHA-BHC	2.10E-03	0.00E+00	1.36E-02	2.18E-05	0.00E+00	1.50E-03	1.52E-03	1.40E-02	1.40E-01	1.1E-01	1.1E-02
AROCLOR-1260	7.80E-02	0.00E+00	5.18E-01	8.09E-04	0.00E+00	5.72E-02	5.80E-02	6.80E-02	6.80E-01	8.5E-01	8.5E-02
ENDRIN ALDEHYDE	3.50E-03	0.00E+00	2.26E-02	3.63E-05	0.00E+00	2.50E-03	2.53E-03	9.20E-02	9.20E-01	2.8E-02	2.8E-03
ENDRIN KETONE	1.10E-02	0.00E+00	7.11E-02	1.14E-04	0.00E+00	7.84E-03	7.96E-03	9.20E-02	9.20E-01	8.6E-02	8.6E-03
GAMMA-CHLORDANE	4.90E-03	0.00E+00	3.91E-02	5.08E-05	0.00E+00	4.31E-03	4.36E-03	4.58E+00	9.16E+00	9.5E-04	4.8E-04
TOTAL AROCLOR	7.80E-02	0.00E+00	5.18E-01	8.09E-04	0.00E+00	5.72E-02	5.80E-02	6.80E-02	6.80E-01	8.5E-01	8.5E-02
TOTAL CHLORDANE	4.90E-03	0.00E+00	3.91E-02	5.08E-05	0.00E+00	4.31E-03	4.36E-03	4.58E+00	9.16E+00	9.5E-04	4.8E-04
TOTAL DDD/DDE/DDT	2.04E-02	0.00E+00	5.64E-01	2.12E-04	0.00E+00	6.22E-02	6.24E-02	1.47E-01	5.56E+00	4.2E-01	1.1E-02
Dioxins											
TEQ MAMMAL	1.47E-05	0.00E+00	1.32E-06	1.52E-07	0.00E+00	1.46E-07	2.98E-07	1.00E-06	1.00E-05	3.0E-01	3.0E-02
Inorganics											
ALUMINUM	1.26E+04	8.52E-01	1.26E+04	1.31E+02	1.88E-01	1.39E+03	1.52E+03	1.93E+00	1.93E+01	7.9E+02	7.9E+01
ARSENIC	1.21E+02	2.99E-04	8.35E+01	1.25E+00	6.60E-05	9.21E+00	1.05E+01	1.04E+00	4.55E+00	1.0E+01	2.3E+00
BARIUM	4.72E+01	1.10E-02	4.72E+01	4.89E-01	2.43E-03	5.21E+00	5.70E+00	5.18E+01	8.27E+01	1.1E-01	6.9E-02
BERYLLIUM	1.10E+00	0.00E+00	1.10E+00	1.14E-02	0.00E+00	1.21E-01	1.33E-01	5.32E-01	6.73E-01	2.5E-01	2.0E-01
CADMIUM	2.00E+00	0.00E+00	1.60E+01	2.07E-02	0.00E+00	1.76E+00	1.78E+00	7.70E-01	6.90E+00	2.3E+00	2.6E-01
CHROMIUM	1.88E+01	0.00E+00	8.80E+00	1.95E-01	0.00E+00	9.71E-01	1.17E+00	2.40E+00	5.82E+01	4.9E-01	2.0E-02
COBALT	9.50E+01	5.64E-04	9.50E+01	9.85E-01	1.24E-04	1.05E+01	1.15E+01	7.33E+00	1.89E+01	1.6E+00	6.1E-01
COPPER	4.30E+01	3.30E-03	2.26E+02	4.46E-01	7.28E-04	2.49E+01	2.53E+01	5.60E+00	8.27E+01	4.5E+00	3.1E-01
IRON	1.66E+05	2.93E+00	1.66E+05	1.72E+03	6.46E-01	1.83E+04	2.00E+04	5.00E+01	5.00E+02	4.0E+02	4.0E+01
LEAD	9.58E+01	5.33E-04	5.82E+01	9.93E-01	1.18E-04	6.41E+00	7.41E+00	4.70E+00	1.86E+02	1.6E+00	4.0E-02
MANGANESE	9.82E+02	0.00E+00	9.82E+02	1.02E+01	0.00E+00	1.08E+02	1.19E+02	5.15E+01	1.46E+02	2.3E+00	8.1E-01
MERCURY	1.90E-01	0.00E+00	5.45E-01	1.97E-03	0.00E+00	6.01E-02	6.21E-02	3.20E-02	1.60E-01	1.9E+00	3.9E-01
NICKEL	1.27E+02	5.40E-03	2.95E+02	1.32E+00	1.19E-03	3.25E+01	3.38E+01	1.70E+00	1.48E+01	2.0E+01	2.3E+00
SELENIUM	0.00E+00	2.56E-04	0.00E+00	0.00E+00	5.65E-05	0.00E+00	5.65E-05	1.43E-01	6.61E-01	3.9E-04	8.5E-05
SILVER	2.78E-01	0.00E+00	2.78E-01	2.88E-03	0.00E+00	3.07E-02	3.35E-02	6.02E+00	1.19E+02	5.6E-03	2.8E-04
THALLIUM	1.70E+00	0.00E+00	1.70E+00	1.76E-02	0.00E+00	1.88E-01	2.05E-01	7.40E-03	7.40E-02	2.8E+01	2.8E+00
VANADIUM	2.73E+01	0.00E+00	2.73E+01	2.83E-01	0.00E+00	3.01E+00	3.29E+00	4.16E+00	9.44E+00	7.9E-01	3.5E-01
ZINC	1.90E+02	0.00E+00	1.43E+03	1.97E+00	0.00E+00	1.58E+02	1.60E+02	7.54E+01	2.98E+02	2.1E+00	5.4E-01

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	5.50E-01	kg
Food Ingestion Rate = (If)	6.07E-02	kg/day
Water Ingestion Rate = (Iw)	1.21E-01	L/day
Sediment Ingestion Rate = (Is)	5.70E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (fish) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

MINK - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Sed. Conc. (mg/kg)	Avg SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Inorganics											
ALUMINUM	1.07E+04	8.52E-01	1.07E+04	4.09E+01	5.64E-02	4.35E+02	4.76E+02	1.93E+00	1.93E+01	2.5E+02	2.5E+01
ARSENIC	6.25E+01	2.80E-04	8.94E+00	2.40E-01	1.86E-05	3.65E-01	6.05E-01	1.04E+00	4.55E+00	5.8E-01	1.3E-01
CADMIUM	8.71E-01	0.00E+00	5.23E-01	3.34E-03	0.00E+00	2.13E-02	2.47E-02	7.70E-01	6.90E+00	3.2E-02	3.6E-03
COBALT	4.77E+01	3.64E-04	4.77E+01	1.83E-01	2.41E-05	1.95E+00	2.13E+00	7.33E+00	1.89E+01	2.9E-01	1.1E-01
COPPER	3.24E+01	1.80E-03	5.04E+01	1.24E-01	1.19E-04	2.06E+00	2.18E+00	5.60E+00	8.27E+01	3.9E-01	2.6E-02
IRON	8.78E+04	7.25E-01	8.78E+04	3.37E+02	4.80E-02	3.58E+03	3.92E+03	5.00E+01	5.00E+02	7.8E+01	7.8E+00
LEAD	6.24E+01	2.89E-04	4.43E+00	2.39E-01	1.91E-05	1.81E-01	4.20E-01	4.70E+00	1.86E+02	8.9E-02	2.3E-03
MANGANESE	4.37E+02	0.00E+00	4.37E+02	1.68E+00	0.00E+00	1.78E+01	1.95E+01	5.15E+01	1.46E+02	3.8E-01	1.3E-01
MERCURY	1.14E-01	0.00E+00	1.30E-01	4.38E-04	0.00E+00	5.29E-03	5.73E-03	3.20E-02	1.60E-01	1.8E-01	3.6E-02
NICKEL	7.21E+01	3.23E-03	3.51E+01	2.77E-01	2.14E-04	1.43E+00	1.71E+00	1.70E+00	1.48E+01	1.0E+00	1.2E-01
THALLIUM	8.87E-01	0.00E+00	8.87E-01	3.40E-03	0.00E+00	3.62E-02	3.96E-02	7.40E-03	7.40E-02	5.4E+00	5.4E-01
ZINC	1.32E+02	0.00E+00	2.56E+02	5.07E-01	0.00E+00	1.04E+01	1.09E+01	7.54E+01	2.98E+02	1.5E-01	3.7E-02

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	1.10E+00	kg
Food Ingestion Rate = (If)	4.50E-02	kg/day
Water Ingestion Rate = (Iw)	7.31E-02	L/day
Sediment Ingestion Rate = (Is)	4.23E-03	kg/day
Home Range = (HR)	3.49E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (fish) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

GREEN HERON - CONSERVATIVE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	Max Sed. Conc. (mg/kg)	Max SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Volatile Organics											
1,2-DICHLOROBENZENE	1.60E-03	0.00E+00	5.75E-03	1.28E-05	0.00E+00	8.91E-04	9.03E-04	NV	NV	#VALUE!	#VALUE!
ACETONE	2.00E-01	0.00E+00	7.18E-01	1.60E-03	0.00E+00	1.11E-01	1.13E-01	2.01E+04	2.01E+05	5.6E-06	5.6E-07
CHLOROFORM	0.00E+00	1.00E-03	0.00E+00	0.00E+00	1.10E-04	0.00E+00	1.10E-04	NV	NV	#VALUE!	#VALUE!
CARBON DISULFIDE	3.90E-03	0.00E+00	1.40E-02	3.12E-05	0.00E+00	2.17E-03	2.20E-03	NV	NV	#VALUE!	#VALUE!
Semivolatile Organics											
2,4-DIMETHYLPHENOL	3.50E-03	0.00E+00	1.26E-02	2.80E-05	0.00E+00	1.95E-03	1.98E-03	NV	NV	#VALUE!	#VALUE!
2-METHYLNAPHTHALENE	2.10E-01	3.30E-03	7.54E-01	1.68E-03	3.63E-04	1.17E-01	1.19E-01	2.00E+00	2.00E+01	5.9E-02	5.9E-03
2-METHYLPHENOL	1.20E-02	0.00E+00	4.31E-02	9.60E-05	0.00E+00	6.68E-03	6.78E-03	NV	NV	#VALUE!	#VALUE!
4-METHYLPHENOL	2.10E-02	0.00E+00	7.54E-02	1.68E-04	0.00E+00	1.17E-02	1.19E-02	NV	NV	#VALUE!	#VALUE!
ACENAPHTHENE	4.80E-02	3.60E-04	5.00E-02	3.84E-04	3.96E-05	7.75E-03	8.17E-03	2.00E+00	2.00E+01	4.1E-03	4.1E-04
ACENAPHTHYLENE	1.10E-01	8.20E-04	1.15E-01	8.80E-04	9.02E-05	1.78E-02	1.87E-02	2.00E+00	2.00E+01	9.4E-03	9.4E-04
ANTHRACENE	1.50E-01	1.10E-04	1.56E-01	1.20E-03	1.21E-05	2.42E-02	2.54E-02	2.00E+00	2.00E+01	1.3E-02	1.3E-03
ATRAZINE	4.60E-03	0.00E+00	1.65E-02	3.68E-05	0.00E+00	2.56E-03	2.60E-03	NV	NV	#VALUE!	#VALUE!
BENZO(A)ANTHRACENE	6.50E-01	2.00E-04	6.77E-01	5.20E-03	2.20E-05	1.05E-01	1.10E-01	2.00E+00	2.00E+01	5.5E-02	5.5E-03
BENZO(A)PYRENE	7.80E-01	1.60E-04	8.12E-01	6.24E-03	1.76E-05	1.26E-01	1.32E-01	2.00E+00	2.00E+01	6.6E-02	6.6E-03
BENZO(B)FLUORANTHENE	1.00E+00	2.50E-04	1.04E+00	8.00E-03	2.75E-05	1.61E-01	1.69E-01	2.00E+00	2.00E+01	8.5E-02	8.5E-03
BENZO(G,H,I)PERYLENE	6.30E-01	1.30E-04	6.56E-01	5.04E-03	1.43E-05	1.02E-01	1.07E-01	2.00E+00	2.00E+01	5.3E-02	5.3E-03
BENZO(K)FLUORANTHENE	8.60E-01	1.50E-04	8.96E-01	6.88E-03	1.65E-05	1.39E-01	1.46E-01	2.00E+00	2.00E+01	7.3E-02	7.3E-03
BIS(2-ETHYLHEXYL)PHTHALATE	4.10E-01	0.00E+00	1.47E+00	3.28E-03	0.00E+00	2.28E-01	2.31E-01	1.11E+00	1.11E+01	2.1E-01	2.1E-02
CARBAZOLE	1.00E-01	0.00E+00	1.04E-01	8.00E-04	0.00E+00	1.61E-02	1.69E-02	2.00E+00	2.00E+01	8.5E-03	8.5E-04
CHRYSENE	8.90E-01	1.80E-04	9.27E-01	7.12E-03	1.98E-05	1.44E-01	1.51E-01	2.00E+00	2.00E+01	7.5E-02	7.5E-03
DIBENZO(A,H)ANTHRACENE	1.80E-01	0.00E+00	1.87E-01	1.44E-03	0.00E+00	2.91E-02	3.05E-02	2.00E+00	2.00E+01	1.5E-02	1.5E-03
FLUORANTHENE	1.80E+00	3.60E-04	1.87E+00	1.44E-02	3.96E-05	2.91E-01	3.05E-01	2.00E+00	2.00E+01	1.5E-01	1.5E-02
FLUORENE	1.20E-01	1.30E-03	1.25E-01	9.60E-04	1.43E-04	1.94E-02	2.05E-02	2.00E+00	2.00E+01	1.0E-02	1.0E-03
INDENO(1,2,3-CD)PYRENE	6.60E-01	1.10E-04	6.87E-01	5.28E-03	1.21E-05	1.07E-01	1.12E-01	2.00E+00	2.00E+01	5.6E-02	5.6E-03
NAPHTHALENE	1.30E-01	1.50E-03	1.35E-01	1.04E-03	1.65E-04	2.10E-02	2.22E-02	2.00E+00	2.00E+01	1.1E-02	1.1E-03
PENTACHLOROPHENOL	3.40E-02	0.00E+00	1.22E-01	2.72E-04	0.00E+00	1.89E-02	1.92E-02	6.73E+00	5.20E+01	2.9E-03	3.7E-04
PHENANTHRENE	6.90E-01	1.10E-03	7.19E-01	5.52E-03	1.21E-04	1.11E-01	1.17E-01	2.00E+00	2.00E+01	5.9E-02	5.9E-03
PHENOL	8.70E-03	0.00E+00	3.12E-02	6.96E-05	0.00E+00	4.84E-03	4.91E-03	NV	NV	#VALUE!	#VALUE!
PYRENE	1.30E+00	3.00E-04	1.35E+00	1.04E-02	3.30E-05	2.10E-01	2.20E-01	2.00E+00	2.00E+01	1.1E-01	1.1E-02
Pesticides/PCBs											
4,4'-DDD	3.62E-03	0.00E+00	3.64E-03	2.90E-05	0.00E+00	5.64E-04	5.93E-04	2.27E-01	2.70E+00	2.6E-03	2.2E-04
4,4'-DDE	5.40E-03	0.00E+00	1.49E-01	4.32E-05	0.00E+00	2.31E-02	2.32E-02	2.27E-01	2.70E+00	1.0E-01	8.6E-03
4,4'-DDT	1.50E-02	0.00E+00	9.00E-02	1.20E-04	0.00E+00	1.39E-02	1.41E-02	2.27E-01	2.70E+00	6.2E-02	5.2E-03
ALDRIN	2.60E-03	0.00E+00	1.68E-02	2.08E-05	0.00E+00	2.60E-03	2.63E-03	NV	NV	#VALUE!	#VALUE!
ALPHA-BHC	2.10E-03	0.00E+00	1.36E-02	1.68E-05	0.00E+00	2.10E-03	2.12E-03	5.60E-01	2.25E+00	3.8E-03	9.4E-04
AROCLOR-1260	7.80E-02	0.00E+00	5.18E-01	6.24E-04	0.00E+00	8.03E-02	8.09E-02	1.80E-01	1.80E+00	4.5E-01	4.5E-02
ENDRIN ALDEHYDE	3.50E-03	0.00E+00	2.26E-02	2.80E-05	0.00E+00	3.51E-03	3.53E-03	1.00E-02	1.00E-01	3.5E-01	3.5E-02
ENDRIN KETONE	1.10E-02	0.00E+00	7.11E-02	8.80E-05	0.00E+00	1.10E-02	1.11E-02	1.00E-02	1.00E-01	1.1E+00	1.1E-01
GAMMA-CHLORDANE	4.90E-03	0.00E+00	3.91E-02	3.92E-05	0.00E+00	6.05E-03	6.09E-03	2.14E+00	1.07E+01	2.8E-03	5.7E-04
TOTAL AROCLOR	7.80E-02	0.00E+00	5.18E-01	6.24E-04	0.00E+00	8.03E-02	8.09E-02	1.80E-01	1.80E+00	4.5E-01	4.5E-02
TOTAL CHLORDANE	4.90E-03	0.00E+00	3.91E-02	3.92E-05	0.00E+00	6.05E-03	6.09E-03	2.14E+00	1.07E+01	2.8E-03	5.7E-04
TOTAL DDD/DDE/DDT	2.04E-02	0.00E+00	5.64E-01	1.63E-04	0.00E+00	8.74E-02	8.76E-02	2.27E-01	2.70E+00	3.9E-01	3.2E-02
Dioxins											
TEQ BIRD	1.15E-05	0.00E+00	1.03E-06	9.20E-08	0.00E+00	1.60E-07	2.52E-07	1.40E-05	1.40E-04	1.8E-02	1.8E-03
Inorganics											
ALUMINUM	1.26E+04	8.52E-01	1.26E+04	1.01E+02	9.37E-02	1.95E+03	2.05E+03	1.10E+02	1.10E+03	1.9E+01	1.9E+00
ARSENIC	1.21E+02	2.99E-04	8.35E+01	9.68E-01	3.29E-05	1.29E+01	1.39E+01	2.24E+00	4.51E+00	6.2E+00	3.1E+00
BARIUM	4.72E+01	1.10E-02	4.72E+01	3.78E-01	1.21E-03	7.32E+00	7.69E+00	2.08E+01	4.17E+01	3.7E-01	1.8E-01
BERYLLIUM	1.10E+00	0.00E+00	1.10E+00	8.80E-03	0.00E+00	1.71E-01	1.79E-01	NV	NV	#VALUE!	#VALUE!
CADMIUM	2.00E+00	0.00E+00	1.60E+01	1.60E-02	0.00E+00	2.48E+00	2.49E+00	1.47E+00	6.35E+00	1.7E+00	3.9E-01
CHROMIUM	1.88E+01	0.00E+00	8.80E+00	1.50E-01	0.00E+00	1.36E+00	1.51E+00	2.66E+00	1.56E+01	5.7E-01	9.7E-02
COBALT	9.50E+01	5.64E-04	9.50E+01	7.60E-01	6.20E-05	1.47E+01	1.55E+01	7.61E+00	1.83E+01	2.0E+00	8.4E-01
COPPER	4.30E+01	3.30E-03	2.26E+02	3.44E-01	3.63E-04	3.50E+01	3.53E+01	4.05E+00	3.49E+01	8.7E+00	1.0E+00
IRON	1.66E+05	2.93E+00	1.66E+05	1.33E+03	3.22E-01	2.57E+04	2.71E+04	1.00E+02	1.00E+03	2.7E+02	2.7E+01
LEAD	9.58E+01	5.33E-04	5.82E+01	7.66E-01	5.86E-05	9.01E+00	9.78E+00	1.63E+00	4.46E+01	6.0E+00	2.2E-01
MANGANESE	9.82E+02	0.00E+00	9.82E+02	7.86E+00	0.00E+00	1.52E+02	1.60E+02	1.79E+02	3.77E+02	8.9E-01	4.3E-01
MERCURY	1.90E-01	0.00E+00	5.45E-01	1.52E-03	0.00E+00	8.45E-02	8.60E-02	6.40E-03	6.40E-02	1.3E+01	1.3E+00
NICKEL	1.27E+02	5.40E-03	2.95E+02	1.02E+00	5.94E-04	4.57E+01	4.67E+01	6.71E+00	1.86E+01	7.0E+00	2.5E+00
SELENIUM	0.00E+00	2.56E-04	0.00E+00	0.00E+00	2.82E-05	0.00E+00	2.82E-05	2.90E-01	8.19E-01	9.7E-05	3.4E-05
SILVER	2.78E-01	0.00E+00	2.78E-01	2.22E-03	0.00E+00	4.31E-02	4.53E-02	2.02E+00	6.05E+01	2.2E-02	7.5E-04
THALLIUM	1.70E+00	0.00E+00	1.70E+00	1.36E-02	0.00E+00	2.64E-01	2.77E-01	NV	NV	#VALUE!	#VALUE!
VANADIUM	2.73E+01	0.00E+00	2.73E+01	2.18E-01	0.00E+00	4.23E+00	4.45E+00	3.44E-01	1.69E+00	1.3E+01	2.6E+00
ZINC	1.90E+02	0.00E+00	1.43E+03	1.52E+00	0.00E+00	2.22E+02	2.23E+02	6.61E+01	1.71E+02	3.4E+00	1.3E+00

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.00E-01	kg
Food Ingestion Rate = (If)	3.10E-02	kg/day
Water Ingestion Rate = (Iw)	2.20E-02	L/day
Sediment Ingestion Rate = (Is)	1.60E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (invertebrate) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I

GREEN HERON - AVERAGE INPUTS
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
TANK FARM 5 UNIT 1
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Chemical	95% UCL or Avg Sed. Conc. (mg/kg)	Avg SW Conc. (mg/L)	Fish Conc. (mg/kg)	Dose (mg/kg/d) from: Sediment	Surface Water	Fish	Total Dose (mg/kg/d)	NOAEL (mg/kg/d)	LOAEL (mg/kg/d)	Hazard Quotients NOAEL	LOAEL
Pesticides/PCBs											
ENDRIN KETONE	1.10E-02	0.00E+00	7.11E-02	7.78E-05	0.00E+00	1.01E-02	1.01E-02	1.00E-02	1.00E-01	1.0E+00	1.0E-01
Inorganics											
ALUMINUM	1.07E+04	8.52E-01	1.07E+04	7.54E+01	8.44E-02	1.51E+03	1.58E+03	1.10E+02	1.10E+03	1.4E+01	1.4E+00
ARSENIC	6.25E+01	2.80E-04	8.94E+00	4.42E-01	2.77E-05	1.26E+00	1.71E+00	2.24E+00	4.51E+00	7.6E-01	3.8E-01
CADMIUM	8.71E-01	0.00E+00	5.23E-01	6.16E-03	0.00E+00	7.40E-02	8.01E-02	1.47E+00	6.35E+00	5.5E-02	1.3E-02
COBALT	4.77E+01	3.64E-04	4.77E+01	3.38E-01	3.61E-05	6.75E+00	7.09E+00	7.61E+00	1.83E+01	9.3E-01	3.9E-01
COPPER	3.24E+01	1.80E-03	5.04E+01	2.29E-01	1.78E-04	7.13E+00	7.35E+00	4.05E+00	3.49E+01	1.8E+00	2.1E-01
IRON	8.78E+04	7.25E-01	8.78E+04	6.21E+02	7.18E-02	1.24E+04	1.30E+04	1.00E+02	1.00E+03	1.3E+02	1.3E+01
LEAD	6.24E+01	2.89E-04	4.43E+00	4.41E-01	2.86E-05	6.27E-01	1.07E+00	1.63E+00	4.46E+01	6.6E-01	2.4E-02
MERCURY	1.14E-01	0.00E+00	1.30E-01	8.07E-04	0.00E+00	1.83E-02	1.91E-02	6.40E-03	6.40E-02	3.0E+00	3.0E-01
NICKEL	7.21E+01	3.23E-03	3.51E+01	5.10E-01	3.20E-04	4.96E+00	5.47E+00	6.71E+00	1.86E+01	8.2E-01	2.9E-01
VANADIUM	2.21E+01	0.00E+00	2.21E+01	1.56E-01	0.00E+00	3.12E+00	3.28E+00	3.44E-01	1.69E+00	9.5E+00	1.9E+00
ZINC	1.32E+02	0.00E+00	2.56E+02	9.34E-01	0.00E+00	3.62E+01	3.71E+01	6.61E+01	1.71E+02	5.6E-01	2.2E-01

Cells are shaded if the value is greater than 1.0

Body Weight = (BW)	2.12E-01	kg
Food Ingestion Rate = (If)	3.00E-02	kg/day
Water Ingestion Rate = (Iw)	2.10E-02	L/day
Sediment Ingestion Rate = (Is)	1.50E-03	kg/day
Home Range = (HR)	1.00E+01	acres
Contaminated Area = (CA)	Assume equal to home range	

Dose (sediment) = (Cs * Is)(H)/BW
Dose (fish) = (Cf * If)(H)/BW
Dose (water) = (Cw * Iw)(H)/BW
Cf = Contaminant concentration in fish
Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Total Dose = Dose (sediment) + Dose (fish) + Dose (water)
H=CA/HR (Assume = to 1)

Conc = Concentration
LOAEL = Lowest Observed Adverse Effects Concentration
NOAEL = No Observed Adverse Effects Concentration
Sed = Sediment
SW = Surface Water

APPENDIX I
COMPARISON OF ANALYTICAL RESULTS FOR SURFACE SOIL AND SHALLOW SUBSURFACE SOIL SAMPLES
TANK FARM 4, DU 4-1
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Parameter	Units	Ecological Screening LeveL	Surface Soils						Sub-Surface Soils					
			Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences	Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences
TEQ	NG/KG	NC	24/24	0.842 J	7.18 J	2.5	2.5		22/22	0.194 J	3.87 J	1.5	1.5	
TEQ BIRD	NG/KG	NC	24/24	0.301 J	2.76 J	1.3	1.3		22/22	0.063 J	1.48 J	0.5	0.5	
TEQ FISH	NG/KG	NC	24/24	0.271 J	2.28 J	1.1	1.1		22/22	0.066	1.26 J	0.5	0.5	
TEQ MAMMAL	NG/KG	NC	24/24	0.842 J	7.18 J	2.5	2.5		22/22	0.194 J	3.87 J	1.5	1.5	
ALUMINUM	MG/KG	NC	24/24	4850	15200	9664	9664		22/22	2990 J	17200	8374	8374	
ARSENIC	MG/KG	18	24/24	4.2 J	**59.5**	11.8	11.8	1	22/22	4.9 J	**35.2 J**	12.4	12.4	5
BARIUM	MG/KG	330	24/24	13.1	56.7	29.6	29.6		22/22	7.3 J	103	26.9	26.9	
BERYLLIUM	MG/KG	10	24/24	0.096 J	0.7 J	0.4	0.4		22/22	0.16	0.78	0.4	0.4	
CADMIUM	MG/KG	0.36	21/24	0.027 J	**0.48**	0.2	0.2	2	21/22	0.033 J	**0.55**	0.2	0.2	5
CALCIUM	MG/KG	NC	21/24	101 J	1900 J	599	525		18/22	53.3 J	1750 J	351.2	288	
CHROMIUM	MG/KG	26	24/24	8.4 J	20.8	12.1	12.1		22/22	4.7 J	17.3 J	11.0	11.0	
COBALT	MG/KG	13	24/24	4.9 J	**20.5 J**	11.8	11.8	10	22/22	5.8	**37.1**	17.3	17.3	12
COPPER	MG/KG	28	24/24	5.4	25.2	14.9	14.9		22/22	3.3	26.4	14.5	14.5	
IRON	MG/KG	NC	24/24	18000	53200	30150	30150		22/22	18500	66500	36181.8	36182	
LEAD	MG/KG	11	24/24	6.9 J	**63.5 J**	21.8	21.8	19	22/22	4.2 J	**20.7 J**	9.9	9.9	8
MAGNESIUM	MG/KG	NC	24/24	1110 J	3040	1912	1912		22/22	729 J	5120	1981.9	1982	
MANGANESE	MG/KG	220	24/24	144	**818**	391	391	21	22/22	120	**4480**	841.5	842	19
MERCURY	MG/KG	1.58	19/24	0.031 J	0.14	0.1	0.1		14/22	0.011 J	0.13 J	0.0	0.0	
NICKEL	MG/KG	38	24/24	11.5	37.1	22.6	22.6		22/22	13.4 J	**77**	30.3	30.3	5
POTASSIUM	MG/KG	NC	24/24	187 J	545 J	318	318		22/22	104 J	934	324.4	324	
SELENIUM	MG/KG	0.52	14/24	0.82 J	**3.5**	1.4	1.4	14	9/22	0.72 J	**4.7**	2.0	1.4	9
SILVER	MG/KG	4.2	1/24	0.068 J	0.068 J	0.1	0.0		1/22	0.12 J	0.12 J	0.1	0.0	
SODIUM	MG/KG	NC	21/24	21 J	137 J	50.5	45.3		19/22	11 J	479 J	71.5	63.1	
THALLIUM	MG/KG	0.0569	6/24	2.6	**5.3**	3.6	1.0	6	5/22	2	**11.8**	4.2	1.0	5
VANADIUM	MG/KG	7.8	24/24	12.6 J	**37.6**	20.8	20.8	24	22/22	8.5	**30.2**	17.1	17.1	22
ZINC	MG/KG	46	24/24	27.8	**125**	67.6	67.6	18	22/22	35.7	**176**	69.1	69.1	16
2,4-DICHLOROPHENOL	UG/KG	NC	0/24	0	0	0.0	2.6		1/22	5.1 J	5.1 J	5.1	2.1	
2,4-DIMETHYLPHENOL	UG/KG	10	1/24	39 J	**39 J**	39.0	95.5	1	0/22	0	0	0.0	85.2	
2-CHLOROPHENOL	UG/KG	10	5/24	5.4	8	6.6	3.6		3/22	4.8	7.9	5.6	2.5	
2-METHYLNAPHTHALENE	UG/KG	29000	4/24	4.7 J	47	18.3	4.8		4/22	5.7	15 J	10.0	3.4	
2-METHYLPHENOL	UG/KG	50	2/24	4.5	30	17.3	61.2		1/22	6.4	6.4	6.4	50.4	
4-METHYLPHENOL	UG/KG	50	3/24	5	**81**	47.3	7.8	2	1/22	6.1	6.1	6.1	2.1	
ACENAPHTHENE	UG/KG	20000	5/24	6.2	100	25.4	7.0		2/22	4.5	47 J	25.8	4.1	
ACENAPHTHYLENE	UG/KG	29000	15/24	4	2500	185	116		5/22	11	76 J	36.4	9.8	
ANTHRACENE	UG/KG	2500	16/24	4.3	**8800**	573	383	1	7/22	4	99 J	36.8	13.0	
BENZO(A)ANTHRACENE	UG/KG	1100	21/24	8.2	**54000**	2636	2307	1	13/22	3.9	320 J	53.4	32.3	
BENZO(A)PYRENE	UG/KG	1100	21/24	8.5	**24000**	1210	1059	1	12/22	4.6 J	250 J	56.4	31.6	
BENZO(B)FLUORANTHENE	UG/KG	1100	22/24	4.3 J	**49000**	2327	2133	1	12/22	7.1 J	610 J	111	61.2	
BENZO(G,H,I)PERYLENE	UG/KG	1100	21/24	6	**8500**	456	399	1	10/22	4.2	180 J	44.4	21.2	
BENZO(K)FLUORANTHENE	UG/KG	1100	21/24	7.4 J	**19000**	974	853	1	12/22	4.1	490	63.5	35.4	

APPENDIX I
COMPARISON OF ANALYTICAL RESULTS FOR SURFACE SOIL AND SHALLOW SUBSURFACE SOIL SAMPLES
TANK FARM 4, DU 4-1
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Parameter	Units	Ecological Screening LeveL	Surface Soils						Sub-Surface Soils					
			Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences	Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	100	6/24	36 J	**320 J**	126	223	3	3/22	65 J	87 J	75.7	177	
CARBAZOLE	UG/KG	NC	1/24	740 J	740 J	740	238		0/22	0	0	0.0	196	
CHRYSENE	UG/KG	1100	21/24	12	**59000**	2887	2527	1	13/22	4.3	440	70.0	42.1	
DIBENZO(A,H)ANTHRACENE	UG/KG	1100	14/24	3.8	**3900 J**	300	176	1	6/22	5.6 J	46	21.3	7.2	
DI-N-BUTYL PHTHALATE	UG/KG	100	1/24	78 J	78 J	78	248		4/22	41 J	52 J	48.3	170	
FLUORANTHENE	UG/KG	29000	22/24	5.1	**83000**	3887	3564	1	13/22	4.4	310 J	68.8	41.4	
FLUORENE	UG/KG	29000	9/24	6.6	470	61.8	24.5		6/22	4.6	84 J	20.3	7.0	
INDENO(1,2,3-CD)PYRENE	UG/KG	1100	21/24	5.7 J	**8500**	450	394	1	9/22	4.6 J	140 J	45.3	19.7	
NAPHTHALENE	UG/KG	29000	5/24	4.5	21	8.7	3.9		6/22	4.3	13 J	7.5	3.5	
PHENANTHRENE	UG/KG	29000	21/24	5.6	440	70.0	61.5		9/22	4.5	280 J	54.5	23.5	
PHENOL	UG/KG	3800	8/24	7.1	68	34.1	12.9		9/22	4.5 J	39	18.3	8.7	
PYRENE	UG/KG	1100	22/24	4.4	**86000**	4006	3672	1	13/22	4.9 J	310 J	67.7	40.7	
LOW MOLECULAR WEIGHT PAHS	UG/KG	29000	21/24	10.1 J	12400	679	594		12/22	4	601 J	98.9	54.8	
HIGH MOLECULAR WEIGHT PAHS	UG/KG	1100	22/24	13.8 J	**4E+05 J**	18637	17084	9	13/22	17.5 J	**2750 J**	548	325	2
TOTAL PAHS	UG/KG	NC	22/24	13.8 J	4E+05 J	19268	17662		14/22	5.3 J	2950 J	594	379	
2-BUTANONE	UG/KG	NC	6/24	3 J	150	35.1	10.6		7/22	3.6 J	26	10.2	4.8	
ACETONE	UG/KG	2500	15/24	3.5 J	160 J	34.8	22.6		13/22	7.6 J	180 J	48.5	29.6	
BTEX	UG/KG	NC	10/24	0.87 J	2.6 J	1.8	2.3		4/22	1.1 J	2.4 J	1.8	2.1	
CARBON DISULFIDE	UG/KG	94.1	0/24	0	0	0.0	2.7		2/22	0.96 J	2.9 J	1.7	2.3	
M+P-XYLENES	UG/KG	95000	4/24	1.3 J	2.5 J	1.9	2.6		1/22	2.4 J	2.4 J	2.4	2.3	
METHYL TERT-BUTYL ETHER	UG/KG	NC	0/24	0	0	0.0	2.7		2/22	1 J	1.1 J	1.1	2.2	
TOLUENE	UG/KG	75000	3/24	1.2 J	2 J	1.7	2.5		2/22	1.7 J	1.8 J	1.8	2.2	
TOTAL XYLENES	UG/KG	95000	7/24	0.87 J	2.6 J	1.9	2.4		2/22	1.1 J	2.4 J	1.8	2.3	
4,4'-DDD	UG/KG	21	4/24	6	**49**	24.1	5.9	2	2/22	4.6	8.2	6.4	2.3	
4,4'-DDE	UG/KG	21	3/24	5.1 J	10 J	8.3	3.0		0/22	0	0	0.0	2.0	
4,4'-DDT	UG/KG	21	1/24	10 J	10 J	10.0	3.0		1/22	7.1 J	7.1 J	7.1	2.2	
AROCLOR-1254	UG/KG	1.3	0/24	0	0	0.0	21.7		1/22	100 J	**100 J**	100	23.1	1
BETA-BHC	UG/KG	3.98	2/24	6.1 J	**14**	10.1	1.8	2	0/22	0	0	0.0	1.0	
DELTA-BHC	UG/KG	10	1/24	3.9	3.9	3.9	1.2		0/22	0	0	0.0	1.0	
ENDOSULFAN I	UG/KG	0.01	1/24	2.5	**2.5**	2.5	1.2	1	0/22	0	0	0.0	1.0	
ENDOSULFAN SULFATE	UG/KG	0.01	2/24	4.8 J	**22 J**	13.4	3.1	2	1/22	7.1	**7.1**	7.1	2.2	1
ENDRIN	UG/KG	0.04	1/24	7.9 J	**7.9 J**	7.9	2.4	1	0/22	0	0	0.0	2.0	
ENDRIN ALDEHYDE	UG/KG	0.04	1/24	35 J	**35 J**	35.0	3.6	1	0/22	0	0	0.0	2.0	
ENDRIN KETONE	UG/KG	0.04	2/24	3.7 J	**69**	36.4	5.1	2	0/22	0	0	0.0	2.0	
GAMMA-BHC (LINDANE)	UG/KG	0.05	1/24	3.4 J	**3.4** J	3.4	1.2	1	0/22	0	0	0.0	1.0	
TOTAL AROCLOR	UG/KG	1.3	0/24	0	0	0.0	21.7		1/22	100 J	**100 J**	100	23.1	1
TOTAL DDD/DDE/DDT	UG/KG	21	6/24	5.1 J	**59 J**	21.9	7.3	2	2/22	8.2 J	11.7 J	10.0	2.7	
TOXAPHENE	UG/KG	119	1/24	240 J	**240 J**	240	118	1	0/22	0	0	0.0	101	
EXTRACTABLE PETROLEUM HYDROCARBONS	MG/KG	NC	13/18	30 J	540	134	99.5		8/16	19 J	240	73.8	42.8	

APPENDIX I
COMPARISON OF ANALYTICAL RESULTS FOR SURFACE SOIL AND SHALLOW SUBSURFACE SOIL SAMPLES
TANK FARM 5, DU 5-1
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Parameter	Units	Ecological Screening LeveL	Surface Soils						Sub-Surface Soils					
			Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences	Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences
TEQ	NG/KG	NC	11/11	1 J	5.98 J	3.1	3.1		10/10	0.541 J	7.54 J	3.8	3.8	
TEQ BIRD	NG/KG	NC	11/11	0.324 J	4.62 J	1.8	1.8		10/10	0.162 J	2.32 J	1.2	1.2	
TEQ FISH	NG/KG	NC	11/11	0.305 J	3.7 J	1.5	1.5		10/10	0.182 J	2.42 J	1.2	1.2	
TEQ MAMMAL	NG/KG	NC	11/11	1 J	5.98 J	3.1	3.1		10/10	0.541 J	7.54 J	3.8	3.8	
ALUMINUM	MG/KG	NC	11/11	5460	9740	7803	7803		10/10	5130	9090	7177	7177	
ARSENIC	MG/KG	18	11/11	4.3 J	**43.7**	16.4	16.4	3	10/10	3.5 J	**44.1**	18.2	18.2	5
BARIUM	MG/KG	330	11/11	9.5 J	23.7	15.8	15.8		10/10	8	24 J	13.3	13.3	
BERYLLIUM	MG/KG	10	11/11	0.33	0.55 J	0.5	0.5		10/10	0.31	0.57 J	0.4	0.4	
CADMIUM	MG/KG	0.36	10/11	0.1 J	0.33	0.2	0.2		10/10	0.13 J	0.34	0.2	0.2	
CALCIUM	MG/KG	NC	11/11	166 J	1710 J	783	783		9/10	150 J	964 J	445	400	
CHROMIUM	MG/KG	26	11/11	5.6	12.8	9.4	9.4		10/10	7.5	16	9.9	9.9	
COBALT	MG/KG	13	11/11	2.2 J	**13.2 J**	8.1	8.1	1	10/10	6.3	**15.7 J**	10.8	10.8	4
COPPER	MG/KG	28	11/11	7.5	24.2	12.9	12.9		10/10	7.7	18.5	13.2	13.2	
IRON	MG/KG	NC	11/11	11500	33700	21818	21818		10/10	18500	55500	26830	26830	
LEAD	MG/KG	11	11/11	9.3 J	**33.3 J**	21.7	21.7	10	10/10	4.3 J	**15.3 J**	9.1	9.1	3
MAGNESIUM	MG/KG	NC	11/11	824 J	2320 J	1597	1597		10/10	1080	2560 J	1764	1764	
MANGANESE	MG/KG	220	11/11	95.8 J	**462**	274	274	7	10/10	114	**511 J**	280	280	6
MERCURY	MG/KG	1.58	2/11	0.019 J	0.12	0.1	0.0		2/10	0.012 J	0.016 J	0.0	0.0	
NICKEL	MG/KG	38	11/11	6.8 J	22.6	16.0	16.0		10/10	13.2 J	26.8	19.2	19.2	
POTASSIUM	MG/KG	NC	11/11	142 J	388 J	226	226		10/10	120 J	362 J	187	187	
SELENIUM	MG/KG	0.52	6/11	2.9 J	**4.2**	3.6	2.5	6	6/10	2.3	**4**	3.3	2.6	6
SILVER	MG/KG	4.2	8/11	0.095 J	0.21 J	0.2	0.1		7/10	0.081 J	0.19 J	0.1	0.1	
SODIUM	MG/KG	NC	6/11	19.3 J	53.9 J	35.1	25.2		4/10	20.6 J	61.4	33.6	19.2	
THALLIUM	MG/KG	0.0569	11/11	0.65 J	**2.5**	1.7	1.7	11	10/10	1	**2.8**	1.8	1.8	10
VANADIUM	MG/KG	7.8	11/11	10.9 J	**24 J**	15.3	15.3	11	10/10	7.4 J	**14.5 J**	11.2	11.2	9
ZINC	MG/KG	46	11/11	18.4 J	**69.5**	42.0	42.0	3	10/10	30.2	**71.2 J**	43.5	43.5	3
2-METHYLNAPHTHALENE	UG/KG	29000	0/11	0	0	0.0	2.0		1/10	4.3 J	4.3 J	4.3	2.2	
4-METHYLPHENOL	UG/KG	50	0/11	0	0	0.0	2.0		1/10	7.8 J	7.8 J	4.9	2.2	
ACENAPHTHENE	UG/KG	20000	3/11	4.2	7.7	5.7	3.0		0/10	0	0	0.0	1.9	
ACENAPHTHYLENE	UG/KG	29000	4/11	7.6	26 J	14.4	6.5		0/10	0	0	0.0	1.9	
ANTHRACENE	UG/KG	2500	7/11	4.5	27	12.9	8.9		0/10	0	0	0.0	1.9	
BENZALDEHYDE	UG/KG	NC	1/11	73 J	73 J	73.0	193		0/10	0	0	0.0	192	
BENZO(A)ANTHRACENE	UG/KG	1100	11/11	5.9	230	46.8	46.8		4/10	5.8	12	8.4	4.5	
BENZO(A)PYRENE	UG/KG	1100	11/11	6.4	300	55.8	55.8		4/10	5.5	11	8.0	4.3	
BENZO(B)FLUORANTHENE	UG/KG	1100	11/11	10	530 J	92.7	92.7		5/10	5.2 J	22	10.6	6.3	
BENZO(G,H,I)PERYLENE	UG/KG	1100	11/11	4.4	270	48.0	48.0		3/10	4.1	8.3	6.9	3.4	
BENZO(K)FLUORANTHENE	UG/KG	1100	11/11	4.6 J	200 J	36.4	36.4		3/10	4.3 J	9.9 J	7.4	3.5	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	100	1/11	58 J	58 J	58.0	192		1/10	61 J	61 J	61.0	178	
CHRYSENE	UG/KG	1100	11/11	8.4	300	60.3	60.3		4/10	6.4	16 J	11.4	5.7	
DIBENZO(A,H)ANTHRACENE	UG/KG	1100	7/11	4.3	57 J	17.4	11.8		0/10	0	0	0.0	1.9	

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TANK FARM 5, DU 5-1
DATA GAPS INVESTIGATION
TANK FARM 4 AND 5
NAVSTA NEWPORT, NEWPORT, RI

Parameter	Units	Ecological Screening LeveL	Surface Soils						Sub-Surface Soils					
			Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences	Frequency of Detection	Minimum Concentration	Maximum Concentration	Average of Positive Results	Average of All Results	Number of Exceedences
DI-N-BUTYL PHTHALATE	UG/KG	100	0/11	0	0	0.0	204		1/10	360 J	**360 J**	360	208	1
FLUORANTHENE	UG/KG	29000	11/11	13	600	112	112		6/10	5.1	22	12.5	8.2	
FLUORENE	UG/KG	29000	3/11	5.5	11	8.7	3.9		0/10	0	0	0.0	1.9	
INDENO(1,2,3-CD)PYRENE	UG/KG	1100	11/11	4	240 J	41.4	41.4		3/10	4.3	7.5	5.6	3.0	
NAPHTHALENE	UG/KG	29000	0/11	0	0	0.0	2.0		1/10	5.9	5.9	5.9	2.3	
PHENANTHRENE	UG/KG	29000	11/11	4.4	200	44.9	44.9		4/10	4.9	14	7.9	4.3	
PYRENE	UG/KG	1100	11/11	11	430	87.4	87.4		6/10	4.7	19	10.9	7.3	
LOW MOLECULAR WEIGHT PAHS	UG/KG	29000	11/11	4.4 J	258 J	62.3	62.3		4/10	4.9 J	17.9 J	10.5	5.3	
HIGH MOLECULAR WEIGHT PAHS	UG/KG	1100	11/11	68.2 J	**3160 J**	592	592	1	6/10	9.8 J	120	60.5	37.0	
TOTAL PAHS	UG/KG	NC	11/11	72.6 J	3410 J	653	653		6/10	9.8 J	133 J	67.5	41.2	
ACETONE	UG/KG	2500	7/11	6 J	65 J	33.3	22.2		6/10	5.4 J	44 J	19.4	12.5	
BTEX	UG/KG	NC	1/11	1.8 J	1.8 J	1.8	2.5		1/10	1.2 J	1.2 J	1.2	2.1	
CARBON DISULFIDE	UG/KG	94.1	0/11	0	0	0.0	2.6		1/10	4 J	4 J	4.0	2.4	
ISOPROPYLBENZENE	UG/KG	NC	1/11	6.2	6.2	6.2	3.0		0/10	0	0	0.0	2.3	
TOLUENE	UG/KG	75000	1/11	1.8 J	1.8 J	1.8	2.5		1/10	1.2 J	1.2 J	1.2	2.1	
4,4'-DDD	UG/KG	21	1/11	5.1	5.1	5.1	2.3		0/10	0	0	0.0	1.9	
4,4'-DDE	UG/KG	21	2/11	5.5	6.6	6.1	2.8		0/10	0	0	0.0	1.9	
4,4'-DDT	UG/KG	21	1/11	5.6 J	5.6 J	5.6	2.4		0/10	0	0	0.0	1.9	
AROCLOR-1254	UG/KG	1.3	1/11	39	**39**	39.0	22.2	1	0/10	0	0	0.0	19.1	
TOTAL AROCLOR	UG/KG	1.3	1/11	39	**39**	39.0	22.2	1	0/10	0	0	0.0	19.1	
TOTAL DDD/DDE/DDT	UG/KG	21	2/11	10.6	12.2 J	11.4	3.7		0/10	0	0	0.0	1.9	
EXTRACTABLE PETROLEUM HYDROCARBONS	MG/KG	NC	3/3	16 J	23 J	20.3	20.3		1/2	35 J	35 J	35.0	21.3	