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RECORD OF DECISION SITE 19 ON SHORE DERECKTOR SHIPYARD SOIL AND GROUNDWATER OPERABLE UNIT 12 (OU 12) NS NEWPORT RI

09/01/2014

TETRA TECH

RECORD OF DECISION

SITE 19 – ON-SHORE DERECKTOR SHIPYARD
SOIL AND GROUNDWATER

(OPERABLE UNIT 12)

NAVFAC
Naval Facilities Engineering Command

NAVAL STATION NEWPORT
MIDDLETOWN/NEWPORT, RHODE ISLAND

SEPTEMBER 2014

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TABLE OF CONTENTS

SECTION **PAGE NO.**

TABLE OF CONTENTS 1

ACRONYMS 3

1.0 DECLARATION 5
1.1 Site Name and Location 5
1.2 Statement of Basis and Purpose 5
1.3 Assessment of Site 5
1.4 Description of Selected Remedy 5
1.5 Statutory Determinations 6
1.6 ROD Data Certification Checklist 7
1.7 Authorizing Signatures 9
1.7.1 Navy Signature 9
1.7.2 EPA Region 1 Signature 11

2.0 DECISION SUMMARY 13
2.1 Site Name, Location, and Brief Description 13
2.2 Site History and Enforcement Activities 13
2.3 Community Participation 17
2.4 Scope and Role of Operable Unit 17
2.5 Site Characteristics 18
2.5.1 Physical Characteristics 18
2.5.2 Conceptual Site Model (CSM) 19
2.5.3 Nature, Extent, Fate and Transport of Contamination 19
2.6 Current and Potential Future Site and Resource Uses 21
2.7 Summary of Site Risks 23
2.7.1 Human Health Risk 23
2.7.2 Ecological Risk 29
2.7.3 Basis for Action 30
2.8 Remedial Action Objectives (RAOs) 30
2.9 Description of Alternatives 32
2.9.1 Soil Alternatives 32
2.9.2 Groundwater Alternatives 35
2.10 Comparative Analysis of Alternatives 38
2.10.1 Threshold Criteria 38
2.10.2 Primary Balancing Criteria 41
2.10.3 Modifying Criteria 43
2.11 Principal Threat Waste 43
2.12 Selected Remedy 44
2.12.1 Rationale for Selected Remedy 44
2.12.2 Description of Selected Remedy 44
2.12.3 Summary of Estimated Remedy Costs 45
2.12.4 Expected Outcomes of Selected Remedy 46
2.13 Statutory Determinations 46
2.14 Documentation of Significant Changes 48

3.0 RESPONSIVENESS SUMMARY 49
3.1 Stakeholder Comments and Lead Agency Responses 49
3.2 Technical and Legal Issues 49

DETAILED ADMINISTRATIVE RECORD REFERENCE TABLE R-1

ADDITIONAL REFERENCES R-3

APPENDICES

A Rhode Island Department of Environmental Management Concurrence Letter
B Cost Estimates
C Human Health Risk Assessment Summary Tables
D ARARs and To Be Considered Guidance
E Public Hearing Transcript
F Data Technical Memorandum for June 2014 Groundwater and Soil Additional Sampling Effort (Tetra Tech, September 2014)

TABLES

NUMBER **PAGE NO.**

1-1 ROD Data Certification Checklist 7

2-1 Previous Investigations and Site Documentation 14
2-2 Summary of Maximum Concentrations of COCs 19
2-3 Receptors and Exposure Routes Evaluated in the HHRA 23
2-4 Receptors and Calculated Risk Exceedances in the HHRA 24
2-5 Cleanup Levels for Soil (Central Area) 29
2-6 Cleanup Levels for Groundwater (Site-Wide) 30
2-7 Summary of Remedial Alternatives Evaluated for Soil 31
2-8 Summary of Remedial Alternatives Evaluated for Groundwater 32
2-9 Comparison of Cleanup Alternatives Evaluated for Soil 35
2-10 Comparison of Cleanup Alternatives Evaluated for Groundwater 37
2-11 How Selected Remedy Mitigates Risk and Achieves RAOs 43

3-1 Summary of Questions from Public Comment Period 47

FIGURES
(presented at the end of the document)

NUMBER

1-1 Site Locus

2-1a Historical Site Layout and Features
2-1b Sample Locations Representing Current Conditions
2-2 Site Plan
2-3 Interpretive Conceptual Site Model
2-4 Soil Criteria Exceedances
2-5 Soil Cleanup Level Exceedances
2-6 Groundwater Cleanup Level Exceedances (2011)
2-7 Human Health Conceptual Site Model
2-8 Soil Alternative S-2 – Cover and LUCs
2-9 Groundwater Alternative G-2 – MNA and LUCs

ACRONYMS

µg	microgram(s)
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
ARAR	Applicable or Relevant and Appropriate Requirement
B&R	Brown & Root Environmental, Inc.
CDO	Chronic Daily Intake
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act [as amended]
CFR	Code of Federal Regulations
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CSF	cancer slope factor
CSGWPP	Comprehensive State Groundwater Protection Program
CSM	conceptual site model
CWA	Clean Water Act
DEC	[RIDEM] Direct Exposure Criteria
EISB	enhanced in situ bioremediation
ELUR	Environmental Land Use Restrictions
EPA	United States (U.S.) Environmental Protection Agency
ERA	ecological risk assessment
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
FS	Feasibility Study
FY	Fiscal Year
GRA	General Response Action
HHRA	human health risk assessment
HI	Hazard Index
HQ	Hazard Quotient
IAS	Initial Assessment Study
ILCR	incremental lifetime cancer risk
IR	Installation Restoration [Program]
IRIS	Integrated Risk Information System
ISCO	in situ chemical oxidation
IUR	inhalation unit risk
kg	kilogram
L	liter
LTM	long-term monitoring
LUC	land use control
MCL	[U.S. EPA / federal] Maximum Contaminant Level
MCLG	[U.S. EPA / federal] Maximum Contaminant Level Goal
mg	milligram(s)

mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
NAVSTA	Naval Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, or National Contingency Plan
NETC	Naval Education and Training Center
NIRIS	Naval Installation Restoration Information Solution
NPL	National Priorities List
NPW	net present worth
NTCRA	non-time critical removal action
OU	Operable Unit
O&M	operation and maintenance
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PRD	Pre-Remedial Design [sampling]
PRG	Preliminary Remediation Goal
PV	present value (a.k.a. present worth)
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RfC	reference concentration
RfD	reference dose
RI	Remedial Investigation
RIDEM	Rhode Island Department of Environmental Management
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RSL	[U.S. EPA] Regional Screening Level
SASE	Site Assessment Screening Evaluation (or Study Area Screening Evaluation)
SPLP	Synthetic Precipitation Leaching Procedure
SVOC	semivolatile organic compound
TCE	trichloroethene
TCLP	Toxicity Characteristics Leaching Procedure
TPH	total petroleum hydrocarbons
TRZ	Target Remediation Zone
TSCA	Toxic Substances Control Act
U.S.	United States
USCG	United States (U.S.) Coast Guard
UU/UE	unlimited use and unrestricted exposure
VISL	Vapor Intrusion Screening Level [calculator and modeling tool]
VOC	volatile organic compound

1.0 DECLARATION

1.1 SITE NAME AND LOCATION

The Former Robert E. Derecktor Shipyard (Former Derecktor Shipyard), which is also known as Site 19, is an industrial port at Naval Station (NAVSTA) Newport, located in Newport and Middletown, Rhode Island. Site 19 includes two operable units (OUs): OU5, which is the marine sediment associated with the Former Derecktor Shipyard, and OU12, which is the on-shore soil and groundwater of the Former Derecktor Shipyard. This Record of Decision (ROD) is for Site 19, OU12, the Former Derecktor Shipyard Soil and Groundwater, or Site 19 – On-Shore Derecktor Shipyard (OU12) (Figure 1-1). NAVSTA Newport was formerly identified as the Naval Education and Training Center (NETC) and has been assigned United States Environmental Protection Agency (EPA) Identification (ID) number RI6170085470.

1.2 STATEMENT OF BASIS AND PURPOSE

This ROD presents the Selected Remedy for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12), as chosen by the Navy and EPA in accordance with provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record for Site 19 – On-Shore Derecktor Shipyard (OU12), as listed in the Detailed Administrative Record Reference Table presented at the end of this ROD. The Rhode Island Department of Environmental Management (RIDEM) concurs with the Navy and EPA on the Selected Remedy for Site 19 – On-Shore Derecktor Shipyard (OU12) (Appendix A).

1.3 ASSESSMENT OF SITE

The response action selected in this ROD is necessary to protect the public health and welfare or the environment from actual or threatened releases of hazardous substances into the environment. A CERCLA action is required because the human health risk assessment (HHRA) determined that concentrations of metals and polycyclic aromatic hydrocarbons (PAHs) in soil pose an unacceptable risk to human health under hypothetical future residential scenarios. Also, several metals are present in soil at concentrations exceeding state regulatory direct exposure criteria, and recent construction activities may have resulted in a release of asbestos containing material (ACM). The HHRA determined concentrations of metals and volatile organic compounds (VOCs) in groundwater pose an unacceptable risk to human health under industrial worker and hypothetical future residential scenarios (Section 2.7.1). A screening vapor intrusion evaluation in the HHRA indicated potential vapor intrusion issues under industrial worker and hypothetical future residential scenarios (Section 2.7.1). There are no sediment or surface water media at Site 19 - On-Shore Derecktor Shipyard (OU12). The ecological risk assessment (ERA) did not identify any areas of ecological value at Site 19 – On-Shore Derecktor Shipyard (OU12) due to its industrialized setting with minimal open cover. Therefore, there are no unacceptable ecological risks to address at Site 19 - On-Shore Derecktor Shipyard (OU12).

1.4 DESCRIPTION OF SELECTED REMEDY

The major components of the Selected Remedy for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12) include the following:

- **Additional Sampling and Short-Term Measures**: Conduct additional sampling before the completion of the Remedial Design (RD) (i.e., pre-RD [PRD] soil sampling) to assess potential site contamination within the *Northern Area* (Figure 2-2). After publication of the Proposed Plan, improvement construction project activities within the Northern Area potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils were stockpiled that potentially contaminated the site. The remedy may need to be modified based on the PRD sampling results following finalization of this ROD. Short-term protective measures will be implemented to restrict exposure to ACM in debris/soil and potentially contaminated

sediment until they are removed from the site. These measures will include containment of the existing stockpiles and management of erosion and storm water runoff.

- **Covers**: Depending on the specific area where concentrations of Chemicals of Concern (COCs) exceed cleanup levels, maintenance or rehabilitation of existing cover material (soil, concrete, or pavement) or installation and maintenance of new 6-inch-thick soil cover in compliance with RIDEM Remediation Regulations.

- **Monitored Natural Attenuation (MNA):** MNA groundwater monitoring will document the expected reductions in groundwater COC concentrations.

- **Land Use Controls (LUCs) and Operation and Maintenance (O&M):** LUCs and O&M will ensure that future use of the property is limited to industrial activities (residential and unrestricted recreational site use will be prohibited). There will be annual inspections of the covers to confirm the continued protectiveness of the remedy. A limited portion of a paved recreation path is located in the southern-most portion of the *Central Area* (Figure 2-2). This paved path is surrounded by effective soil cover and will operate under restricted recreational activity (i.e., this portion of path pavement and the surrounding effective soil cover must be maintained in order to be protective of recreational users in this particular area). The LUCs and O&M will prevent disturbance of and maintain soil, pavement, and/or asphalt covers; ensure that subsurface soils that are above cleanup goals are not disturbed without appropriate precautions; restrict potential exposure to COCs in site groundwater; evaluate and/or mitigate vapor intrusion issues when exposure conditions change; and prohibit groundwater use until cleanup levels have been achieved. LUCs and O&M also will protect (inspect and fix) components of soil remedy (e.g., covers) and the groundwater remedy (e.g., monitoring wells). Additionally, short-term LUCs, in the form of a Base Instruction, have been implemented to restrict exposure to the site soils that may have been impacted from the excavation/demolition and stockpiling of these soils/debris and sediments until the results of the PRD soil sampling determines if remedial action of these soils is necessary. These controls include maintenance of the existing fencing to prevent uncontrolled access and the restriction of unauthorized excavation of the soils in the Northern Area.

The Selected Remedy mitigates potential unacceptable exposure of human receptors to contaminated soil and groundwater through construction and/or O&M of barriers to impacted soil, LUCs for soil and groundwater (which include inspections for specific land usage [i.e., industrial] and condition of soil covers and monitoring wells), and long-term groundwater monitoring. The LUC component of the Selected Remedy also provides for future protection against vapor intrusion issues (i.e., if exposure conditions change due to new building construction, conduct vapor intrusion evaluation followed by mitigation if necessary) until respective volatile COCs in groundwater are addressed. Remedial actions for Site 19 – On-Shore Derecktor Shipyard (OU12) are not expected to adversely impact the current and reasonably anticipated future land use. The Selected Remedy is expected to achieve substantial long-term risk reduction and to allow the property to be used for the reasonably anticipated future land use (industrial, with restricted recreational use only for a limited portion of a paved exercise path). This ROD documents the final remedial action decision for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12) and does not affect any other sites at NAVSTA Newport, including OU5 (marine sediment at Site 19 – Off-Shore Derecktor Shipyard). Implementation of this remedy will allow for continued industrial use of the site (with one small area having restricted recreational use), which is consistent with current use and the overall cleanup strategy for NAVSTA Newport of restoring sites to support base operations.

1.5 STATUTORY DETERMINATIONS

The Selected Remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on site in excess of levels that allow for unlimited use and unrestricted exposure (UU/UE), a statutory review will be conducted within 5 years of initiation of the remedial action and every 5 years thereafter to ensure that the Selected Remedy is, or will be, protective of human health and the environment.

Federal regulations that pertain to the cleanup require a determination that there is no practical alternative to taking federal actions affecting federal jurisdictional wetlands, aquatic habitats, and floodplains, per Executive Orders 11990 (Protection of Wetlands) and 11988 (Protection of Floodplains), as incorporated under Federal Emergency Management Agency (FEMA) regulations. While there are no jurisdictional wetlands at the site (although regulated habitats abut the site in Narragansett Bay), the majority of the site is located within the 100-year coastal floodplain. The Navy's remedial measures will prevent contamination within the floodplain from migrating from the covered areas and posing a risk to adjacent floodplain, wetlands, and aquatic habitats. The FEMA regulations require the Navy to solicit public comment, as part of the Proposed Plan, regarding its proposed remedial work within the coastal floodplain. No negative comments were received.

1.6 ROD DATA CERTIFICATION CHECKLIST

Table 1-1 summarizes the locations of information required to be included in the ROD, as presented in Section 2.0 – Decision Summary and Appendix B (Cost Estimates). Additional information can be found in the Administrative Record file for NAVSTA Newport, available online at http://go.usa.gov/DyNw (then click Administrative Records).

TABLE 1-1. ROD DATA CERTIFICATION CHECKLIST

DATA	LOCATION IN ROD
Chemicals of concern (COCs) and their respective concentrations	Sections 2.5, 2.7, and 2.8
Baseline risk represented by the COCs	Section 2.7
Cleanup levels established for COCs and the basis for these levels	Section 2.7 and 2.8
How source materials constituting principal threats are addressed	Section 2.11
Current and reasonably anticipated future land use assumptions and current and potential future beneficial land uses used in the risk assessment	Section 2.6
Potential land and groundwater uses that will be available at the site as a result of the Selected Remedy	Section 2.12.4
Estimated capital, operation/operating and maintenance (O&M), and total present value (PV) costs; discount rate; and number of years over which the remedy costs are projected	Section 2.12.3 and Appendix B
Key factors that led to the selection of the remedy	Section 2.12.1

If contamination posing an unacceptable risk to human health or the environment is discovered after execution of this ROD and is shown to be the result of Navy activities, the Navy will undertake the necessary actions to ensure continued protection of human health and the environment.

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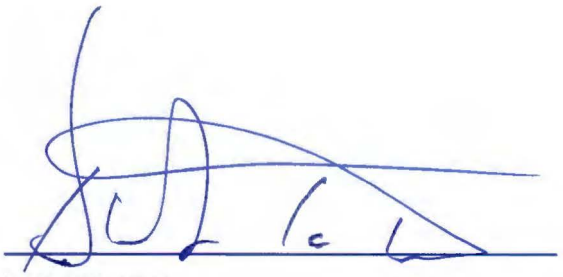
1.7 AUTHORIZING SIGNATURES

1.7.1 Navy Signature

The signature provided below validates the Selected Remedy for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12) located at NAVSTA Newport in Newport/Middletown, Rhode Island, by the Navy and EPA. RIDEM concurs with the Selected Remedy, as indicated in Appendix A of this ROD.

The Selected Remedy mitigates potential unacceptable exposure of human receptors to contaminated soil and groundwater through PRD soil sampling in the Northern Area, construction and/or O&M of barriers to impacted soil, LUCs for soil and groundwater (which include inspections for specific land usage [i.e., industrial] and condition of soil covers and monitoring wells), and long-term groundwater monitoring of natural attenuation.

Concur and recommend for implementation:



9/12/14

D.W. Mikatarian
Captain, U.S. Navy
Commanding Officer
Naval Station Newport, Rhode Island

Date

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1.7.2 EPA Region 1 Signature

The signature provided below validates the Selected Remedy for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12) located at NAVSTA Newport in Newport/Middletown, Rhode Island, by the Navy and EPA. RIDEM concurs with the Selected Remedy, as indicated in Appendix A of this ROD.

The Selected Remedy mitigates potential unacceptable exposure of human receptors to contaminated soil and groundwater through PRD soil sampling in the Northern Area, construction and/or O&M of barriers to impacted soil, LUCs for soil and groundwater (which include inspections for specific land usage [i.e., industrial] and condition of soil covers and monitoring wells), and long-term groundwater monitoring of natural attenuation.

Concur and recommend for implementation:

9/16/14

James T. Owens, III **Date**
Director, Office of Site Remediation and Restoration
United States Environmental Protection Agency Region 1 – New England

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2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND BRIEF DESCRIPTION

NAVSTA Newport is located approximately 25 miles south of Providence, Rhode Island, primarily on Aquidneck Island. The facility occupies approximately 1,000 acres, with portions of the facility located in the City of Newport and the Towns of Middletown, Portsmouth, and Jamestown, Rhode Island. The majority of the facility layout follows the western shoreline of Aquidneck Island for nearly 6 miles, facing the eastern passage of Narragansett Bay (Figure 1-1). The major commands currently located at NAVSTA Newport include the NETC, Surface Warfare Officers School (SWOS) Command, Naval Undersea Warfare Center (NUWC), and Naval War College. Research, development, and training are the primary activities at NAVSTA Newport.

Site 19, the Former Derecktor Shipyard, is located at Coddington Cove in the central portion of NAVSTA Newport, as illustrated on Figure 1-1, and occupies land within both Middletown and Newport. It is composed of approximately 41 acres of shoreline land and improvements (OU12) and the adjacent deep water industrial port in Coddington Cove (OU5) that were formerly leased to Robert E. Derecktor Shipyards of Rhode Island, Inc. (Derecktor, Inc.)

Site 19 – On-Shore Derecktor Shipyard (OU12) is bounded to the east and south by Defense Highway, to the north by Pier 2, and to the west by Narragansett Bay (including Site 19 – Off-Shore Derecktor Shipyard [OU5]). The site consists of undeveloped areas, relic foundations of former buildings, parking areas, storage areas utilized by the U.S. Coast Guard (USCG) for buoy maintenance, one major building (Building 6), and on-going construction and improvement projects. A paved road provides access to the central and northern portions of the site from Defense Highway.

The northern portion of the site is the location of a USCG waterfront improvement and building construction project, a buoy maintenance yard, and a satellite parking area. The central portion of the site is a graded unpaved area formerly occupied by Building 42. South of this central area is a concrete slab relic foundation previously occupied by Building 234. An active natural gas station is located on a portion of the foundation. The most southern portion of the site consists of undeveloped vegetated land.

Contaminants in soil and groundwater were identified during past environmental assessments at the Former Derecktor Shipyard and were attributed to previous activities, mainly those activities undertaken by Robert E. Derecktor Shipyards of Rhode Island, Inc. (repair, maintenance, and construction of private and military ships), mainly during their lease period from 1979 through 1992.

NAVSTA Newport is an active facility, with environmental investigations and remedial efforts conducted under CERCLA and funded under the Environmental Restoration, Navy program. The Navy is conducting its Environmental Restoration Program (i.e., environmental investigation and remediation program) at NAVSTA Newport in accordance with a Federal Facility Agreement (FFA) between the Navy, EPA, and RIDEM. The Navy is the lead agency for the investigation and specified cleanup of designated sites within the NAVSTA Newport property, with EPA and RIDEM providing oversight.

After publication of the Proposed Plan, improvement construction project activities within the Northern Area potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils were stockpiled that potentially contaminated the site.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

Previous environmental investigations designed to evaluate the environmental quality of soil and groundwater at the Site 19 – On-Shore Derecktor Shipyard (OU12) are summarized in Table 2-1. Results of these investigations indicated that elevated concentrations of metals, PAHs, and PCBs were present in soil at the site, which were addressed to a great degree by several removal actions. Figure 2-1a and Figure 2-1b show several site features and the removal action areas. These investigations also indicated that elevated concentrations of VOCs and metals are present in groundwater at the site. The nature and extent of contamination is discussed in Section 2.5.

To facilitate the response action for Site 19 – On-Shore Derecktor Shipyard (OU12), the site initially was divided into five subareas based on historical operations and/or site conditions (Figure 2-2): *North Waterfront Area, Central Shipyard Area, PCB Removal Area, Former Building 234 Area, and South Waterfront Area*. The subarea divisions carried through investigation planning, sampling, and subsequent data analysis and risk assessment. However, during development of the FS (and for the Selected Remedy for soil described in this ROD), the soil medium at the site was reorganized into three areas respective to soil action requirements (Figure 2-2): *Northern Area, Central Area, and Southern Area*. These CERCLA soil actionable and/or non-actionable areas are based on a number of factors, including operational history, data uncertainty, and enforcement actions within each subarea; consideration of past removal actions and HHRA results from each subarea; and risk management decisions considering background levels, actual site conditions, and planned continued industrial/military site usage. Note the Selected Remedy for groundwater described in this ROD is site-wide.

TABLE 2-1. PREVIOUS INVESTIGATIONS AND SITE DOCUMENTATION

INVESTIGATION	DATE	DESCRIPTION (REFERENCE)
Initial Assessment Study (IAS)	1983	The IAS for NAVSTA Newport did not identify Derecktor Shipyard directly for additional study, but it discussed the waterfront area, industrial and supply area, and noted approximately 44 acres of the waterfront area, including several buildings and Pier 1, which were leased to the State of Rhode Island, which subsequently sub-leased the area to Derecktor, Inc. for the development of a private shipyard. (EEI, 1983).
Resource Conservation and Recovery Act (RCRA) Inspections and Violations	1983-1984	EPA and RIDEM conducted Resource Conservation and Recovery Act (RCRA) Inspections at the shipyard and noted several violations, such as improperly stored waste materials and containers. Appendix H in the FS (Tetra Tech, 2014a) provides a summary of these enforcements actions and the information regarding the measures taken to address these regulatory violations. In response to the RCRA violations, Derecktor, Inc. conducted soil waste characterization studies at the north and south storage areas (Dolce, Spirito & Assoc., 1984) (see Appendix I of the Halliburton NUS [1993] PA Report). Based on levels and types of contaminants detected, and non-potable aquifer status, no soil excavation was recommended for either storage area.
Derecktor, Inc. pleads guilty to criminal violations	1987	Robert E. Derecktor pled guilty to criminal violations of the Toxic Substance Control Act (TSCA), CERCLA, Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Clean Air Act, and Hazardous Transportation Act for illegal disposal activities within the site.
National Priorities List (NPL) listing	1989	NAVSTA Newport was listed on the U.S. EPA NPL as the NETC. Derecktor Shipyard was not initially identified as a site. Robert E. Derecktor Shipyards of RI, Inc. was a tenant at the property.
Derecktor, Inc. bankruptcy	1986	Derecktor, Inc. filed for Chapter 11 bankruptcy.
Preliminary Assessment (PA)	1993	A **PA** was conducted when Derecktor, Inc. departed. The PA concluded that shipyard operations generated large quantities of hazardous wastes including waste oil, paints, solvents, thinners, concentrated bases, and other waste solids and liquids that were improperly stored and disposed (Halliburton NUS, 1993). Based on these conclusions, the Former Derecktor Shipyard was added to the FFA "Study Area" list. The PA identified several areas of concern due to improper housekeeping and hazardous material handling practices, and recommended several actions and additional investigations. Due to Derecktor bankruptcy and based on the PA findings and recommendations, the Navy and others undertook a series of short-term actions, including the following: Removing contaminant-filled drums and containers; excavating and removing aboveground tanks and USTs; locating storm drain systems; removing site-wide debris and former building remnants; and cleaning interiors of remaining buildings to ensure the safety of personnel conducting additional studies.
Building 42 Sandblast Grit Removal	1995-1996	(Within Central Shipyard Area). The sandblast grit material around former Building 42 was removed and backfilled with sand and crushed stone mix during a **Removal Action**. As part of this effort, the embankment to the east of Building 42 was excavated and repaired. Confirmatory and waste characterization samples were analyzed for TCLP VOCs, TCLP SVOCs, TCLP Metals, PCBs, total lead, and TPH.

TABLE 2-1. PREVIOUS INVESTIGATIONS AND SITE DOCUMENTATION

INVESTIGATION	DATE	DESCRIPTION (REFERENCE)
Study Area Screening Evaluation (SASE)	1996-1997	The SASE was conducted to evaluate contaminants present on-shore in the buildings, features (e.g., catch basins and sumps), fill, soil, and groundwater. The SASE targeted the areas identified by the PA for sample collection and analysis. The SASE Report summarized contaminants detected, probable contaminant discharge routes, and estimated human health risks in a human health risk assessment (**HHRA**). A qualitative ecological risk assessment (**ERA**) also was conducted. The ERA concluded minimal viable habitats, so ecological risk would not need further evaluation. Report recommendations included excavation of hot spots, additional sampling, filling of sumps and trenches, and addressing several outfalls and catch basins. (Brown and Root Environmental, Inc. [B&R], 1997).
Berm Removal at the South Waterfront	1997-1998	A berm containing construction debris and soil located in the South Waterfront Area was removed from September 1997 to November 1998. Prior to removal, the berm was divided into six equal sections. Soils from each section were removed and stockpiled for composite sampling and comparison to state residential criteria and waste characterization standards prior to reuse and/or disposal. Shoreline restoration activities were conducted after the removals. Some of the excavated soils were used as fill material at Tank Farm 4, and the remaining soil was shipped offsite for disposal.
Building 42 S42-1 Sump Pit Removal	1998	(Within Central Shipyard Area). May to June 1998. Sump 1, located beneath former Building 42, was removed. Soils beneath the sump also were removed to a depth of 1 foot. Confirmatory samples were collected and, upon review of the data (analytical results were compared to RIDEM residential and industrial/commercial direct exposure criteria [DEC]), removal activities were concluded. Confirmatory samples were collected six inches below grade surface on each sidewall and from one location on the floor of excavation. The samples were analyzed for VOCs, SVOCs, TPH, RCRA 8 Metals, and PCB and Pesticides. Arsenic was detected from 15 to 22 milligrams per kilogram (mg/kg) in the confirmatory samples, above RIDEM Residential and Industrial DECs for arsenic.
PCB Removal Action (TP14)	1998	(Within PCB Removal Area within Central Shipyard Area). Initiated PCB contaminated soil removal at TP-14. See completion in 1999 below.
Sampling for PCBs south of Pier 1	1999	(Within North Waterfront Area). Area identified during 1999 site walk was sampled for PCBs. No detections in January 1999 exceeded RIDEM Residential DECs. Aroclor-1254 was detected at 0.1 ppm (below all standards).
Test Pit near well MW09	1999	(On southern edge of Former Building 234 Area). Test pit located approximately 7 feet south of MW-09 completed in February 1999. The Area near MW09 was test pitted to 1.5 feet below ground surface to investigate potential historical dumping outside south side of Former Building 234. RIDEM Residential DEC were exceeded for arsenic, manganese and zinc. There was one exceedance of the Industrial DEC for arsenic.
Sampling for PCBs at Building 54, Substation 16	1999	Area sampled for PCBs in February 1999. All nondetect except one upgradient sample had a concentration of 0.039 ppm for Aroclor-1254. No samples exceeded the Rhode Island Residential DEC for PCBs (10 mg/kg).
Building 42 S42-5 Sump Investigation and Removal	1999-2000	(Within Central Shipyard Area). Occurred from March 1999 to August 2000. A concrete sump and associated valve chamber were removed. Approximately 42 tons of concrete debris were disposed. Piping and associated soil also were removed. Since the concrete foundation of the sump was left in place, the bottom sample was collected from a location beside and below the concrete foundation. Confirmatory samples were analyzed for VOCs, SVOCs, TPH, RCRA 8 Metals, and PCB and Pesticides, and were compared to RIDEM residential and industrial/commercial DEC. Arsenic ranged from 10 mg/kg to 27 mg/kg.
Building 42 Former Trench/Disposal Pits – Trenching and Hot Spot Removal	1999	(Within Central Shipyard Area). Three exploratory trenches were excavated north of former Building 42 (i.e., bilge water disposal area) from February through August 1999. Based on sample analysis (VOCs, SVOCs, RCRA 8 Metals [barium, cadmium, chromium, lead, mercury, selenium, silver, and zinc0, PCBs, and TPH) of the soil excavated from the trenches, a hotspot removal was conducted at one location. The hotspot removal action included the removal and disposal of approximately 25 cubic yards of soil. Confirmation samples were collected and compared to RIDEM residential and industrial/commercial DEC. Concentrations were below the RIDEM DECs. Only arsenic at 18.8 mg/kg exceeded the RIDEM Industrial DEC.

TABLE 2-1. PREVIOUS INVESTIGATIONS AND SITE DOCUMENTATION

INVESTIGATION	DATE	DESCRIPTION (REFERENCE)
Completed Test Pit 14 PCB Contaminated Soil Removal	1999	(Within PCB Removal Area within Central Shipyard Area). Occurred June 1998 to February 1999. A series of excavations and confirmatory sampling was conducted to delineate and remove PCB-contaminated soils. Approximately 430 tons of PCB-contaminated soil was removed from the Test Pit 14 area. Confirmation samples were collected and compared to RIDEM residential and industrial/commercial DEC. Further action was required after the initial excavation because of elevated PCBs within the areas bordering the northern, southern, and eastern extents of the sample locations and TP-14. No further action was required at the drainage basin east of Building 6. Samples were analyzed for the following analyses: VOCs, SVOCs, TPH, RCRA 8 Metals, PCBs, and Pesticides. The results indicate that contamination migrated south under the paved area and to the east, and into the drainage swale. There were no exceedances of the Residential Standards in the upgradient or west portions of TP-14. PAHs and arsenic in remaining soils exceed the Rhode Island Industrial/Commercial DEC. Approximately 430 tons of PCB-contaminated soil were disposed at Model City, New York.
Sandblast Grit Removal at Northgate Watchtower and Revetment Wall	2004, 2005, 2007-2008	(Northern edge of North Waterfront Area). Sandblast Grit Removal at Northgate Watchtower and Revetment Wall (north of Building 6 outside Central Shipyard Area in North Waterfront Area). Occurred in multiple stages in 2004, 2005, and 2007-2008. A series of removal actions were conducted north of Building 6 in the vicinity of a new watchtower to remove subsurface sand blast grit. Confirmation samples were collected and compared to RIDEM residential and industrial/commercial DEC. The area along Defense Highway was reworked to repair and replace the revetment wall (replaced with a gabion-basket wall).
Asbestos Release	2007	Asbestos overhead steam pipe mitigation. The ACM insulating material on the overhead steam pipe (a.k.a. silver snake) was mitigated in 2007; this included removal of the deteriorated steam line insulation jacket, removal of asbestos debris on the ground, soil sampling for asbestos, and removal of contaminated soil.
Data Gaps Investigation (SASE Addendum)	2011-2013	The Data Gaps Investigation included groundwater, soil, and soil gas sampling focused on specific locations and analytes as scoped by the Navy, EPA, and RIDEM. The results were used to refine soil and groundwater characterization results and update the baseline **HHRA** for each of the five subareas investigated (Figure 2-2): North Waterfront Area; Central Shipyard Area; PCB Removal Area; Former Building 234 Area; and South Waterfront Area. The updated baseline HHRAs indicated unacceptable risks to human health through exposure to soil and groundwater in one or more subareas (see Section 2.7). (Tetra Tech, 2013).
Feasibility Study (FS)	2014	The **FS** screened potential remedial technologies, and developed and evaluated **remedial alternatives** for Site 19 – On-Shore Derecktor Shipyard (OU12) based on information from previous investigations. The final FS presented three remedial alternatives to address contamination in soil and three remedial alternatives to address contamination in groundwater. (Tetra Tech, 2014).
Improvement Construction Activities	2013-2014	Navy and USCG construction project activities (Fender Pile Replacement Project, Marginal Wharf Project, and Buoy Tender Project) within the Northern Area potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils were stockpiled that potentially contaminated the site. PRD soil sampling will be performed after this ROD is finalized to determine if changes are needed for the Selected Remedy.

Additional information about terms in blue text is provided in the *Detailed Administrative Record Reference Table* included before the appendices at the end of this ROD.

During the course of these previous investigations and removal actions, Building 234 [in the Former Building 234 Area], Building 42 [in the Central Shipyard Area], and Huts 1 and 2 [in the North Waterfront Area] were demolished (in addition to several ancillary and miscellaneous structures). The dry docks were demolished and removed from Pier 1 and the Greenport Ferry was removed. In addition, temporary offices were constructed in the Central Shipyard Area (subsequently removed in 2012). Several Navy and USCG construction projects are ongoing at the time of this ROD (Table 2-1). Impacts to the site since the publication of the Proposed Plan will be evaluated after this ROD is finalized. The South Waterfront Area was improved with landscaping (native vegetation) and a walking path.

2.3 COMMUNITY PARTICIPATION

The Navy performs public participation activities in accordance with CERCLA and the NCP throughout the site cleanup process at NAVSTA Newport. The Navy has a comprehensive community relations program for NAVSTA Newport, and community relations activities are conducted in accordance with the NAVSTA Newport Community Involvement Plan. These activities include regular technical and Restoration Advisory Board (RAB) meetings with local officials and the establishment of an online Information Repository for dissemination of information to the community (available through the Web page at http://go.usa.gov/DyNw).

The Navy organized a RAB in 1990 to review and discuss NAVSTA Newport environmental issues with local community officials and concerned citizens. The RAB consists of representatives of the Navy, EPA, and RIDEM and members of the local community. The RAB has met frequently since its inception and now meets bi-monthly. Site 19 – On-Shore Derecktor Shipyard (OU12)investigation activities, results, and associated remedial decisions have been discussed at RAB meetings. Documents and other relevant information relied on in the remedy selection process are available for public review as part of the Administrative Record, located within the online information repository. For additional information about the IRP at NAVSTA Newport, contact Ms. Lisa Rama, Public Affairs Office, 690 Peary Street, NAVSTA Newport, Newport, Rhode Island, 02841 (lisa.rama@navy.mil).

In accordance with Sections 113 and 117 of CERCLA, the Navy provided a public comment period from May 21 to June 20, 2014, for the proposed remedial action described in the Proposed Plan for OU12 at Site 19. A public meeting to present the Proposed Plan was held on May 21, 2014, at the Courtyard Marriott, 9 Commerce Drive, Middletown, Rhode Island. A **public notice** of the meeting and availability of documents was published in the *Newport Daily News* on May 16, 2014. Immediately following the public informational meeting, the Navy held a public hearing to solicit public comments for the record. A transcript of the oral comments received during the public hearing is provided in Appendix E. Three comments were received during the public hearing, and no written comments were received during the 30-day comment period. The Navy's *Responsiveness Summary* is presented in Section 3.0 of this ROD.

2.4 SCOPE AND ROLE OF OPERABLE UNIT

Site 19 – On-Shore Derecktor Shipyard (OU12) is part of a comprehensive environmental investigation and cleanup program currently being performed at NAVSTA Newport under CERCLA authority pursuant to the FFA dated March 23, 1992. Fifteen IRP sites have been identified at NAVSTA Newport. Each site progresses through the cleanup process independently, and for the most part, the Selected Remedy for Site 19 – On-Shore Derecktor Shipyard (OU12) is not expected to have an impact on the strategy or progress of cleanup for the other sites at NAVSTA Newport. Because OU12 is adjacent to OU5 and both are part of Site 19, the OU12 remedy may need to be conducted in coordination with the OU5 remedy. However, other OUs at NAVSTA Newport should be unaffected by the activities at the site and the remedies conducted.

An Initial Assessment Study (IAS), completed in 1983, identified 18 sites where contamination was suspected to pose a threat to human health and the environment (EEI, 1983). This initial list of sites did not include Site 19 as it was not added to the FFA list until 1993. Six of the 18 sites were investigated further in a Confirmation Study (CS) completed in 1986. A Remedial Investigation (RI) completed in 1992 included McAllister Point Landfill (Site 1), Melville North Landfill (Site 2), Old Fire Fighting Training Area (OFFTA) (Site 9), Tank Farm 4 (Site 12), and Tank Farm 5 (Site 13). The McAllister Point Landfill, Melville North Landfill, and Tank Farm 4 had been previously investigated as part of both the IAS and CS, and Tank Farm 5 was investigated during the IAS.

RODs have been signed for the McAllister Point Landfill and OFFTA, the portion of Tank Farm 5 where Tanks 53 and 56 were located, the disposal areas of Tank Farms 4 and 5, the Former Building 32 at Gould Island, and the Naval Undersea Systems Center Disposal Site. The Melville Water Tower was addressed through a non-time-critical removal action (NTCRA). Six additional sites are also being

investigated under the IR Program: Tank Farm 1 (Site 7); Tank Farm 2 (Site 10); Tank Farm 3 (Site 11); Coddington Cove Rubble Fill Area (Site 4); Carr Point Storage Area (Site 22), and Coddington Point Debris Sites (Site 23). Another site, Carr Point Shooting Range, is being investigated as Site 1 under the Munitions Response Program (MRP).

Investigations and removal action results at Site 19 – On-Shore Derecktor Shipyard (OU12) indicate the presence of surface and subsurface soil contamination and the presence of groundwater contamination that poses unacceptable human health risk to future hypothetical future residents (surface soil, subsurface soil, and groundwater) and future industrial workers (groundwater). In addition, a potential release of asbestos and stockpiled soil, sediment, and debris in the Northern Area may constitute a release of contaminants exceeding CERCLA risk standards. Further characterization is required to assess whether changes to the remedy are necessary. Other than the aforementioned removal actions, there have been no previous remedial actions conducted in response to the contamination at Site 19 – On-Shore Derecktor Shipyard (OU12). The remedy documented in this ROD will achieve the Remedial Action Objectives (RAOs) for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12), as listed in Section 2.8. Implementation of this remedy will allow for continued industrial use of the site, which is consistent with current and reasonably anticipated future use and the overall cleanup strategy for NAVSTA Newport of restoring sites to support base operations.

2.5 SITE CHARACTERISTICS

Figure 2-3 presents the conceptual site model (CSM) for Site 19 – On-Shore Derecktor Shipyard (OU12), a graphical interpretation of contaminant sources, contaminant release mechanisms, transport routes, and receptors under current and future land use scenarios. Historical activities at the shipyard have resulted in PAHs, PCBs, metals, and VOCs in soil and/or groundwater at concentrations exceeding acceptable risk levels and/or state regulatory standards. The nature and extent of contamination at the site is described in Section 2.5.2, and the evaluated contaminant exposure pathways and potential human receptors under current and potential future land use scenarios are presented in Section 2.7. The information summarized below is from data and information gathered during the PA, SASE, removal actions, and Data Gaps Investigation.

2.5.1 Physical Characteristics

Site 19 – On-Shore Derecktor Shipyard (OU12) consists of paved and unpaved surfaces used for parking and storage. The USCG stores buoys at the northern portion of the waterfront, and several improvement construction projects are underway in the Northern Area (Fender Pile Replacement Project, Marginal Wharf Project, and Buoy Tender Project) at the time of this ROD. Some of these construction activities potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils have been stockpiled that potentially contaminated the site.

The site is located at the southeastern end of the Narragansett Basin. This basin is a complex mass of sedimentary rocks. The depth to bedrock varies at the site ranging from 4 to 50 feet below ground surface, with shallower depths toward the north and east portions of the site. The bedrock at the site is identified as fissile, grey to black phyllite, which is generally weathered and broken, with trace clay filling in fractures. Portions of the site are known to have been extensively altered by construction activities and emplacement of fill materials (B&R, 1997); however, it is frequently not possible to differentiate between natural soils and fill materials, because much of the fill material is not significantly different from the natural glacial materials that exist at the site. Overburden soils are variably described as sand, silty gravelly sand, weathered phyllite, and silty sand gravel throughout the site. The overburden material has moderate to high permeability (0.5 to 1.7 feet/day) based on hydraulic conductivity slug testing conducted during the 1996 SASE Investigation.

Groundwater throughout the site's shallow unconfined aquifer flows east to west discharging into the bay (Figure 2-3). The groundwater table in the overburden material is usually encountered at 5 to 15 feet below ground surface depending on the location at the site. The water table fluctuates less than 5 feet seasonally. Groundwater is tidally influenced at the site, and is hydraulically connected to the

seawater in Narragansett Bay. Overburden groundwater is expected to discharge through the bulkhead, advanced by hydraulic gradient from the hills east of the site. Bedrock groundwater has not been adequately characterized with respect to probable flow pattern, although it is expected to behave in a similar manner as overburden groundwater.

Other than minor drainage swale features, no natural water bodies occur within the site. The majority of the site is covered by impervious materials such as asphalt and concrete. No buildings remain at the site, but USCG is constructing a new office building in the Northern Area (Buoy Tender Project) at the time of this ROD. Almost 30 percent of the site lies within the 100-year floodplain. Because precipitation cannot readily percolate through paved, compacted, or well-vegetated surfaces, water passes over paved areas and is discharged to Coddington Cove via storm drainage systems.

2.5.2 Conceptual Site Model (CSM)

Figure 2-3 presents the overall interpretive CSM for Site 19 – On-Shore Derecktor Shipyard (OU12), which integrates information regarding the physical characteristics of the site, sources of contamination, contaminant mobility (fate and transport), and potentially exposed populations to identify exposure routes and receptors evaluated in the risk assessment(s). The CSM indicates that chemical contaminants were discharged from historical site activities to the soil and groundwater. There are no ecological receptors (no ecological risk to address). Volatile organic compounds in groundwater can volatilize into soil gas, which may cause vapor intrusion issues.

Some areas of contamination identified during previous inspections were addressed by removal actions (see Table 2-1). Data collected following these actions indicate that there are no remaining specific source areas at the site. However, residual contamination present at the site poses health risk. The source of contamination is inferred from a review of historical shipyard operations and site observations. Shipyard operations conducted by a commercial shipbuilding and refurbishing company, Robert E. Derecktor Shipyards of Rhode Island, Inc. (Derecktor, Inc.) (1979 to 1992) included sand blasting, painting, chemical and waste storage and transfer, and other common shipyard practices. Ship repair, maintenance, and construction operations were concentrated in the Former Building 234 Area (Figure 2-1a). The shipyard had a history of violations of environmental statutes for the improper management and disposal of wastes and contaminants both on land and in the bay. It is believed that the chemicals and wastes produced by these operations are sources of residual contamination.

After publication of the Proposed Plan, a construction project in the Northern Area potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils have been stockpiled that potentially contaminated the site.

Current site usage is military / industrial, except in the South Waterfront Area (now the southern portion of the Central Area) where a limited recreational use exercise path is present (Figure 2-2). Future land use is anticipated to remain military / industrial, with restricted recreational use in the one location. No future residential uses are planned for this area; however, the hypothetical residential scenarios were evaluated for decision-making purposes.

2.5.3 Nature, Extent, Fate and Transport of Contamination

Past operations at the Site 19 – On-Shore Derecktor Shipyard (OU12) were found to have resulted in the release of contaminants to the soil and groundwater at this site. Chemicals of Potential Concern (COPCs) identified in the HHRA screening steps for each subarea are tabulated in Appendix C. The COCs are compiled and discussed in Section 2.7 and Section 2.8. Table 2-2 presents site-wide maximum concentrations and frequency of detection for the COCs.

TABLE 2-2. SUMMARY OF MAXIMUM CONCENTRATIONS OF COCS

CHEMICAL OF CONCERN (COC)	SITE-WIDE SURFACE SOIL		SITE-WIDE SUBSURFACE SOIL		SITE-WIDE GROUNDWATER	
	MAX CONC (MG/KG)	FOD	MAX CONC (MG/KG)	FOD	MAX CONC (µG/L)	FOD
SOIL – RESIDENTIAL LAND USE SCENARIO						
Benzo(a)anthracene	5.74	18 / 37	1.3	20 / 66	--	--
Benzo(a)pyrene	4.92	15 / 36	0.69	21 / 66	--	--
Benzo(b)fluoranthene	7.12	16 / 36	0.91	21 / 66	--	--
Benzo(g,h,i)perylene	2.07	13 / 36	0.09	13 / 62	--	--
Benzo(k)fluoranthene	2.48	12 / 36	0.12	15 / 65	--	--
Chrysene	5.65	17 / 37	1.3	22 / 66	--	--
Dibenzo(a,h)anthracene	0.82	4 / 35	0.04	5 / 59	--	--
Indeno(I,2,3-cd)pyrene	2.07	13 / 36	0.08	11 / 62	--	--
*Total Aroclors (PCBs) **	*0.416*	*5 / 33*	*0.10*	*3 / 33*	--	--
Arsenic	24.4	35 / 37	47.2	108 / 112	--	--
Beryllium	3.5	29 / 35	0.67	66 / 94	--	--
Chromium	130	35 / 37	60.2	110 / 112	--	--
Lead	189	37 /37	75	110 / 112	--	--
Manganese	597	35 / 35	2,450	94 / 94	--	--
SOIL – INDUSTRIAL LAND USE SCENARIO						
Benzo(a)pyrene	4.92	15 / 36	0.69	21 / 66	--	--
Dibenzo(a,h)anthracene	0.82	4 / 35	0.04	5 / 59	--	--
Arsenic	24.4	37 / 37	47.2	108 / 112	--	--
Beryllium	3.5	25 / 35	0.67	66 / 94	--	--
GROUNDWATER – RESIDENTIAL LAND USE SCENARIO						
Trichloroethene (TCE)	--	--	--	--	12.2	11 / 22
Arsenic	--	--	--	--	78.1	16 / 21
Cobalt	--	--	--	--	24.8	9 / 20
Iron	--	--	--	--	65,800	17 / 20
Manganese	--	--	--	--	9,100	20 / 20
Vinyl Chloride **	--	--	--	--	100	3 / 22

Notes:
Max Conc – Maximum concentration FOD – frequency of detection
µg – microgram mg - milligram kg - kilogram L - liter
RIDEM ResDEC – RIDEM Residential Direct Exposure Criteria (DEC) RIDEM IndDEC – RIDEM Industrial Direct Exposure Criteria (DEC)
* Total PCBs is not a COC because the maximum soil concentration (0.416 mg/kg in surface soil and 0.10 mg/kg in subsurface soil) is less than the proposed PRG in the FS (EPA Residential Guidance value of 1 mg/kg [EPA, 1990] would have been the cleanup level). See Table 2-5. Previous PCB soil issues were addressed by removal actions.
** Vinyl chloride is included as a groundwater COC based on data from groundwater samples collected at MW-104 (upgradient well) in 1996. See Table 2-6. Well MW104 is located at the upgradient perimeter of the site, and VOC contamination in this well and its upgradient source (to be determined) will be investigated separately from OU12. The Selected Remedy already includes LUCs with protective measures to address potential vapor intrusion risks site-wide due to TCE detections in the northern part of the site.

Soils with metals and PAHs exceeding RIDEM criteria and Newport/site-specific background levels are in various, but distinct, areas in the Central Area. Exceedances of RIDEM criteria and background in soil are shown on Figure 2-4 and are discussed and presented in detail in the FS (Tetra Tech, 2014). Since the FS, additional soil sampling was conducted in June 2014 in order to reevaluate previous soil leachability criteria exceedances based on historical naphthalene and TCLP lead data. The June 2014 naphthalene and SPLP lead results indicate no leachability criteria exceedances (see Appendix F). Also, historical groundwater data and June 2014 groundwater data provide empirical evidence that (i) lead has not leached from soil to groundwater at levels to cause groundwater concentrations above the RIDEM

GA Groundwater Objective of 15 µg/L, and (ii) naphthalene has not leached from soil to the groundwater (RIDEM GA Groundwater Objective is 100 µg/L) (see Appendix F).

Since releases or potential releases of contaminants in the Northern Area were identified after the issuance of the Proposed Plan, PRD soil sampling will be required to determine whether there is a need to modify the Selected Remedy.

A low-concentration trichloroethene (TCE) plume is in the shallow aquifer throughout the Northern Area. The maximum detected TCE concentration was 12 µg/L in 2011, down from the maximum detection of 33 µg/L in 1996. The maximum detected TCE concentration decreased to 9 µg/L in June 2014 (see Appendix F), but this may not appropriately represent the maximum TCE concentration currently in site groundwater. A wide area of dissolved mixed metals above cleanup levels extends throughout the Northern and Central Areas.

Soil concentrations exceeded RIDEM TPH criteria in the surface soil at two locations (TP12 and TP16) and the subsurface vadose zone at one location (TP26). Investigations and actions associated with vicinity UST and petroleum-related projects are discussed in detail in the FS (Tetra Tech, 2014). The Navy and RIDEM agreed that petroleum issues (as indicated by TPH concentrations) at the site will be addressed under RIDEM's UST Program, but may occur concurrently with the CERCLA remediation.

Elevated volatile concentrations in soil gas correlate with the TCE groundwater plume in the Northern Area. Potential vapor intrusion issues in the Central Area are based on modeling results using VOC groundwater concentrations in wells MW08 (2011) and MW104 (1996). Chlorinated VOCs detected previously in 1996 in MW104 are thought to be attributable to an upgradient source to be investigated separately (Building 7 – Power Plant, former UST site).

Exceedances of cleanup levels (risk-based and/or ARAR-based; see Section 2.8) in soil are indicated on Figure 2-5. Exceedances of groundwater cleanup levels are indicated on Figure 2-6.

2.6 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

NAVSTA Newport is an active military training facility and is expected to remain active for the foreseeable future. Forty-two Naval and defense commands currently operate at NAVSTA Newport, which is one of the Navy's primary sites for training and educating officers, officer candidates, senior enlisted personnel, and midshipman candidates, and which also is used for conducting advanced undersea warfare and development systems activities. Tenant commands include the NUWC, Naval Warfare College, SWOS, Navy Warfare Development Command, Officer Training Command, Center for Service Support, Naval Academy Preparatory School, and Senior Enlisted Academy.

The NAVSTA Newport area has been used by the U.S. Navy since the Civil War era. Activities have increased during war times and later decreased as Naval forces were reorganized. Between 1900 and the mid-1970s, the facility was also used as a refueling depot. The Shore Establishment Realignment Program reorganization in April 1973 resulted in reductions in personnel, and the Navy excessed a large portion of the acreage of the original facility. NETC was subsequently established. In the mid-1990s, several new laboratories at the NUWC were constructed to provide research, development, testing, evaluation, engineering, and fleet support for submarines and underwater systems. In October 1998, NAVSTA Newport was established as the primary host command, taking over base operating support responsibilities from NETC.

The Former Derecktor Shipyard is part of the NAVSTA Newport facility located in Middletown and Newport, Rhode Island. Site 19 – On-Shore Derecktor Shipyard (OU12) is bounded to the east and south by Defense Highway, to the north by Pier 2, and to the west by Narragansett Bay (including Site 19 – Off-Shore Derecktor Shipyard [OU5]). The site was used in the past as home to the Commander Cruiser-Destroyer Force Atlantic and was the Newport, Rhode Island, location of Derecktor, Inc., a tenant which utilized the space as an industrial port to construct and maintain ships. Buildings and structures

associated with ship maintenance and construction have since been removed. A USCG construction project to restore the bulkhead between Piers 1 and 2 and construct a new office building in the Northern Area is ongoing, and when complete, this area will serve as moorage for USCG buoy tenders.

Reasonable potential future land uses include continued industrial/commercial use, improvements and construction, and limited development. In addition, a limited area in the south-most portion of the Central Area will continue to be used for a recreation path. Restricted recreational use will be maintained for the short length of paved path, which is surrounded by surface soil below cleanup levels (effective cover).There are no plans for residential development of the site. However, hypothetical future residential use of the site was evaluated in the HHRA to determine if restrictions would be necessary (see Section 2.7.1). Groundwater underlying the site and facility is not used for drinking water. Drinking water for NAVSTA Newport and most of the residents of Newport, Portsmouth, and Middletown is supplied and managed by the Newport Water Department, which receives its water supply from a series of seven surface water reservoirs located on Aquidneck Island and two surface water reservoirs on the mainland. Site 19 – On-Shore Derecktor Shipyard (OU12) is not within the watershed of any of the area supply reservoirs. Private wells located within 3 miles of NAVSTA Newport provide drinking water to approximately 4,800 of the estimated 10,000 people that live within 3 miles of NAVSTA Newport (Tetra Tech, 2004). Due to the near-coastal location, OU12 groundwater is downgradient of any potential or existing water sources.

Groundwater flows to the site from areas hydraulically upgradient (east) of the site. RIDEM has established a state groundwater classification system to protect its groundwater resources. Site 19 – On-Shore Derecktor Shipyard (OU12) is in RIDEM's GB Aquifer groundwater classification area (typically located at highly urbanized areas or in the vicinity of disposal sites for solid waste, hazardous waste, or sewerage sludge); however, this classification is not recognized by EPA, because Rhode Island does not have an EPA-approved Comprehensive State Groundwater Protection Program (CSGWPP). Therefore, the groundwater is federally classified as a drinking water source and, thus, the GA groundwater classification applies to the CERCLA remedial action. Groundwater classified as GA is presumed suitable for public or private drinking water use without treatment (RIDEM, 2010). In addition, per EPA groundwater remediation guidance, in states without an EPA-approved CSGWPP, such as Rhode Island, CERCLA groundwater remediation must meet federal drinking water standards (i.e., Maximum Contaminant Levels [MCLs] and non-zero Maximum Contaminant Level Goals [MCLGs]) and risk-based standards, or more stringent state groundwater standards, unless the water is non-potable.

Accordingly, current site use is industrial, and this use is expected to continue for the foreseeable future. Following placement and establishment of covers and the new monitoring well network, the site will be restricted with LUCs to prevent non-industrial development and usage. Additionally, the LUCs will include institutional controls (ICs) to prevent disturbance of the components of the remedy, evaluate [and/or mitigate] vapor intrusion risk should future industrial development involve the construction of buildings before the groundwater cleanup levels for VOCs (e.g., TCE and its daughter products) are met, and to restrict aquifer usage until groundwater cleanup levels are met. The portion of the exercise path through the Southern Area into the Central Area will be maintained for restricted recreational usage.

Short-term protective measures will be implemented to restrict exposure to ACM in debris/soil and potentially contaminated sediment until they are removed from the site. These measures will include containment of the existing stockpiles and management of erosion and storm water runoff. Additionally, short-term LUCs, in the form of a Base Instruction, have been implemented to restrict exposure to the site soils that may have been impacted from the excavation/demolition and stockpiling of these soils/debris and sediments until the results of the PRD soil sampling determines if remedial action of these soils is necessary. These controls include maintenance of the existing fencing to prevent uncontrolled access and the restriction of unauthorized excavation of the soils in the Northern Area. If asbestos is determined to be mixed with soil at unacceptable levels based on PRD sampling results and risk evaluation following the finalization of the ROD, then a soil remedial action will be extended to the Northern Area, and the corresponding LUCs remedy component will be amended to prevent unacceptable exposure to ACM remaining after implementation of the remedial action.

2.7 SUMMARY OF SITE RISKS

Human health risks were calculated for **potential receptors** based on unrestricted use of the site for decision-making purposes, as indicated in the *Human Health Conceptual Site Model – Exposure Pathway Analysis* figure, Figure 2-7, and as shown on the graphic conceptual site model (CSM) figure, Figure 2-3. The risks were calculated for soil and groundwater individually for each of the five investigation-subareas (Figure 2-2) (Tetra Tech, 2013 and 2014) (see Appendix C): North Waterfront Area (11.4 acres); Central Shipyard Area (9.1 acres); PCB Removal Area (0.5 acre); Former Building 234 Area (7.3 acres); and South Waterfront Area (6.4 acres). Ecological risks were not evaluated because the qualitative ecological assessment in the B&R (1997) SASE Report determined the site contains limited areas of ecological value (e.g., no habitat; see Section 2.7.2).

The baseline risk assessment estimates the site risks if no action were to be taken. The risk assessment results provide the basis for taking action and identify the contaminants and exposure pathways that need to be addressed by the remedial action. The results of the baseline HHRA can be found in the SASE Addendum Report (Tetra Tech, 2013).

2.7.1 Human Health Risk

The quantitative HHRA was conducted using chemical concentrations detected in soil, groundwater, and soil gas (Tetra Tech, 2013). Risks were re-evaluated by the project team during FS development to address various issues raised since that time. Risks were evaluated for exposure to soil and groundwater COCs, and estimated for hypothetical exposure to modeled future indoor air concentrations. A supplemental evaluation of site risks may be required for the Northern Area based on the PRD sampling results for asbestos and other site contaminants, because exposure to asbestos and sediment contaminants were not evaluated in the HHRA. Key steps in the risk assessment process included identification of COPCs, exposure assessment, toxicity assessment, and risk characterization. Tables summarizing data used in the HHRA and the associated results are presented in Appendix C.

2.7.1.1 Identification of COPCs

The available validated data collected during the field investigations, excluding data associated with soils removed during previous removal actions (current conditions), were used to identify COPCs for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12). Both federal screening values and federal and state criteria were used for COPC selection. Federal values included EPA Regional Screening Levels (RSLs), MCLs, and EPA Groundwater Screening Levels for Evaluating the Vapor Intrusion into Indoor Air from Groundwater and Soils. State criteria included RIDEM Residential and Industrial DECs and GA Leachability Criteria. **COPCs were identified** for soil and groundwater during the HHRA. Preliminary COPCs were identified for potential future indoor air vapor.

2.7.1.2 Exposure Assessment

During the **exposure assessment** step of the HHRA, current and potential future exposure pathways through which humans might come into contact with the COPCs identified in the previous step were evaluated. The results of the exposure assessment were used to refine the CSM. Exposure scenarios for the HHRA were selected on the basis of the current and future anticipated uses of the site, in order to address all of the key human exposure media, and on discussions with EPA. The exposure scenarios in the HHRA are tabulated below in Table 2-3 and shown on Figure 2-7.

TABLE 2-3. RECEPTORS AND EXPOSURE ROUTES EVALUATED IN HHRA

RECEPTOR	EXPOSURE ROUTE
Current Industrial Worker	➢ Surface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors.
Future Industrial Worker	➢ Surface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Subsurface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Groundwater incidental ingestion and dermal contact; inhalation of vapors. ➢ Indoor air vapor inhalation.
Current/Future Construction Worker	➢ Surface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Subsurface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Groundwater incidental ingestion and dermal contact; inhalation of vapors.
Current Trespasser (Adolescent and Adult)	➢ Surface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors.
Future Trespasser (Adolescent and Adult)	➢ Surface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Subsurface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors.
Future Resident (Child and Adult)	➢ Surface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Subsurface Soil incidental ingestion and dermal contact; inhalation of airborne particulates and vapors. ➢ Groundwater incidental ingestion and dermal contact; inhalation of droplets and vapors. ➢ Indoor air vapor inhalation.

2.7.1.3 Toxicity Assessment

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

The toxicity values used to evaluate non-carcinogenic health effects for ingestion and dermal exposures are called reference doses (RfDs), and for inhalation exposures are called reference concentrations (RfCs). The RfD and RfC are estimates of daily exposure levels for the human population that are likely to be without appreciable risk during a portion or all of a lifetime. They are based on a review of available animal and/or human toxicity data, with adjustments for various uncertainties associated with the data. Carcinogenic effects are quantified using cancer slope factors (CSFs) for ingestion and dermal exposures, and using inhalation unit risks (IURs) for inhalation exposure. CSFs and IURs are plausible upper-bound estimates of the probability of development of cancer per unit intake of chemical over a lifetime. The potential carcinogenic effects are calculated using available dose-response data from human and/or animal studies. The cancer and non-cancer toxicity values for the constituents selected as COPCs during the HHRA are presented in Appendix C.

2.7.1.4 Risk Characterization

During the risk characterization, the outputs of the exposure and toxicity assessments are combined to characterize the baseline risk (cancer risks and non-cancer hazards) at the site if no action was taken to address the contamination. Potential **cancer risks and non-cancer hazards** were calculated based on

reasonable maximum exposure (RME) assumptions. The RME scenario assumes the maximum level of human exposure that could reasonably be expected to occur.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime cancer risk is calculated from the following equations:

For dermal and oral exposures, Cancer Risk = (Estimated Exposure Intake) × (CSF)

For inhalation exposure, Cancer Risk = (Exposure Concentration) × (IUR × 1,000 µg/mg)

These calculated risks are probabilities that are usually expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk, or incremental lifetime cancer risk (ILCR), of 1×10^{-6} under an RME scenario indicates that an individual experiencing the RME estimate has an "excess lifetime cancer risk" because it would be in addition to the risks of contracting cancer that individuals face from other causes. EPA's generally acceptable risk range for site-related exposures to COCs is 1×10^{-4} (1 in 10,000) to 1×10^{-6} (1 in 1,000,000). Risks within this range are subject to site-specific risk management decisions.

The potential for non-carcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., a lifetime) to an RfD derived for a similar exposure period. An RfD represents a level to which an individual may be exposed that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a Hazard Quotient (HQ). An HQ less than 1 indicates that a receptor's dose of a single contaminant is less than the RfD and that toxic non-carcinogenic effects from that chemical are unlikely. The hazard index (HI) is generated by adding the HQs for all chemicals that affect the same target organ (e.g., liver) or that act through the same mechanism of action within a medium or across all media to which a given individual may be reasonably exposed. An HI of 1 or less indicates that, based on the sum of all HQs from different contaminants and exposure routes, toxic non-carcinogenic effects from all contaminants are unlikely. An HI greater than 1 indicates that site-related exposures may present a risk to human health. Non-cancer HQs are calculated as follows:

For dermal and oral exposures, Non-Cancer Risk (i.e., HQ) = (Estimated Exposure Intake) / (RfD)

For inhalation exposure, Non-Cancer Risk (i.e., HQ) = (Exposure Concentration) × (RfC)

Table 2-4 provides RME cancer risk and non-cancer effects estimates for the significant receptors and routes of exposure developed by taking into account various conservative assumptions about the frequency and duration of exposure for each receptor and also the toxicity of the COPCs. COPCs associated with carcinogenic risk include arsenic and PAHs. Total cancer risk estimates for all applicable soil exposure scenarios range from less than 1×10^{-4} for all receptors to a maximum of 5×10^{-4} for child and adult residents. The risk levels indicate that if no soil cleanup action is taken, the increased probabilities of developing cancer as a result of site-related soil exposure would be as high as 5 in 10,000. Total cancer risk estimates for all applicable groundwater exposure scenarios range from less than 1×10^{-4} for all receptors to a maximum of 2×10^{-3} for the lifelong resident. The maximum cancer risk for future industrial worker exposure to site groundwater is 2×10^{-4} (2 in 10,000). The risk levels indicate that if no groundwater cleanup action is taken, the increased probabilities of developing cancer as a result of site-related groundwater lifelong exposure would be as high as 2 in 1,000.

Table 2-4 also provides RME cancer risk and non-cancer effects estimated for hypothetical vapor intrusion exposure in the North Waterfront Area and in the Former Building 234 Area using a semi-quantitative screening risk evaluation. Risks and effects/hazards were estimated using groundwater data (maximum of 1996 and 2011 data sets) and soil gas data (2011) with the EPA Vapor Intrusion Screening Level (VISL) Calculator modeling tool. The risk estimates in the HHRA are conservative because of dated analytical data and use of non-site-specific, default model parameters for hypothetical buildings and exposures (Tetra Tech, 2013). In the North Waterfront Area, total cancer risk estimates for the vapor intrusion exposure routes were less than 1×10^{-4} for both the commercial and residential scenarios. In the

Former Building 234 Area, total cancer risk estimates for the vapor intrusion exposure routes were less than 1×10^{-4} for commercial scenario and 6×10^{-4} for the residential scenario.

Total HIs for soil exposure routes range from 0.01 for adult trespassers to 4 for the child resident (HQs are less than 1 for same target organs for the HI of 4) as shown in Table 2-4. Total HIs for groundwater exposure routes range from 0.06 for the construction worker to 56 for the child resident (same location as highest ILCR of 6×10^{-4} for groundwater). The maximum non-cancer risk with industrial use is and HI of 4 for future industrial worker exposure to groundwater. The non-cancer risks and hazards determined associated with vapor intrusion were estimated with the EPA VISL Calculator modeling tool. In the North Waterfront Area, RME total HIs for the vapor intrusion exposure routes were less than 1 for the industrial scenario, but exceeded 1 for the residential scenario (HI of 5 using groundwater data and HI of 6 using soil gas data with the VISL Calculator). In the Former Building 234 Area, total HIs for the vapor intrusion exposure routes range from 0.4 for the industrial worker to 2 for the resident (using groundwater data, only).

TABLE 2-4. RECEPTORS AND CALCULATED RISK EXCEEDANCES IN THE HHRA

RECEPTOR	MEDIUM	TOTAL CANCER RISK	TOTAL NON-CANCER RISK
NORTH WATERFRONT AREA			
Current Adolescent Trespasser	Surface Soil	$< 1x10^{-4}$	0.02
Current Adult Trespasser	Surface Soil	$< 1x10^{-4}$	0.01
Current Lifelong Trespasser	Surface Soil	$< 1x10^{-4}$	NA
Current Industrial Worker	Surface Soil	$< 1x10^{-4}$	0.06
Future Adolescent Trespasser	Surface Soil	$< 1x10^{-4}$	0.01
	Subsurface Soil	$< 1x10^{-4}$	0.02
Future Adult Trespasser	Surface Soils	$< 1x10^{-4}$	0.01
	Subsurface Soil	$< 1x10^{-4}$	0.01
Future Lifelong Trespasser	Surface Soil	$< 1x10^{-4}$	NA
	Subsurface Soil	$< 1x10^{-4}$	NA
Current/Future Construction Worker	Surface Soil	$< 1x10^{-4}$	0.09
	Subsurface Soil	$< 1x10^{-4}$	0.2
	Groundwater	$< 1x10^{-4}$	0.06
Future Industrial Worker	Surface Soil	$< 1x10^{-4}$	0.05
	Subsurface Soil	$< 1x10^{-4}$	0.07
	Groundwater	$< 1x10^{-4}$	0.2
	Indoor Air Vapor **	$< 1x10^{-4}$ (soil gas data) $< 1x10^{-4}$ (groundwater data)	1 (soil gas data) 1 (groundwater data)
Hypothetical Child Resident	Surface Soil	$< 1x10^{-4}$	0.7
	Subsurface Soil	$< 1x10^{-4}$	0.90
	Groundwater	$1x10^{-4}$	**5**
Hypothetical Adult Resident	Surface Soil	$< 1x10^{-4}$	0.08
	Subsurface Soil	$< 1x10^{-4}$	0.09
	Groundwater	$< 1x10^{-4}$	**4**

TABLE 2-4. RECEPTORS AND CALCULATED RISK EXCEEDANCES IN THE HHRA			
RECEPTOR	MEDIUM	TOTAL CANCER RISK	TOTAL NON-CANCER RISK
Hypothetical Lifelong Resident	Surface Soil	< $1x10^{-4}$	NA
	Subsurface Soil	< $1x10^{-4}$	NA
	Groundwater	$1x10^{-4}$	NA
	Indoor Air Vapor **	< $1x10^{-4}$ (soil gas data) < $1x10^{-4}$ (groundwater data)	**6** (soil gas data) **5** (groundwater data)
CENTRAL SHIPYARD AREA			
Current Adolescent Trespasser	Surface Soil	< $1x10^{-4}$	0.06
Current Adult Trespasser	Surface Soil	< $1x10^{-4}$	0.04
Current Lifelong Trespasser	Surface Soil	< $1x10^{-4}$	NA
Current Industrial Worker	Surface Soil	< $1x10^{-4}$	0.2
Future Adolescent Trespasser	Surface Soil	< $1x10^{-4}$	0.06
	Subsurface Soil	< $1x10^{-4}$	0.05
Future Adult Trespasser	Surface Soils	< $1x10^{-4}$	0.04
	Subsurface Soil	< $1x10^{-4}$	0.03
Future Lifelong Trespasser	Surface Soil	< $1x10^{-4}$	NA
	Subsurface Soil	< $1x10^{-4}$	NA
Current/Future Construction Worker	Surface Soil	< $1x10^{-4}$	1
	Subsurface Soil	< $1x10^{-4}$	0.5
	Groundwater	< $1x10^{-4}$	**2***
Future Industrial Worker	Surface Soil	< $1x10^{-4}$	0.2
	Subsurface Soil	< $1x10^{-4}$	0.1
	Groundwater	**$2x10^{-4}$**	**4**
Hypothetical Child Resident	Surface Soil	$1x10^{-4}$	**3***
	Subsurface Soil	< $1x10^{-4}$	**2***
	Groundwater	**$6x10^{-4}$**	**56**
Hypothetical Adult Resident	Surface Soil	< $1x10^{-4}$	0.3
	Subsurface Soil	< $1x10^{-4}$	0.2
	Groundwater	**$1x10^{-3}$**	**24**
Hypothetical Lifelong Resident	Surface Soil	$1x10^{-4}$	NA
	Subsurface Soil	$1x10^{-4}$	NA
	Groundwater	**$2x10^{-3}$**	NA
PCB REMOVAL AREA			
Current Adolescent Trespasser	Surface Soil	< $1x10^{-4}$	0.07
Current Adult Trespasser	Surface Soil	< $1x10^{-4}$	0.04
Current Lifelong Trespasser	Surface Soil	< $1x10^{-4}$	NA
Current Industrial Worker	Surface Soil	< $1x10^{-4}$	0.2
Future Adolescent Trespasser	Surface Soil	< $1x10^{-4}$	0.07
	Subsurface Soil	< $1x10^{-4}$	0.09
Future Adult Trespasser	Surface Soil	< $1x10^{-4}$	0.04
	Subsurface Soil	< $1x10^{-4}$	0.06
Future Lifelong Trespasser	Surface Soil	< $1x10^{-4}$	NA
	Subsurface Soil	< $1x10^{-4}$	NA
Current/Future Construction Worker	Surface Soil	< $1x10^{-4}$	1

TABLE 2-4. RECEPTORS AND CALCULATED RISK EXCEEDANCES IN THE HHRA

RECEPTOR	MEDIUM	TOTAL CANCER RISK	TOTAL NON-CANCER RISK
	Subsurface Soil	< $1x10^{-4}$	**2***
Future Industrial Worker	Surface Soil	< $1x10^{-4}$	0.2
	Subsurface Soil	< $1x10^{-4}$	0.3
Hypothetical Child Resident	Surface Soil	**$5x10^{-4}$**	**3***
	Subsurface Soil	$1x10^{-4}$	**4**
Hypothetical Adult Resident	Surface Soil	< $1x10^{-4}$	0.3
	Subsurface Soil	< $1x10^{-4}$	0.4
Hypothetical Lifelong Resident	Surface Soil	**$5x10^{-4}$**	NA
	Subsurface Soil	**$2x10^{-4}$**	NA
FORMER BUILDING 234 AREA			
Current Adolescent Trespasser	Surface Soil	< $1x10^{-4}$	0.08
Current Adult Trespasser	Surface Soil	< $1x10^{-4}$	0.05
Current Lifelong Trespasser	Surface Soil	< $1x10^{-4}$	NA
Current Industrial Worker	Surface Soil	< $1x10^{-4}$	0.2
Future Adolescent Trespasser	Surface Soil	< $1x10^{-4}$	0.07
	Subsurface Soil	< $1x10^{-4}$	0.07
Future Adult Trespasser	Surface Soil	< $1x10^{-4}$	0.05
	Subsurface Soil	< $1x10^{-4}$	0.04
Future Lifelong Trespasser	Surface Soil	< $1x10^{-4}$	NA
	Subsurface Soil	< $1x10^{-4}$	NA
Current/Future Construction Worker	Surface Soil	< $1x10^{-4}$	1
	Subsurface Soil	< $1x10^{-4}$	**2***
	Groundwater	< $1x10^{-4}$	0.1
Future Industrial Worker	Surface Soil	< $1x10^{-4}$	0.2
	Subsurface Soil	< $1x10^{-4}$	0.2
	Groundwater	< $1x10^{-4}$	0.2
	Indoor Air Vapor **	< $1x10^{-4}$ (groundwater data)	0.4 (groundwater data)
Hypothetical Child Resident	Surface Soil	**$3x10^{-4}$**	**3***
	Subsurface Soil	$1x10^{-4}$	**3***
	Groundwater	< $1x10^{-4}$	**4**
Hypothetical Adult Resident	Surface Soil	< $1x10^{-4}$	0.3
	Subsurface Soil	< $1x10^{-4}$	0.3
	Groundwater	< $1x10^{-4}$	**2***
Hypothetical Lifelong Resident	Surface Soil	**$4x10^{-4}$**	NA
	Subsurface Soil	$1x10^{-4}$	NA
	Groundwater	< $1x10^{-4}$	NA
	Indoor Air Vapor **	**$6x10^{-4}$** (groundwater data)	**2** (groundwater data)
SOUTH WATERFRONT AREA			
Future Adolescent Trespasser	Subsurface Soil	< $1x10^{-4}$	0.07
Future Adult Trespasser	Subsurface Soil	< $1x10^{-4}$	0.05
Future Lifelong Trespasser	Subsurface Soil	< $1x10^{-4}$	NA
Current/Future Construction Worker	Subsurface Soil	< $1x10^{-4}$	0.8
Future Industrial Worker	Subsurface Soil	< $1x10^{-4}$	0.3

TABLE 2-4. RECEPTORS AND CALCULATED RISK EXCEEDANCES IN THE HHRA			
RECEPTOR	MEDIUM	TOTAL CANCER RISK	TOTAL NON-CANCER RISK
Hypothetical Child Resident	Subsurface Soil	$1x10^{-4}$	**3***
Hypothetical Adult Resident	Subsurface Soil	$< 1x10^{-4}$	0.3
Hypothetical Lifelong Resident	Subsurface Soil	$1x10^{-4}$	NA

Notes:
Bolded values exceed EPA target risk range or target hazard (cancer risk of 1×10^{-4} and non-cancer HI of 1).
* All target organ HIs are less than 1; therefore, no unacceptable non-cancer risk.
NA – Not applicable
** Indoor Air Vapor risk estimates are qualified as conservative because of dated analytical data and use of non-site-specific, default EPA VISL Calculator model parameters for hypothetical buildings / exposures. Risks estimated using groundwater data (maximum of 1996 and 2011 data sets) for both the North Waterfront Area and the Former Building 234 Area. Risks also estimated using 2011 soil gas data in the North Waterfront Area (risk estimates based on soil gas data are for chlorinated VOCs).

2.7.1.5 Summary of Human Health Risk

No unacceptable risks were identified based on the CERCLA risk assessment for industrial workers exposed to surface or subsurface soil across all of Site 19 – On Shore Derecktor Shipyard. Unacceptable cancer or non-cancer CERCLA risks were associated with the following exposure scenarios:

- Exposure of hypothetical residential receptor to carcinogenic PAHs and metals in soil in the Central Area (Former Building 234 Area and PCB Removal Area subareas).
- Exposure of future industrial workers to arsenic and manganese in site-wide groundwater.
- Exposure of future residents to TCE, arsenic, cobalt, iron, and manganese in site-wide groundwater.
- Exposure of future industrial workers or residents from potential vapor intrusion from groundwater contaminated with TCE and vinyl chloride (from an upgradient source).

Lead concentrations did not exceed screening levels in Step 1, so blood lead modeling was not performed. Potential risks from asbestos and other contaminants from recent construction activities in the Northern Area may need to be assessed.

The basis for the vapor intrusion screening risk evaluation was the use of maximum detected concentrations of contaminants in soil gas and groundwater, default exposure assumptions for RME residential and industrial exposures, and conservative attenuation factors (0.1 for soil gas to indoor air and 0.001 for groundwater to indoor air). It is evident that risks associated with vapor intrusion should be less than what was predicted in this evaluation. Based on data collected at many Navy industrial buildings, soil gas to indoor air attenuation factors typically range between 0.001 and 0.0001, thus reducing the risks associated with soil gas by a factor of more than 100. This would clearly reduce residential risks at North Waterfront Area to less than EPA's target risk range and target HI of 1. Nonetheless, to ensure protection of human health the vapor intrusion pathway will be considered.

2.7.2 Ecological Risk

The qualitative ecological assessment in the B&R (1997) SASE Report determined the site contains limited areas of ecological value (i.e., no habitat, significantly limiting the assemblage of wildlife species that may utilize the site for cover, foraging, and/or nesting/breeding areas). The report concluded that the overall likelihood of relevant ecological exposure and risk associated with the site is expected to be minimal, and conducting further ecological evaluations is not warranted. Therefore, there is no unacceptable ecological risk associated with Site 19 – On-Shore Derecktor Shipyard (OU12) to be addressed by the remedy.

2.7.3 Basis for Action

Unacceptable risks and state criteria exceedances were identified in soil and groundwater at Site 19 - On-Shore Derecktor Shipyard (OU12), including unacceptable cancer and non-cancer risk associated with exposure to PAHs and metals in soil, VOCs and metals in groundwater, and potentially VOCs by vapor intrusion from groundwater and soil gas. Potential risks may be posed by asbestos and other contaminants in the Northern Area. The results of the PRD soil sampling will determine if remedial action of these soils is necessary. Because unacceptable risks were identified under current and/or future use, the response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. In addition, state criteria exceedances will be addressed by the response action.

2.8 REMEDIAL ACTION OBJECTIVES (RAOS)

RAOs are medium-specific goals that define the objective of conducting remedial actions to protect human health and the environment. RAOs specify the COCs, potential exposure routes and receptors, and acceptable concentrations (i.e., cleanup levels) for a site and provide a general description of what the cleanup will accomplish. RAOs are developed to ensure compliance with ARARs and typically serve as the design basis for the remedial alternatives (see Section 2.9).

Based on the potential pathways, receptors of concern, and current and potential future land use scenarios, the **RAOs** for soil and groundwater at Site 19 – On-Shore Derecktor Shipyard (OU12) are as follows:

Central Area

- Prevent the incidental ingestion of and uncontrolled direct contact with surface and subsurface soil containing COCs that exceed the respective human health cleanup goals for residential and industrial exposure.
- Prevent future migration of soil COCs to groundwater and surface water at levels that cause unacceptable risk.

Site-Wide

- Restore groundwater quality for the COCs to its beneficial reuse.
- Prevent residential and industrial exposure to site groundwater until groundwater cleanup goals have been achieved.
- Prevent residential and industrial exposure to vapors resulting from subsurface contaminants at levels that cause unacceptable risk.

If asbestos is determined to be mixed with soil at unacceptable levels based on future sampling and risk evaluation, then an RAO will be added to the ROD with approval by EPA and RIDEM, in accordance with CERCLA and the FFA, using an additional public notification and ROD revision, or Explanation of Significant Differences (ESD) as appropriate, to prevent inhalation exposure to ACM debris/soil at unacceptable levels (to be determined).

There are no ecological receptors based on the lack of habitat at the site (B&R, 1997). Therefore, no ecological risks need to be addressed at the site.

For human receptors, cancer risks greater than 1×10^{-4} and/or non-cancer HIs greater than 1 were used as thresholds for each exposure pathway and land use scenario. Chemicals were not considered to be significant contributors to risk if their individual carcinogenic risk contribution was less than 1×10^{-6} or their non-cancer (target organ- / critical effect-specific-) HQ was less than 1.

Chemicals associated with unacceptable human health risk (ILCRs greater than 1×10^{-4} or HIs greater than 1) and/or federal or state criteria exceedance were identified as **COCs** that require remediation

(Table 2-5 [soil] and Table 2-6 [groundwater]). Acceptable concentrations based on risk were calculated to meet an ILCR of 1×10^{-6} and an HI of 1 for carcinogens and non-carcinogens, respectively. These calculated concentrations were identified as candidate risk-based PRGs in the FS (Tetra Tech, 2014) (see Appendix C). In addition, COCs were identified by comparison to federal MCLs, EPA health advisories, and RIDEM Direct Exposure Criteria (DEC). The **PRGs** were developed during the FS as target cleanup goals for remedial actions that, if met, would result in acceptable COC concentrations in the media of concern and thereby mitigate risks to human health and the environment and/or result in concentrations below state criteria (see Appendix C).

The recommended PRGs developed and presented in the FS have been retained as **cleanup levels** in this ROD. Cleanup levels for Site 19 - On-Shore Derecktor Shipyard (OU12) were selected for active remediation to support continued industrial use of the site. Table 2-5 and Table 2-6 (and Appendix C) summarize the COCs and respective cleanup levels selected for remediation of soil and groundwater, respectively. Exceedances of cleanup levels (risk-based and/or ARAR-based; see Section 2.8) in soil are indicated on Figure 2-5. Exceedances of groundwater cleanup levels are indicated on Figure 2-6.

TABLE 2-5. CLEANUP LEVELS FOR SOIL (CENTRAL AREA)

CHEMICAL OF CONCERN (COC)	SURFACE SOIL CLEANUP LEVEL (mg/kg)	BASIS OF SELECTION	SUBSURFACE SOIL CLEANUP LEVEL (mg/kg)	BASIS FOR SELECTION
RESIDENTIAL SCENARIO				
Benzo(a)anthracene	0.15	TCR = 10^{-6}	0.15	TCR = 10^{-6}
Benzo(a)pyrene	0.015	TCR = 10^{-6}	0.015	TCR = 10^{-6}
Benzo(b)fluoranthene	0.15	TCR = 10^{-6}	0.15	TCR = 10^{-6}
Benzo(g,h,i)perylene	0.8	RIDEM ResDEC	--	--
Benzo(k)fluoranthene	0.9	RIDEM ResDEC	--	--
Chrysene	0.4	RIDEM ResDEC	0.4	RIDEM ResDEC
Dibenzo(a,h)anthracene	0.015	TCR = 10^{-6}	0.015	TCR = 10^{-6}
Indeno(I,2,3-cd)pyrene	0.15	TCR = 10^{-6}	--	--
Total Aroclors (PCBs) *	-- *	-- *	-- *	-- *
Arsenic	13	Background	20	Background
Beryllium	1.5	RIDEM ResDEC	--	--
Chromium	16	Background	18	Background
Lead	150	RIDEM ResDEC	--	--
Manganese	390	RIDEM ResDEC	1,037	Background
INDUSTRIAL SCENARIO				
Benzo(a)pyrene	0.8	RIDEM IndDEC	--	--
Dibenzo(a,h)anthracene	0.8	RIDEM IndDEC	--	--
Arsenic	13	Background	20	Background
Beryllium	1.5	RIDEM IndDEC	--	--

Notes
TCR – Target Cancer Risk Background – Newport / site-specific background value
RIDEM ResDEC – RIDEM Residential Direct Exposure Criteria (DEC) RIDEM IndDEC – RIDEM Industrial Direct Exposure Criteria (DEC)
* No cleanup level selected for Total PCBs because the maximum soil concentration (0.416 mg/kg in surface soil and 0.10 mg/kg in subsurface soil) was less than the proposed PRG in the FS (EPA Residential Guidance value of 1 mg/kg [EPA, 1990]). Therefore no action necessary for this COC (PCBs) in surface or subsurface soils. Previous PCB soil issues were addressed by removal actions.

TABLE 2-6. CLEANUP LEVELS FOR GROUNDWATER (SITE-WIDE)		
CHEMICAL OF CONCERN (COC)	GROUNDWATER CLEANUP LEVEL (µG/L)	BASIS FOR SELECTION
RESIDENTIAL SCENARIO		
Trichloroethene (TCE)	5	EPA MCL
Vinyl Chloride *	2	EPA MCL
Arsenic	10	EPA MCL
Cobalt	4.7	Non-cancer risk-based value for child resident
Iron	11,000	Non-cancer risk-based value for child resident
Manganese	300	EPA Lifetime Health Advisory Level

Note:
EPA MCL – U.S. EPA Maximum Contaminant Level. RIDEM GA Groundwater Objectives are equivalent to EPA MCLs.
* Vinyl chloride is included as a groundwater COC based on data from groundwater samples collected at MW-104 (upgradient well) in 1996. Although the source of the vinyl chloride measured at MW-104 must be upgradient of Site 19 - On-Shore Derecktor Shipyard (OU12), groundwater within the site will be monitored and subject to land use controls (LUCs) to protect receptors from potential future vapor intrusion from this analyte. TCE detections in the northern portion of the site drive this requirement as well.

2.9 DESCRIPTION OF ALTERNATIVES

To address potentially unacceptable human health risks and state criteria exceedances at Site 19 - On-Shore Derecktor Shipyard (OU12), a **preliminary technology screening** evaluation was conducted in the FS. A number of treatment technologies and process options were initially screened based on their potential effectiveness, implementability, and cost. Some technologies were eliminated (e.g., treatment, sequestration, etc.), primarily due to their impracticality with respect to site-specific circumstances or due to the low levels and discontinuous distributions of contaminants at the site. The technologies and process options retained after the initial screening were assembled into various alternatives for soil and groundwater. Consistent with the NCP, the No Action alternative was evaluated as a baseline for comparison with other alternatives during the comparative analysis. The remedial alternatives developed in the FS for Site 19 – On-Shore Derecktor Shipyard (OU12) are presented below for soil (Section 2.9.1) and groundwater (Section 2.9.2).

2.9.1 Soil Alternatives

To address COCs in soil at Site 19 - On-Shore Derecktor Shipyard (OU12), a screening of General Response Actions (GRAs), remedial technologies, and process options was conducted as part of the FS (Tetra Tech, 2014). The technologies and process options retained from the detailed screening were assembled into remedial alternatives for soil. Consistent with the NCP, the No Action alternative was evaluated as a baseline for comparison with other alternatives during the comparative analysis (see Section 2.10). Table 2-7 summarizes the major components and provides estimated costs for each of the remedial alternatives developed for OU12 soil. The Selected Remedy for soil (Alternative S-2; see Section 2.12) is shown on Figure 2-8.

TABLE 2-7. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR SOIL			
ALTERNATIVE	COMPONENTS	DETAILS	COST
S-1: No Action	None	No further actions would be taken for soils.	**Capital**: $0 **Periodic**: $0 **O&M**: $0 **Total 30-Year Present Worth**: $0

TABLE 2-7. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR SOIL

ALTERNATIVE	COMPONENTS	DETAILS	COST
S-2: Covers and LUCs	PRD Soil Sampling	Conduct additional soil sampling prior to implementation of the remedial action to assess potential site contamination within OU12 resulting from the stockpiling of asbestos-contaminated debris/soil and from the stockpiling of potentially contaminated sediments within the Northern Area. The OU12 remedy in the Northern Area may need to be modified based on the PRD sampling results following finalization of the ROD.	**Capital**: $777,300 **Periodic:** $2,500 (annually) $15,000 (every 5 years) **O&M**: $30,000 (every 5 years) **Total 30-Year Present Worth**: $1,030,800 **Discount Rate**: 1.9% **Timeframe**: 30 years
	Covers	No further actions for soils in the Southern Area. Previously (in the FS and Proposed Plan) no action was required for soil in the Northern Area; however, ongoing Navy and USCG construction activities may have impacted the area. Therefore, the need for OU12 remedy modification to include soil action (e.g., cover or excavation) in the Northern Area will be assessed based on the results of the PRD sampling event following finalization of the ROD. For the soil action within the 24.3-acre Central Area: A 6-inch soil encapsulation/cover system will be placed over four Target Remediation Zones (TRZs) (extent of medium to be addressed by active remediation [e.g., soil cover or aquifer injection]), totaling 2.8 acres, where exposed surface soil exceeds the Industrial cleanup level of arsenic, only. The limits of soil cover construction are based on the area of exposed soils bounded by physical features and existing engineered or physical controls, such as roads, pavement, concrete, building foundations, and/or existing soil cover. One TRZ with existing asphalt paved areas will be re-paved with a new 2-inch layer of asphalt, and any TRZs (or other areas) with existing concrete-paved covered areas will be inspected and maintained. All covers (asphalt, concrete, existing and new soil covers, and existing vegetation on steep slope) within the Central Area will be maintained. O&M (along with LUCs and at least annual inspections of the cover) will prevent disturbance of and maintain soil, pavement, and/or asphalt covers; ensure that subsurface soils that are above cleanup goals are not disturbed without appropriate precautions. Figure 2-8 shows these different cover-type areas with shaded colors or hatching. Some ancillary, small areas not specifically called out on the figure will need some form of cover (and maintenance; or its existing condition maintained). These will be determined during preparation of, and specified in, the forthcoming Remedial Design (RD).	
	LUCs, including engineering controls, ICs, and inspections	The site will remain industrial/commercial, except for the portion of the paved recreation path at the south end of the Central Area, which will be maintained for restricted recreational usage. An implementable soil LUC boundary will be created to encompass the 24.3-acre Central Area, which is the current Attainment Area for soil. No further soil action is needed in the Southern Area. The need to establish any LUCs in the Northern Area will be assessed based on the results of the PRD sampling event following finalization of the ROD. The Navy will implement short-term protective measures to restrict exposure to asbestos-contaminated debris/soil and potentially contaminated sediment until it is removed from the site. These measures will include containment of the existing stockpiles and management of erosion/storm water runoff. Additionally, short-term LUCs, in the form of a Base Instruction, have been	

TABLE 2-7. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR SOIL

ALTERNATIVE	COMPONENTS	DETAILS	COST
S-2: Covers and LUCs (cont.)	LUCs, including engineering controls, ICs, and inspections (cont.)	implemented to restrict exposure to the site soils that may have been impacted from the excavation/demolition and stockpiling of these soils/debris and sediments until the results of the PRD soil sampling determines if remedial action of these soils is necessary. These controls include maintenance of the existing fencing to prevent uncontrolled access and the restriction of unauthorized excavation of the soils in the Northern Area. This soil LUC boundary lies within the larger site-wide groundwater LUC boundary (see Table 2-8). All covers (asphalt, concrete, existing and new soil covers, and existing vegetation on steep slope) will be maintained through CERCLA risk-based engineering controls and institutional controls to meet residential and industrial RAOs. In addition, institutional controls will be maintained to meet residential RAOs. LUCs include a soil management plan (for future industrial/commercial exposure and control of CERCLA site soils), establishment in Naval Installation Restoration Information Solution (NIRIS) LUC Tracker and the Base Master Plan, as well as annual site inspections and reporting. If ownership of the base is transferred, with contamination remaining in place, Environmental Land Use Restrictions (ELURs) will be recorded in accordance with applicable laws and the requirements of the LUC RD.	
	Five-Year Reviews	Five-year reviews will be conducted, because contamination would remain in excess of levels that allow for UU/UE.	
S-3: Covers, Excavation and Off-Site Disposal, and LUCs	PRD Soil Sampling	Conduct additional soil sampling prior to implementation of the remedial action to assess potential site contamination within OU12 resulting from the stockpiling of asbestos-contaminated debris/soil and from the stockpiling of potentially contaminated sediments within the Northern Area. The OU12 remedy in the Northern Area may need to be modified based on the PRD sampling results following finalization of the ROD.	**Capital**: $2,831,700 **Periodic:** $2,500 (annually) $15,000 (every 5 years) **O&M**: $30,000 (every 5 years) **Total 30-Year Present Worth**: $3,085,200 **Discount Rate**: 1.9% **Timeframe**: 30 years
	Covers	Same as Alternative S-2, except a 6-inch soil encapsulation/cover system will be placed over two TRZs/areas (totaling 0.6 acre) of the four TRZs where exposed surface soil exceeds the Industrial cleanup level of arsenic, only. The other two TRZs will be excavated and backfilled (see below).	
	Excavation	Two TRZs, totaling 2.2 acres, where exposed surface soil exceeds the Industrial cleanup level of arsenic will be excavated to a depth of 2 feet (totaling 7,150 cubic yards). The excavation limits will be subject to pre-verification / confirmation sampling; however, for estimating purposes, the maximum extent of excavation to physical features and existing engineered or physical controls is assumed. These areas will be backfilled with clean fill and re-vegetated. Excavated soils will be managed as remedial action construction-derived waste, which will be characterized, transported, and disposed off-site appropriately based on the characteristics of the waste (assumed nonhazardous for estimation purposes). The two excavated/backfilled TRZs/areas will be restored and maintained along with all covers (asphalt, concrete, existing and new soil covers, and existing vegetation on steep slope) within the Central Area.	

TABLE 2-7. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR SOIL			
ALTERNATIVE	**COMPONENTS**	**DETAILS**	**COST**
S-3: Covers, Excavation and Off-Site Disposal, and LUCs (cont.)	LUCs, including engineering controls, ICs, and inspections	Same as Alternative S-2.	
	Five-Year Reviews	Same as Alternative S-2.	

2.9.2 Groundwater Alternatives

To address COCs in groundwater at Site 19 - On-Shore Derecktor Shipyard (OU12), a screening of GRAs, remedial technologies, and process options was conducted as part of the FS (Tetra Tech, 2014). The technologies and process options retained from the detailed screening were assembled into remedial alternatives for groundwater. Consistent with the NCP, the No Action alternative was evaluated as a baseline for comparison with other alternatives during the comparative analysis (see Section 2.10). Table 2-8 summarizes the major components and provides estimated costs for each of the remedial alternatives developed for groundwater. The Selected Remedy for groundwater (Alternative G-2; see Section 2.12) is shown on Figure 2-9.

TABLE 2-8. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR GROUNDWATER			
ALTERNATIVE	**COMPONENTS**	**DETAILS**	**COST**
G-1: No Action	None	No further actions would be taken for groundwater.	**Capital**: $0 **Periodic**: $0 **O&M**: $0 **Total 30-Year Present Worth**: $0
G-2: MNA and LUCs	MNA	Groundwater COCs beneath the 34.5-acre site (entire site is Target Remediation Zone [TRZ] for groundwater) will be addressed by the remedial action. MNA will be implemented site-wide. Accurately modeling the timeframe for the attenuation of metals in groundwater is not currently feasible based on the available information. For the purposes of this FS, it was assumed that the cleanup levels will be attained in 30 years. MNA is expected to be successful within this 30-year timeframe due the relatively low levels of contamination and their susceptibility to geochemical changes in aquifer, which will occur over time since the removal actions completed through 2008. Each successive round of groundwater data will add to the evaluation of natural attenuation at the site. The predicted time for the concentration of COCs to reach cleanup levels by natural attenuation will become more accurate as more groundwater data are collected and evaluated. For estimating purposes, it is assumed that 9 new monitoring wells will be installed to complement 14 existing wells for the groundwater long-term monitoring (LTM) program network. The 23 wells will be sampled and analyzed for trichloroethene (TCE) and its daughter products, metals COCs, and MNA- and geochemical-parameters that help evaluate the effectiveness of natural attenuation. For estimating purposes, it is assumed that periodic long-term groundwater monitoring will be conducted quarterly for the first 2 years and annually thereafter. The LTM requirements and details will be determined during development of the MNA performance / LTM plan following the ROD.	**Capital**: $194,000 **Periodic:** Year 1: $152,800 Year 2: $152,800 Years 3 to 15 (annually): $40,500 Years 16 to 30 (annually): $20,430 $15,000 (every 5 years) **O&M**: $0 (accounted in periodic costs) **Total 30-Year Present Worth**: $1,201,100 **Discount Rate**: 1.9% **Timeframe**: 30 years

TABLE 2-8. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR GROUNDWATER

ALTERNATIVE	COMPONENTS	DETAILS	COST
G-2: MNA and LUCs (cont.)	LUCs, including ICs and inspections	The site will remain industrial/commercial. An implementable groundwater LUC boundary will be created to encompass the 34.5-acre site-wide groundwater Attainment Area (AA). The groundwater AA also corresponds to the soil gas AA for future industrial and residential scenarios. Institutional controls will prohibit installation of groundwater supply wells, including public and private drinking water wells and residential irrigation wells, and will prohibit use of groundwater. ICs also will include a requirement to evaluate and/or mitigate vapor intrusion risk and implement protective construction measures should site development involving the construction of buildings occur before groundwater cleanup levels for VOCs (e.g., TCE and its daughter products) are met. Monitoring wells will be inspected and maintained as needed throughout the LTM duration until cleanup levels are met. LUCs include establishment in Naval Installation Restoration Information Solution (NIRIS) LUC Tracker and the Base Master Plan, as well as annual site inspections and reporting. If ownership of the base is transferred, with contamination remaining in place, Environmental Land Use Restrictions (ELURs) will be recorded in accordance with applicable laws and the requirements of the LUC RD to be developed following the ROD.	
	Five-Year Reviews	Five-year reviews will be conducted until contamination reaches cleanup levels to allow for UU/UE.	
G-3: In Situ Treatment, MNA, and LUCs	In Situ Treatment	Alternative G-3 consists of five major components: In situ biological treatment of chlorinated solvents, in situ chemical treatment of metals, MNA to document decreasing levels of groundwater COCs, groundwater performance / LTM to verify the effectiveness of in situ treatments and MNA, and LUCs (with inspections and 5-Year Reviews as needed). Two groundwater treatment technologies will be targeted at two TRZs: Enhanced in situ bioremediation (EISB) for the remediation of TCE-contaminated groundwater in the northern portion of the site, and in situ chemical oxidation (ISCO) for the remediation of metals-contaminated groundwater in the central portion of the site. For EISB, an emulsified oil product (assumed EOS® 598B42 brand) will be injected into the subsurface through injection wells as an electron donor to enhance anaerobic, reducing conditions to expedite biodegradation of TCE. It is assumed that 80 permanent injection wells will be installed in the northern portion of the site, arranged as five biobarriers, each biobarrier consisting of a line of 16 permanent injection wells spaced 25-feet on center. The biobarriers will be equally spaced and perpendicular to groundwater flow. The target treatment depth interval is 10 to 20 feet. A pilot study will be performed prior to implementation to refine design parameters. Only one injection event is estimated. The dosage calculation assumes 0.0015 pound of EOS is required to saturate each 1 pound of contaminated aquifer matrix, which equates to 1,315 pounds of EOS (172 gallons) per injection well. Approximately 7,750 gallons of displacement flush water (mix water or chase water) would be combined with the 172 gallons of EOS for each well.	**Capital**: $7,412,200 **Periodic:** Year 1: $395,500 Year 2: $292,600 Years 3 to 5 (annually): $76,400 Years 6 to 10 (annually): $30,200 $15,000 (every 5 years) **O&M**: $0 (accounted in capital and periodic costs) **Total 30-Year Present Worth**: $8,478,300 **Discount Rate**: 1.0% **Timeframe**: 10 years

TABLE 2-8. SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED FOR GROUNDWATER

ALTERNATIVE	COMPONENTS	DETAILS	COST
G-3: In Situ Treatment, MNA, and LUCs (cont.)	In Situ Treatment (cont.)	For ISCO, a chemical oxidant (assumed Fenton's Reagent brand) will be injected into the subsurface through temporary injection points for aquifer matrix geochemical manipulation of pH, oxidation state, and alkalinity to increase stability of metals. Injection of alkaline solutions may be needed. Preliminary estimates for the large treatment area indicate more than 4,500 temporary direct push injection points will be needed to treat the groundwater metals COCs in the central portion of the site. The 10-foot on center injection point grid layout measures 900 feet wide by 500 feet long (450,000 square feet; over 10 acres) in the central portion of the site. The target treatment depth interval is 5 to 15 feet. A pilot study will be performed prior to implementation to refine design parameters. Only one injection event is estimated. The loading calculation assumes 1,500 gallons of 12.5 percent Fenton's Reagent solution will be injected at each point (equates to 6.75 million gallons total solution for target area). For purposes of planning and costing, it is assumed that RAOs would be attained at the north (TCE) area in 5 years and the center (metals) area in 3 years. However, it also is assumed that the RAOs would be attained site-wide in target treatment and non-treatment areas via MNA in 10 years following the injections. The estimate includes, in addition to the 9 new wells and the 14 existing monitoring wells for MNA performance / LTM, the installation of 10 new performance monitoring wells for EISB and 15 new performance monitoring wells for ISCO (34 new wells to be installed; total up to 48 wells per sampling event). The wells will be sampled and analyzed for TCE and its daughter products, metals COCs, and MNA- and geochemical-parameters that help evaluate the effectiveness of EISB, ISCO, and MNA (the 15 ISCO-specific performance monitoring wells will not be analyzed for MNA parameters). The periodic long-term groundwater monitoring will be conducted quarterly for the first 2 years and annually thereafter. In addition, performance monitoring of ISCO includes sampling the 15 ISCO-specific performance monitoring wells at 2 weeks, 4 weeks, and 8 weeks following injection. Performance monitoring of EISB is accomplished by the quarterly sampling events during the first 2 years and annual events thereafter.	
	MNA	Same as Alternative G-2, except the LTM network under Alternative G-3 contains 10 additional wells to monitor EISB performance and 15 additional wells to monitor ISCO performance (and to monitor MNA performance) (total up to 48 wells) for a duration of up to 10 years.	
	LUCs, including engineering controls, ICs, and inspections	Same as Alternative G-2, except the well maintenance also includes the 80 EISB injection wells, additional 10 performance monitoring wells for EISB, and 15 additional monitoring wells for ISCO.	
	Five-Year Reviews	Same as Alternative G-2.	

2.10 COMPARATIVE ANALYSIS OF ALTERNATIVES

Tables 2-9 and 2-10 and subsequent text summarize the comparison of the remedial alternatives for OU12 soil and groundwater, respectively, against the **nine CERCLA evaluation criteria** outlined in the NCP at 40 Code of Federal Regulations (CFR) 300.430(e)(9)(iii), and categorized as threshold, primary balancing, and modifying criteria. Additional information on the detailed comparison of remedial alternatives is presented in the FS (Tetra Tech, 2014). Alternative 1 (No Action) does not meet the threshold criteria and therefore cannot be selected for a remedy.

2.10.1 Threshold Criteria

2.10.1.1 Overall Protection of Human Health and the Environment

Soil. Both Alternatives S-2 and S-3, comparable to each other, would be more protective of human health than Alternative S-1. The PRD soil sampling in the Northern Area prior to implementing Alternatives S-2 or S-3 will identify whether further protective measures are required to address potential releases from recent construction activities. Short-term measures will be implemented to restrict exposure to asbestos-contaminated debris/soil and potentially contaminated sediment until it is removed from the site. LUCs would be implemented to prevent residential and unrestricted land uses and reduce the exposure to the contaminated soils for hypothetical residents, and prevent industrial exposure to covered surface soil and contaminated subsurface soil. As part of the LUCs and O&M, inspections will confirm that covers remain protective. The soil RAOs would be achieved almost equally by Alternatives S-2 and S-3. Five-year reviews would be conducted to identify if site risks have changed or if additional remedial actions are needed.

Groundwater. Alternatives G-2 and G-3 would provide protection of human health by preventing use of groundwater through LUCs. Alternative G-1 would not be protective since no measures would be taken to address groundwater risks. Natural attenuation processes would achieve groundwater cleanup levels under both alternatives; however, Alternative G-3 may restore beneficial use of groundwater faster than with natural attenuation processes alone. The effectiveness of Alternatives G-2 and G-3 for interim protection of human health would be dependent on enforcement of LUCs. Long-term periodic monitoring and 5-year reviews under both alternatives would provide the Navy and regulatory agencies the opportunity to review site conditions and perform additional remedial actions if they become warranted.

2.10.1.2 Compliance with ARARs'

Soil. Alternative S-1 would not comply with chemical-specific ARARs. There are no location-specific or action-specific ARARs for Alternative S-1. Alternatives S-2 and S-3 meet chemical-specific, location-specific, and action-specific ARARs and TBCs, including action-specific ARARs if needed to address asbestos releases in the Northern Area (to be determined by PRD soil sampling after finalization of the ROD). Implementation of either of these alternatives would be compliant and conducted in accordance with regulations. Also refer to FS Tables 4-2 through 4-10.

Groundwater. Alternative G-1 would not comply with chemical-specific ARARs. There are no location-specific or action-specific ARARs for Alternative G-1. Each of Alternatives G-2 and G-3 would be implemented in a manner to meet chemical-specific, location-specific, and action-specific ARARs and TBCs. Implementation of either of these alternatives would be compliant and conducted in accordance with regulations. However, ISCO likely would have a negative impact on the sensitive and proximate bay habitats and ecological receptors from the extreme geochemical changes to be induced by the oxidant, which would be injected in large quantities immediately upgradient of the bay. Also refer to FS Tables 5-2 through 5-10.

TABLE 2-9: COMPARISON OF CLEANUP ALTERNATIVES EVALUATED FOR SOIL

	Alternative S-1 No Action	Alternative S-2 ** Cover and LUCs	Alternative S-3 Cover, Excavation and Off-Site Disposal, and LUCs
Alternative Description/Components			
Brief Summary of Remedial Alternative Components	No Action	Install new "encapsulations" – 6-inch soil covers/ barriers and asphalt/ pavement improvement, O&M of existing soil and asphalt/ pavement barriers and new soil/ asphalt barriers, Cover and LUCs	Install new "encapsulations" – 6-inch soil covers/ barriers, Excavation and off-site disposal of 10,000 tons of contaminated soil; O&M of existing soil and asphalt/ pavement barriers and new soil barriers, Cover and LUCs
Estimated Timeframes For Cleanup			
Time to achieve cleanup goals	NA	<1 year	<1 year
CRITERIA ANALYSIS: Threshold Criteria – Selected alternative must meet these criteria			
Protects Human Health and the Environment – *Will it protect people and animal life? Is it permanent?*	⦸	●	●
Compliance with ARARs – *Does this alternative meet federal and state environmental laws, regulations, and requirements?*	⦸	●	●
Primary Balancing Criteria – Used to differentiate between alternatives meeting the threshold criteria above			
Provides Long-Term Effectiveness and Permanence – *Do risks remain onsite? If so, are the controls adequate and reliable?*	⦸	O	●
Reduces Mobility, Toxicity, and Volume Through Treatment – *Does the alternative reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?*	⦸	⦸	⦸
Provides Short-Term Protection – *How soon will risks be reduced? Are there short-term hazards to workers, residents, or the environment that could occur during cleanup?*	⦸	●	O
Implementability – *Is the alternative technically feasible? Are necessary goods and services (treatment equipment, space, etc.) available?*	●	●	O
Cost – *Based on a total up to 30-year present worth.*[(1) (2)]			
Capital Costs (initial costs)	$ 0	$ 777,300	$ 2,831,700
Future Periodic, O&M, and Monitoring Costs (Present Value)	$ 0	$ 253,500 (PV_{30yr})	$ 253,500 (PV_{30yr})
Total Present Worth Cost (2014 dollars)	**$ 0**	**$ 1,030,800**	**$ 3,085,200**
Modifying Criteria – May be used to modify recommended cleanup			
State Agency Acceptance – *Do state environmental agencies agree with Navy's recommended alternative?*	⦸	●	⦸
Community Acceptance – *What objections, modifications, or suggestions do the public offer during the public comment period?*	Not Applicable	●	Not Applicable

Notes:

* Alternative S-2 – Cover and LUCs is the Selected Remedy for soil (see Section 2.12).

1. For purposes of cost estimation, all future costs (periodic, O&M, and/or monitoring) represent 30-year time frames. Present Value (PV) of all future costs are provided. Actual total costs may be higher.
2. The 5-year reviews at this site are a component of the Newport facility 5-year reviews. Five-year review costs are included in Alternatives S-2 and S-3.

ARARs: Applicable or Relevant and Appropriate Requirements
LUCs: Land Use Controls
O&M: Operation and Maintenance

● Meets
O Partially meets
⦸ Does not meet

TABLE 2-10: COMPARISON OF CLEANUP ALTERNATIVES EVALUATED FOR GROUNDWATER

	Alternative G-1 No Action	Alternative G-2 MNA and LUCs	Alternative G-3 In Situ Treatment, MNA, and LUCs
Alternative Description/Components			
Brief Summary of Remedial Alternative Components	No Action	Install new monitoring wells and implement LTM for MNA and the LUCs. O&M of monitoring wells with periodic LUC inspections and reporting.	Install new injection wells for enhanced biodegradation and for chemical oxidation, inject emulsified oil and oxidant, monitoring wells and implement LTM for MNA and the LUCs. O&M of monitoring wells with periodic LUC inspections and reporting.
Estimated Timeframes For Cleanup			
Time to achieve cleanup goals	NA	30 years	10 years
CRITERIA ANALYSIS: Threshold Criteria – Selected alternative must meet these criteria			
Protects Human Health and the Environment – *Will it protect people and animal life? Is it permanent?*	⦸	●	●
Compliance with ARARs – *Does this alternative meet federal and state environmental laws, regulations, and requirements?*	⦸	●	●
Primary Balancing Criteria – Used to differentiate between alternatives meeting the threshold criteria above			
Provides Long-Term Effectiveness and Permanence – *Do risks remain onsite? If so, are the controls adequate and reliable?*	⦸	○	○
Reduces Mobility, Toxicity, and Volume Through Treatment – *Does the alternative reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?*	⦸	⦸	○
Provides Short-Term Protection – *How soon will risks be reduced? Are there short-term hazards to workers, residents, or the environment that could occur during cleanup?*	⦸	○	○
Implementability – *Is the alternative technically feasible? Are necessary goods and services (treatment equipment, space, etc.) available?*	●	●	○
Cost – *Based on a total up to 30-year present worth.*[(1) (2)]			
Capital Costs (initial costs)	$ 0	$ 194,000	$ 7,412,200
Future Periodic, O&M, and Monitoring Costs (Present Value)	$ 0	$ 1,007,100 (PV_{30yr})	$ 1,066,100 (PV_{10yr})
Total Present Worth Cost (2014 dollars)	**$ 0**	**$ 1,201,100**	**$ 8,478,300**
Modifying Criteria – May be used to modify recommended cleanup			
State Agency Acceptance – *Do state environmental agencies agree with Navy's recommended alternative?*	⦸	●	⦸
Community Acceptance – *What objections, modifications, or suggestions do the public offer during the public comment period?*	Not Applicable	●	Not Applicable

Notes:

* Alternative G-2 – MNA and LUCs is the Selected Remedy for groundwater (see Section 2.12).

1. For purposes of cost estimation, all future costs (periodic, O&M, and monitoring) for Alternative G-2 are for 30-year time frame, whereas future costs for Alternative G-3 are for 10-year time frame. Present Value (PV) of all future costs are provided. Actual total costs may be higher.
2. The 5-year reviews at this site are a component of the Newport facility 5-year reviews. Five-year review costs are included in Alternatives G-2 and G-3.

ARARs: Applicable or Relevant and Appropriate Requirements
LUCs: Land Use Controls
O&M: Operation and Maintenance

● Meets
○ Partially meets
⦸ Does not meet

2.10.2 Primary Balancing Criteria

2.10.2.1 Long-Term Effectiveness and Permanence

Soil. Alternative S-1 does not provide any effectiveness or permanence, as no remedial action would be performed to mitigate risks associated with soil. Alternatives S-2 and S-3 are comparable in long-term effectiveness and permanence because implementation and enforcement of the LUCs for both would prevent future unrestricted land uses. Both alternatives would reduce the potential exposure to contaminated soil. Both alternatives address surface soil industrial PRG exceedances equally and require LUC inspections and cover inspections to ensure performance and long-term reliability. Five-Year Reviews will be required as long as contamination is left in place under the covers. Alternative S-3 may have an incrementally higher long-term effectiveness because of excavating two of the Target Remediation Zones (TRZs) (extent of medium to be addressed by active remediation [e.g., soil cover or aquifer injection]); however, this would not result in permanent reduction of all potential health risks in the Central Area.

Groundwater. Alternative G-1 does not provide any effectiveness or permanence, as no remedial action would be performed to mitigate risks associated with groundwater. Alternative G-2 would provide effectiveness through LUCs alone, but only permanence through natural attenuation. Alternative G-3 likely would prove more effective than Alternative G-2 due to the groundwater treatment components; however, these components have been developed in the FS based on significant assumptions. LUCs under both Alternatives G-2 and G-3 would be effective for preventing exposure to groundwater COCs as long as the LUCs remain in place. Groundwater LTM and 5-year reviews would be required for Alternatives G-2 and G-3 until groundwater contaminant concentrations decrease to acceptable levels through natural attenuation (following EISB and ISCO under G-3). Regular monitoring would allow the responsible agency to assess changes in contaminant status and identify potential impacts to downgradient receptors.

2.10.2.2 Reduction in Toxicity, Mobility, or Volume through Treatment

Soil. None of the soil alternatives involve reduction in toxicity, mobility, or volume through treatment, as they are presented.

Groundwater. Alternative G-1 does not involve treatment and does not meet this criterion. However, reductions would occur over a longer period of time via natural attenuation mechanisms, but there would be no monitoring of the progress of these reductions. Alternative G-2 (MNA and LUCs) does not provide reduction of toxicity, mobility, or volume of waste through treatment, as no active treatment is proposed. Alternative G-3 includes two active treatment technologies (EISB and ISCO), which will reduce the toxicity, mobility, and volume of waste through treatment.

2.10.2.3 Short-Term Effectiveness

Soil. Alternative S-1 has no short-term effectiveness, because nothing is implemented. Alternatives S-2 and S-3 provide comparable short-term effectiveness, but Alternative S-3 introduces slightly more risk to the community and site workers during implementation (because of the excavation component). There would be additional traffic due to additional site preparation and off-site disposal. Short-term protective measures will be implemented under both Alternatives S-2 and S-3 to restrict exposure to ACM in debris/soil and potentially contaminated sediment stockpiled in the Northern Area until it is removed from the site. These measures will include containment of the existing stockpiles and management of erosion/storm water runoff. Additionally, short-term LUCs, in the form of a Base Instruction, have been implemented to restrict exposure to the site soils that may have been impacted from the excavation/demolition and stockpiling of these soils/debris and sediments until the results of the PRD soil sampling determines if remedial action of these soils is necessary. These controls include maintenance of the existing fencing to prevent uncontrolled access and the restriction of unauthorized excavation of the soils in the Northern Area. Both alternatives involve the import and placement of clean soil and paving materials. All workers would require training and medical monitoring in accordance with Occupational

Safety and Health Standards for both alternatives. The estimated construction durations for each of the alternatives are as follows:

- Alternative S-1: No implementation
- Alternative S-2: 3 months
- Alternative S-3: 4 months

Groundwater. Alternative G-1 has no short-term effectiveness, because nothing is implemented. Alternatives G-2 and G-3 would cause minor short-term impacts related to installation of new monitoring wells (G-2 and G-3), installation of injection wells and points (G-3), and periodic groundwater sampling (G-2 and G-3). Proper health and safety procedures and personal protective equipment would protect workers during the collection of long-term monitoring samples. Alternative G-3 would be more risky than G-2 for site workers due to the handling of the oxidant material for ISCO (e.g., Fenton's Reagent).

2.10.2.4 Implementability

Soil. Alternative S-1 has no construction or operation. Alternative S-2 would be marginally easier to implement than Alternative S-3 without excavation activities and off-site soil disposal. Implementation of Alternatives S-2 and S-3 would require readily available resources. LUCs should not be difficult to implement and enforce at an active Navy facility.

In general, major engineering, administrative, and construction difficulties would not be anticipated for Alternatives S-2 or S-3. The implementation of these alternatives involves standard construction techniques and equipment. There are ample companies with the trained personnel, equipment, and materials to perform site preparation, conduct soil removal and long-term periodic monitoring. Regulatory personnel and environmental specialists are readily available to perform 5–year reviews.

No permits would be necessary from other agencies, because the site would be remediated under the CERCLA program. However, the substantive requirements of those permits such as erosion and sediment control plan and local construction permits will be met for Alternatives S-2 and S-3. Because of the work along the railroad tracks to address TRZ 6, which is within the railroad right-of-way, a Physical Alteration Permit might be needed from Rhode Island Department of Transportation to perform soil remediation (i.e., re-paving or placing 6-inch soil cover).

Groundwater. Alternative G-1 has no construction or operation. Alternative G-2 is more easily implemented than Alternative G-3, because of the lessor number of monitoring wells to install and sample, and Alternative G-3 also has a large number of injection wells for the EISB injection and injection points for the ISCO injection. The number of injection wells required for EISB and temporary injection points for ISCO under Alternative G-3 may not be possible considering utilities and current/future construction (e.g., USCG Buoy Tender Project). While groundwater LTM and 5-year reviews are common for both Alternatives G-2 and G-3, Alternative G-3 has more performance monitoring events and monitoring wells associated with EISB and ISCO. There are a sufficient number of companies available with the trained personnel, equipment, and materials to perform monitoring well installation, EISB and ISCO designs and injections, LTM, and 5-year reviews.

Sufficient commercial laboratory capacity is available to handle the volume of analytical samples for analysis under both alternatives. LUCs would be easily implemented and maintained for both alternatives. Incorporating LUCs into NIRIS LUC Tracker and the Base Master Plan should not be difficult to implement and enforce, since the site is part of an active Navy facility and coordination with other agencies and property owners would not be necessary.

2.10.2.5 Cost

Soil. Alternative S-1 has no cost as nothing is being implemented. Alternative S-3 is the most expensive alternative because of the 10,000 tons of soil to dispose and the additional 10,000 tons of clean backfill for the excavation areas (respective components are otherwise the same). Alternative S-2 has only

limited soil excavation (e.g., at edges of new covers) and associated offsite disposal to be conducted, and requires less imported clean backfill than Alternative S-3. The estimated capital cost of Alternative S-2 would be $777,300 and of Alternative S-3 would be $2,831,700.

Future costs are estimated the same for both Alternatives S-2 and S-3: In Years 1 through 30, the annual O&M and monitoring costs would be $2,500; five-year reviews would cost $15,000 per event; periodic maintenance of soil covers and pavement is assumed at $30,000 every 5 years. The PV of these future O&M and periodic costs from Years 1 through 30 is estimated the same for Alternatives S-2 and S-3 at $253,500.

The total present worth cost for Alternative S-2, based on a 30-year period and a 1.9 percent real discount rate, is estimated to be $1,030,800. The total present worth cost for Alternative S-3, based on a 30-year period and a 1.9 percent real discount rate, is estimated to be $3,085,200.

Groundwater. Alternative G-1 has no cost as nothing is being implemented. Alternative G-3 is the most expensive alternative because of the significant costs associated with the EISB and ISCO remedial components, including the additional associated performance monitoring. Alternative G-2 requires fewer monitoring wells and less sampling. The estimated capital cost of Alternative G-2 would be $194,000 and of Alternative G-3 would be $7,412,200. Future costs are similar between Alternatives G-2 and G-3, although they are over different time frames (30 years for Alternative G-2 and 10 years for Alternative G-3).

The total present worth cost for Alternative G-2, based on a 30-year period and a 1.9 percent real discount rate, is estimated to be $1,201,100. The total present worth cost for Alternative G-3, based on a 10-year period and a 1.0 percent real discount rate, is estimated to be $8,478,300.

2.10.3 Modifying Criteria

2.10.3.1 State Acceptance

State involvement has been solicited throughout the CERCLA process. RIDEM, as the designated state support agency in Rhode Island, concurs with the Selected Remedy. RIDEM's concurrence letter is presented in Appendix A.

2.10.3.2 Community Acceptance

The public was notified of a formal public comment period, as described in Section 2.3, and was encouraged to participate in the process. No written comments were received during the formal public comment period (May 21 to June 20, 2014) for the Proposed Plan. The questions posed at the public meeting (informal session) on May 21, 2014, were general inquiries for informational purposes and were addressed at the public meeting. The formal public hearing, at which attendees were asked to state their comments for the record, took place immediately after the public meeting on May 21, 2014. These formal comments/questions and the Navy responses are summarized in Section 3.0. The transcript of the public hearing is provided as Appendix E.

2.11 PRINCIPAL THREAT WASTE

The NCP at 40 CFR Section 300.430(a)(1)(iii)(A) establishes an expectation that treatment will be used to address the principal threats posed by a site, wherever practicable. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or that would present a significant risk to human health or the environment should exposure occur. A source material is a material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. At Site 19 – On-Shore Derecktor Shipyard (OU12), the contaminant concentrations are not highly toxic or highly mobile; therefore, principal threat wastes are not present at the site.

2.12 SELECTED REMEDY

2.12.1 Rationale for Selected Remedy

The Selected Remedy for OU12 is **Soil Alternative S-2 – Cover and LUCs** and **Groundwater Alternative G-2 – MNA and LUCs**. This combination offers the best balance among the nine evaluation criteria.

Soil Alternative S-2 includes PRD soil sampling in the Northern Area, new soil covers, re-pavement, O&M, and LUCs. In the Northern Area, PRD sampling results will determine whether additional remedial measures are required to address potential releases of asbestos and other contaminants. Short-term measures will be implemented to restrict exposure to asbestos-contaminated debris/soil and potentially contaminated sediment until it is removed from the site. The LUCs will restrict the Central Area to industrial land use and require maintenance of the new and existing soil covers and pavement to prevent future industrial exposure to subsurface soil. In addition, a limited portion of a paved recreation path is located in the southern-most portion of the *Central Area* (Figure 2-2). This paved path is surrounded by effective soil cover and will operate under restricted recreational activity (i.e., this portion of path pavement and the surrounding effective soil cover must be maintained in order to be protective of recreational users in this particular area). If asbestos is determined to be mixed with soil at unacceptable levels based on PRD sampling results and risk evaluation following the finalization of the ROD, then a soil remedial action will be extended to the Northern Area, and the corresponding LUCs remedy component will be amended to prevent unacceptable exposure to ACM remaining after implementation of the remedial action.

Groundwater Alternative G-2 relies on MNA, which includes a long-term groundwater monitoring program to verify that natural attenuation processes are effectively reducing TCE, vinyl chloride, and metals concentrations to the natural steady-state conditions. The available site data indicate that MNA will be successful over time, currently estimated at 15 years for TCE and 30 years for metals. The time required will be re-evaluated at each 5-year cycle, at a minimum, to assure that the remedy is acceptable. LUCs include a requirement to evaluate and/or mitigate vapor intrusion risk should site development involving the construction of buildings occur before groundwater cleanup levels for chlorinated VOCs (e.g., TCE and its daughter products) are met.

The 5-year review will assess if adequate reductions in concentrations of COCs are evident in the monitoring data. After an appropriate amount of data has been collected to allow a determination, if MNA is determined to be an ineffective remedy for the site, the Navy will seek a change to the remedial action with approval by EPA and RIDEM, in accordance with CERCLA and the Federal Facilities Agreement (FFA), using an additional public notification and ROD amendment.

If reductions in metals concentrations are seen, and the amount of time for cleanup levels to be achieved is predicted to be acceptable to EPA and RIDEM, the Navy would continue the MNA program until cleanup goals for metals in groundwater are achieved. In the meantime, implementing LUCs will ensure continued protection of human health by preventing the use of groundwater until cleanup goals are achieved. Groundwater currently is not used as a drinking water source and there are no plans to do so in the future.

2.12.2 Description of Selected Remedy

The Selected Remedy for soil (S-2) will allow for the planned continued use of OU12 and includes the following components (Table 2-7 and Figure 2-8):

- Conduct PRD soil sampling before the completion of the RD to assess potential site contamination within the *Northern Area*. After publication of the Proposed Plan, improvement construction project activities within the Northern Area potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils were stockpiled that potentially

contaminated the site. The remedy may need to be modified based on the PRD sampling results following finalization of this ROD. Short-term protective measures will be implemented to restrict exposure to ACM in debris/soil and potentially contaminated sediment until they are removed from the site. These measures will include containment of the existing stockpiles and management of erosion and storm water runoff.

- Covers to prevent exposure to COCs in soil.

- LUCs and O&M to ensure protection of the covers, and to establish protective measures to prevent non-industrial use or development. There will be annual inspections of the cover to confirm the continued protectiveness of the remedy. Restricted recreational use will be allowed in the southernmost portion of the Central Area, where a paved exercise path ends (Figure 2-2). Additionally, short-term LUCs, in the form of a Base Instruction, have been implemented to restrict exposure to the site soils that may have been impacted from the excavation/demolition and stockpiling of these soils/debris and sediments until the results of the PRD soil sampling determines if remedial action of these soils is necessary. These controls include maintenance of the existing fencing to prevent uncontrolled access and the restriction of unauthorized excavation of the soils in the Northern Area.

The Selected Remedy for groundwater (G-2) also will allow for the planned continued use of OU12 and includes the following components (Table 2-8 and Figure 2-9):

- MNA to monitor decreases in COC concentrations due to natural attenuation.

- LUCs and O&M to prevent exposure to COCs in groundwater and protect the monitoring well network.

The LUC component of the Selected Remedy also provides for future protection against vapor intrusion issues (i.e., if exposure conditions change due to new building construction, conduct vapor intrusion evaluation and/or mitigation if necessary) until respective volatile COCs in groundwater are addressed.

.Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on site in excess of levels that allow for unlimited use and unrestricted exposure, in accordance with Section 121(c) of CERCLA and NCP §300.430(f)(5)(iii)(c), a statutory review will be conducted within 5 years of the initiation of remedial action, and every 5 years thereafter, to ensure that the Selected Remedy continues to be protective of human health and the environment. During such reviews, the Navy, EPA, and state will review site conditions and the LUC compliance inspection information and monitoring data to determine whether continued implementation of the Selected Remedy is appropriate. Five-year reviews will be conducted for the Site 19 – On-Shore Derecktor Shipyard (OU12) until conditions are restored such that the site is suitable for unrestricted use and unlimited exposure in accordance with CERCLA.

2.12.3 Summary of Estimated Remedy Costs

The cost estimate for the Selected Remedy is provided in Appendix C.

The estimated capital cost of Soil Alternative S-2 is $777,300 with future costs over 30 years estimated at $253,500 (discounted present value). The total present worth cost for Alternative S-2, based on a 30-year period and a 1.9 percent real discount rate, is estimated to be $1,030,800.

The estimated capital cost of Groundwater Alternative G-2 is $194,000 with future costs over 30 years estimated at $1,007,100 (discounted present value). The total present worth cost for Alternative G-2, based on a 30-year period and a 1.9 percent real discount rate, is estimated to be $1,201,100.

2.12.4 Expected Outcomes of Selected Remedy

The current industrial land use (with a limited area of restricted recreational use), which will be supported by the Selected Remedy, is expected to continue at Site 19 – On-Shore Derecktor Shipyard (OU12), and there are no other planned land uses in the foreseeable future. There are no socio-economic, community revitalization, or economic impacts or benefits associated with implementation of the Selected Remedy. Table 2-11 describes how the Selected Remedy mitigates risk and achieves RAOs for OU12.

The current industrial use of the site is expected to continue for the foreseeable future, and it is not expected that modification or removal of the LUCs will be required. However, if proposed land use changes in the future and uses other than industrial are anticipated, additional remedial approaches may be required. Any modifications to LUCs will be conducted in accordance with provisions of the Site 19 – On-Shore Derecktor Shipyard (OU12) LUC RD (to be completed after the ROD), CERCLA, and the NCP.

2.13 STATUTORY DETERMINATIONS

In accordance with the NCP, the Selected Remedy meets the following statutory determinations:

- **Protection of Human Health and the Environment** – The Selected Remedy is needed to prevent unacceptable risks to human health and the environment associated with potential exposure to COCs in site soil and groundwater under current and anticipated future (and hypothetical future) land use scenarios. The Selected Remedy for soil will be protective of human health and the environment through sampling in the Northern Area to assess potential asbestos and contaminant risks; installation and maintenance of soil and asphalt/concrete covers (barriers) over surface soil that exceeds industrial cleanup goals; and the maintenance of LUCs (i) to prevent industrial exposure to subsurface soil COCs that exceed Industrial cleanup levels and (ii) to prevent residential exposure to surface and subsurface soil COCs that exceed Residential cleanup levels. Short-term protective measures will be implemented to restrict exposure to ACM in debris/soil and potentially contaminated sediment until they are removed from the site. If asbestos is determined to be mixed with soil at unacceptable levels based on PRD sampling results and risk evaluation following the finalization of the ROD, then a soil remedial action will be extended to the Northern Area, and the corresponding LUCs remedy component will be amended to prevent unacceptable exposure to ACM remaining after implementation of the remedial action.

  The Selected Remedy for groundwater will be protective of human health and the environment through the reduction of COC concentrations in site groundwater to achieve cleanup levels, monitoring to confirm contaminant levels achieve groundwater cleanup levels, and the maintenance of LUCs until all groundwater cleanup levels are met. The Selected Remedy includes LUCs, which will ensure the long-term effectiveness of the soil and groundwater remedy, will prevent unrestricted use of the property and uncontrolled excavation, and will prevent exposure to contaminated groundwater until conditions are suitable for UU/UE. Long-term maintenance, monitoring, and five-year reviews will be required.

- **Compliance with ARARs** – The Selected Remedy will attain all identified federal and state ARARs, as presented in Appendix D. Additional asbestos-related action-specific ARARs have been identified as potential ARARs since the Proposed Plan was issued, owing to the potential release of asbestos into soils in the Northern Area during construction activities. In compliance with federal floodplain management standards, the Navy specifically solicited public comment concerning its selected alternative's work within federally designated floodplain and adjacent to federal jurisdictional wetlands. No negative comments were received.

TABLE 2-11. HOW SELECTED REMEDY MITIGATES RISK AND ACHIEVES RAOS

RISK	RAO	COMMENTS
Direct exposure to and ingestion of contaminated soil	Prevent the incidental ingestion of and uncontrolled direct contact with surface and subsurface soil containing COCs that exceed human health cleanup levels.	The cover(s) (soil, asphalt, and concrete pavement) will prevent exposure to surface soil with COC concentrations exceeding Industrial cleanup levels. Implementing, enforcing, and inspecting LUCs will prevent exposure to COCs at concentrations (i) exceeding Industrial cleanup levels in subsurface soil and (ii) exceeding Residential cleanup levels in surface and subsurface soil. LUCs will restrict non-industrial site use or development. LUCs and inspections will be implemented to ensure that land use (industrial) does not change and to ensure that contact with COCs at concentrations that would cause an unacceptable risk under more intensive uses is prevented for the life of the remedy. Periodic inspections and O&M of the covers would be conducted to verify that cover(s) (soil, asphalt, and concrete pavement) are not disturbed where Industrial cleanup levels are exceeded in subsurface soil and to ensure continued compliance with and effectiveness of the LUCs. Short-term protective measures will be implemented to restrict exposure to ACM in debris/soil and potentially contaminated sediment until they are removed from the site. If asbestos is determined to be mixed with soil at unacceptable levels based on PRD sampling results and risk evaluation following the finalization of the ROD, then an RAO will be added to the ROD via ESD to prevent inhalation exposure to ACM debris/soil at unacceptable levels (to be determined). The LUCs remedy component will be amended to prevent unacceptable exposure to ACM remaining after implementation of the remedial action.
Migration of contaminants to groundwater and surface water	Prevent future migration of soil COCs to groundwater and surface water at levels that cause unacceptable risks or exceed cleanup goals.	Soil leachability test data from samples collected in June 2014 (see Appendix F) indicate no leachability criteria exceedances. In addition, empirical data (collocated soil and groundwater data; including groundwater data from samples collected in June 2014) suggest COCs are not migrating to groundwater at levels that cause unacceptable risk or criteria exceedances in groundwater. LUCs and inspections will be implemented to ensure that land use (industrial) does not change and to ensure that contact with COCs at concentrations that would cause an unacceptable risk under more intensive uses is prevented for the life of the remedy. Periodic inspections of the site would be conducted to verify that cover(s) (soil, asphalt, and concrete pavement) are not disturbed where Industrial cleanup levels are exceeded in subsurface soil and to ensure continued compliance with and effectiveness of the LUCs. Sampling will determine if sediment and debris/soil piles pose a risk of migration to surfaces waters. Piles will be managed, as required by applicable standards, to prevent any release of contaminants to either surface *water* or groundwater.
Use of groundwater	Restore groundwater quality for the COCs to its beneficial reuse.	MNA will monitor the decrease of COC concentrations to natural steady-state conditions over time, as the northern area aquifer biological activity progresses and the central area aquifer matrix geochemistry rebalances, and will document when steady-state conditions are achieved. Groundwater quality will be established through comparison of successive rounds of groundwater sampling data to cleanup levels as specified in the LTM Plan to be developed after the ROD. LUCs will restrict the use of site groundwater until cleanup levels are achieved.
Direct exposure to, and ingestion of groundwater by industrial workers and hypothetical residents	Prevent residential and industrial exposure to site groundwater until groundwater cleanup goals have been achieved.	LUCs will restrict the use of site groundwater until cleanup levels are achieved.
Inhalation of indoor air vapor by industrial workers and hypothetical residents	Prevent residential and industrial exposure to vapors resulting from subsurface contaminants.	LUCs also will include a requirement to evaluate vapor intrusion risk, should site development involving the construction of buildings occur before groundwater cleanup levels for volatile organic compounds (e.g., trichloroethene [TCE] and vinyl chloride) are met. Vapor intrusion issues will be addressed once groundwater cleanup levels are achieved.

- **Cost-Effectiveness** – The Selected Remedy is a cost-effective alternative that allows for continued industrial use of the property. The costs are proportional to overall effectiveness by achieving an adequate amount of long-term effectiveness and permanence within a reasonable time frame. Detailed costs for the Selected Remedy are presented in Appendix B. These cost estimates are based on the conceptual designs evaluated during the FS. Line item quantities and costs may vary based on the engineering designs developed during the RD phase following this ROD.

- **Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable** – For soil, the Navy, EPA, and RIDEM have concluded that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be used in a practical manner. Large volumes of contaminated soils remain above state criteria, but pose a relatively low long-term threat (i.e., not principal threat). Because there are no source materials at this site that constitute a principal threat, the Selected Remedy is not required to satisfy the statutory preference for remedies employing treatment that reduce the toxicity, mobility, or volume as a principal element. The Selected Remedy for soil includes covers and LUCs, and provides the best balance of cost versus benefit to achieve the remedial goals. The Selected Remedy for soil does not include treatment.

  For groundwater, the Selected Remedy represents the maximum extent to which permanent solutions and alternative treatment technologies can be used in a practical manner. Based on the type and volume of contamination, in-situ treatment alternatives could cause greater short-term risk, be more difficult to implement, and have a significantly greater cost. MNA and LTM of groundwater COCs with LUCs provide the best balance of tradeoffs for long-term effectiveness and permanence with ease of implementation for reasonable cost. The Selected Remedy for groundwater does not include treatment.

- **Five-Year Review Requirement** – Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on site in excess of levels that allow for UU/UE, a statutory review will be conducted within 5 years after initiation of remedial action and every 5 years thereafter to ensure that the remedy is, or will be, protective of human health and the environment.

2.14 DOCUMENTATION OF SIGNIFICANT CHANGES

CERCLA Section 117(b) requires an explanation of significant changes from the Selected Remedy presented in the Proposed Plan that was published for public comment. After publication of the Proposed Plan, improvement construction project activities within the Northern Area potentially released asbestos from excavated/stockpiled debris and soil containing ACM. In addition, excavated sediments and soils were stockpiled that potentially contaminated the site. The Navy has modified the Preferred Remedy presented in the Proposed Plan by adding the PRD sampling component to assess the potential contaminant releases from the construction activities in the Northern Area. The remedy may need to be modified based on the PRD sampling results following finalization of this ROD. Short-term protective measures will be implemented to restrict exposure to ACM in debris/soil and potentially contaminated sediment until they are removed from the site. These measures will include containment of the existing stockpiles and management of erosion and storm water runoff. Additionally, short-term LUCs, in the form of a Base Instruction, have been implemented to restrict exposure to the site soils that may have been impacted from the excavation/demolition and stockpiling of these soils/debris and sediments until the results of the PRD soil sampling determines if remedial action of these soils is necessary. These controls include maintenance of the existing fencing to prevent uncontrolled access and the restriction of unauthorized excavation of the soils in the Northern Area.

Formal comments received during the public comment period and the associated responses are provided in Section 3.0 (Responsiveness Summary).

3.0 RESPONSIVENESS SUMMARY

3.1 STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

Participants in the public meeting (informal session) held on May 21, 2014, included RAB members and representatives of the Navy, EPA, and RIDEM. The questions raised at the public meeting were general inquiries for informational purposes and were addressed at the public meeting. A formal public hearing was held immediately following the public meeting. Oral comments received during the public hearing and written comments received during the public comment period are summarized in Table 3-1. The transcript of the public hearing is included as Appendix E.

TABLE 3-1. SUMMARY OF QUESTIONS FROM PUBLIC COMMENT PERIOD

QUESTION/COMMENT	RESPONSE
From Public Hearing	
Ms. Margaret Kirschner: If one attributed contamination to pier operations versus Derecktor operations, would all other contaminants have been found any way?	If the on-shore portion of Derecktor Shipyard was not investigated, all of the contamination may not have been identified.
Ms. Kathy Abbass / Rhode Island Marine Archeology Project: Will the remedy be protective of stream/culvert and wetland under the railroad tracks? Also, please be mindful of potential cultural finds that could be of historical significance.	The remedies will be implemented to protect coastal and wetland resources. The remedy for Site 19 – On-Shore Derecktor Shipyard (OU12) will not impact this culvert/stream. Cultural finds will be identified if encountered during any ancillary excavations; however, note the remedy mostly includes the addition of imported soil.
Mr. David Brown: Navy has done competent and thorough job. However, we may need a fuller picture of groundwater flow from this site and from upgradient sites, and what is staying at the site versus flowing into the bay. If upgradient contaminants are not addressed, this could undermine the Shipyard remedies. Consider implementing reduced runoff programs at upgradient Navy housing developments, etc.	Upgradient sites also are being addressed under the Navy IR Program. Upgradient contamination evaluations were part of the investigation and will be part of long-term groundwater monitoring.
From Public Comment Period	
None.	Not applicable.

3.2 TECHNICAL AND LEGAL ISSUES

No additional technical or legal issues associated with the Site 19 – On-Shore Derecktor Shipyard (OU12) ROD were identified.

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References

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DETAILED ADMINISTRATIVE RECORD REFERENCE TABLE

RECORD OF DECISION
SITE 19 – ON-SHORE DERECKTOR SHIPYARD
SOIL AND GROUNDWATER (OPERABLE UNIT 12)
NAVAL STATION NEWPORT, RHODE ISLAND

DETAILED ADMINISTRATIVE RECORD REFERENCE TABLE

ITEM	REFERENCE PHRASE IN ROD	LOCATION IN ROD	LOCATION OF INFORMATION IN ADMINISTRATIVE RECORD
1	**Preliminary Assessment (PA)**	Table 2-1	Halliburton NUS Corporation, 1993. *Preliminary Site Assessment (PA) Report, Derecktor Shipyard, Middletown, Rhode Island*. May.
2	**Site Assessment Screening Evaluation (SASE)**	Table 2-1	B&R, 1997. *Draft Final Site Assessment Screening Evaluation (SASE) Report, Former Robert E. Derecktor Shipyard, Naval Education and Training Center, Newport, Rhode Island*. June.
3	**Removal Actions**	Table 2-1	OHM, 1996. *Final Closure Report for Remedial Action, Derecktor Shipyard Sand Blast Grit Removal, Naval Education and Training Center – Newport, Rhode Island*. February. Foster Wheeler Environmental, 2002. *Final Remedial Action Report for Various Removal Actions at the Derecktor Shipyard and Miscellaneous Investigations at Naval Station Newport, Naval Station Newport, Newport, Rhode Island*. July. Tetra Tech EC, 2005. *Final Closeout Report for Sand Blast Grit Removal at Derecktor Shipyard, Naval Station Newport, Portsmouth, Rhode Island.* June. Tetra Tech EC, 2008. *Final Removal Action Completion Report for Sandblast Grit Removal at Derecktor Shipyard, Naval Station Newport, Portsmouth, Middletown, Rhode Island*. March. Tetra Tech, 2014. *Feasibility Study for Site 19 – On-Shore Derecktor Shipyard (OU12), NAVSTA Newport, Rhode Island*. May.
4	**Background Soil Investigation**	Table 2-1	Tetra Tech, 2008. *Basewide Background Study Report for Naval Station Newport, Newport, Rhode Island*. July.
5	**Data Gaps Investigation (SASE Addendum)**	Table 2-1	Tetra Tech, 2013. *Final Study Area Screening Evaluation (SASE) Addendum for Site 19 - On-Shore Derecktor Shipyard, Naval Station Newport, Rhode Island*. January.
6	**Human Health Risk Assessment (HHRA)**	Table 2-1 and Section 2.7.1	B&R, 1997. Tetra Tech, 2014.
7	**Ecological Risk Assessment (ERA)**	Table 2-1 and Section 2.7.2	B&R, 1997. Tetra Tech, 2014.
8	**Feasibility Study (FS)**	Table 2-1	Tetra Tech, 2014.
9	**remedial alternatives**	Section 2.9	Tetra Tech, 2014.
10	**public notice**	Section 2.3	*Newport Daily News* on May 16, 2014.
11	**groundwater flow**	Section 2.5.1 and 2.5.2	Tetra Tech, 2013 and 2014.
12	**potential receptors**	Section 2.7	Tetra Tech, 2013 and 2014.
16	**Chemicals of Potential Concern (COPCs were identified**	Section 2.8	Tetra Tech, 2013 and 2014.
13	**exposure assessment**	Section 2.7	Tetra Tech, 2013 and 2014.

DETAILED ADMINISTRATIVE RECORD REFERENCE TABLE			
ITEM	REFERENCE PHRASE IN ROD	LOCATION IN ROD	LOCATION OF INFORMATION IN ADMINISTRATIVE RECORD
14	**cancer risks and non-cancer hazards**	Section 2.7	Tetra Tech, 2013 and 2014.
15	**Remedial Action Objectives (RAOs)**	Section 2.8	Tetra Tech, 2014.
16	**Chemicals of Concern (COCs)**	Section 2.8	Tetra Tech, 2014.
17	**Preliminary Remediation Goals (PRGs)**	Section 2.8	Tetra Tech, 2014.
18	**Cleanup Levels**	Section 2.8	Tetra Tech, 2014.
19	**preliminary technology screening**	Section 2.9	Tetra Tech, 2014.
20	**nine CERCLA evaluation criteria**	Section 2.10	Tetra Tech, 2014.

ADDITIONAL REFERENCES

B&R (Brown and Root Environmental, Inc.), 1997. *Draft Final Site Assessment Screening Evaluation (SASE) Report, Former Robert E. Derecktor Shipyard, Naval Education and Training Center, Newport, Rhode Island*. June.

EPA, 1990. *Guidance on Remedial Actions for Superfund Sites with PCB Contamination*. Office of Emergency and Remedial Response. EPA-540-G-90-007. August.

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Foster Wheeler Environmental, 2002. *Final Remedial Action Report for Various Removal Actions at the Derecktor Shipyard and Miscellaneous Investigations at Naval Station Newport, Naval Station Newport, Newport, Rhode Island*. July.

Halliburton NUS Corporation, 1993. *Preliminary Site Assessment (PA) Report, Derecktor Shipyard, Middleton, Rhode Island*. May.

Navy, 2014. *Final Proposed Remedial Action Plan for Site 19 - On-Shore Derecktor Shipyard (OU12), Naval Station Newport, Rhode Island*. May.

OHM, 1996. *Final Closure Report for Remedial Action, Derecktor Shipyard Sand Blast Grit Removal, Naval Education and Training Center – Newport, Rhode Island*. February.

Tetra Tech EC, 2005. *Final Closeout Report for Sand Blast Grit Removal at Derecktor Shipyard, Naval Station Newport, Portsmouth, Rhode Island.* June.

Tetra Tech EC, 2008. *Final Removal Action Completion Report for Sandblast Grit Removal at Derecktor Shipyard, Naval Station Newport, Portsmouth, Middletown, Rhode Island*. March.

Tetra Tech NUS (Tetra Tech), 2004. *Five-Year Review for Naval Station Newport, Newport, Rhode Island*. December.

Tetra Tech, 2008. *Basewide Background Study Report for Naval Station Newport, Newport, Rhode Island*. July.

Tetra Tech, 2013. *Final Study Area Screening Evaluation (SASE) Addendum for Site 19 - On-Shore Derecktor Shipyard, Naval Station Newport, Rhode Island*. January.

Tetra Tech, 2014. *Final Feasibility Study (FS) for Site 19 - On-Shore Derecktor Shipyard (OU12), Naval Station Newport, Rhode Island*. May.

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Figures

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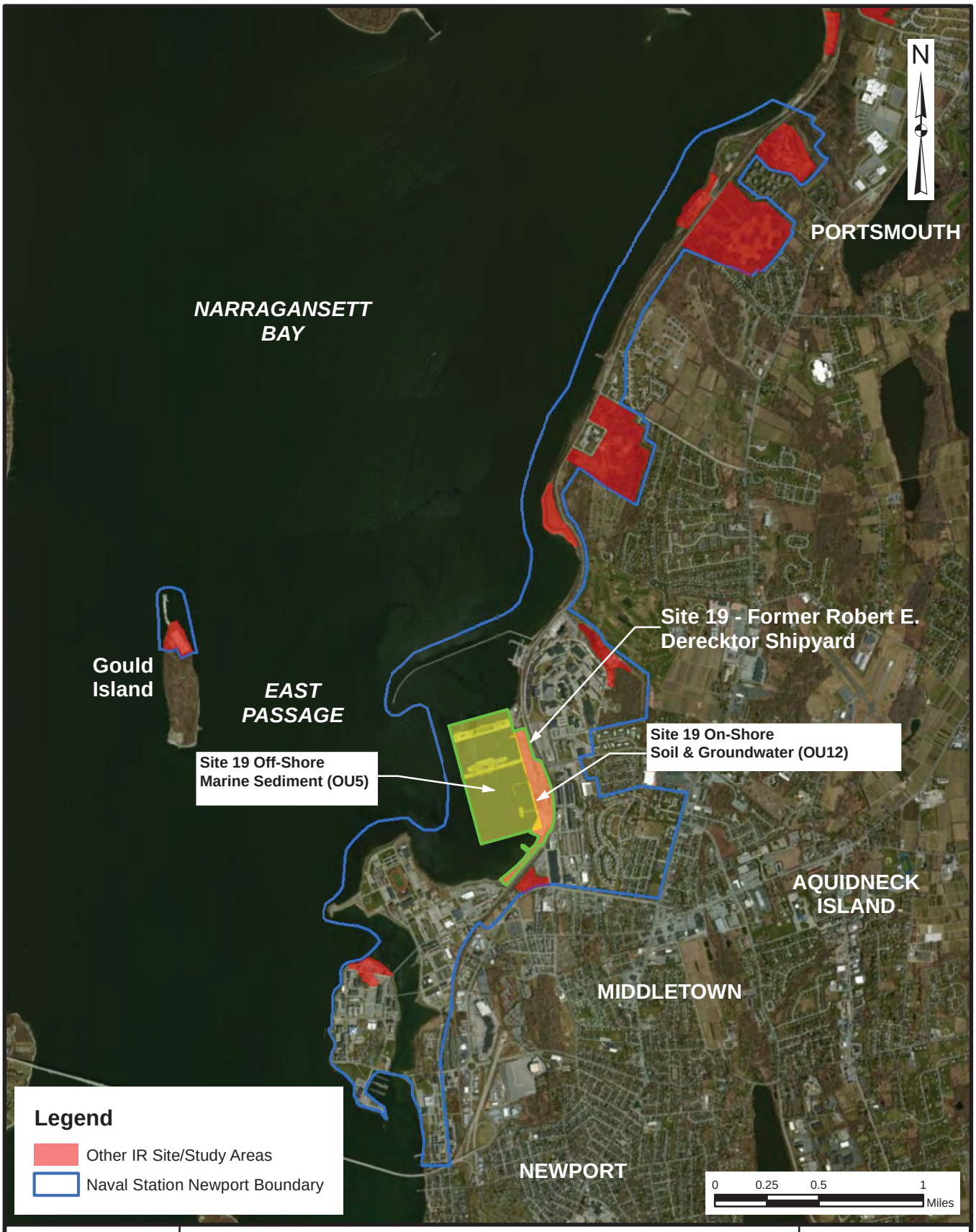

TETRA TECH

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

SITE LOCUS

SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
RECORD OF DECISION

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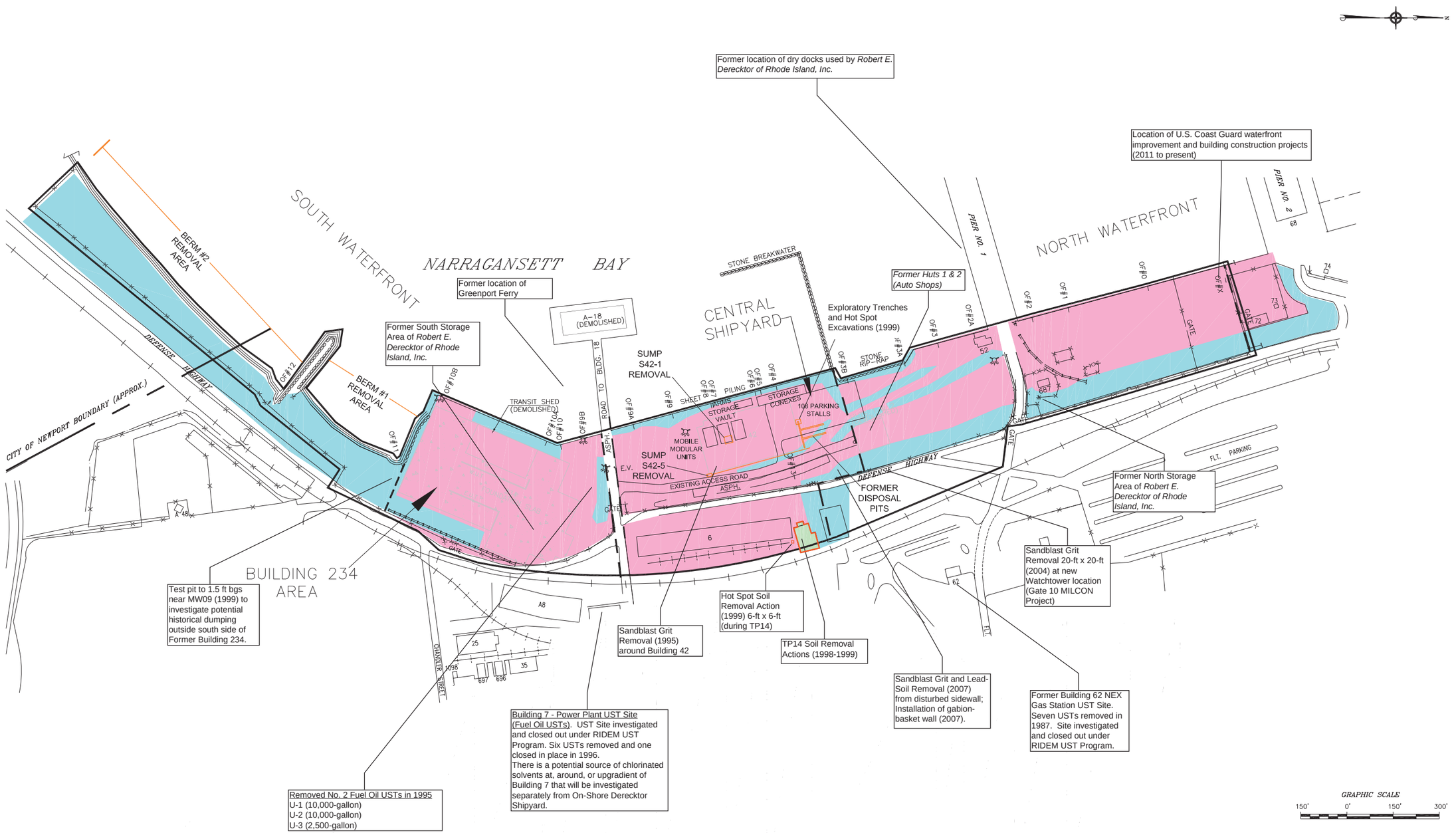

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LEGEND

- FENCE
- OF#10A — OUTFALL LOCATION WITH IDENTIFIER
- HYDRANT LOCATION
- A-18 — BUILDING AND NUMBER
- SITE BOUNDARY
- PAVED AREA
- UNPAVED AREA
- PCB REMOVAL AREA
- INTERIM REMOVAL ACTION AREA

Notes:
1. All locations to be considered approximate.
2. Plan NOT to be used for design.
3. Compiled from actual field survey plan by Louis Federici & Assoc., Providence, RI, and U.S. Navy Plans, and historical documents such as removal action completion reports.
4. Site 19 - On-Shore Derecktor Shipyard was investigated and evaluated for risks as five separate subareas, as shown on this figure: North Waterfront Area, Central Shipyard Area, PCB Removal Area, Former Building 234 Area, and South Waterfront Area. During development of the FS, new subarea boundaries were defined to improve the development of soil remedial action alternatives and eventual implementation of soil actions: Northern Area, Central Area, and Southern Area (see Figure 2-2).
5. This figure (Figure 2-1a) and Figure 2-1b show outdated pavement conditions due to removal actions and unrelated site improvements (construction and demolition). Current conditions based on aerial photography dated 2010 and site walks in January 2014 are shown on Figure 2-4 and Figure 2-8.

TETRA TECH

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

HISTORICAL SITE LAYOUT AND FEATURES

SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
RECORD OF DECISION

FILE	SCALE
\\..\DERECKTOR_SITE_FEATURES.DWG	PER SCALE BAR
FIGURE NUMBER 2-1a	**REV** 3 **DATE** 07/31/2014

ACAD:I:\02125\GIDF\DERECKTOR_SITE_FEATURES.DWG 10/11/12 DWM

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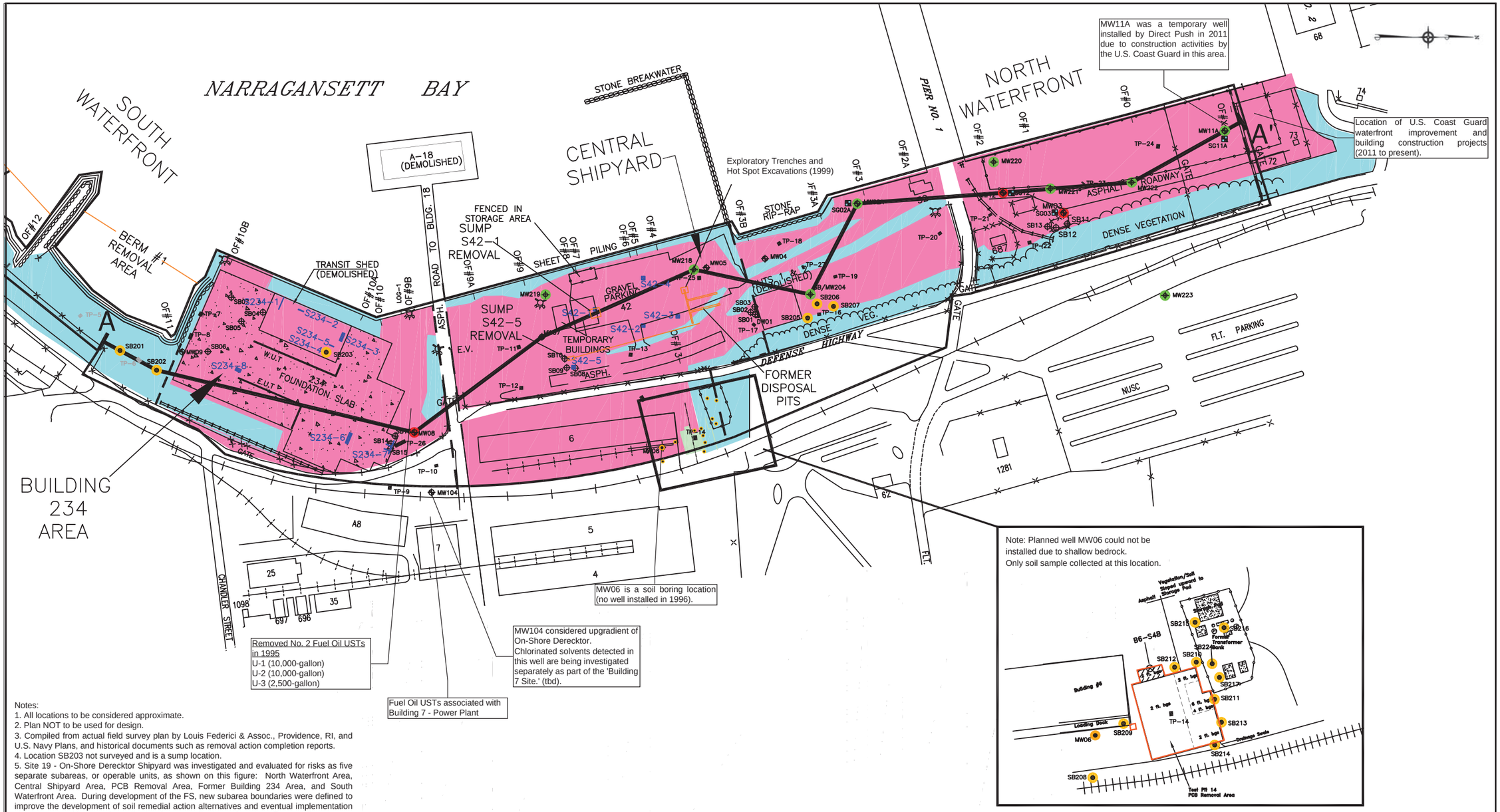

Note: Planned well MW06 could not be installed due to shallow bedrock. Only soil sample collected at this location.

Notes:
1. All locations to be considered approximate.
2. Plan NOT to be used for design.
3. Compiled from actual field survey plan by Louis Federici & Assoc., Providence, RI, and U.S. Navy Plans, and historical documents such as removal action completion reports.
4. Location SB203 not surveyed and is a sump location.
5. Site 19 - On-Shore Derecktor Shipyard was investigated and evaluated for risks as five separate subareas, or operable units, as shown on this figure: North Waterfront Area, Central Shipyard Area, PCB Removal Area, Former Building 234 Area, and South Waterfront Area. During development of the FS, new subarea boundaries were defined to improve the development of soil remedial action alternatives and eventual implementation of soil actions: Northern Area, Central Area, and Southern Area (see Figure 2-2).
6. Figure 2-1a and this figure (Figure 2-1b) show outdated pavement conditions due to removal actions and unrelated site improvements (construction and demolition). Current conditions based on aerial photography dated 2010 and site walks in January 2014 are shown on Figure 2-4 and Figure 2-8.

LEGEND

- TRANSECT (A)
- FENCE
- SUMP WITH IDENTIFIER (S234–6)
- OUTFALL LOCATION WITH IDENTIFIER (OF#10A)
- HYDRANT LOCATION
- BUILDING AND NUMBER (A–18)
- SOIL BORING INSTALLED / SAMPLED BEFORE 2011 (SB16)
- FORMER TEST PIT LOCATION (TP–5)
- OTHER EXISTING WELL INSTALLED BEFORE 2011 (MW11)
- SITE BOUNDARY
- SOIL BORING INSTALLED IN 2011 (sampled in 2011)
- WELL INSTALLED IN 2011 (sampled in 2011)
- WELL INSTALLED BEFORE 2011 (sampled in 2011)
- SOIL GAS SAMPLE LOCATION
- PAVED AREA
- UNPAVED AREA
- PCB REMOVAL AREA
- INTERIM REMOVAL ACTION AREA

GRAPHIC SCALE
150' 0' 150' 300'

TETRA TECH

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

SAMPLE LOCATIONS REPRESENTING CURRENT CONDITIONS

SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
RECORD OF DECISION

FILE	SCALE
\..\DER_SHIP_ON-SHORE_X-SECTION_LOC.DWG	PER SCALE BAR
FIGURE NUMBER 2-1b	REV 3 / DATE 07/31/14

ACAD:I:\04095\FSDR\DER_SHIP_ON-SHORE_X-SECTION_LOC.DWG 11/29/12 DWM

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Bing Maps aerial:
Aerial photograph from ESRI Bing Maps map service
(© 2010 Microsoft Corporation and its data suppliers).

Note: This aerial photograph was taken when RDA Construction performing work on the project and the site appearance is much different than today. The locations for the various items shown are approximate locations only. Quantities are approximate.

Concrete - USCG approx 20 cy re-bar reinforced concrete "T"-shaped spread footing debris from Bldg 72 demolition.

"Cyan" pile - USCG approx 15 cy of soil and asphalt from previously paved area.

New USCG Facility: Foundation, CMU walls, and Steel Roof trusses in place.

Soil
Northern Area
(Action Requirement To Be Determined)
(Pre-Remedial Design Sampling and Risk Evaluation after ROD)

"Blue" pile - 70% USN, 30% USCG approx 540 cy marine sediments from waterside between Navy Center and South Bulkhead.

North Waterfront Area

"Orange" pile - USCG approx 800 cy of soil from new bldg & utility excavations, adjacent to duct bank debris with ACM conduit

Rock and Concrete approx 20 cy each, separated from "Blue" pile

"Yellow" pile - USCG approx 700 cy active cut/fill soil pile from curb installation along eastern boundary of entire project site.

"Green" pile - USCG approx 125 cy soil from landside behind bulkhead for tie rods

"Red" Pile - USN approx 800 cy soil from landside excavation behind diagonal bulkhead.

Note: ex-Saratoga departed on 21 August 2014

Concrete - USCG approx 15 cy each unreinforced concrete rubble from SE and NW utility pads

Soil
Central Area
(Action Required)

PCB Removal Area

Central Shipyard Area

Groundwater
Site-Wide
(Action Required)

Narragansett Bay

Former Building 234 Area

Paved recreational exercise path

Site Boundary / CERCLA Action required for Groundwater

CERCLA Investigation and Risk Assessment Subarea Boundary

CERCLA Action required for Soil

CERCLA No Further Action required for soil (or Action Requirement to be determined).

South Waterfront Area

Soil
Southern Area
(No Further Action)

Coddington Cove

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TETRA TECH

Map by: EC 09/10/14

Project #: 112G04095

Map Location

0 100 200 400

Scale in Feet

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

FIGURE 2-2 - SITE PLAN

SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
RECORD OF DECISION

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Note: This three-dimensional interpretive CSM picture shows monitoring wells and groundwater contaminants that are projected west (i.e., into the figure, between the profile-cut and the Bay). The top of each respective monitoring well is shown on the ground surface.

LEGEND

- Soil contaminants
- Groundwater contaminants
- Groundwater Monitoring Well

RECEPTORS

Current/Future Trespasser—Dermal contact with and incidental ingestion of surface soil/air.

Future Resident—Dermal contact with and incidental ingestion of surface soil/subsurface soil; dermal contact with and ingestion of tap water (groundwater); inhalation of air.

Current/Future Industrial Worker—Dermal contact with and incidental ingestion of surface soil/subsurface soil, air and groundwater.

Current/Future Construction Worker—Dermal contact with and incidental ingestion of soil/shallow groundwater; inhalation of dust and trench air.

TETRA TECH

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

INTERPRETIVE CONCEPTUAL SITE MODEL

SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
RECORD OF DECISION

File	No Scale (perspective)
Figure Number 2-3	Date: 07/30/14

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Surface Soil

Subsurface Soil

Northern Area

Central Area

Southern Area

MW-11 TP-23 SB-11 MW-03 TP-22 MW-12 TP-21 TP-20 MW-02 TP-19 SB207 TP-28 SB206 TP-16 TP-27 SB204 SB205 TP-18 MW-04 TP-17 MW-05 SB216 SB217 SB215 SB224 TP-14 SB209 SB208 MW-06 TP-15 MW-07 TP-12 TP-11 TP-10 MW-08 TP-09 TP-26 TP-07 TP-08 MW-09

MW-11 TP-24 TP-23 MW-03 TP-22 MW-12 TP-21 TP-20 MW-02 TP-19 SB207 TP-28 SB206 TP-16 SB205 TP-27 SB204 TP-18 MW-04 SB-01 SB-03 TP-17 MW-05 TP-DPSOIL TP-25 SB213 SB214 SB211 SB210 TP-14 SB212 MW-06 TP-15 TP-13 S-42-5 (Sump S-42) SB-10 SB-09 MW-07 TP-12 TP-11 TP-10 MW-08 TP-09 SB-14 SB-15 TP-26 SB-04 SB-06 TP-08 MW-09 SB202 TP-06 SB201 TP-05 TP-02 TP-01

No exceedances of RIDEM criteria

Exceeds RIDEM Residential DEC and background, but below Industrial DEC

Exceeds RIDEM Industrial DEC and background

Exceeds RIDEM Residential and/or Industrial DEC, but below background

Paved

Below Water Table

No further CERCLA action for Soils

CERCLA Action Required for soils

No GA Leachability exceedances based on June 2014 data.

Source: ESRI, i-cubed, USDA FSA, USGS AEX, GeoEye, Getmapping, Aerogrid, IGP

RIDEM- Rhode Island Department of Environmental Management Remediation Regulations, November 2011

Bing Maps aerial:
Aerial photograph from ESRI Bing Maps map service (© 2010 Microsoft Corporation and its data suppliers).

Note: See soil data and criteria exceedances in Appendix A (A.1).

NAVFAC Naval Facilities Engineering Command Atlantic Division

Map by: MC 8/11/14

Approved: EC 8/11/14

Project #: 112G04095

Map Location

N

0 75 150 300

Scale in Feet

FIGURE- 2-4
SOIL CRITERIA EXCEEDANCES
SITE 19- ON-SHORE DERECKTOR SHIPYARD
NAVAL STATION NEWPORT, RHODE ISLAND

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Northern Area
Central Area
Southern Area
MW-11
TP-23
SB-11
MW-03
TP-22
MW-12
TP-21
TP-20
MW-02
TP-19
SB207
TP-28
SB206
TP-16
SB205
TP-27
SB204
TP-18
TP-17
MW-04
MW-05
SB216
SB217
SB215
SB224
TP-14
SB209
SB208
MW-06
TP-15
MW-07
TP-12
TP-11
TP-10
MW-08
TP-09
TP-26
TP-07
TP-08
MW-09
TP-24
SB-01
SB-03
TP-DPSOIL
TP-25
SB213
SB214
SB211
SB210
SB212
TP-13
S-42-5
(Sump S-42)
SB-10
SB-09
SB-04
SB-06
SB202
TP-06
SB201
TP-05
SB-14
SB-15
TP-02
TP-01

Other Soil Sample Locations (no exceedances)
Exceeds Industrial Soil Cleanup Level
Exceeds Residential Soil Cleanup Level
No further CERCLA action for Soils
CERCLA Action Required for soils

Source: ESRI, i-cubed, USDA FSA, USGS AEX, GeoEye, Getmapping, Aerogrid, IGP

Bing Maps aerial:
Aerial photograph from ESRI Bing Maps map service (© 2010 Microsoft Corporation and its data suppliers).

Surface Soil

Subsurface Soil

NAVFAC Naval Facilities Engineering Command Atlantic Division

Map by: EC 5/30/14

Approved: EC 5/30/14

Project #: 112G04095

Map Location

N

0 75 150 300

Scale in Feet

FIGURE 2-5
SOIL CLEANUP LEVEL EXCEEDANCES
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
NAVAL STATION NEWPORT, RHODE ISLAND

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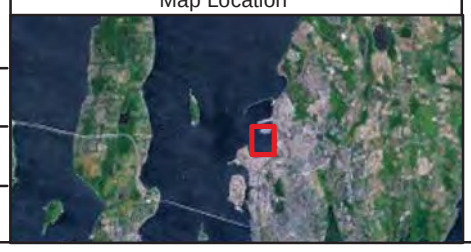
TETRA TECH

Map by: MC 3/11/14

Approved: EC 3/11/14

Project #: 112G04095

Map Location



N

0 100 200 400

Scale in Feet

FIGURE 2-6
GROUNDWATER CLEANUP LEVEL EXCEEDANCES (2011)
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
NAVAL STATION NEWPORT, RHODE ISLAND

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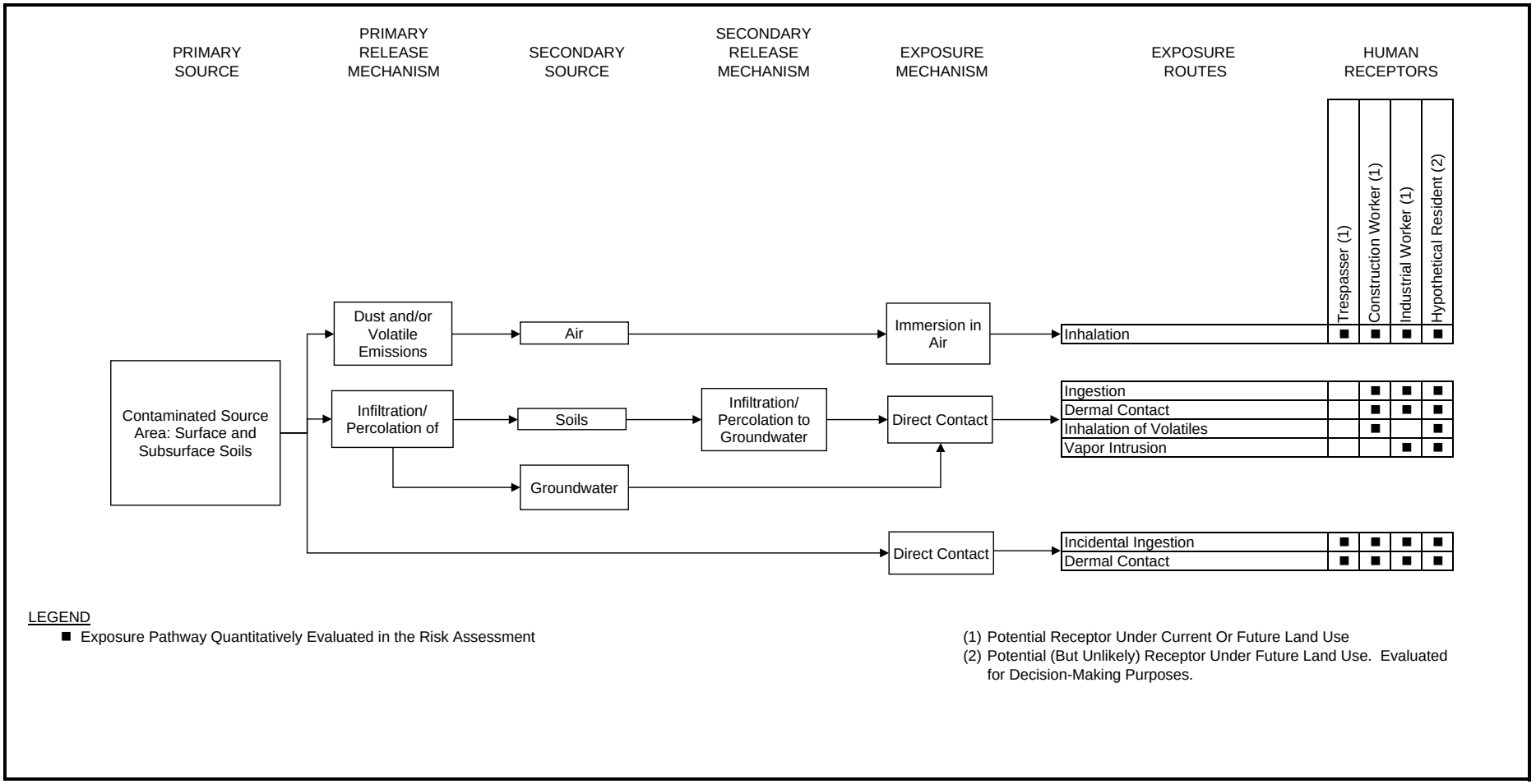

LEGEND

■ Exposure Pathway Quantitatively Evaluated in the Risk Assessment

(1) Potential Receptor Under Current Or Future Land Use
(2) Potential (But Unlikely) Receptor Under Future Land Use. Evaluated for Decision-Making Purposes.

FIGURE 2-7
HUMAN HEALTH CONCEPTUAL SITE MODEL
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
NAVAL STATION NEWPORT, RHODE ISLAND

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TETRA TECH

Map by: EC 06/17/14

Project #: 112G04095

FIGURE 2-8
SOIL ALTERNATIVE S-2
COVER AND LUCs
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
NAVAL STATION NEWPORT, RHODE ISLAND

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TETRA TECH

Map by: MC 3/12/14

Approved: EC 3/12/14

Project #: 112G04095

Map Location

N

0 100 200 400

Scale in Feet

FIGURE 2-9
GROUNDWATER ALTERNATIVE G-2
MNA AND LUCs
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
OU12 - SOIL AND GROUNDWATER
NAVAL STATION NEWPORT, RHODE ISLAND

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Appendix A

Rhode Island Department of Environmental Management (RIDEM) Concurrence Letter

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RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

11 September 2014

Mr. James T. Owens, III, Director
U.S. EPA – New England Region
Office of Site Remediation and Restoration
5 Post Office Square
Suite 100 (OSRR 07-3)
Boston, MA 02109-3912

RE: Record of Decisions for Site 19 – Former Derecktor Shipyard Marine Sediment (OU5) and Onshore Derecktor Shipyard (OU12) Soil and Groundwater
Naval Station Newport, RI

Dear Mr. Owens:

On 23 March 1992 the State of Rhode Island entered into a Federal Facilities Agreement (FFA) with the Department of the Navy and the Environmental Protection Agency. One of the primary goals of the FFA is to ensure that the environmental impacts associated with past activities at Naval Station Newport located in Newport, Rhode Island are thoroughly investigated and that appropriate actions are taken to protect human health and the environment.

In accordance with the FFA, the Department of Environmental Management (Department) has completed its review of the September 2014 Record of Decisions (RODs) for both operable units (OUs) at Site 19 – Former Derecktor Shipyard Marine Sediment (OU5) and Onshore Derecktor Shipyard (OU12) Soil and Groundwater, located at Naval Station Newport, RI.

The Department of the Navy's selected alternative for OU5, as presented in the ROD, is the following: dredging target open water areas and disposal of the dredged sediment at an offsite landfill, installation of a one-foot thick engineered sand/gravel cap at target sub-pier areas under Pier 2, long-term monitoring of the capped sub-pier areas, and implementation of land use controls (LUCs) to prohibit disturbance of the engineered sand/gravel cap and to minimize potential exposure to asbestos in dredged sediment.

The Department of the Navy's selected alternative for OU12, as presented in the ROD, is the following: rehabilitation of existing cover material (soil, concrete or pavement) and installation of a new six-inch soil cover in select areas, monitored natural attenuation (MNA) of groundwater with long-term monitoring, long-term maintenance and inspections, and land use controls (LUCs).

The Department has worked on this Site with the Department of the Navy and the Environmental Protection Agency from the early stages up through this important decision milestone. Based upon this Department's review of these RODs and the results of the remedial investigation activities conducted to date, we offer our concurrence on both of these decisions. This concurrence is

30% post-consumer fiber

contingent upon all aspects of the aforementioned RODs being implemented during design, construction, and operation of the remedies in a timely manner.

The Department wishes to emphasize the following aspects of the RODs:

Former Derecktor Shipyard Marine Sediment (OU5):

- The Navy will conduct a pre-design investigation of the marine sediment to determine whether recent construction activities have modified any of the areas targeted for dredging;

- The Navy will conduct confirmation sampling in open water areas to ensure that cleanup levels have been met on an area-average basis, and in capped areas to ensure that COCs left beneath the pier do not migrate into the cap during placement or migrate after capping;

- The Navy will implement a long-term monitoring plan for the capped sub-pier areas to ensure that COCs remaining beneath the pier are not re-exposed or migrating;

- The Navy will implement LUCs to ensure that the capped sub-pier areas will be protected or addressed in another manner if Pier 2 is ever reconstructed or demolished;

- The Navy will establish safe work practices in the LUC documentation that require future dredging and pier/waterfront maintenance and construction projects to consider the presence of potential asbestos to ensure that dredge spoils are handled appropriately;

Onshore Derecktor Shipyard (OU12) Soil and Groundwater:

- The Navy will conduct a pre-design investigation of the North Waterfront Area to determine whether contaminant risks are present above remedial goals due to the recent construction activities at the Site; the remedy may need to be modified based on the pre-design sampling results;

- The Navy will implement interim LUCs to prevent exposure to asbestos and sediment-related contaminants in the North Waterfront Area;

- The Navy will implement groundwater use restrictions and a long-term monitoring plan for the Site;

- If, after an appropriate amount of data has been collected, MNA is determined to be an ineffective remedy for addressing chlorinated solvents and/or metals in groundwater, the Navy will seek a change to the remedial action for groundwater, using an additional public notification and ROD amendment or Explanation of Significant Differences (ESD);

- The Navy will implement LUCs to prevent residential and unrestricted recreational uses of the Site; and

- The Navy will implement LUCs to require long-term maintenance and inspections of the new and existing cover material (soil, concrete or pavement) and the monitoring wells.

As stated in the RODs for both OUs, the Navy will conduct five-year reviews to ensure that the remedial actions for the Site continue to provide adequate protection of human health and the environment.

RIDEM would like to thank the Navy for their diligence in investigating this site and working with the affected stakeholders by considering their concerns in the decision-making process. We urge the Navy to make every effort to continue to consider such concerns and endeavor to have these remedies implemented in a manner that allows the local community maximum participation in this process.

Sincerely,

Janet Coit
Director

cc: Terrence Gray, RIDEM
Leo Hellested, RIDEM
Matthew DeStefano, RIDEM
Richard Gottlieb, RIDEM
Pamela Crump, RIDEM
Lynne Jennings, USEPA
Kymberlee Keckler, USEPA
James Gravette, Navy

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Appendix B

Cost Estimates

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TABLE B-1.1
PRESENT VALUE ANALYSIS
SOIL ALTERNATIVE S-2 : COVERS AND LAND USE CONTROLS
SITE 19-ON-SHORE DERECKTOR SHIPYARD
NAVAL STATION NEWPORT, RHODE ISLAND

Year	Capital Cost	Annual Cost	Costs Every 5 Years	Total Year Cost	Annual Discount Rate at 1.9%	Present Worth
0	**$777,303**	$0		$777,303	1.000	$777,303
1		$2,500		$2,500	0.981	$2,453
2		$2,500		$2,500	0.963	$2,408
3		$2,500		$2,500	0.945	$2,363
4		$2,500		$2,500	0.927	$2,319
5		$2,500	$45,000	$47,500	0.910	$43,234
6		$2,500		$2,500	0.893	$2,233
7		$2,500		$2,500	0.877	$2,191
8		$2,500		$2,500	0.860	$2,151
9		$2,500		$2,500	0.844	$2,110
10		$2,500	$45,000	$47,500	0.828	$39,351
11		$2,500		$2,500	0.813	$2,032
12		$2,500		$2,500	0.798	$1,995
13		$2,500		$2,500	0.783	$1,957
14		$2,500		$2,500	0.768	$1,921
15		$2,500	$45,000	$47,500	0.754	$35,816
16		$2,500		$2,500	0.740	$1,850
17		$2,500		$2,500	0.726	$1,815
18		$2,500		$2,500	0.713	$1,782
19		$2,500		$2,500	0.699	$1,748
20		$2,500	$45,000	$47,500	0.686	$32,599
21		$2,500		$2,500	0.674	$1,684
22		$2,500		$2,500	0.661	$1,652
23		$2,500		$2,500	0.649	$1,622
24		$2,500		$2,500	0.637	$1,591
25		$2,500	$45,000	$47,500	0.625	$29,671
26		$2,500		$2,500	0.613	$1,533
27		$2,500		$2,500	0.602	$1,504
28		$2,500		$2,500	0.590	$1,476
29		$2,500		$2,500	0.579	$1,448
30		$2,500	$45,000	$47,500	0.569	$27,006

TOTAL PRESENT WORTH= $1,030,819

Notes:

● The 30-year timeframe evaluated for Alternative S-2 is used to provide a reasonably accurate cost estimate. In reality, O&M will continue and the LUCs will be enforced in perpetuity to maintain industrial land use.

● The "Real" Discount Rate used to calculate the Present Value (PV) is timeframe dependent per the Office of Management and Budget (OMB), *Circular A-94, Appendix C, Revised December 2013, "Discount Rates for Cost Effectiveness, Lease Purchase, and Related Analysis" for Calendar Year 2014*, http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c/.

● The information in this cost estimate is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements can occur as a result of new information and data collected. This is an order-of-magnitude engineering cost estimate that is expected to be within –30 to +50 percent of the actual project cost.

TABLE B-1.2
CAPITAL COST - LUCs
SOIL ALTERNATIVE S-2 : COVERS AND LAND USE CONTROLS
SITE 19 - ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVAL STATION NEWPORT, RHODE ISLAND

Item	Quantity	Unit	Unit Cost				Total Cost				Total Direct Cost
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
1 PROJECT DOCUMENTS/LAND USE CONTROLS											
1.1 Prepare Documents and Plans	120	hr			$38.79		$0	$0	$4,655	$0	$4,655
1.2 Prepare Land Use Controls Documents	200	hr			$38.79		$0	$0	$7,758	$0	$7,758
Subtotal							$0	$0	$12,413	$0	$12,413
Local Area Adjustments							100.0%	99.2%	111.1%	101.9%	
							$0	$0	$13,791	$0	$13,791
Overhead on Labor Cost @ 30%									$4,137		$4,137
G & A on Labor Cost @ 10%									$1,379		$1,379
G & A on Material Cost @ 10%								$0			$0
G & A on Subcontract Cost @ 10%							$0				$0
G & A on Equipment Cost @ 10%										$0	$0
Tax on Materials and Equipment Cost @ 6%								$0		$0	$0
Total Direct Cost							$0	$0	$19,307	$0	$19,307
Indirects on Total Direct Cost @ 15%											$2,896
Profit on Total Direct Cost @ 10%											$1,931
Subtotal											$24,134
Total Field Cost											$24,134
Contingency on Total Field Costs @ 0%											$0
Engineering on Total Field Cost @ 0%											$0
TOTAL COST											**$24,134**

TABLE B-1.3
CAPITAL COST - COVERs
SOIL ALTERNATIVE S-2 : COVERS AND LAND USE CONTROLS
SITE 19 - ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVAL STATION NEWPORT, RHODE ISLAND

Maintain TRZ 7 pavement. Maintain existing as-is TRZ 1 and 2.
6-inch soil cover on TRZs 3, 4, 6, and TRZ 8
repave TRZ 5

Item	Quantity	Unit	Unit Cost Subcontract	Unit Cost Material	Unit Cost Labor	Unit Cost Equipment	Total Cost Subcontract	Total Cost Material	Total Cost Labor	Total Cost Equipment	Subtotal Direct Cost
1 PROJECT DOCUMENTS/INSTITUTIONAL CONTROLS											
1.1 Prepare Documents and Plans, and Permits	300	hr			$38.79		$0	$0	$11,637	$0	$11,637
2 WORK PLANNING											
1.2 Remedial Action Work Plan	100	hr			$38.79		$0	$0	$3,879	$0	$3,879
3 SITE PREPARATION AND FIELD SUPPORT											
3.1 Office Trailer	2	mo				$400.00	$0	$0	$0	$800	$800
3.2 Field Office Support	2	mo		$200.00			$0	$400	$0	$0	$400
3.3 Storage Trailer	2	mo				$103.00	$0	$0	$0	$206	$206
3.4 Utility Connection/Disconnection (phone/electric)	1	ls	2000.00				$2,000	$0	$0	$0	$2,000
3.5 Site Utilities	1	mo	200.00				$200	$0	$0	$0	$200
3.6 Underground Utility Clearances	1	ls	4000.00				$4,000	$0	$0	$0	$4,000
3.7 Construction Survey Support	2	day	1150.00				$2,300	$0	$0	$0	$2,300
3.8 Equipment Mobilization/Demobilization	4	ea			$188.00	$566.00	$0	$0	$752	$2,264	$3,016
3.9 Site Superintendent	2	mo			$8,229.76		$0	$0	$16,460	$0	$16,460
3.10 Site Health & Safety and QA/QC	2	mo			$6,827.04		$0	$0	$13,654	$0	$13,654
3.11		ls		$1,000.00	$250.00	$200.00	$0	$0	$0	$0	$0
3.12 Water Truck for Dust Control	2	mo				$4,000.00	$0	$0	$0	$8,000	$8,000
3.13 Water for Dust Suppression, 4,000 gal/month	8,000	gal		$0.03			$0	$240	$0		$240
3.14 Cut & Chip Light Trees to 6" diam	0.5	acre			$1,800.00	$1,475.00	$0	$0	$900	$738	$1,638
3.15 Clear Site, grasses & brush	3	acre			$370.00	$345.00	$0	$0	$1,110	$1,035	$2,145
3.16 Erosion and Sedimentation Controls	3	ls	3000.00				$9,000	$0	$0	$0	$9,000
4 DECONTAMINATION											
4.1 Equipment Decon Pad	1	ls		$4,500.00	$3,000.00	$725.00	$0	$4,500	$3,000	$725	$8,225
4.2 Decontamination Services	2	mo		$210.00	$1,800.00	$315.00	$0	$420	$3,600	$630	$4,650
4.3 Decon Water	6,000	gal		$0.20			$0	$1,200	$0	$0	$1,200
4.4 Decon Water Storage Tank,5,000 gallon	2	mo				$645.00	$0	$0	$0	$1,290	$1,290
4.5 Clean Water Storage Tank, 4,000 gallon	2	mo				$580.00	$0	$0	$0	$1,160	$1,160
4.5 Disposal of Decon Waste (liquid & solid)	2	mo	985				$1,970	$0	$0	$0	$1,970
5 EXCAVATION AND DISPOSAL											$0
5.1 Excavator, Crawler Mounted,1-1/2 cy	1.5	mo			$13,264.00	$17,316.80	$0	$0	$19,896	$25,975	$45,871
5.2 Front End Loader, 3 cy (145HP)	1.5	mo			$10,256.00	$8,546.66	$0	$0	$15,384	$12,820	$28,204
5.3 Dozer, Crawler, 105 H. P.	4	week			$2,564.00	$2,754.00	$0	$0	$10,256	$11,016	$21,272
6 BACKFILL AND SITE RESTORATION											
Clean backfill (loamy)											
6.1 6-inch cover TRZs 3, 4, 6 and 8	2,232	cy		$19.60	$0.53	$0.34	$0	$43,747	$1,183	$759	$45,689
6.2		sy		$5.40	$0.63	$0.41	$0	$0	$0	$0	$0
6.3 Fine Grading and seeding, incl. lime, fert, and seed	13,392	sy		$0.56	$1.78	$0.33	$0	$7,500	$23,838	$4,419	$35,758
6.4		cy		$31.50	$3.90	$8.60	$0	$0	$0	$0	$0
6.5 Asphalt, Binder Course, 2" Thick	23,567	sf		$0.73	$0.08	$0.09	$0	$17,204	$1,885	$2,121	$21,210
6.6		sf		$0.39	$0.06	$0.07	$0	$0	$0	$0	$0
7 POST CONSTRUCTION COST											
7.1 Contractor Completion Report	150	hr			$38.79		$0	$0	$5,819	$0	$5,819
7.2 Remedial Action Closeout Report	200	hr			$38.79		$0	$0	$7,758	$0	$7,758
Subtotal							$19,470	$75,211	$141,011	$73,958	$309,650
Local Area Adjustments							100.0%	99.2%	111.1%	101.9%	
							$19,470	$74,609	$156,663	$75,363	$326,105
Overhead on Labor Cost @ 30%									$46,999		$46,999
G & A on Labor Cost @ 10%									$15,666		$15,666
G & A on Material Cost @ 10%								$7,461			$7,461
G & A on Subcontract Cost @ 10%							$1,947				$1,947
G & A on Equipment Cost @ 10%										$7,536	$7,536

TABLE B-1.3
CAPITAL COST - COVERs
SOIL ALTERNATIVE S-2 : COVERS AND LAND USE CONTROLS
SITE 19 - ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVAL STATION NEWPORT, RHODE ISLAND

Maintain TRZ 7 pavement. Maintain existing as-is TRZ 1 and 2.
6-inch soil cover on TRZs 3, 4, 6, and TRZ 8
repave TRZ 5

Item	Quantity	Unit	Unit Cost Subcontract	Unit Cost Material	Unit Cost Labor	Unit Cost Equipment	Total Cost Subcontract	Total Cost Material	Total Cost Labor	Total Cost Equipment	Subtotal Direct Cost
Tax on Materials and Equipment Cost @	6%							$4,477		$4,522	$8,998
Total Direct Cost							$21,417	$82,070	$219,328	$82,900	$405,715
Indirects on Total Direct Cost @	30%	(excluding transportation and disposal cost)									$121,714
Profit on Total Direct Cost @	10%										$40,571
Subtotal											$568,001
Health & Safety Monitoring @	2%	(includes air quality monitoring)									$11,360
Total Field Cost											$579,361
Contingency on Total Field Costs @	20%										$115,872
Engineering on Total Field Cost @	10%	(excluding transportation and disposal cost)									$57,936
TOTAL COST											**$753,169**

TABLE B-1.4
ANNUAL COST
SOIL ALTERNATIVE S-2 : COVERS AND LAND USE CONTROLS
SITE 19 - ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVAL STATION NEWPORT, RHODE ISLAND

Item	Item Cost Years 1 to 30	Item Cost Every 5 years	Notes
Annual LUC Report	$1,500		
LUCs Inspection	$1,000		Annual LUC inspection
Site Review		$15,000	Five-Year Review (assume 5YR is performed in conjunction with other remedy-in-place sites).
Soil Cover and Pavement Maintenance		$30,000	
TOTALS	**$2,500**	**$45,000**	

TABLE B-2.1
PRESENT WORTH ANALYSIS
GROUNDWATER ALTERNATIVE G-2: MNA and LUCs
SITE 19-ON-SHORE DERECKTOR SHIPYARD
NAVAL STATION (NAVSTA) NEWPORT
NEWPORT, RI

Year	Capital Cost	Annual Cost	Cost Every 5 Years	Total Year Cost	Annual Discount Rate at 1.9%	Present Worth
0	**$194,035**	$0		$194,035	1.000	$194,035
1		$152,785		$152,785	0.981	$149,936
2		$152,785		$152,785	0.963	$147,141
3		$40,446		$40,446	0.945	$38,226
4		$40,446		$40,446	0.927	$37,513
5		$40,446	$15,000	$55,446	0.910	$50,466
6		$40,446		$40,446	0.893	$36,127
7		$40,446		$40,446	0.877	$35,453
8		$40,446		$40,446	0.860	$34,792
9		$40,446		$40,446	0.844	$34,144
10		$40,446	$15,000	$55,446	0.828	$45,934
11		$40,446		$40,446	0.813	$32,882
12		$40,446		$40,446	0.798	$32,269
13		$40,446		$40,446	0.783	$31,667
14		$40,446		$40,446	0.768	$31,077
15		$40,446	$15,000	$55,446	0.754	$41,808
16		$20,430		$20,430	0.740	$15,118
17		$20,430		$20,430	0.726	$14,836
18		$20,430		$20,430	0.713	$14,559
19		$20,430		$20,430	0.699	$14,288
20		$20,430	$15,000	$35,430	0.686	$24,316
21		$20,430		$20,430	0.674	$13,760
22		$20,430		$20,430	0.661	$13,503
23		$20,430		$20,430	0.649	$13,251
24		$20,430		$20,430	0.637	$13,004
25		$20,430	$15,000	$35,430	0.625	$22,132
26		$20,430		$20,430	0.613	$12,524
27		$20,430		$20,430	0.602	$12,290
28		$20,430		$20,430	0.590	$12,061
29		$20,430		$20,430	0.579	$11,836
30		$20,430	$15,000	$35,430	0.569	$20,144

TOTAL PRESENT WORTH= $1,201,093

Notes:

- The 30-year timeframe evaluated for Alternative G-2 is used to provide a reasonably accurate cost estimate. O&M of the monitoring well network, long-term groundwater monitoring, and LUCs may continue beyond 30 years until cleanup levels are met.
- The "Real" Discount Rate used to calculate the Present Value (PV) is timeframe dependent per the Office of Management and Budget (OMB), *Circular A-94, Appendix C, Revised December 2013, "Discount Rates for Cost Effectiveness, Lease Purchase, and Related Analysis" for Calendar Year 2014* , http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c/.
- The information in this cost estimate is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements can occur as a result of new information and data collected. This is an order-of-magnitude engineering cost estimate that is expected to be within –30 to +50 percent of the actual project cost.

TABLE B-2.2
CAPITAL COST
GROUNDWATER ALTERNATIVE G-2: MNA and LUCs
SITE 19-ON-SHORE DERECKTOR SHIPYARD
NAVAL STATION (NAVSTA) NEWPORT
NEWPORT, RI

Item	Quantity	Unit	Unit Cost				Total Cost				Total Direct Cost
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
1 PROJECT DOCUMENTS/INSTITUTIONAL CONTROLS											
1.1 Prepare Documents, Plans, and Permits	300	hr			$38.79		$0	$0	$11,637	$0	$11,637
1.2 Prepare Land Use Controls Documents	200	hr			$38.79		$0	$0	$7,758	$0	$7,758
2 SITE PREPARATION AND FIELD SUPPORT											$0
2.1 Underground Utility Clearances	1	ls	2000.00				$2,000	$0	$0	$0	$2,000
2.2 Construction Survey Support	2	day	1150.00				$2,300	$0	$0	$0	$2,300
2.3 Equipment Mobilization/Demobilization	2	ea			$188.00	$566.00	$0	$0	$376	$1,132	$1,508
2.4 Well Installation Oversight	40	hr			$38.79		$0	$0	$1,552	$0	$1,552
2.5 Site Health & Safety and QA/QC	40	hr			$38.79		$0	$0	$1,552	$0	$1,552
3 MNA MONITORING WELLS											$0
3.1 Monitoring Wells Installation (10- 2" wells @20ft. each)	200	ft	$40.00				$8,000	$0	$0	$0	$8,000
3.2 Well Heads	10	ea	$200.00				$2,000	$0	$0	$0	$2,000
3.3 Well Development @ 3 hours/well	10	ea	$300.00				$3,000	$0	$0	$0	$3,000
3.4 IDW Disposal	10	drum	$250.00				$2,500	$0	$0	$0	$2,500
4 NA EVALUATION											$0
4.1 Hydrogeologic Investigation	100	hr			$38.79		$0	$0	$3,879	$0	$3,879
4.2 Baseline Groundwater Sampling and Analysis	1	ls	$33,311.00				$33,311	$0	$0	$0	$33,311
4.3 NA Evaluation Report	250	hr			$38.79		$0	$0	$9,698	$0	$9,698
Subtotal							$53,111	$0	$36,451	$1,132	$90,694
Local Area Adjustments							100.0%	99.2%	111.1%	101.9%	
							$53,111	$0	$40,497	$1,154	$94,761
Overhead on Labor Cost @	30%								$12,149		$12,149
G & A on Labor Cost @	10%								$4,050		$4,050
G & A on Material Cost @	10%							$0			$0
G & A on Subcontract Cost @	10%						$5,311				$5,311
G & A on Equipment Cost @	10%									$115	$115
Tax on Materials and Equipment Cost @	6%							$0		$69	$69
Total Direct Cost							$58,422	$0	$56,695	$1,338	$116,456
Indirects on Total Direct Cost @	25%										$29,114
Profit on Total Direct Cost @	10%										$11,646
Subtotal											$157,215
Health & Safety Monitoring @	2%										$3,144
Total Field Cost											$160,359
Contingency on Total Field Costs @	15%										$24,054
Engineering on Total Field Cost @	6%										$9,622
TOTAL COST											**$194,035**

TABLE B-2.3
ANNUAL COST
GROUNDWATER ALTERNATIVE G-2: MNA and LUCs
SITE 19-ON-SHORE DERECKTOR SHIPYARD
NAVAL STATION (NAVSTA) NEWPORT
NEWPORT, RI

Item	Item Cost Year1	Item Cost Year 2	Item Cost Years 3 to 15	Item Cost Years 16 to 30	Item Cost Every 5 years	Notes
Groundwater Monitoring	$145,785	$145,784.96	$36,446	$16,430		Collect groundwater samples from 23 Wells. Sampling Quarterly Years 1-2 and then annually through Year 30.
Annual Report	$6,000	$6,000	$3,000	$3,000		
LUCs Inspection	$1,000	$1,000	$1,000	$1,000		Annual LUC inspection (assume 16 hours at $50/hr plus expenses)
Site Review					$15,000	Five-Year Review (assume 5YR is performed in conjunction with other remedy-in-place sites).
TOTALS	**$152,785**	**$152,785**	**$40,446**	**$20,430**	**$15,000**	

TABLE B-2.4
MONITORING COST
GROUNDWATER ALTERNATIVE G-2: MNA and LUCs
SITE 19-ON-SHORE DERECKTOR SHIPYARD
NAVAL STATION (NAVSTA) NEWPORT
NEWPORT, RI

Item	Quantity	Unit	Unit Cost Subcontract	Material	Labor	Equipment	Extended Cost Subcontract	Material	Labor	Equipment	Subtotal Direct Cost	Comments
1 MONITORING												
Groundwater Monitoring per Event, Quarterly Years 1 and 2, Annually Years 3 through 15												
1.01 Groundwater for VOCs	23	samples	$120.00	$20.00			$2,760	$460	$0	$0	$3,220	11 wells plus QA/QC
1.02 Groundwater for metals	23	samples	$125.00	$20.00			$2,875	$460	$0	$0	$3,335	15 wells plus QA/QC
1.03 Natural Attenuation Parameters	23	samples	$180.00	$40.00			$4,140	$920	$0	$0	$5,060	Test kits and Lab
1.04 Per Diem 8 day/event/2 people	16	days	$160.00				$2,560	$0	$0	$0	$2,560	
1.05 Vehicle	2	weeks	$450.00				$900	$0	$0	$0	$900	
1.06 IDW disposal	1	ls	$300.00				$300	$0	$0	$0	$300	
1.07 Field labor 8 days/event/2 people	128	hours			$38.00		$0	$0	$4,864	$0	$4,864	
1.08 Data Validation (QA\QC)	20	hours			$38.00		$0	$0	$760	$0	$760	
1.09 Prepare Report	48	hours			$38.00		$0	$0	$1,824	$0	$1,824	
1.10 Equipment Rental @$2200/event	1	events				$1,800.00	$0	$0	$0	$1,800	$1,800	
1.11 Project Management	8	hrs			$46.00		$0	$0	$368	$0	$368	
Subtotal							$13,535	$1,840	$7,816	$1,800	$24,991	
Overhead on Labor Cost @ 30%									$2,345		$2,345	
G & A on Labor Cost @ 10%									$782		$782	
Sales Tax on Material 6%: 6%								$110			$110	
G & A on Material Cost @ 10%								$195			$195	
G & A on Subcontract Cost @ 10%							$1,354				$1,354	
Total Direct Cost							$14,889	$2,145	$10,942	$1,800	$29,776	
Indirects on Total Direct Cost @ 10%											$2,978	
Profit on Total Direct Cost @ 10%											$2,978	
Subtotal											$35,732	
Health & Safety Monitoring @ 2%											$715	
Total Monitoring Cost											**$36,446**	
2 MONITORING												
YEARS 16 through 30 Groundwater Monitoring												
2.01 Groundwater for metals	23	samples	$125.00	$20.00			$2,875	$460	$0	$0	$3,335	13 wells plus QA/QC
2.02 Natural Attenuation Parameters	0	samples	$60.00	$30.00			$0	$0	$0	$0	$0	Test kits
2.03 Per Diem 4 day/event/2 people	8	days	$160.00				$1,280	$0	$0	$0	$1,280	
2.04 Vehicle	4	days	$90.00				$360	$0	$0	$0	$360	
2.05 IDW disposal	1	ls	$300.00				$300	$0	$0	$0	$300	
2.06 Field labor 4 days/event/2 people	64	hours			$38.00		$0	$0	$2,432	$0	$2,432	
2.07 Data Validation (QA\QC)	8	hours			$38.00		$0	$0	$304	$0	$304	
2.08 Prepare Report	32	hours			$38.00		$0	$0	$1,216	$0	$1,216	
2.09 Equipment Rental @$1600/event	1	events				$1,800.00	$0	$0	$0	$1,800	$1,800	
2.10 Project Management	4	hrs			$46.00		$0	$0	$184	$0	$184	
Subtotal							$4,815	$460	$4,136	$1,800	$11,211	
Overhead on Labor Cost @ 30%									$1,241		$1,241	
G & A on Labor Cost @ 10%									$414		$414	
Sales Tax on Material 6%: 6%								$28			$28	
G & A on Material Cost @ 10%								$49			$49	
G & A on Subcontract Cost @ 10%							$482				$482	
Total Direct Cost							$5,297	$536	$5,790	$1,800	$13,423	
Indirects on Total Direct Cost @ 10%											$1,342	
Profit on Total Direct Cost @ 10%											$1,342	
Subtotal											$16,108	
Health & Safety Monitoring @ 2%											$322	
Total Monitoring Cost											**$16,430**	

Appendix C

Human Health Risk Assessment Summary Tables

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Site 19 – On-Shore Derecktor Shipyard (OU12)

Record of Decision
Appendix C

Revised Baseline HHRA Tables (Tetra Tech, 2013)
and
COC and PRG Development Tables (Tetra Tech, 2014).

The Baseline HHRA was conducted for each of the five investigation-subareas in the SASE Addendum Report (Tetra Tech, 2013): North Waterfront Area, Central Shipyard Area, Former Building 234 Area, PCB Removal Area, and South Waterfront Area.

Preliminary Remediation Goals (selected as Cleanup Levels in the ROD) were developed in the Tetra Tech (2014) Feasibility Study for each of the risk-based COCs and criteria-exceedance-based COCs in each subarea. The results were combined into one cumulative list of soil COCs and PRGs for the Central Area (soil actionable area) and one list for groundwater site-wide.

Contents:

- RAGS Part D, Table 3s, Exposure Point Concentrations
- RAGS Part D, Table 4s, Daily Intake Values
- RAGS Part D, Table 5s, Non-Cancer Toxicity Data
- RAGS Part D, Table 6s, Cancer Toxicity Data
- FS Tables 2-4 through 2-12, showing development of individual subarea- and cumulative-COCs and PRGs for each of soil (Central Area) and groundwater (site-wide).
- RAGS Part D, Table 9s, Summary of Receptor Risks and Hazards (North Waterfront Area)
- RAGS Part D, Table 9s, Summary of Receptor Risks and Hazards (Central Shipyard Area)
- RAGS Part D, Table 9s, Summary of Receptor Risks and Hazards (Former Building 234 Area)
- RAGS Part D, Table 9s, Summary of Receptor Risks and Hazards (PCB Removal Area)
- RAGS Part D, Table 9s, Summary of Receptor Risks and Hazards (South Waterfront Area)
- HHRA Tables for Screening Vapor Intrusion Evaluation

LIST OF TABLES
RAGS PART D TABLE 3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Table No.

3.1.RME	Unpaved Surface Soil - North Waterfront
3.2.RME	Surface Soil - North Waterfront
3.3.RME	Subsurface Soil - North Waterfront
3.4.RME	Groundwater - North Waterfront
3.5.RME	Unpaved Surface Soil - Central Shipyard
3.6.RME	Surface Soil - Central Shipyard
3.7.RME	Subsurface Soil - Central Shipyard
3.8.RME	Groundwater - Central Shipyard
3.9.RME	Unpaved Surface Soil - Former Building 234
3.10.RME	Surface Soil - Former Building 234
3.11.RME	Subsurface Soil - Former Building 234
3.12.RME	Groundwater - Former Building 234
3.13.RME	Subsurface Soil - South Waterfront
3.14.RME	Unpaved Surface Soil - PCB Removal Area
3.15.RME	Surface Soil - PCB Removal Area
3.16.RME	Subsurface Soil - PCB Removal Area

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Unpaved North Waterfront Surface Soil	Benzo(a)anthracene	mg/kg	(1)	(1)	0.232	0.232	mg/kg	Maximum Detected Concentration	(1)
	Benzo(a)pyrene	mg/kg	(1)	(1)	0.165	0.165	mg/kg	Maximum Detected Concentration	ProUCL 4.1.01
	Benzo(b)fluoranthene	mg/kg	(1)	(1)	0.263	0.263	mg/kg	Maximum Detected Concentration	ProUCL 4.1.01
	Chrysene	mg/kg	(1)	(1)	0.238	0.238	mg/kg	Maximum Detected Concentration	ProUCL 4.1.01
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.124	0.124	mg/kg	Maximum Detected Concentration	ProUCL 4.1.01
	Indeno(1,2,3-cd)pyrene	mg/kg	(1)	(1)	0.099	0.099	mg/kg	Maximum Detected Concentration	ProUCL 4.1.01
	Chromium VI	mg/kg	8.73	10.8 (G)	16.1	10.8	mg/kg	95% KM (Percentile Bootstrap) UCL	ProUCL 4.1.01
	Cobalt	mg/kg	5.46	7.0 (N)	9.56	7.0	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Iron	mg/kg	15,125	18,800 (NP)	27,100	18,800	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Manganese	mg/kg	170.9	229 (N)	337	229	mg/kg	95% Student's-t UCL	ProUCL 4.1.01

G = Gamma
L = Lognormal
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

(1) There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
North Waterfront	Benzo(a)anthracene	mg/kg	0.486	0.207 (N)	0.61	0.207	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(a)pyrene	mg/kg	0.479	0.161 (N)	0.53	0.161	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(b)fluoranthene	mg/kg	0.500	0.251 (N)	0.805	0.251	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chrysene	mg/kg	0.489	0.209 (N)	0.58	0.209	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.124	0.124	mg/kg	Maximum Detected Concentration	ProUCL 4.1.01
	Indeno(1,2,3-cd)pyrene	mg/kg	0.467	0.109 (N)	0.38	0.109	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	8.7	13.5 (G)	24.1	13.5	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.01
	Cobalt	mg/kg	6.5	7.9 (N)	14.7	7.9	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Iron	mg/kg	15,774	17,425 (G)	27,100	17,425	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

(1) There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.

TABLE 3.3.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
North Waterfront	Benzo(a)pyrene	mg/kg	(1)	(1)	0.044	0.044	mg/kg	Maximum Detected Concentration	(1)
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.0233	0.0233	mg/kg	Maximum Detected Concentration	(1)
	Aluminum	mg/kg	6420	7,510 (G)	18,200	7,510	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	9.48	11.0 (G)	27.1	11	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01
	Cobalt	mg/kg	7.13	8.68 (G)	19.8	8.68	mg/kg	95% KM (BCA) UCL	ProUCL 4.1.01
	Iron	mg/kg	17,600	20,100 (G)	44,400	20,100	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

(1) There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
North Waterfront	cis-1,2-Dichloroethene	ug/L	1.2	2.3 (N)	4.26	4.26	ug/L	Maximum Detected Concentration	(1)
	Trichloroethene (Mutagenic)	ug/L	4.8	7.9 (N)	12.2	12.2	ug/L	Maximum Detected Concentration	(1)
	Trichloroethene (Nonmutagenic)	ug/L	4.8	7.9 (N)	12.2	12.2	ug/L	Maximum Detected Concentration	(1)
	Vinyl Chloride	ug/L	(2)	(2)	1.47	1.47	ug/L	Maximum Detected Concentration	(1)
	Aluminum	ug/L	(3)	(3)	337	337	ug/L	Maximum Detected Concentration	(1)
	Chromium VI	ug/L	(3)	(3)	0.508	0.508	ug/L	Maximum Detected Concentration	(3)
	Iron	ug/L	(3)	(3)	605	605	ug/L	Maximum Detected Concentration	(3)
	Manganese	ug/L	(3)	(3)	53.9	53.9	ug/L	Maximum Detected Concentration	(3)

G - Gamma distribution.
N - Normal distribution.
NP = Nonparametric distribution.

1 - There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.
2 - The maximum detected concentration is used as the exposure point concentration for groundwater.
3 - There are less than five samples. Pro UCL will not calculate any statistics with less than five samples. Maximum Concentration is used for the EPC.

TABLE 3.5.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Unpaved Cental Shipyard	Arsenic	mg/kg	(1)	(1)	24.4	24.4	mg/kg	Maximum Detected Concentration	(1)
	Chromium VI	mg/kg	(1)	(1)	15.8	15.8	mg/kg	Maximum Detected Concentration	(1)
	Cobalt	mg/kg	(1)	(1)	14.7	14.7	mg/kg	Maximum Detected Concentration	(1)
	Iron	mg/kg	(1)	(1)	31,800	31,800	mg/kg	Maximum Detected Concentration	(1)
	Manganese	mg/kg	(1)	(1)	448	448	mg/kg	Maximum Detected Concentration	(1)

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

(1) There are less than five samples. Pro UCL will not calculate any statistics with less than five samples. Maximum Concentration is used for the EPC.

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Cental Shipyard	Benzo(a)anthracene	mg/kg	0.21	0.30 (NP)	0.41	0.30	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(a)pyrene	mg/kg	0.11	0.17 (NP)	0.14	0.14	mg/kg	Maximum	(1)
	Benzo(b)fluoranthene	mg/kg	0.23	0.34 (NP)	0.41	0.34	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chrysene	mg/kg	0.21	0.30 (NP)	0.42	0.3	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Arsenic	mg/kg	16.2	23.7 (N)	24.4	23.7	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	14.50	17.3 (N)	18.2	17.3	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Cobalt	mg/kg	12.00	14.6 (N)	14.7	14.6	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	28,000	32,800 (NP)	32,500	32,500	mg/kg	Maximum Detected Concentration	(1)
	Manganese	mg/kg	381	435 (N)	448	435	mg/kg	95% Student's-t UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.
(1) Calculated 95% UCL exceeds the maximum concentration. Maximum concentration used as the EPC.

TABLE 3.7.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Cental Shipyard	Benzo(a)anthracene	mg/kg	0.294	0.278 (G)	1.30	0.278	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(a)pyrene	mg/kg	0.257	0.194 (G)	0.69	0.194	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(b)fluoranthene	mg/kg	0.282	0.247 (G)	0.91	0.247	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chrysene	mg/kg	0.296	0.282 (L)	1.3	0.282	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.046	0.046	mg/kg	Maximum Detected Concentration	(1)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.27	0.2	0.24	0.2	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Aluminum	mg/kg	9,450	10,200 (N)	14,300	10,200	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Arsenic	mg/kg	16.4	18.4 (N)	37.3	18.4	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	12.5	13.3 (N)	22	13.3	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Cobalt	mg/kg	11.1	12.3 (N)	20.2	12.3	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	24,600	26,900 (N)	40,100	26,900	mg/kg	95% Student's-t UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.
(1) There was only one detected concentration. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.

TABLE 3.8.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Central Shipyard	Aluminum	ug/L	(1)	(1)	312	312	ug/L	Maximum Detected Concentration	(1)
	Arsenic	ug/L	(1)	(1)	78.1 J	78.1	ug/L	Maximum Detected Concentration	(1)
	Cadmium	ug/L	(1)	(1)	1.53	1.53	ug/L	Maximum Detected Concentration	(1)
	Cobalt	ug/L	(1)	(1)	24.8	24.8	ug/L	Maximum Detected Concentration	(1)
	Iron	ug/L	(1)	(1)	65,800 J	65,800	ug/L	Maximum Detected Concentration	(1)
	Manganese	ug/L	(1)	(1)	9,100	9,100	ug/L	Maximum Detected Concentration	(1)

Notes:
1 - Only two groundwater sample was collected at the Central Shipyard in 2011 therefore statistics could not be calculated. The maximum detected concentration is used as the exposure point concentration for groundwater.

TABLE 3.9.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Unpaved Former Building 234 Surface Soil	Benzo(a)anthracene	mg/kg	0.230	0.324 (N)	0.47	0.324	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(a)pyrene	mg/kg	0.214	0.288 (N)	0.41	0.288	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(b)fluoranthene	mg/kg	0.314	0.477 (N)	0.66	0.477	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chrysene	mg/kg	0.274	0.409 (N)	0.58	0.409	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.062	0.062	mg/kg	Maximum Detected Concentration	(1)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.26	0.180 (N)	0.19	0.18	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Arsenic	mg/kg	11.9	17.9 (N)	23.6	17.9	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Beryllium	mg/kg	0.84	3.2 (G)	3.5	3.2	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.01
	Cadmium	mg/kg	(1)	(1)	13	13	mg/kg	Maximum Detected Concentration	(1)
	Chromium VI	mg/kg	34.00	83 (G)	130	83	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01
	Cobalt	mg/kg	12.40	20.0 (N)	23.9	20	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	22,700	32,100 (N)	37,200	32,100	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Lead	mg/kg	53.9	135 (G)	189	53.9	mg/kg	Arithmetic Mean Concentration	(2)
	Manganese	mg/kg	366	509 (N)	597	509	mg/kg	95% Student's-t UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

1 There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.
2 - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
U.S. EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children.
Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.10.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Former Building 234	Benzo(a)anthracene	mg/kg	0.22	0.30 (N)	0.47	0.3	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(a)pyrene	mg/kg	0.21	0.27 (N)	0.41	0.27	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Benzo(b)fluoranthene	mg/kg	0.28	0.43 (N)	0.66	0.43	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Chrysene	mg/kg	0.25	0.36 (N)	0.58 J	0.36	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.062 J	0.062	mg/kg	Maximum Detected Concentration	(1)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.25	0.18 (N)	0.19 J	0.18	mg/kg	95% KM (t) UCL	ProUCL 4.1.01
	Arsenic	mg/kg	11.2	16.4 (N)	23.6	16.4	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Beryllium	mg/kg	0.75	3.7 (L)	3.5	3.5	mg/kg	Maximum Detected Concentration	(2)
	Cadmium	mg/kg	(1)	(1)	13	13	mg/kg	Maximum Detected Concentration	(1)
	Chromium VI	mg/kg	31.60	91.1 (L)	130	91.1	mg/kg	95% H-UCL	ProUCL 4.1.01
	Cobalt	mg/kg	11.80	17.8 (N)	23.9	17.8	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	22,300	30,020 (N)	37,200	30,020	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Lead	mg/kg	53.6	115 (G)	189 J	53.6	mg/kg	Arithmetic Mean	(3)
	Manganese	mg/kg	356	474 (N)	597	474	mg/kg	95% Student's-t UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric
1 - There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.
2 - The calculated 95% UCL exceeds the maximum concentration. The maximum concentration was used as the EPC.
3 - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
U.S. EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children.

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.11.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Former Building 234	Benzo(a)pyrene	mg/kg	(1)	(1)	0.055 J	0.055	mg/kg	Maximum Detected Concentration	(1)
	Aluminum	mg/kg	9,990	12,600 (N)	23,300	12,600	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Arsenic	mg/kg	12.1	23.3 (G)	42	23.3	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	18.5	25.4 (G)	60.2	25.4	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01
	Cobalt	mg/kg	10.5	13.3 (N)	25	13.3	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	26,200	31,600 (N)	50,000	31,600	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Manganese	mg/kg	450	684 (G)	2,450	684	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

1 - There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.

TABLE 3.12.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Former Building 234	cis-1,2-Dichloroethene	ug/L	(1)	(1)	12.7	12.7	ug/L	Maximum Detected Concentration	(1)
	Trichloroethene (Mutagenic)	ug/L	(1)	(1)	3.9	3.9	ug/L	Maximum Detected Concentration	(1)
	Trichloroethene (Nonmutagenic)	ug/L	(1)	(1)	3.9	3.9	ug/L	Maximum Detected Concentration	(1)
	Vinyl Chloride	ug/L	(1)	(1)	0.263 J	0.263	ug/L	Maximum Detected Concentration	(1)
	Aluminum	ug/L	(1)	(1)	53.7	53.7	ug/L	Maximum Detected Concentration	(1)
	Arsenic	ug/L	(1)	(1)	1.32 J	1.32	ug/L	Maximum Detected Concentration	(1)
	Cobalt	ug/L	(1)	(1)	1.74 J	1.74	ug/L	Maximum Detected Concentration	(2)
	Iron	ug/L	(1)	(1)	459	459	ug/L	Maximum Detected Concentration	(1)
	Manganese	ug/L	(1)	(1)	532	532	ug/L	Maximum Detected Concentration	(1)

Notes:
1 - Only one groundwater sample was collected at Building 234 in 2011 therefore statistics could not be calculated. The maximum detected concentration is used as the exposure point concentration for groundwater.

TABLE 3.13.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
South Waterfront	Aluminum	mg/kg	12,000	15,800 (N)	17,400	15,800	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Arsenic	mg/kg	17.1	23.7 (N)	26.3	23.7	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	14.7	19.1 (N)	21.2	19.1	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Cobalt	mg/kg	16.5	23.8 (N)	29.9	23.8	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	31,900	41,800 (N)	45,500	41,800	mg/kg	95% Student's-t UCL	ProUCL 4.1.01

N = Normal

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

TABLE 3.14.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Unpaved PCB Removal Area Surface Soil	Benzo(a)anthracene	mg/kg	(1)	(1)	0.13	0.13	mg/kg	Maximum Detected Concentration	(1)
	Benzo(a)pyrene	mg/kg	(1)	(1)	0.12	0.12	mg/kg	Maximum Detected Concentration	(1)
	Benzo(b)fluoranthene	mg/kg	(1)	(1)	0.18	0.18	mg/kg	Maximum Detected Concentration	(1)
	Benzo(g,h,i)perylene	mg/kg	(1)	(1)	0.072	0.072	mg/kg	Maximum Detected Concentration	(1)
	Benzo(k)fluoranthene	mg/kg	(1)	(1)	0.086	0.086	mg/kg	Maximum Detected Concentration	(1)
	Chrysene	mg/kg	(1)	(1)	0.14	0.14	mg/kg	Maximum Detected Concentration	(1)
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.0174	0.017	mg/kg	Maximum Detected Concentration	(1)
	Indeno(1,2,3-cd)pyrene	mg/kg	(1)	(1)	0.071	0.071	mg/kg	Maximum Detected Concentration	(1)
	Total Aroclors	mg/kg	(1)	(1)	0.0244	0.0244	mg/kg	Maximum Detected Concentration	(1)
	Arsenic	mg/kg	(1)	(1)	21.7	21.7	mg/kg	Maximum Detected Concentration	(1)
	Cobalt	mg/kg	(1)	(1)	22.7	22.7	mg/kg	Maximum Detected Concentration	(1)
	Iron	mg/kg	(1)	(1)	30,600	30,600	mg/kg	Maximum Detected Concentration	(1)
	Manganese	mg/kg	(1)	(1)	619	619	mg/kg	Maximum Detected Concentration	(1)

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

(1) There are less than five samples. Pro UCL will not calculate any statistics with less than five samples. Maximum Concentration is used for the EPC.

TABLE 3.15.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
PCB Removal Area	Benzo(a)anthracene	mg/kg	(1)	(1)	5.74	5.74	mg/kg	Maximum Detected Concentration	(1)
	Benzo(a)pyrene	mg/kg	(1)	(1)	4.92	4.92	mg/kg	Maximum Detected Concentration	(1)
	Benzo(b)fluoranthene	mg/kg	(1)	(1)	7.12	7.12	mg/kg	Maximum Detected Concentration	(1)
	Benzo(g,h,i)perylene	mg/kg	(1)	(1)	2.07	2.07	mg/kg	Maximum Detected Concentration	(1)
	Benzo(k)fluoranthene	mg/kg	(1)	(1)	2.48	2.48	mg/kg	Maximum Detected Concentration	(1)
	Chrysene	mg/kg	(1)	(1)	5.65	5.65	mg/kg	Maximum Detected Concentration	(1)
	Dibenzo(a,h)anthracene	mg/kg	(1)	(1)	0.82	0.82	mg/kg	Maximum Detected Concentration	(1)
	Indeno(1,2,3-cd)pyrene	mg/kg	(1)	(1)	2.07	2.07	mg/kg	Maximum Detected Concentration	(1)
	Total Aroclors	mg/kg	(2)	(2)	0.416	0.416	mg/kg	Maximum Detected Concentration	(2)
	Arsenic	mg/kg	(1)	(1)	21.8	21.8	mg/kg	Maximum Detected Concentration	(1)
	Cobalt	mg/kg	(1)	(1)	22.7	22.7	mg/kg	Maximum Detected Concentration	(1)
	Iron	mg/kg	(1)	(1)	32,000	32,000	mg/kg	Maximum Detected Concentration	(1)
	Manganese	mg/kg	(1)	(1)	619	619	mg/kg	Maximum Detected Concentration	(1)

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

(1) There are less than five samples. Pro UCL will not calculate any statistics with less than five samples. Maximum Concentration is used for the EPC.
(2) There are less than four detected concentrations. Reliable statistics cannot be computed. The Maximum concentration was used as the EPC.

I assumed the units were ug/kg and converted to mg/kg.

TABLE 3.16.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORMER ROBERT E. DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
PCB Removal Area	Benzo(a)anthracene	mg/kg	0.099	0.146 (G)	0.252	0.146	mg/kg	95% KM (BCA) UCL	ProUCL 4.1.01
	Benzo(a)pyrene	mg/kg	0.079	0.167 (G)	0.172	0.167	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.01
	Benzo(b)fluoranthene	mg/kg	0.119	0.322 (G)	0.336	0.322	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.01
	Dibenzo(a,h)anthracene	mg/kg	0.041	0.044 (L)	0.0437	0.044	mg/kg	95% KM (BCA) UCL	ProUCL 4.1.01
	Aluminum	mg/kg	11,300	16,100 (N)	19,900	16,100	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Arsenic	mg/kg	16.3	35.0 (G)	47.2	35	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01
	Chromium VI	mg/kg	13.4	19.1 (N)	25.6	19.1	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Cobalt	mg/kg	12.4	18.7 (N)	24	18.7	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Iron	mg/kg	27,200	37,600 (N)	43,600	37,600	mg/kg	95% Student's-t UCL	ProUCL 4.1.01
	Manganese	mg/kg	520	872 (G)	1,190	872	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.01

G = Gamma
N = Normal
NP = Non-parametric

Exposure point concentrations for the RME scenarios are also the exposure point concentrations for the CTE scenarios.

LIST OF TABLES
RAGS PART D TABLE 4
VALUES USED FOR DAILY INTAKE CALCULATIONS

Table No.	Reasonable Maximum Exposures
4.1.RME	Adolescent Trespassers Exposed to Surface Soil/Subsurface Soil
4.2.RME	Adolescent Trespassers Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.3.RME	Adult Trespassers Exposed to Surface Soil/Subsurface Soil
4.4.RME	Adult Trespassers Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.5.RME	Construction Workers Exposed to Surface Soil/Subsurface Soil
4.6.RME	Construction Workers Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.7.RME	Construction Workers Exposed to Groundwater
4.8.RME	Construction Workers Exposed to Volatile Emissions from Groundwater
4.9.RME	Industrial Workers Exposed to Surface Soil/Subsurface Soil
4.10.RME	Industrial Workers Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.11.RME	Industrial Workers Exposed to Groundwater
4.12.RME	Child Residents Exposed to Surface Soil/Subsurface Soil
4.13.RME	Child Residents Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.14.RME	Child Residents Exposed to Groundwater
4.15.RME	Child Residents Exposed to Volatile Emissions from Groundwater
4.16.RME	Adult Residents Exposed to Surface Soil/Subsurface Soil
4.17.RME	Adult Residents Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.18.RME	Adult Residents Exposed to Groundwater
4.19.RME	Adult Residents Exposed to Volatile Emissions from Groundwater

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADOLESCENT TRESPASSERS - SOILS
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespassers	Adolescent	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1997	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	10	years	(2)	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3650	days	USEPA, 1989	
Dermal	Trespassers	Adolescent	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	5050	cm2	(3)	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.4	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	10	years	(2)	
				BW	Body Weight	50	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3650	days	USEPA, 1989	

Notes:

1 - Assumes two days a week for 24 weeks (mid-April through mid-October.

2 - Adolescent ages 6 to 16 years old and an adult ages 16 to 36 years old for a total exposure duration of 30 years.

3 - Assumes assumes that the head, forearms, hands, lower legs, and feet are exposed (USEPA, 1997).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 3.76E-08 Cancer Dermal Intake = 7.59E-07

Noncancer Ingestion Intake = 2.63E-07 Noncancer Dermal Intake = 5.31E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADOLESCENT TRESPASSERS - SOILS TO AIR
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Trespassers	Adolescent	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	4	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	48	days/year	(1)	
				ED	Exposure Duration	10	years	(2)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA, 2012	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA, 2012	
				Um	Mean annual wind speed	3.84	m/sec	USEPA, 2012	
				V	Fraction of vegetative cover	0.5	unitless	USEPA, 2012	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA, 2012	

Notes:

1 - Assumes 4 hours a day, two days a week for 24 weeks (mid-April through mid-October.

2 - Adolescent ages 6 to 16 years old and an adult ages 16 to 36 years old for a total exposure duration of 30 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2012: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 3.13E-03 Noncancer Inhalation Intake = 2.19E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.3 RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SOILS
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespassers	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1991	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1997	BW x AT
				EF	Exposure Frequency	48	days/year	(1)	
				ED2	Exposure Duration (Age 16 - 30)	20	years	(2)	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	7,300	days	USEPA, 1989	
Dermal	Trespassers	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	48	days/year	(1)	
				ED2	Exposure Duration (Age 16 - 30)	20	years	(2)	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	7,300	days	USEPA, 1989	

Notes:

1 - Assumes two days a week for 24 weeks (mid-April through mid-October.

2 - Adolescent ages 6 to 16 years old and an adult ages 16 to 36 years old for a total exposure duration of 30 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 5.37E-08 Cancer Dermal Intake (Age 6 - 30) = 2.14E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 0.00E+00 Cancer Dermal Intake (Age 6 - 16) = 0.00E+00

Cancer Ingestion Intake Age 16 - 30) = 5.37E-08 Cancer Dermal Intake (Age 16 - 30) = 2.14E-07

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.88E-07 Noncancer Dermal Intake = 7.50E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SOILS TO AIR
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Trespassers	Adult	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	4	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				EF	Exposure Frequency	48	days/year	(1)	
				ED2	Exposure Duration (Age 16 - 30)	20	years	(2)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	7,300	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA, 2012	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA, 2012	
				Um	Mean annual wind speed	3.84	m/sec	USEPA, 2012	
				V	Fraction of vegetative cover	0.5	unitless	USEPA, 2012	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA, 2012	

Notes:

1 - Assumes 4 hours a day, two days a week for 24 weeks (mid-April through mid-October.

2 - Adolescent ages 6 to 16 years old and an adult ages 16 to 36 years old for a total exposure duration of 30 years.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2012: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 30) = 6.26E-03

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 2.19E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 0.00E+00

Cancer Inhalation Intake (Age 16 - 30) = 6.26E-03

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS- SOILS
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Workers	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	330	mg/day	USEPA, 2002b	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2002b	BW x AT
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 2.40E-08 Cancer Dermal Intake = 7.20E-08

Noncancer Ingestion Intake = 1.68E-06 Noncancer Dermal Intake = 5.04E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - SOILS TO AIR
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	$CA = (1/PEF + 1/VF) \times Cs$
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.40E+06	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 1.70E-03 Noncancer Inhalation Intake = 1.19E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - GROUNDWATER
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Workers	Adult	Derecktor Shipyard	CGW	Chemical Concentration in Groundwater	Maximum	ug/L	USEPA Region I, 1999	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	0.05	L/day	(1)	$\frac{CGW \times CF \times IR\text{-}GW \times EF \times ED}{BW \times AT}$
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	Derecktor Shipyard	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
				CF	Conversion factor	0.001	L/cm^3	--	
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	8	hr/event	(1)	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	(1)	
				EF	Exposure Frequency	130	days/year	(1)	For organics if tevent > t*
				ED	Exposure Duration	1	years	USEPA, 2002	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				BW	Body Weight	70	kg	USEPA, 1997	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA Region I, 1999. Risk Updates, Number 5.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Dermal Intake = 2.40E-01 Noncancer Dermal Intake = 1.68E+01

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - GROUNDWATER TO AIR

FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	VDEQ, 2004	Exposure Concentration (mg/m^3) =
				CW	Chemical concentration in water.	Average	ug/L	--	
				CF	Conversion Factor	0.001	mg/ug	--	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				ET	Exposure Time	8	hours/day	(1)	
				EF	Exposure Frequency	130	days/year	(1)	
				ED	Exposure Duration	1	years	USEPA, 2002	CA = CW x CF x VF
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				VF	Volatilization Factor	Calculated	(mg/m3)/(mg/L)	VDEQ, 2012	

Notes:

1 - Professional judgment. Assumes 5 days a week over six months.

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

VDEQ, 2012: Virginia Department of Environmental Quality (VDEQ, online- http://www.deq.state.va.us/vrprisk/homepage.html).

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 1.70E-06 Noncancer Inhalation Intake = 1.19E-04

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.9.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - SOIL

FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Workers	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997	
				CF3	Conversion Factor 3	0.000001	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2004	BW x AT
				EF	Exposure Frequency	250	days/year	USEPA, 2004; RIDEM, 2011	
				ED	Exposure Duration	25	years	USEPA, 1997; RIDEM, 2011	
				BW	Body Weight	70	kg	USEPA, 1997; RIDEM, 2011	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989; RIDEM, 2011	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989; RIDEM, 2011	
Dermal	Industrial Workers	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	--	
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	250	days/year	USEPA, 2004	
				ED	Exposure Duration	25	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

RIDEM, 2011: Rhode Island Department of Environmental Management, DEM-DSR-01-93, November 2011.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 3.49E-07 Cancer Dermal Intake = 2.31E-06

Noncancer Ingestion Intake = 9.78E-07 Noncancer Dermal Intake = 6.46E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

.TABLE 4.10.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - SOIL TO AIR

FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Industrial Workers	Adult	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				EF	Exposure Frequency	250	days/year	USEPA, 1997	
				ED	Exposure Duration	25	years		
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA, 2012	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA, 2012	
				Um	Mean annual wind speed	3.84	m/sec	USEPA, 2012	
				V	Fraction of vegetative cover	0.5	unitless	USEPA, 2012	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA, 2012	

Notes:

1 - Length of typical work day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

USEPA, 2012: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 8.15E-02 Noncancer Inhalation Intake = 2.28E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.11.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - GROUNDWATER
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Workers	Adult	Derecktor Shipyard	CGW	Chemical Concentration in Groundwater	95% UCL or Max	ug/L	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	1	L/day	USEPA, 1991	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	250	days/year	USEPA, 2004	BW x AT
				ED	Exposure Duration	25	years	USEPA, 1997; RIDEM, 2011	
				BW	Body Weight	70	kg	USEPA, 1997; RIDEM, 2011	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989; RIDEM, 2011	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	USEPA, 1989; RIDEM, 2011	
Dermal	Industrial Workers	Adult	Derecktor Shipyard	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	DAevent x EV x EF x ED x SA
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	BW x AT
				CF	Conversion factor	0.001	L/cm3	- -	
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	For inorganics
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	
				tevent	Duration of event	0.5	hr/event	(1)	For organics if tevent <= t*
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				SA	Skin Surface Available for Contact	904	cm2	(2)	
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	250	days/year	USEPA, 2004	For organics if tevent > t*
				ED	Exposure Duration	25	years	USEPA, 1997; RIDEM, 2011	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				BW	Body Weight	70	kg	USEPA, 1997; RIDEM, 2011	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)]
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989; RIDEM, 2011	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	USEPA, 1989; RIDEM, 2011	

Notes:

1 - Professional judgment.

2 - Represents hands of the industrial worker, USEPA, 2004.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

RIDEM, 2011: Rhode Island Department of Environmental Management, DEM-DSR-01-93, November 2011.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 3.49E-06 Cancer Dermal Intake (Age 6 - 30) = 3.16E+00

Mutagenic Chemicals

Cancer Ingestion Intake ure Duration = 3.49E-06 Cancer Dermal Intake ure Duration = 3.16E+00

Cancer Ingestion Intake = 0.00E+00 Cancer Dermal Intake = 0.00E+00

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 9.78E-06 Noncancer Dermal Intake = 8.85E+00

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.12.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS - SOILS
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	200	mg/day	USEPA, 1997;RIDEM, 2011	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 2004;RIDEM, 2011	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997;RIDEM, 2011	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989;RIDEM, 2011	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Resident	Child	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

RIDEM, 2011: Rhode Island Department of Environmental Management, DEM-DSR-01-93, November 2011.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 1.10E-06 Cancer Dermal Intake (Age 0 - 6) = 3.07E-06

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 3.65E-07 Cancer Dermal Intake (Age 0 - 2) = 1.02E-06

Cancer Ingestion Intake (Age 2 - 6) = 7.31E-07 Cancer Dermal Intake (Age 2 - 6) = 2.05E-06

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.28E-05 Noncancer Dermal Intake = 3.58E-05

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.13.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS SOILS TO AIR
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	24	hours/day	USEPA, 2002a	$\frac{CA \times ET \times EF \times ED}{AT \times 24 \text{ hours/day}}$
				EF	Exposure Frequency	350	days/year	USEPA, 2002a;RIDEM, 2011	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at center of source	73.95045	g/m2-s per kg/m3	USEPA, 2012	
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA, 2012	
				Um	Mean annual wind speed	3.84	m/sec	USEPA, 2012	
				V	Fraction of vegetative cover	0.5	unitless	USEPA, 2012	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA, 2012	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2012: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

RIDEM, 2011: Rhode Island Department of Environmental Management, DEM-DSR-01-93, November 2011.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 6) = 8.22E-02

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 1.92E+00

Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 2) = 2.74E-02

Cancer Inhalation Intake (Age 2 - 6) = 5.48E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.14.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS - GROUNDWATER
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Residents	Child	Derecktor Shipyard	CGW	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	1	L/day	USEPA, 1997	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	350	days/year	USEPA, 2004	BW x AT
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1987	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Residents	Child	Derecktor Shipyard	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	DAevent x EV x EF x ED x SA
				CF	Conversion factor	0.001	L/cm3	- -	BW x AT
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	For inorganics
				t*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				tevent	Duration of event	1	hr/event	USEPA, 2004	
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	For organics if tevent <= t*
				SA	Skin Surface Available for Contact	6,600	cm2	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)}
				BW	Body Weight	15	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

Notes:

1 - Children were evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children were evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 5.48E-06 Cancer Dermal Intake Time (Age 0 - 6) = 3.62E+01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 1.83E-06 Cancer Dermal Intake (Age 0 - 2) = 1.21E+01

Cancer Ingestion Intake (Age 2 - 6) = 3.65E-06 Cancer Dermal Intake (Age 2 - 6) = 2.41E+01

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 6.39E-05 Noncancer Dermal Intake = 4.22E+02

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.15.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS - INHALATION OF VOLATILES FROM GROUNDWATER

FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Residents	Child	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 1991	Exposure Concentration (mg/m^3) =
				GW	Chemical concentration in water.	95% UCL or Max	ug/L	USEPA, 2002	
				CF	Conversion Factor	0.001	mg/ug	--	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				ET	Exposure Time	24	hours/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	CA = CW x CF x VF
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1997	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
				VF	Volatilization Factor	0.5	L/m3	USEPA, 1989	

Notes:

1 - Children will be evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children will be evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991: Human Health Evaluation Manual, Part B: Development of Risk-based Preliminary Remediation Goals. OSWER Directive 9285.7-01B.

USEPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 2.74E-05 Noncancer Inhalation Intake = 3.20E-04

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.16.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - SOILS
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1997; RIDEM, 2011	
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	--	BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997; RIDEM, 2011	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989; RIDEM, 2011	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Resident	Adult	Derecktor Shipyard	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1.0E-06	kg/mg	--	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2002b	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E; Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

RIDEM, 2011: Rhode Island Department of Environmental Management, DEM-DSR-01-93, November 2011.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 4.70E-07 Cancer Dermal Intake (Age 6 - 30) = 1.87E-06

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 1.96E-07 Cancer Dermal Intake (Age 6 - 16) = 7.81E-07

Cancer Ingestion Intake (Age 16 - 30) = 2.74E-07 Cancer Dermal Intake (Age 16 - 30) = 1.09E-06

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.37E-06 Noncancer Dermal Intake = 5.47E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.17.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - SOILS TO AIR

FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m^3) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	24	hours/day	USEPA, 2002a	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				EF	Exposure Frequency	350	days/year	USEPA, 2002a; RIDEM, 2011	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	$CA = (1/PEF + 1/VF) \times Cs$
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8760	days	USEPA, 1989	$PEF = \frac{Q\ /\ C \times 3600}{0.036 \times (1 - V) \times (U_m\ /\ U_t)^3 \times F(x)}$
				PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA, 2002a	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at	73.95045	g/m2-s per	USEPA, 2012	
					center of source		kg/m3		$F(x) = 0.18 * (8x^3 + 12x) * \exp(-x^2)$
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA, 2012	
				Um	Mean annual wind speed	3.84	m/sec	USEPA, 2012	$x = 0.886 * Ut / Um$
				V	Fraction of vegetative cover	0.5	unitless	USEPA, 2012	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA, 2012	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

USEPA, 2012: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Hartford, Connecticut.

RIDEM, 2011: Rhode Island Department of Environmental Management, DEM-DSR-01-93, November 2011.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 30) = 3.29E-01

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 9.59E-01

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 1.37E-01

Cancer Inhalation Intake (Age 16 - 30) = 1.92E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.18.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - GROUNDWATER
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Residents	Adult	Derecktor Shipyard	CGW	Chemical Concentration in Groundwater	95% UCL or Max	ug/L	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
				CF	Conversion Factor	0.001	mg/ug	--	
				IR-GW	Ingestion Rate of Groundwater	2	L/day	USEPA, 1997	CGW x CF x IR-GW x EF x ED
				EF	Exposure Frequency	350	days/year	USEPA, 2004	BW x AT
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Residents	Adult	Derecktor Shipyard	Daevent	Dermally Absorbed Dose per Event	Calculated	mg/cm2-event	USEPA, 2004	Dermally Absorbed Dose (mg/kg/day) =
				Cw	Chemical Concentration in Groundwater	Max or 95% UCL	mg/kg	USEPA, 2002	DAevent x EV x EF x ED x SA
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004	BW x AT
				CF	Conversion factor	0.001	L/cm3	--	
				Kp	Permeability coefficient	Chemical Specific	cm/hr	USEPA, 2004	For inorganics
				τ	Lag time	Chemical Specific	hr/event	USEPA, 2004	DAevent = Kp x CW x CF x tevent
				t^*	Time it takes to reach steady state	Chemical Specific	hr/event	USEPA, 2004	
				tevent	Duration of event	0.58	hr/event	(1)	For organics if tevent <= t^*
				B	Bunge model constant	Chemical Specific	unitless	USEPA, 2004	DAevent= 2 x FA x Kp x Cw x CF x sqrt[(6 x τ x tevent)/pi]
				SA	Skin Surface Available for Contact	18,000	cm2	USEPA, 2004	
				EV	Event Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 2004	For organics if tevent > t^*
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	DAevent =FA x Kp x Cw x CF x [tevent/(1+B) +
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	2 x τ +(1 + 3B + $3B^2$)/(1+B^2)
				BW	Body Weight	70	kg	USEPA, 1997	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

1 - Adults were evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults were evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)

Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) = 9.39E-06 Cancer Dermal Intake (Age 6 - 30) = 8.45E+01

Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 16) = 3.91E-06 Cancer Dermal Intake (Age 6 - 16) = 3.52E+01

Cancer Ingestion Intake (Age 16 - 30) = 5.48E-06 Cancer Dermal Intake (Age 16 - 30) = 4.93E+01

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 2.74E-05 Noncancer Dermal Intake = 2.47E+02

Cancer risk from ingestion = Groundwater concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Groundwater concentration x Cancer Dermal Intake x DAevent x Dermal Cancer Slope Factor

Hazard Index from ingestion = Groundwater concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Groundwater concentration x Noncancer Dermal Intake x DAevent / Dermal Reference Dose

TABLE 4.19.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - INHALATION OF VOLATILES FROM GROUNDWATER

FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Residents	Adult	Derecktor Shipyard	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 1991	Exposure Concentration (mg/m^3) =
				GW	Chemical concentration in water.	95% UCL or Max	ug/L	USEPA, 2002	
				CF	Conversion Factor	0.001	mg/ug	--	$\frac{CA \times ET \times EF \times ED}{AT \times 24\ hours/day}$
				ET	Exposure Time	24	hours/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	CA = CW x CF x VF
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1997	
				AT-N	Averaging Time (Non-Cancer)	8496	days	USEPA, 1989	
				VF	Volatilization Factor	0.5	L/m3	USEPA, 1989	

Notes:

1 - Adults will be evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults will be evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991: Human Health Evaluation Manual, Part B: Development of Risk-based Preliminary Remediation Goals. OSWER Directive 9285.7-01B.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 1.37E-04 Noncancer Inhalation Intake = 4.12E-04

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor

Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

LIST OF TABLES
RAGS PART D TABLE 5
NON-CANCER TOXICITY DATA

Table No.

5-1 Non-Cancer Toxicity Data - Oral/Dermal
5-2 Non-Cancer Toxicity Data - Inhalation

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal[2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds										
cis-1,2-Dichloroethene	Subchronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Kidney	300/1	PPRTV	2/3/2011
	Chronic	2.0E-03	mg/kg/day	1	2.0E-03	mg/kg/day	Kidney	3000/1	IRIS	9/21/2012
Tetrachloroethene	Subchronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	Liver	100/1	HEAST	9/97
	Chronic	6.0E-03	mg/kg/day	1	6.0E-03	mg/kg/day	Neurotoxicity	1000/1	IRIS	9/21/2012
Trichloroethene	Chronic	5.0E-04	mg/kg/day	1	5.0E-04	mg/kg/day	Immune System, Developmental	10 - 1000	IRIS	9/21/2012
Vinyl Chloride	Chronic	3.0E-03	mg/kg/day	1	3.0E-03	mg/kg/day	Liver	30/1	IRIS	9/21/2012
Semivolatile Organic Compounds										
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene[3]	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Kidney	3000/1	IRIS	9/21/2012
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs										
Total Aroclors	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics										
Aluminum	Subchronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	Central Nervous System	30/1	ATSDR	9/2008
	Chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	Central Nervous System	100	PPRTV	10/23/2006
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, Cardiovascular System	3/1	IRIS	9/21/2012
Beryllium	Subchronic	5.0E-03	mg/kg/day	0.007	3.5E-05	mg/kg/day	Gastrointestinal System	100/1	HEAST	9/97
	Chronic	2.0E-03	mg/kg/day	0.007	1.4E-05	mg/kg/day	Gastrointestinal System	300/1	IRIS	9/21/2012
Cadmium	Chronic	5.0E-04	mg/kg/day	0.05	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	9/21/2012
Chromium[4]	Subchronic	2.0E-02	mg/kg/day	0.025	5.0E-04	mg/kg/day	None Reported	100/3	HEAST	9/97
	Chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	None Reported	300/3	IRIS	6/3/2011
Cobalt	Subchronic	3.0E-03	mg/kg/day	1	3.0E-03	mg/kg/day	Thyroid	300/1	PPRTV	8/25/2008
	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Thyroid	3000/1	PPRTV	8/25/2008
Iron	Subchronic	7.0E-01	mg/kg/day	1	7.0E-01	mg/kg/day	Gastrointestinal System	1.5	PPRTV	9/11/2006
	Chronic	7.0E-01	mg/kg/day	1	7.0E-01	mg/kg/day	Gastrointestinal System	1.5	PPRTV	9/11/2006
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese[5]	Chronic	2.4E-02	mg/kg/day	0.04	9.6E-04	mg/kg/day	Central Nervous System	1	IRIS	6/3/2011

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Notes:

1 - U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

2 - Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.

3 - Pyrene is used as a surrogate for benzo(g,h,i)perylene.

4 - Values are for hexavalent chromium.

5 - Adjusted IRIS value in accordance with IRIS.

Definitions:

HEAST = Health Effects Assessment Summary Tables

IRIS = Integrated Risk Information System

NA = Not Available.

ATSDR = Agency for Toxic Substances and Disease Registry.

PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD[1]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds									
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	Chronic	4.0E-02	mg/m^3	1.1E-02	(mg/kg/day)	Neurotoxicity	1000/1	IRIS	9/21/2012
Trichloroethene	Subchronic	5.4E-01	mg/m^3	1.5E-01	(mg/kg/day)	Central Nervous System	300/1	ATSDR	9/1997
	Chronic	2.0E-03	mg/m^3	5.7E-04	(mg/kg/day)	Immune System, Developmental	10 - 100	IRIS	9/21/2012
Vinyl Chloride	Chronic	1.0E-01	mg/m^3	2.9E-02	(mg/kg/day)	Liver	30/1	IRIS	9/21/2012
Semivolatile Organic Compounds									
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs									
Total Aroclors	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics									
Aluminum	Chronic	5.0E-03	mg/m3	1.4E-03	(mg/kg/day)	Central Nervous System	300/1	PPRTV	10/23/2006
Arsenic	Chronic	1.5E-05	mg/m3	4.3E-06	(mg/kg/day)	Skin, Cardiovascular System	NA	Cal EPA(1)	9/2009
Beryllium	Chronic	2.0E-05	mg/m3	5.7E-06	(mg/kg/day)	Respiratory	10/1	IRIS	9/21/2012
Cadmium	Chronic	2.0E-05	mg/m3	5.7E-06	(mg/kg/day)	Kidney, Respiratory	NA	Cal EPA(2)	12/2008
Chromium[2]	Chronic	1.0E-04	mg/m3	2.9E-05	(mg/kg/day)	Respiratory	300/1	IRIS	9/21/2012
Cobalt	Subchronic	2.0E-05	mg/m3	5.7E-06	(mg/kg/day)	Respiratory	100/1	PPRTV	8/25/2008
	Chronic	6.0E-06	mg/m3	1.7E-06	(mg/kg/day)	Respiratory	300/1	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	(mg/kg/day)	Central Nervous System	1000/1	IRIS	9/21/2012

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Notes:

1 - Extrapolated RfD = RfC *20m^3/day / 70 kg

2 - Values are for hexavalent chromium.

Definitions:

IRIS = Integrated Risk Information System

NA = Not Applicable

ATSDR = Agency for Toxic Substances and Disease Registry.

Cal EPA(1) = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

Cal EPA(2) = Technical Support Document For the Derivation of Noncancer Reference Exposure Levels, December 2008.

HEAST = Health Effects Assessment Summary Tables

NYSDOH = Final Report, Trichloroethene Air Criteria Document, New "York State Department of Health, October, 2006

PPRTV = Provisional Peer Reviewed Toxicity Value.

LIST OF TABLES
RAGS PART D TABLE 6
CANCER TOXICITY DATA

Table No.

6-1	Cancer Toxicity Data - Oral/Dermal
6-2	Cancer Toxicity Data - Inhalation

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND
PAGE 1 OF 2

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds								
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Inadequate information to assess carcinogenic potential	IRIS	9/21/2012
Tetrachloroethene	2.1E-03	$(mg/kg/day)^{-1}$	1	2.1E-03	$(mg/kg/day)^{-1}$	Likely to be carcinogenic to humans	IRIS	9/21/2012
Trichloroethene - non-mutagen[3,4]	3.7E-02	$(mg/kg/day)^{-1}$	1	3.7E-02	$(mg/kg/day)^{-1}$	Carcinogenic to humans	IRIS	9/21/2012
Trichloroethene - mutagen[3,4]	9.3E-03	$(mg/kg/day)^{-1}$	1	9.3E-03	$(mg/kg/day)^{-1}$	Carcinogenic to humans	IRIS	9/21/2012
Vinyl Chloride[3]	7.2E-01	$(mg/kg/day)^{-1}$	1	7.2E-01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	9/21/2012
Semivolatile Organic Compounds								
Benzo(a)anthracene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(a)pyrene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	9/21/2012
Benzo(b)fluoranthene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	9/21/2012
Benzo(k)fluoranthene[3]	7.3E-02	$(mg/kg/day)^{-1}$	1	7.3E-02	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Chrysene[3]	7.3E-03	$(mg/kg/day)^{-1}$	1	7.3E-03	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Dibenzo(a,h)anthracene[3]	7.3E+00	$(mg/kg/day)^{-1}$	1	7.3E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Indeno(1,2,3-cd)pyrene[3]	7.3E-01	$(mg/kg/day)^{-1}$	1	7.3E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	USEPA(1)	7/1993
Pesticides/PCBs								
Total Aroclors	2.0E+00	$(mg/kg/day)^{-1}$	1	2.0E+00	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	9/21/2012
Inorganics								
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	$(mg/kg/day)^{-1}$	1	1.5E+00	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	9/21/2012
Beryllium	NA	NA	NA	NA	NA	Carcinogenic potential cannot be determined	IRIS	9/21/2012
Cadmium	NA	NA	NA	NA	NA	B1 / Probable human carcinogen	IRIS	9/21/2012
Chromium[3,5]	5.0E-01	$(mg/kg/day)^{-1}$	0.025	2.0E+01	$(mg/kg/day)^{-1}$	D (Not classifiable as to human carcinogenicity)	NJDEP	4/8/2009
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	9/21/2012
Manganese	NA	NA	NA	NA	NA	D (Not classifiable as to human carcinogenicity)	IRIS	9/21/2012

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND
PAGE 2 OF 2

Notes:
1 - USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
2 - Adjusted cancer slope factor for dermal = Oral cancer slope factor / Oral absorption efficiency for dermal.
3 - Trichloroethene, vinyl chloride, carcinogenic PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).
4 - See text for a discussion of trichloroethene toxicity.
5 - Values are for hexavalent chromium.

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

NJDEP = New Jersey Department of Environmental Protection.

USEPA(1) = USEPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND
PAGE 1 OF 2

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor[1]		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds							
cis-1,2-Dichloroethene	NA	NA	NA	NA	Inadequate information to assess carcinogenic potential	IRIS	9/21/2012
Tetrachloroethene	2.6E-07	$(ug/m^3)^{-1}$	9.1E-04	$(mg/kg/day)^{-1}$	Likely to be carcinogenic to humans	IRIS	9/21/2012
Trichloroethene - non-mutagen[2,3]	3.1E-06	$(ug/m^3)^{-1}$	1.1E-02	$(mg/kg/day)^{-1}$	Carcinogenic to humans	IRIS	9/21/2012
Trichloroethene - mutagen[2,3]	1.0E-06	$(ug/m^3)^{-1}$	3.5E-03	$(mg/kg/day)^{-1}$	Carcinogenic to humans	IRIS	9/21/2012
Vinyl Chloride	4.4E-06	$(ug/m^3)^{-1}$	1.5E-02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	9/21/2012
Semivolatile Organic Compounds							
Benzo(a)anthracene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Benzo(a)pyrene[2]	1.1E-03	$(ug/m^3)^{-1}$	3.9E+00	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Benzo(b)fluoranthene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Benzo(g,h,i)perylene	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	9/21/2012
Benzo(k)fluoranthene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Chrysene[2]	1.1E-05	$(ug/m^3)^{-1}$	3.9E-02	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Dibenzo(a,h)anthracene[2]	1.2E-03	$(ug/m^3)^{-1}$	4.2E+00	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Indeno(1,2,3-cd)pyrene[2]	1.1E-04	$(ug/m^3)^{-1}$	3.9E-01	$(mg/kg/day)^{-1}$	NA	Cal EPA	9/2009
Pesticides/PCBs							
Total Aroclors	1.0E-04	$(ug/m3)^{-1}$	3.5E-01	$(mg/kg/day)^{-1}$	B2 / Probable human carcinogen	IRIS	9/21/2012
Inorganics							
Aluminum	NA	NA	NA	NA	NA	NA	NA
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	1.5E+01	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	9/21/2012
Beryllium	2.4E-03	$(ug/m^3)^{-1}$	8.4E+00	$(mg/kg/day)^{-1}$	B1 /Known/likely human carcinogen	IRIS	9/21/2012
Cadmium	1.8E-03	$(ug/m^3)^{-1}$	6.3E+00	$(mg/kg/day)^{-1}$	B1 /Known/likely human carcinogen	IRIS	9/21/2012
Chromium[2,4]	8.4E-02	$(ug/m^3)^{-1}$	2.9E+02	$(mg/kg/day)^{-1}$	A / Known human carcinogen	IRIS	9/21/2012
Cobalt	9.0E-03	$(ug/m^3)^{-1}$	3.2E+01	$(mg/kg/day)^{-1}$	NA	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	9/21/2012
Manganese	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	9/21/2012

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
FORMER ROBERT E. DERECKTOR SHIPYARD
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND
PAGE 2 OF 2

Notes:

1 - Inhalation CSF = Unit Risk * 70 kg / 20m^3/day.

2 - Trichloroethene, vinyl chloride, carcinogenic PAHs and hexavalent chromium are considered to act via the mutagenic mode of action. These chemicals are evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

3 - See text for a discussion of trichloroethene toxicity.

4 - Values are for hexavalent chromium.

Definitions:

HEAST = Health Effects Assessment Summary Tables

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 2-4
SOIL RISK-BASED COCS AND PRGs - PCB REMOVAL AREA
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Risk-Based Chemical of Concern (COC)	*PCB Removal Area* Soil Data [5]								Candidate Preliminary Remediation Goals (PRGs)								Selected Risk-Based Soil PRGs for PCB Removal Area	
									Applicable Rhode Island Chemical-Specific ARARs				Calculated Risk-Based PRGs		Representative Background Values [3]			
	Surface Soil [6]				Subsurface Soil				RIDEM Residential DEC [1]	RIDEM Industrial DEC [1]	RIDEM GA Leachability Criteria [1][2]	TSCA [7] PCB Residential	Target Cancer Risk Level	Hazard Index				
	EPC (mg/kg)	Type	Maximum (mg/kg)	FOD	EPC (mg/kg)	Type	Maximum (mg/kg)	FOD	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	10^{-6} (mg/kg)	1 (mg/kg)	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)
FUTURE RESIDENTIAL																	***FUTURE RESIDENTIAL***	
Benzo(a)anthracene	5.74	Max	5.74	4/4	0.15	95%UCL	0.25	6/7	0.9	7.8	--	--	0.15	--	--	--	0.15	0.15
Benzo(a)pyrene	4.92	Max	4.92	3/3	0.17	95%UCL	0.17	6/7	0.4	0.8	0.24 mg/kg	--	0.015	--	--	--	0.015	0.015
Benzo(b)fluoranthene	7.12	Max	7.12	4/4	0.32	95%UCL	0.34	6/7	0.9	7.8	--	--	0.15	--	--	--	0.15	0.15
Benzo(k)fluoranthene	2.48	Max	2.48	3/3	--	--	0.12	6/7	0.9	78	--	--	1.5	--	--	--	0.9	-- [8]
Dibenzo(a,h)anthracene	0.82	Max	0.82	2/3	0.04	95%UCL	0.04	3/6	0.4	0.8	--	--	0.015	--	--	--	0.015	0.015
Indeno(1,2,3-cd)pyrene	2.07	Max	2.07	3/3	--	--	0.08	5/6	0.9	7.8	--	--	0.15	--	--	--	0.15	-- [8]
Total Aroclors	0.416	Max	0.416	2/6	--	--	0.10	1/6	10	10	10	1	0.22	--	--	--	-- [8]	-- [8]
Arsenic	21.8	Max	21.8	4/4	35	95%UCL	47.2	7/7	7	7	--	--	0.39	22	13	20	13	20
Chromium [4]	--	--	15.8	4/4	19.1	95%UCL	25.6	7/7	390	10,000	*1.1 mg/L*	--	0.30	235	16	18	16	18

Notes:

Candidate PRG selected as PRG / Final PRG

Risk-based COCs are Chemicals of Potential Concern (COPCs) that were retained as COCs in the subarea-specific baseline human health risk assessment (HHRA) in the SASE Addendum Report (Tetra Tech, 2013).
See Table 1-1b for risk-based COCs for each receptor and medium.

1. RIDEM (Rhode Island Department of Environmental Management) Industrial & Residential DEC (Direct Exposure Criteria) and RIDEM "GA" [Aquifer] Leachability Criteria, DEM-DSR-01-93, November 2011.
2. Leachability criteria for metals in soil are leachate results from either TCLP or SPLP testing. (Current data is TCLP metals; SPLP analysis to be performed at GA Leachability Criteria exceedance locations prior to Record of Decision, per Tier 2 Agreement).
3. Background data set used for On-Shore Derecktor SASE Addendum Report, approved by RIDEM and EPA. 95% Upper Prediction Limits from approved background data set.
4. Chromium is assumed to be in the hexavalent state (conservative assumption).
5. Data set is for respective subarea, only, and considers previous removal actions (that is, soil data from locations addressed by removal actions have been removed from the data set). Data from the 1996 SASE and 2011 Data Gaps Investigation (SASE Addendum) are considered.
6. Surface soil intervals include 0-1, 0-2, and 0.5-1.5 foot intervals.
7. TSCA PCB Residential - 40 CFR 761.61(a)(4)(i)(A) specifies the cleanup level for bulk PCB remediation waste (e.g., soil) without further conditions as 1 ppm (or 10 ppm with cap).
8. No PRG selected because the maximum COC concentration is less than the proposed PRG. Therefore no action necessary for this COC in this medium (subsurface soil in these cases, plus surface soil for Total PCBs). Therefore, Total PCBs do not continue as a COC for surface or subsurface soil. Previous PCB soil issues were addressed by interim removal actions (see Section 1.3).

TABLE 2-5
SOIL RISK-BASED COCS AND PRGs - FORMER BUILDING 234 AREA
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Risk-Based Chemical of Concern (COC)	*Former Building 234 Area* *Soil Data* [5]								Candidate Preliminary Remediation Goals (PRGs)							Selected Risk-Based Soil PRGs for Former Building 234 Area	
									Applicable Rhode Island Chemical-Specific ARARs			Calculated Risk-Based PRGs		Representative Background Values [3]			
	Surface Soil [6]				Subsurface Soil				RIDEM Residential DEC [1]	RIDEM Industrial DEC [1]	RIDEM GA Leachability Criteria [1][2]	Target Cancer Risk Level	Hazard Index	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
	EPC (mg/kg)	EPC Type	Maximum (mg/kg)	FOD	EPC (mg/kg)	EPC Type	Maximum (mg/kg)	FOD	(mg/kg)	(mg/kg)	(mg/kg)	10^{-5} (mg/kg)	1 (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
FUTURE RESIDENTIAL																***FUTURE RESIDENTIAL***	
Benzo(a)anthracene	0.3	95%UCL	0.47	6/8	--	--	0.07	2/10	0.9	7.8	--	0.15	--	--	--	0.15	-- [7]
Benzo(a)pyrene	0.27	95%UCL	0.41	6/8	0.055	Max	0.055	2/10	0.4	0.8	0.24	0.015	--	--	--	0.015	-- [7]
Benzo(b)fluoranthene	0.43	95%UCL	0.66	7/8	--	--	0.08	2/10	0.9	7.8	--	0.15	--	--	--	0.15	-- [7]
Dibenzo(a,h)anthracene	0.062	Max	0.062	1/7	--	--	--	0/10	0.4	0.8		0.015	--	--	--	0.015	-- [7]
Arsenic	16.4	95%UCL	23.6	8/8	23.3	95%UCL	42	15/16	7	7	--	0.39	22	13	20	13	20
Chromium [4]	91.1	95%UCL	130	8/8	25.4	95%UCL	60.2	16/16	390	10,000	*1.1 mg/L*	0.30	235	16	18	16	-- [7]

Notes:

Candidate PRG selected as PRG / Final PRG

Risk-based COCs are Chemicals of Potential Concern (COPCs) that were retained as COCs in the subarea-specific baseline human health risk assessment (HHRA) in the SASE Addendum Report (Tetra Tech, 2013).
See Table 1-1b for risk-based COCs for each receptor and medium.

1. RIDEM (Rhode Island Department of Environmental Management) Residential DEC (Direct Exposure Criteria) and RIDEM "GA" [Aquifer] Leachability Criteria, DEM-DSR-01-93, November 2011.
2 Leachability criteria for metals in soil are leachate results from either TCLP or SPLP testing. (Current data is TCLP metals; SPLP analysis to be performed at GA Leachability Criteria exceedance locations prior to Record of Decision, per Tier 2 Agreement).
3. Background data set used for On-Shore Derecktor SASE Addendum Report, approved by RIDEM and EPA. 95% Upper Prediction Limits from approved background data set.
4. Chromium is assumed to be in the hexavalent state (conservative assumption).
5. Data set is for respective subarea, only, and considers previous removal actions (that is, soil data from locations addressed by removal actions have been removed from the data set).
Data from the 1996 SASE and 2011 Data Gaps Investigation (SASE Addendum) are considered.
6. Surface soil intervals include 0-1, 0-2, and 0.5-1.5 foot intervals
7. No PRG selected because the maximum COC concentration is less than the proposed PRG. Therefore no action necessary for this COC in this medium (subsurface soil in these cases).

-- - no value / not applicable mg/kg - milligram(s) per kilogram mg/L - milligram(s) per liter. EPC (Exposure Point Concentration); Types:Max - maximum detection within evaluated subarea
FOD - frequency of detection ARAR - Applicable or Relevant and Appropriate Requirement 95%UCL - 95 percent Upper Confidence Limit for data within evaluated subarea

TABLE 2-6
GROUNDWATER RISK-BASED COCS AND PRGs - NORTH WATERFRONT AREA
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Risk-Based Chemical of Concern (COC)	*North Waterfront Area* Groundwater Data [3]			Candiate Preliminary Remediation Goals (PRGs)						Selected Risk-Based Groundwater PRG for North Waterfront Area
	EPC		Frequency of Detection	EPA MCL [1]	RIDEM GA Groundwater Objective [2]	Calculated Risk-Based PRGs				
						Target Cancer Risk Level			Hazard Index	
	(µg/L)	Type		(µg/L)	(µg/L)	10^{-6} (µg/L)	10^{-5} (µg/L)	10^{-4} (µg/L)	1 (µg/L)	Groundwater (µg/L)
FUTURE RESIDENTIAL										***FUTURE RESIDENTIAL***
Trichloroethene (TCE)	12.2	Max	6/8	5	5	1.1	11	110	2.6	5

Notes:

Candidate PRG selected as PRG / Final PRG

Risk-based COCs are Chemicals of Potential Concern (COPCs) that were retained as COCs in the subarea-specific baseline human health risk assessment (HHRA) in the SASE Addendum Report (Tetra Tech, 2013). See Table 1-1b for risk-based COCs for each receptor and medium.

1. MCL (Maximum Concentration Level) from EPA (U.S. Environmental Protection Agency) Primary Drinking Water Standards (EPA, April 2012).
2. RIDEM (Rhode Island Department of Environmental Management) GB [Aquifer] Groundwater Objective, DEM-DSR-01-93, November 2011.
3. Data set is for respective sub-area, only, and considers groundwater data collected in 2011 supporting the Data Gaps Investigation (SASE Addendum), only
   The groundwater data considered in the FS for the North Waterfront Area were collected in 2011 from monitoring wells DSY-MW02A, -MW03, -MW11A, -MW12, -MW204, -MW220, -MW221, and -MW222.
   Although sampled in 2011, the data from monitoring well DSY-MW223 is not considered in the FS, because (a) it is a site-specific upgradient sample outside of sub-area boundary and (b) it had no VOCs detections.
   Well DSY-MW11A was a temporary well installed by Direct Push due to the U.S. Coast Guard project construction activities in the vicinity.

-- - no value / not applicable µg/L - microgram(s) per liter EPC (Exposure Poi:oncentration); Type: Max - maximum detection within evaluated subarea

TABLE 2-7
GROUNDWATER RISK-BASED COCS AND PRGs - CENTRAL SHIPYARD AREA
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Risk-Based Chemical of Concern (COC)	*Central Shipyard Area* Groundwater Data [4]			Candiate Preliminary Remediation Goals (PRGs)						Selected Risk-Based Groundwater PRG for Central Shipyard Area
						Calculated Risk-Based PRGs				
						Target Cancer Risk Level			Hazard Index	
	EPC (µg/L)	EPC Type	Frequency of Detection	EPA MCL [1] (µg/L)	RIDEM GA Groundwater Objective [2] (µg/L)	10^{-6} (µg/L)	10^{-5} (µg/L)	10^{-4} (µg/L)	1 (µg/L)	Groundwater (µg/L)
FUTURE RESIDENTIAL										***FUTURE RESIDENTIAL***
Arsenic	78.1	Max	2/2	10	10	0.120	1.2	12	4.7	10
Cobalt	24.8	Max	2/2	--	--	--	--	--	4.7	4.7
Iron	65,800	Max	2/2	--	--	--	--	--	11,000	11,000
Manganese	9,100	Max	2/2	300 [3]	--	--	--	--	320	300
FUTURE INDUSTRIAL										***FUTURE INDUSTRIAL***
Arsenic	78.1	Max	2/2	10	10	0.38	3.8	38	60	10
Manganese	9,100	Max	2/2	300 [3]	--	--	--	--	4,800	300

Notes:

Candidate PRG selected as PRG / Final PRG

Risk-based COCs are Chemicals of Potential Concern (COPCs) that were retained as COCs in the subarea-specific baseline human health risk assessment (HHRA) in the SASE Addendum Report (Tetra Tech, 2013). See Table 1-1b for risk-based COCs for each receptor and medium.

1. MCL (Maximum Concentration Level) from EPA (U.S. Environmental Protection Agency) Primary Drinking Water Standards (EPA, April 2012).
2. RIDEM (Rhode Island Department of Environmental Management) GB [Aquifer] Groundwater Objective, DEM-DSR-01-93, November 2011.
3. Manganese is cited based on an exceedance of the EPA Lifetime Health Advisory Level, which was used in lieu of an MCL at the request of EPA.
4. Data set is for respective sub-area, only, and considers groundwater data collected in 2011 supporting the Data Gaps Investigation (SASE Addendum), only The groundwater sample data considered in the FS for the Central Shipyard Area were collected in 2011 from monitoring wells DSY-MW218 and -MW219.

-- - no value / not applicable µg/L - microgram(s) per liter EPC (Exposure Point Concentration); Type: Max - maximum detection within evaluated subarea

TABLE 2-8
GROUNDWATER RISK-BASED COCS AND PRGs - FORMER BUILDING 234 AREA
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Risk-Based Chemical of Concern (COC)	*Former Building 234 Area* Groundwater Data [4]			Candiate Preliminary Remediation Goals (PRGs)						Selected Risk-Based Groundwater PRG for Former Building 234 Area
						Calculated Risk-Based PRGs				
						Target Cancer Risk Level			Hazard Index	
	EPC (µg/L)	EPC Type	Frequency of Detection	EPA MCL [1] (µg/L)	RIDEM GA Groundwater Objective [2] (µg/L)	10^{-6} (µg/L)	10^{-5} (µg/L)	10^{-4} (µg/L)	1 (µg/L)	Groundwater (µg/L)
FUTURE RESIDENTIAL										***FUTURE RESIDENTIAL***
Manganese	532	Max	1/1	300 [3]	--	--	--	--	320	300

Notes:

Candidate PRG selected as PRG / Final PRG

Risk-based COCs are Chemicals of Potential Concern (COPCs) that were retained as COCs in the subarea-specific baseline human health risk assessment (HHRA) in the SASE Addendum Report (Tetra Tech, 2013). See Table 1-1b for risk-based COCs for each receptor and medium.

1. MCL (Maximum Concentration Level) from EPA (U.S. Environmental Protection Agency) Primary Drinking Water Standards (EPA, April 2012).
2. RIDEM (Rhode Island Department of Environmental Management) GB [Aquifer] Groundwater Objective, DEM-DSR-01-93, November 2011.
3. Manganese is cited based on an exceedance of the EPA Lifetime Health Advisory Level, which was used in lieu of an MCL at the request of EPA.
4. Data set is for respective sub-area, only, and considers groundwater data collected in 2011 supporting the Data Gaps Investigation (SASE Addendum), only The groundwater data considered in the FS for the Former Building 234 Area were collected in 2011 from monitoring well DSY-MW08.

-- - no value / not applicable µg/L - microgram(s) per liter EPC (Exposure Point Concentration); Type: Max - maximum detection within evaluated subarea

TABLE 2-9A
RISK- AND ARAR-BASED COCS AND PRGs - FIVE SUBAREAS
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Combined Risk-Based and ARAR-Based COCs/PRGs for each of the five original subareas.

		Soil Data [5]		Candidate Preliminary Remediation Goals (PRGs)								Selected PRGs in each Subarea			
		Maximum Concentration		Applicable Rhode Island Chemical-Specific ARARs				Calculated Risk-Based PRGs		Representative Background Values [3]					
Chemical	COC Selection basis	Surface Soil [6] (mg/kg)	Subsurface Soil (mg/kg)	RIDEM Residential DEC [1] (mg/kg)	RIDEM Industrial DEC [1] (mg/kg)	RIDEM GA Leachability Criteria [1][2] (mg/kg)	TSCA [7] PCB Residential (mg/kg)	Target Cancer Risk Level 10^{-6} (mg/kg)	Hazard Index 1 (mg/kg)	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Surface Soil (mg/kg)	PRG Selection Basis	Subsurface Soil (mg/kg)	PRG Selection Basis
Northern Waterfront Area												***Northern Waterfront Area***			
Residential												**Residential**			
Benzo(a)pyrene	*ARAR*	0.68	0.04	0.4	0.8	240	--	--	--	--	--	0.4	RIDEM ResDEC	--	--
Benzo(b)fluoranthene	*ARAR*	1	0.07	0.9	7.8	--	--	--	--	--	--	0.9	RIDEM ResDEC	--	--
Chrysene	*ARAR*	0.69	0.04	0.4	780	--	--	--	--	--	--	0.4	RIDEM ResDEC	--	--
Industrial												**Industrial**			
(none)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Central Shipyard Area												***Central Shipyard Area***			
Residential												**Residential**			
Benzo(a)anthracene	*ARAR*	0.41	1.3	0.9	7.8	--	--	--	--	--	--	0.9	RIDEM ResDEC	--	--
Benzo(a)pyrene	*ARAR*	0.14	0.69	0.4	0.8	240						0.4	RIDEM ResDEC	0.4	RIDEM ResDEC
Benzo(b)fluoranthene	*ARAR*	0.41	0.91	0.9	7.8	--						0.9	RIDEM ResDEC	0.9	RIDEM ResDEC
Chrysene	*ARAR*	0.42	1.3	0.4	780	--	--	--	--	--	--	0.4	RIDEM ResDEC	0.4	RIDEM ResDEC
Arsenic	*ARAR*	24.4	37.3	7	7	--	--	--	--	13	20	13	Background	20	Background
Manganese	*ARAR*	448	612	390	10,000	--	--	--	--	349	1,037	390	RIDEM ResDEC	--	--
Industrial												**Industrial**			
Arsenic	*ARAR*	24.4	37.3	7	7	--	--	--	--	13	20	13	Background	20	Background
PCB Removal Area												***PCB Removal Area***			
Residential												**Residential**			
Benzo(a)anthracene	**HHRA**	5.74	0.25	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	0.15	TCR = 10^{-6}
Benzo(a)pyrene	**HHRA**	4.92	0.17	0.4	0.8	240	--	0.015	--	--	--	0.015	TCR = 10^{-6}	0.015	TCR = 10^{-6}
Benzo(b)fluoranthene	**HHRA**	7.12	0.34	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	0.15	TCR = 10^{-6}
Benzo(g,h,i)perylene	*ARAR*	2.07	0.09	0.8	10,000	--	--	--	--	--	--	0.8	RIDEM ResDEC	--	
Benzo(k)fluoranthene	**HHRA**	2.48	0.12	0.9	78	--	--	1.5	--	--	--	0.9	RIDEM ResDEC	--	
Chrysene	*ARAR*	5.65	0.36	0.4	780	--	--	--	--	--	--	0.4	RIDEM ResDEC	--	
Dibenzo(a,h)anthracene	**HHRA**	0.82	0.04	0.4	0.8	--	--	0.015	--	--	--	0.015	TCR = 10^{-6}	0.015	TCR = 10^{-6}
Indeno(1,2,3-cd)pyrene	**HHRA**	2.07	0.08	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	--	--
Total Aroclors [8]	**HHRA**	0.416	0.10	10	10	10	1	0.22	--	--	--	--	[8]	--	[8]
Arsenic	**HHRA**	21.8	47.2	7	7	--	--	0.39	22	13	20	13	Background	20	Background
Chromium[4]	**HHRA**	15.8	25.6	390	10,000	*1.1 mg/L*	--	0.30	235	16	18	16	Background	18	Background
Industrial												**Industrial**			
Benzo(a)pyrene	*ARAR*	4.92	0.17	0.4	0.8	240	--	--	--	--	--	0.8	RIDEM IndDEC	--	--
Dibenzo(a,h)anthracene	*ARAR*	0.82	0.04	0.4	0.8	--	--	--	--	--	--	0.8	RIDEM IndDEC	--	--
Arsenic	*ARAR*	21.8	47.2	7	7	--	--	--	--	13	20	13	Background	20	Background
Former Building 234 Area												***Former Building 234 Area***			
Residential												**Residential**			
Benzo(a)anthracene	**HHRA**	0.47	0.07	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	--	--
Benzo(a)pyrene	**HHRA**	0.41	0.055	0.4	0.8	240	--	0.015	--	--	--	0.015	TCR = 10^{-6}	--	--
Chrysene	*ARAR*	0.58	0.054	0.4	780	--	--	--	--	--	--	0.4	RIDEM ResDEC	--	--
Benzo(b)fluoranthene	**HHRA**	0.66	0.08	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	--	--
Dibenzo(a,h)anthracene	**HHRA**	0.062	--	0.4	0.8		--	0.015	--	--	--	0.015	TCR = 10^{-6}	--	--
Arsenic	**HHRA**	23.6	42	7	7	--	--	0.39	22	13	20	13	Background	20	Background
Beryllium	*ARAR*	3.5	0.67	1.5	1.5	*0.03 mg/L*	--	--	--	--	--	1.5	RIDEM ResDEC	--	--
Chromium[4]	**HHRA**	130	60.2	390	10,000	*1.1 mg/L*	--	0.30	235	16	18	16	Background	--	--
Lead	*ARAR*	189	75	150	500	*0.04 mg/L*	--	--	--	40	12	150	RIDEM ResDEC	--	--
Manganese	*ARAR*	597	2,450	390	10,000	--	--	--	--	349	1,037	390	RIDEM ResDEC	1,037	Background
Industrial												**Industrial**			
Arsenic	*ARAR*	23.6	42	7	7	--	--	--	--	13	20	13	Background	20	Background
Beryllium	*ARAR*	3.5	0.67	1.5	1.5	*0.03 mg/L*	--	--	--	--	--	1.5	RIDEM IndDEC	--	--

TABLE 2-9A
RISK- AND ARAR-BASED COCS AND PRGs - FIVE SUBAREAS
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND
PAGE 2 OF 2

Chemical	COC Selection basis	Soil Data [5] Maximum Concentration: Surface Soil [6] (mg/kg)	Soil Data [5] Maximum Concentration: Subsurface Soil (mg/kg)	Candidate PRGs: Applicable Rhode Island Chemical-Specific ARARs: RIDEM Residential DEC [1] (mg/kg)	RIDEM Industrial DEC [1] (mg/kg)	RIDEM GA Leachability Criteria [1][2] (mg/kg)	TSCA [7] PCB Residential (mg/kg)	Calculated Risk-Based PRGs: Target Cancer Risk Level 10^{-6} (mg/kg)	Hazard Index 1 (mg/kg)	Representative Background Values [3]: Surface Soil (mg/kg)	Representative Background Values [3]: Subsurface Soil (mg/kg)	Selected PRGs in each Subarea: Surface Soil (mg/kg)	PRG Selection Basis	Subsurface Soil (mg/kg)	PRG Selection Basis
Southern Waterfront Area															
Residential														**Residential**	
Arsenic	*ARAR*	--	26.3	7	7	--	--	--	--	13	20	13	Background	20	Background
Industrial														**Industrial**	
Arsenic	*ARAR*	--	26.3	7	7	--	--	--	--	13	20	13	Background	20	Background

Notes:

COC Selection Basis:

HHRA (human health risk assessment) - Risk-based COCs retained from subarea-specific HHRA in the 2011 SASE Addendum Report. (Five subareas were investigated and evaluated individually for risks). See Table 1-1b for risk-based COCs for each receptor and medium.

ARAR (Applicable or Relevant and Appropriate) - ARAR-based COCs are evaluated as COCs in the FS because the maximum detected concentration exceeds applicable criteria (see Table 1-1a) and representative background values. See criteria exceedance locations on Figures 1-7a and 1-7b.

Candidate PRG selected as PRG / Final PRG

Per the Tier 2 Agreement, RIDEM GA Leachability Criteria exceedances for lead and naphthalene (see Table 1-1a) will be evaluated further with (1) additional soil sampling and SPLP testing before the ROD and (2) pending the SPLP results, groundwater monitoring.

TPH not included as a CERCLA COC, because not commingled. See Section 1.5 for commingled / collocated evaluation of TPH and CERCLA contaminants.

1. RIDEM (Rhode Island Department of Environmental Management) Industrial & Residential DEC (Direct Exposure Criteria) and RIDEM "GA" [Aquifer] Leachability Criteria, DEM-DSR-01-93, November 2011.
2. RIDEM GA Leachability criteria for metals in soil are leachate results from either TCLP or SPLP testing.
3. Background data set used for On-Shore Derecktor SASE Addendum Report, approved by RIDEM and EPA. 95% Upper Prediction Limits from approved background data set.
4. Chromium is assumed to be in the hexavalent (+6) state (conservative assumption).
5. Data set: 1996 and 2011 soil data by respective subareas considering previous removal actions, in addition to any unsaturated confirmation soil samples from interim removal actions that also are reflective of current site conditions.
   Soil data points addressed by interim removal actions not considered in FS. See Appendix A (A.1 - Surface & Subsurface Soil criteria screening tables) for existing data set for current site conditions.
6. Surface soil intervals include 0-1, 0-2, and 0.5-1.5 foot intervals
7. TSCA PCB Residential - 40 CFR 761.61(a)(4)(i)(A) specifies the cleanup level for bulk PCB remediation waste (e.g., soil) without further conditions as 1 ppm (or 10 ppm with cap).
8. No PRG selected for Total Aroclors/PCBs, because the maximum concentration is less than the proposed PRG (i.e., TSCA Residential Value of 1 mg/kg). Therefore, no action necessary for PCBs in soil.
   Total PCBs do not continue as a COC for surface or subsurface soil. Previous PCB soil issues were addressed by interim removal actions (see Section 1.3).

-- - no value / not applicable mg/kg - milligram(s) per kilogram.

TABLE 2-9B
SUMMARY OF SOIL COCS AND PRGs - CENTRAL AREA
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Combined Risk-Based and ARAR-Based COCs/PRGs for Soil in the Central Area as defined in Tier 2 Agreement (January 2014). Soil Attainment Area is "Central Area" boundary

Chemical	COC Selection basis	Soil Data [5]		Candidate Preliminary Remediation Goals (PRGs)								Selected PRGs for "Central Area"			
		Maximum Concentration		Applicable Rhode Island Chemical-Specific ARARs				Calculated Risk-Based PRGs		Representative Background Values [3]					
		Surface Soil [6] (mg/kg)	Subsurface Soil (mg/kg)	RIDEM Residential DEC [1] (mg/kg)	RIDEM Industrial DEC [1] (mg/kg)	RIDEM GA Leachability Criteria [1][2] (mg/kg)	TSCA [7] PCB Residential (mg/kg)	Target Cancer Risk Level 10^{-6} (mg/kg)	Hazard Index 1 (mg/kg)	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Surface Soil (mg/kg)	PRG Selection Basis	Subsurface Soil (mg/kg)	PRG Selection Basis
Central Area												**Central Area**			
Residential														**Residential**	
Benzo(a)anthracene	**HHRA**	5.74	1.3	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	0.15	TCR = 10^{-6}
Benzo(a)pyrene	**HHRA**	4.92	0.69	0.4	0.8	240	--	0.015	--	--	--	0.015	TCR = 10^{-6}	0.015	TCR = 10^{-6}
Benzo(b)fluoranthene	**HHRA**	7.12	0.91	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	0.15	TCR = 10^{-6}
Benzo(g,h,i)perylene	*ARAR*	2.07	0.09	0.8	10,000	--	--	--	--	--	--	0.8	RIDEM ResDEC	--	--
Benzo(k)fluoranthene	**HHRA**	2.48	0.12	0.9	78	--	--	1.5	--	--	--	0.9	RIDEM ResDEC	--	--
Chrysene	*ARAR*	5.65	1.3	0.4	780	--	--	--	--	--	--	0.4	RIDEM ResDEC	0.4	RIDEM ResDEC
Dibenzo(a,h)anthracene	**HHRA**	0.82	0.04	0.4	0.8	--	--	0.015	--	--	--	0.015	TCR = 10^{-6}	0.015	TCR = 10^{-6}
Indeno(1,2,3-cd)pyrene	**HHRA**	2.07	0.08	0.9	7.8	--	--	0.15	--	--	--	0.15	TCR = 10^{-6}	--	--
Total Aroclors [8]	**HHRA**	0.416	0.10	10	10	10	1	0.22	--	--	--	--	[8]	--	[8]
Arsenic	**HHRA**	24.4	47.2	7	7	--	--	0.39	22	13	20	13	Background	20	Background
Beryllium	*ARAR*	3.5	0.67	1.5	1.5	*0.03 mg/L*	--	--	--	--	--	1.5	RIDEM ResDEC	--	--
Chromium[4]	**HHRA**	130	60.2	390	10,000	*1.1 mg/L*	--	0.30	235	16	18	16	Background	18	Background
Lead	*ARAR*	189	75	150	500	*0.04 mg/L*	--	--	--	40	12	150	RIDEM ResDEC	--	--
Manganese	*ARAR*	597	2,450	390	10,000	--	--	--	--	349	1,037	390	RIDEM ResDEC	1,037	Background
Industrial														**Industrial**	
Benzo(a)pyrene	*ARAR*	4.92	0.69	0.4	0.8	240	--	--	--	--	--	0.8	RIDEM IndDEC	--	--
Dibenzo(a,h)anthracene	*ARAR*	0.82	0.04	0.4	0.8	--	--	--	--	--	--	0.8	RIDEM IndDEC	--	--
Arsenic	*ARAR*	24.4	47.2	7	7	--	--	--	--	13	20	13	Background	20	Background
Beryllium	*ARAR*	3.5	0.67	1.5	1.5	*0.03 mg/L*	--	--	--	--	--	1.5	RIDEM IndDEC	--	--

Notes:

COC Selection Basis:

HHRA (human health risk assessment) - Risk-based COCs retained from subarea-specific HHRA in the 2011 SASE Addendum Report. (Five subareas were investigated and evaluated individually for risks). See Table 1-1b for risk-based COCs for each receptor and medium.

ARAR (Applicable or Relevant and Appropriate) - ARAR-based COCs are evaluated as COCs in the FS because the maximum detected concentration exceeds applicable criteria (see Table 1-1a) and representative background values. See criteria exceedance locations on Figures 1-7a and 1-7b.

Candidate PRG selected as PRG / Final PRG

Per the Tier 2 Agreement, RIDEM GA Leachability Criteria exceedances for lead and naphthalene (see Table 1-1a) will be evaluated further with (1) additional soil sampling and SPLP testing before the ROD and (2) pending the SPLP results, groundwater monitoring.

TPH not included as a CERCLA COC, because not commingled. See Section 1.5 for commingled / collocated evaluation of TPH and CERCLA contaminants.

"Central Area" - (As defined in Tier 2 Agreement) this is the area south of Pier I (the southern portion of the original "North Waterfront [Sub]Area") extending to include the northern portion of the original "Southern Waterfront [Sub]Area."

The Central Area encompasses the original "Central Shipyard [Sub]Area," "PCB Removal [Sub]Area," and the "Former Building 234 [Sub]Area."

1. RIDEM (Rhode Island Department of Environmental Management) Industrial & Residential DEC (Direct Exposure Criteria) and RIDEM "GA" [Aquifer] Leachability Criteria, DEM-DSR-01-93, November 2011.
2. Leachability criteria for metals in soil are leachate results from either TCLP or SPLP testing. (Current data is TCLP metals; SPLP analysis to be performed at GA Leachability Criteria exceedance locations prior to Record of Decision, per Tier 2 Agreement).
3. Background data set used for On-Shore Derecktor SASE Addendum Report, approved by RIDEM and EPA. 95% Upper Prediction Limits from approved background data set.
4. Chromium is assumed to be in the hexavalent (+6) state (conservative assumption).
5. Data set: 1996 and 2011 soil data by respective subareas considering previous removal actions, in addition to any unsaturated confirmation soil samples from interim removal actions that also are reflective of current site conditions.
   Soil data points addressed by interim removal actions not considered in FS. See Appendix A (A.1 - Surface & Subsurface Soil criteria screening tables) for existing data set for current site conditions.
6. Surface soil intervals include 0-1, 0-2, and 0.5-1.5 foot intervals
7. TSCA PCB Residential - 40 CFR 761.61(a)(4)(i)(A) specifies the cleanup level for bulk PCB remediation waste (e.g., soil) without further conditions as 1 ppm (or 10 ppm with cap).
8. No PRG selected for Total Aroclors/PCBs, because the maximum concentration is less than the proposed PRG (i.e., TSCA Residential Value of 1 mg/kg). Therefore, no action necessary for PCBs in soil.
   Total PCBs do not continue as a COC for surface or subsurface soil. Previous PCB soil issues were addressed by interim removal actions (see Section 1.3).

-- - no value / not applicable mg/kg - milligram(s) per kilogram.

2-10A - PRG EXCEEDANCES IN SURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	MW-03	MW-11	MW-12	SB-11	TP-21	TP-22	TP-23	MW-02	MW-04
SAMPLE ID			DSY-S-MW03-0_501	DSY-S-MW11-0001	DSY-S-MW12-SS01	DSY-SB-11-0002	DSY-S-TP21-0001	DSY-S-TP22-0001	DSY-S-TP23-0001	DSY-S-MW02-SS01	DSY-S-MW04-SS01
(duplicate?)											
SAMPLE DATE			08/05/96	07/31/96	08/06/96	09/05/96	07/24/96	07/24/96	07/23/96	08/08/96	08/12/96
DEPTH INTERVAL (ft)			0.5 - 1	0 - 1	0.5 - 1.5	0 - 2	0 - 1	0 - 1	0 - 1	0.5 - 1.5	0.5 - 1.5
HHRA Subarea			*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*	*North*
Tier 2 Agreement Subarea			Northern	Northern	Northern	Northern	Northern	Northern	Northern	Central	Central
Semivolatiles (µg/kg)											
BENZO(A)ANTHRACENE	**150**	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
BENZO(A)PYRENE	**15**	**800**	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
BENZO(B)FLUORANTHENE	**150**	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
BENZO(G,H,I)PERYLENE	**800**	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
BENZO(K)FLUORANTHENE	**900**	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
CHRYSENE	**400**	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
DIBENZO(A,H)ANTHRACENE	**15**	**800**	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
INDENO(1,2,3-CD)PYRENE	**150**	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
NAPHTHALENE	--	--	330 U	350 U	330 U	410 UJ	370 U	360 U	370 U	350 U	350 U
Inorganics (mg/kg)											
ARSENIC	**13**	**13**	3.3	3.8	2.8	2.9 U	5.1 J	5.3 J	8.8 J	3	4.9
BERYLLIUM	**1.5**	--	0.2 U	0.21 U	0.19 U	0.21 U	0.21 J	0.19 U	0.31 J	0.19 U	0.2 U
CHROMIUM	**16**	--	8.8	6.5 U	7.4	6.7	5.2	5.8	9.2	7.8	6.9 UJ
COBALT	--	--	3.5 U	8	2.6	4.6 U	9.1	7.9	9.8	4.4	4.6
IRON	--	--	13100 J	11900 J	11500	12900	15900	15900	19400	12800	12100
LEAD	**150**	--	20.1	4.8	2.3 J	8 J	9.5 J	9.8 J	10.8 J	3.7 J	7 J
MANGANESE	**390**	--	111	268	81.4 J	135 J	322 J	259 J	340 J	137 J	149
TCLP Metals (µg/L) *(for reference only)*											
LEAD	--	--	1 U	1 U	1.1 UJ	4.5 U	4.4 U	3.3 U	5.2 U	1 U	5.7

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)
Exceeds Residential PRG, and below or no Industrial PRG
Exceeds RIDEM GA Leachability Criteria

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront
Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas
µg - micgrogram mg - milligram kg - kilogram L - liter
NA - Not analyzed or no value
U - Not detected above associated value (detection limit)
J - estimated value between PQL and MDL
B - blank contamination R - rejected (unusable data)

2-10A - PRG EXCEEDANCES IN SURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	SB204		SB205	SB206	SB207	TP-16	TP-18		TP-19	TP-20
SAMPLE ID			DSY-SB204-SO-0002	DSY-SB204-SO-0002-D	DSY-SB205-SO-0002	DSY-SB206-SO-0002	DSY-SB207-SO-0002	DSY-S-TP16-0001	DSY-S-TP18-0001	DSY-S-TP18-0001-D	DSY-S-TP19-0001	DSY-S-TP20-0001
(duplicate?)				(duplicate)						(duplicate)		
SAMPLE DATE			02/14/11	02/14/11	02/15/11	02/14/11	02/15/11	07/25/96	07/24/96	07/24/96	07/24/96	07/24/96
DEPTH INTERVAL (ft)			0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
HHRA Subarea			*North*		*North*	*North*	*North*	*North*	*North*		*North*	*North*
Tier 2 Agreement Subarea			Central		Central	Central	Central	Central	Central		Central	Central
Semivolatiles (µg/kg)												
BENZO(A)ANTHRACENE	**150**	--	22.5 J	17.9 UJ	**232 J**	3.56 UJ	31.8 J	12000 U	380 U	380 U	380 U	380 U
BENZO(A)PYRENE	**15**	**800**	14.5 J	17.9 U	**165**	3.56 U	**29.6 J**	12000 U	380 U	380 U	380 U	380 U
BENZO(B)FLUORANTHENE	**150**	--	22.1 J	17.9 U	**263**	3.56 U	54	12000 U	380 U	380 U	380 U	380 U
BENZO(G,H,I)PERYLENE	**800**	--	18 U	17.9 U	119	1.92 J	25.8 J	12000 U	380 U	380 U	380 U	380 U
BENZO(K)FLUORANTHENE	**900**	--	18 U	17.9 U	92.4	3.56 U	15.8 J	12000 U	380 U	380 U	380 U	380 U
CHRYSENE	**400**	--	24.1 J	17.9 U	238	3.56 U	39.8	12000 U	380 U	380 U	380 U	380 U
DIBENZO(A,H)ANTHRACENE	**15**	**800**	18 U	17.9 U	**124**	3.56 U	17.2 U	12000 U	380 U	380 U	380 U	380 U
INDENO(1,2,3-CD)PYRENE	**150**	--	15.1 J	17.9 U	99.1	3.56 U	24.6 J	12000 U	380 U	380 U	380 U	380 U
NAPHTHALENE	--	--	18 U	17.9 U	18.9 U	3.56 U	18.4 J	12000 U	380 U	380 U	380 U	380 U
Inorganics (mg/kg)												
ARSENIC	**13**	**13**	3.35	3.57	9.81	2.41	6.16	4.7	4.2 J	5 J	2.6 J	4.5 J
BERYLLIUM	**1.5**	--	0.243 J	0.234 J	0.658	0.38	0.462 J	1.1	0.18 J	0.23 J	0.21 U	0.23 J
CHROMIUM	**16**	--	9.16	8.14	**16.1**	9.79	9.58	**24.1**	6.6	7	7.9	7.7
COBALT	--	--	4.55	4.05	9.56	3.94	6.42	14.7	8	8	3.4	8.6
IRON	--	--	16100	14700	27100	13900	19600	19600	15400	17400	11200	18100
LEAD	**150**	--	4.18 J	3.95 J	50.6 J	3.38 J	24.9 J	85.5	20.6 J	14.8 J	3.7 J	14.2 J
MANGANESE	**390**	--	148 J	135 J	337 J	155 J	149 J	187	284 J	299 J	84.1 J	306 J
TCLP Metals (µg/L) *(for reference only)*												
LEAD	--	--	NA	NA	NA	NA	NA	**71.8**	12.4	12.1	1.9 UJ	9.7

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)
Exceeds Residential PRG, and below or no Industrial PRG
Exceeds RIDEM GA Leachability Criteria

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront
Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas
µg - micgrogram mg - milligram kg - kilogram L - liter
NA - Not analyzed or no value
U - Not detected above associated value (detection limit)
J - estimated value between PQL and MDL
B - blank contamination R - rejected (unusable data)

2-10A - PRG EXCEEDANCES IN SURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	TP-27	TP-28	MW-05		MW-07	TP-11	TP-12	TP-15	TP-17	MW-06
SAMPLE ID			DSY-S-TP27-0001	DSY-S-TP28-0001	DSY-S-MW05-SS01	DSY-S-MW05-SS01-D	DSY-S-MW07-0001	DSY-S-TP11-0001	DSY-S-TP12-0001	DSY-S-TP15-0001	DSY-S-TP17-0001	DSY-S-MW06-SS01
(duplicate?)						(duplicate)						
SAMPLE DATE			08/22/96	08/21/96	08/19/96	08/19/96	08/14/96	07/26/96	07/26/96	07/25/96	07/25/96	08/30/96
DEPTH INTERVAL (ft)			0 - 1	0 - 1	0.5 - 1.5	0.5 - 1.5	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0.5 - 1.5
HHRA Subarea			*North*	*North*	*CSY*		*CSY*	*CSY*	*CSY*	*CSY*	*CSY*	*PCB*
Tier 2 Agreement Subarea			Central	Central	Central		Central	Central	Central	Central	Central	Central
Semivolatiles (µg/kg)												
BENZO(A)ANTHRACENE	**150**	--	350 U	**710 J**	330 U	330 U	400 UJ	350 U	350 U	**410 J**	140 J	130 J
BENZO(A)PYRENE	**15**	**800**	350 U	**680 J**	330 U	330 U	400 UJ	350 U	350 U	**86 J**	**140 J**	**120 J**
BENZO(B)FLUORANTHENE	**150**	--	350 U	**1000 J**	330 U	330 U	400 UJ	350 U	350 U	**410 J**	**230 J**	**180 J**
BENZO(G,H,I)PERYLENE	**800**	--	350 U	3700 UJ	330 U	330 U	400 UJ	350 U	350 U	110 J	130 J	72 J
BENZO(K)FLUORANTHENE	**900**	--	350 U	3700 UJ	330 U	330 U	400 UJ	350 U	350 U	360 J	350 UJ	86 J
CHRYSENE	**400**	--	350 U	**690 J**	330 U	330 U	400 UJ	350 U	350 U	**420 J**	120 J	140 J
DIBENZO(A,H)ANTHRACENE	**15**	**800**	350 U	3700 UJ	330 U	330 U	400 UJ	350 U	350 U	370 UJ	350 UJ	360 UJ
INDENO(1,2,3-CD)PYRENE	**150**	--	350 U	**520 J**	330 U	330 U	400 UJ	350 U	350 U	150 J	140 J	71 J
NAPHTHALENE	--	--	350 U	3700 UJ	330 U	330 U	400 UJ	350 U	350 U	370 UJ	350 UJ	360 UJ
Inorganics (mg/kg)												
ARSENIC	**13**	**13**	3.3 UJ	10.9 J	5.8	4.9	**23.9**	**24.4**	**20.1**	**19.3**	3.9	10.4
BERYLLIUM	**1.5**	--	0.15 UJ	0.38 J	0.26 J	0.26 J	0.38 J	0.41 J	0.42 J	0.47	0.23 J	0.45
CHROMIUM	**16**	--	5.3 J	12 J	10	9.6	15.8	15.6	**18.2**	**16.8**	11	15.8 J
COBALT	--	--	6.4 J	7.3 J	9.3	8.6	14.7	14.4 J	14.4 J	12.2 J	7.6 J	22.7
IRON	--	--	13200	19100	18000	19000	31000	31800	32500	31200	23200	30600
LEAD	**150**	--	13.8 J	115 J	5.8 J	21.2 J	9.2 J	10.3	14.7	27.4	26.2	18.1 J
MANGANESE	**390**	--	218 J	314 J	323	272	**448**	**445 J**	**421 J**	349 J	325 J	**619**
TCLP Metals (µg/L) *(for reference only)*												
LEAD	--	--	5.7 U	**71.9**	1 U	1 U	1.8 UJ	1 U	12.8	21.1	13.1	6.2 UJ

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)
Exceeds Residential PRG, and below or no Industrial PRG
Exceeds RIDEM GA Leachability Criteria

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront
Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas
µg - micgrogram mg - milligram kg - kilogram L - liter
NA - Not analyzed or no value
U - Not detected above associated value (detection limit)
J - estimated value between PQL and MDL
B - blank contamination R - rejected (unusable data)

2-10A - PRG EXCEEDANCES IN SURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND
PAGE 4 OF 5

LOCATION ID	Residential PRG	Industrial PRG	SB208		SB209	SB215	SB216	SB217	SB224		TP-14	MW-08
SAMPLE ID			DSY-SO-SB208-000.5	DSY-SO-SB208-000.5-D	DSY-SO-SB209-0.30.7	DSY-SO-SB215-000.5	DSY-SO-SB216-000.5	DSY-SO-SB217-000.5	DSY-SO-SB224-000.5	DSY-SO-SB224-000.5-D	B6-S1	DSY-S-MW08-SS01
(duplicate?)				(duplicate)						(duplicate)		
SAMPLE DATE			02/25/11	02/25/11	02/25/11	02/22/11	02/22/11	02/22/11	02/22/11	02/22/11	01/20/99	08/27/96
DEPTH INTERVAL (ft)			0 - 0.5	0 - 0.5	0.3 - 0.7	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0.25 - 0.5	0.5 - 1.5
HHRA Subarea			*PCB*		*PCB*	*PCB*	*PCB*	*PCB*	*PCB*		*PCB*	*B234*
Tier 2 Agreement Subarea			Central		Central	Central	Central	Central	Central		Central	Central
Semivolatiles (µg/kg)												
BENZO(A)ANTHRACENE	**150**	--	149 J	51.5 J	**5740**	NA	NA	NA	NA	NA	42 J	**200 J**
BENZO(A)PYRENE	**15**	**800**	**129 J**	**46.3 J**	**4920**	NA	NA	NA	NA	NA	410 U	**170 J**
BENZO(B)FLUORANTHENE	**150**	--	**194 J**	67.4 J	**7120**	NA	NA	NA	NA	NA	50 J	**230 J**
BENZO(G,H,I)PERYLENE	**800**	--	59.5 J	28.4 J	**2070**	NA	NA	NA	NA	NA	410 U	88 J
BENZO(K)FLUORANTHENE	**900**	--	71.2 J	28.8 J	**2480**	NA	NA	NA	NA	NA	410 U	87 J
CHRYSENE	**400**	--	161 J	48.1 J	**5650**	NA	NA	NA	NA	NA	45 J	220 J
DIBENZO(A,H)ANTHRACENE	**15**	**800**	**24.7**	**10.1 J**	**820**	NA	NA	NA	NA	NA	410 U	360 UJ
INDENO(1,2,3-CD)PYRENE	**150**	--	55.1 J	23.5 J	**2070**	NA	NA	NA	NA	NA	410 U	80 J
NAPHTHALENE	--	--	24.5 J	14.7 J	751	NA	NA	NA	NA	NA	410 U	360 UJ
Inorganics (mg/kg)												
ARSENIC	**13**	**13**	**21.8 J**	**21.6 J**	10.4 J	NA	NA	NA	NA	NA	13	**19.2**
BERYLLIUM	**1.5**	--	0.57 J	0.576	0.463	NA	NA	NA	NA	NA	NA	**3.5**
CHROMIUM	**16**	--	14.6	13.9	12.8	NA	NA	NA	NA	NA	10	**40.2 J**
COBALT	--	--	14.6 J	13.9 J	8.62 J	NA	NA	NA	NA	NA	NA	23.9
IRON	--	--	32000	28800	22500	NA	NA	NA	NA	NA	NA	32900
LEAD	**150**	--	18.4 J	16.4 J	26.5 J	NA	NA	NA	NA	NA	18	**189 J**
MANGANESE	**390**	--	**435**	348	293	NA	NA	NA	NA	NA	NA	**489**
TCLP Metals (µg/L) *(for reference only)*												
LEAD	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	**81.3 J**

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10A - PRG EXCEEDANCES IN SURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND
PAGE 5 OF 5

LOCATION ID	Residential PRG	Industrial PRG	MW-09		TP-07	TP-08		TP-09	TP-10	TP-26
SAMPLE ID			DSY-S-MW09-0001	MW09TP01	DSY-S-TP07-0001	DSY-S-TP08-0001	DSY-S-TP08-0001-D	DSY-S-TP09-0001	DSY-S-TP10-0001	DSY-S-TP26-0001
(duplicate?)							(duplicate)			
SAMPLE DATE			08/28/96	02/19/99	07/29/96	07/29/96	07/29/96	07/29/96	07/29/96	07/26/96
DEPTH INTERVAL (ft)			0 - 1	0 - 1.5	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1
HHRA Subarea			*B234*		*B234*	*B234*		*B234*	*B234*	*B234*
Tier 2 Agreement Subarea			Central		Central	Central		Central	Central	Central
Semivolatiles (µg/kg)										
BENZO(A)ANTHRACENE	**150**	--	**470 J**	110 J	**170 J**	350 U	340 U	710 U	**250 J**	60 J
BENZO(A)PYRENE	**15**	**800**	**410 J**	**100 J**	**200 J**	350 U	340 U	710 U	**210 J**	**50 J**
BENZO(B)FLUORANTHENE	**150**	--	**660 J**	140 J	**410 J**	36 J	77 J	710 U	**340 J**	66 J
BENZO(G,H,I)PERYLENE	**800**	--	190 J	48 J	1700 U	350 U	340 U	710 U	160 J	350 U
BENZO(K)FLUORANTHENE	**900**	--	270 J	76 J	1700 U	350 U	340 U	710 U	140 J	350 U
CHRYSENE	**400**	--	**580 J**	120 J	310 J	350 U	41 J	710 U	290 J	46 J
DIBENZO(A,H)ANTHRACENE	**15**	**800**	**62 J**	360 U	1700 U	350 U	340 U	710 U	360 U	350 U
INDENO(1,2,3-CD)PYRENE	**150**	--	**190 J**	48 J	1700 U	350 U	340 U	710 U	150 J	350 U
NAPHTHALENE	--	--	360 UJ	360 U	1700 U	350 U	340 U	710 U	360 U	350 UJ
Inorganics (mg/kg)										
ARSENIC	**13**	**13**	5.3	13	3.9	4.9	7.4	**23.6**	**15.8**	2.6
BERYLLIUM	**1.5**	--	0.2 U	0.5 U	0.18 J	0.21 J	0.24 J	0.44	0.54	0.29 J
CHROMIUM	**16**	--	13.7 J	**130**	12.3	15	16	16	**18.4**	6.4
COBALT	--	--	7	11	5.4	7.9	8.6	21.4	13.5	3.3
IRON	--	--	16900	59000	14500	19500	21100	37200	26700	7770
LEAD	**150**	--	23.4 J	63	17.2 J	52.8 J	50.2 J	12.8 J	62.5 J	9.7
MANGANESE	**390**	--	307	**760**	195	291	310	**597**	**448**	157
TCLP Metals (µg/L) *(for reference only)*										
LEAD	--	--	16.4 J	NA	9.6	**90.5**	**114**	2.5 U	**41.6**	29

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	MW-03		MW-11						MW-12		
SAMPLE ID			DSY-S-MW03-1618	DSY-S-MW03-0810	DSY-S-MW11-0103	DSY-S-MW11-1113	DSY-S-MW11-1113-D	DSY-S-MW11-2729	DSY-S-MW11-2931	DSY-S-MW11-2931-D	DSY-S-MW12-SS12	DSY-S-MW12-SS16	DSY-S-MW12-SS05
(duplicate?)							(duplicate)			(duplicate)			
SAMPLE DATE			08/05/96	08/05/96	07/31/96	08/01/96	08/01/96	08/01/96	08/01/96	08/01/96	08/06/96	08/07/96	08/06/96
DEPTH INTERVAL (ft)			16 - 18	8 - 10	1 - 3	11 - 13	11 - 13	27 - 29	29 - 31	29 - 31	21 - 23	29 - 31	7 - 9
Depth to Groundwater (ft)			8.1	8.1	6.4	6.4	6.4	6.4	6.4	6.4	9.1	9.1	9.1
HHRA Subarea			*North*		*North*						*North*		
Tier 2 Agreement Subarea			Northern		Northern						Northern		
Semivolatiles (µg/kg)													
BENZO(A)ANTHRACENE	**150**	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
BENZO(A)PYRENE	**15**	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
BENZO(B)FLUORANTHENE	**150**	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
BENZO(G,H,I)PERYLENE	--	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
BENZO(K)FLUORANTHENE	--	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
CHRYSENE	**400**	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
DIBENZO(A,H)ANTHRACENE	**15**	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
INDENO(1,2,3-CD)PYRENE	--	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
NAPHTHALENE	--	--	360 U	400 U	350 U	350 U	350 U	370 U	380 U	360 U	330 U	380 U	350 U
Inorganics (mg/kg)													
ARSENIC	**20**	**20**	9.9	7	3.7	3.3	3.1	14.6	14.7	13.3	5.6	7.6	4.3
BERYLLIUM	--	--	0.23 J	0.24 U	0.32 J	0.23 J	0.27 J	0.24 J	0.27 J	0.26 J	0.28 J	0.23 J	0.22 U
CHROMIUM	**18**	--	**18.1**	10.3	10	7.8 U	9.8	**18.3**	**24.6**	**23**	14.2	**23**	6.5 J
COBALT	--	--	15.4	6.7	8.5	5.4	4.9	10.2	11.7	10.6	9.7	12.7	4.5
IRON	--	--	26800 J	15500 J	14200 J	12800 J	14900 J	32000 J	44400 J	38200 J	18600	43100	12000
LEAD	--	--	29.2	2.7	7.4	6.6	6.2	3.6	11.8	9.6	4 J	5.7 J	1.7 UJ
MANGANESE	**1,037**		370	113	376	180	181	203	334	280	274 J	382 J	97.5 J
TCLP Metals (µg/L) *(for reference only)*													
LEAD	--	--	1 U	1 U	1 U	2.3 U	1.8 U	1 U	1.5 U	1 U	1 U	1 U	1 U

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND
PAGE 2 OF 10

LOCATION ID	Residential PRG	Industrial PRG	TP-21		TP-22		TP-23		TP-24				MW-02		
SAMPLE ID			DSY-S-TP21-0507	DSY-S-TP21-1011	DSY-S-TP22-0506	DSY-S-TP22-1112	DSY-S-TP23-0507	DSY-S-TP23-0910	DSY-S-TP24-0102	DSY-S-TP24-0102-D	DSY-S-TP24-0507	DSY-S-TP24-1011	DSY-S-MW02-1820	DSY-S-MW02-2426	DSY-S-MW02-3436
(duplicate?)										(duplicate)					
SAMPLE DATE			07/24/96	07/24/96	07/24/96	07/24/96	07/23/96	07/23/96	07/23/96	07/23/96	07/23/96	07/23/96	08/08/96	08/08/96	08/09/96
DEPTH INTERVAL (ft)			5 - 7	10 - 11	5 - 6	11 - 12	5 - 7	9 - 10	1 - 2	1 - 2	5 - 7	10 - 11	18 - 20	24 - 26	34 - 36
Depth to Groundwater (ft)			10	10	11.3	11.3	9.5	9.5	11	11	11	11	9	9	9
HHRA Subarea			*North*		*North*		*North*		*North*					*North*	
Tier 2 Agreement Subarea			Northern		Northern		Northern		Northern					Central	
Semivolatiles (µg/kg)															
BENZO(A)ANTHRACENE	**150**	--	NA	NA	NA	NA	NA	410 U	380 U	53 J	NA	NA	420 U	360 U	380 U
BENZO(A)PYRENE	**15**	--	NA	NA	NA	NA	NA	410 U	380 U	**44 J**	NA	NA	420 UJ	360 U	380 U
BENZO(B)FLUORANTHENE	**150**	--	NA	NA	NA	NA	NA	410 U	380 U	71 J	NA	NA	420 UJ	360 U	380 U
BENZO(G,H,I)PERYLENE	--	--	NA	NA	NA	NA	NA	410 U	380 U	370 U	NA	NA	420 UJ	360 U	380 U
BENZO(K)FLUORANTHENE	--	--	NA	NA	NA	NA	NA	410 U	380 U	370 U	NA	NA	420 UJ	360 U	380 U
CHRYSENE	**400**	--	NA	NA	NA	NA	NA	410 U	380 U	44 J	NA	NA	420 U	360 U	380 U
DIBENZO(A,H)ANTHRACENE	**15**	--	NA	NA	NA	NA	NA	410 U	380 U	370 U	NA	NA	420 UJ	360 U	380 U
INDENO(1,2,3-CD)PYRENE	--	--	NA	NA	NA	NA	NA	410 U	380 U	370 U	NA	NA	420 UJ	360 U	380 U
NAPHTHALENE	--	--	NA	NA	NA	NA	NA	410 U	380 U	370 U	NA	NA	420 U	360 U	380 U
Inorganics (mg/kg)															
ARSENIC	**20**	**20**	3.1 J	2.7 J	8.1	7	5.5	4.6 J	5.7 J	5.5 J	5.1	3.4	4.3	4	6.6
BERYLLIUM	--	--	0.2 U	0.26 U	0.3 J	0.35 J	0.22 J	0.24 J	0.25 J	0.19 J	0.23 J	0.27 J	0.23 U	0.23 U	0.33 J
CHROMIUM	**18**	--	2.8	4.8	7.6	14.6	8.4	7	6.3	6.1	9.5	9	10.9 J	12.3	~~**27.1 J**~~
COBALT	--	--	3.2 UJ	5	9.9	13.8 J	8.9	8.3	9	9	7 J	7.2 J	5.2	7.1	19.8
IRON	--	--	9380	10600	18400	25600	18900	16200	17700	17400	18200	17100	13500	18600	40600
LEAD	--	--	3.4	3.6	6.3	8.6	7.3	6.2 J	7.5 J	7.3 J	6.3	7.9	6 J	3.1 J	10 J
MANGANESE	**1,037**		93.2	125	322	549 J	308	218 J	400 J	329 J	210 J	213 J	97.9	159 J	385
TCLP Metals (µg/L) *(for reference only)*															
LEAD	--	--	NA	NA	NA	NA	NA	1.6 UJ	3.6 U	1.2 UJ	NA	NA	24.7	1 U	~~**48.8**~~

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

~~Sample/Result from below the water table (not in vadose zone)~~

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	MW-04			MW-05				MW-06
SAMPLE ID			DSY-S-MW04-1618	DSY-S-MW04-3234	DSY-S-MW04-0810	DSY-S-MW05-1012	DSY-S-MW05-2224	DSY-S-MW05-3234	DSY-S-MW05-4446	DSY-S-MW06-0406
(duplicate?)										
SAMPLE DATE			08/12/96	08/13/96	08/12/96	08/21/96	08/21/96	08/23/96	08/23/96	08/30/96
DEPTH INTERVAL (ft)			16 - 18	32 - 34	8 - 10	10 - 12	22 - 24	32 - 34	44 - 46	4 - 6
Depth to Groundwater (ft)			9.8	9.8	9.8	8.3	8.3	8.3	8.3	?
HHRA Subarea			*North*			*CSY*				*PCB*
Tier 2 Agreement Subarea			Central			Central				Central
Semivolatiles (µg/kg)										
BENZO(A)ANTHRACENE	**150**	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
BENZO(A)PYRENE	**15**	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
BENZO(B)FLUORANTHENE	**150**	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
BENZO(G,H,I)PERYLENE	--	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
BENZO(K)FLUORANTHENE	--	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
CHRYSENE	**400**	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
DIBENZO(A,H)ANTHRACENE	**15**	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
INDENO(1,2,3-CD)PYRENE	--	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
NAPHTHALENE	--	--	420 U	380 U	400 U	4000 UJ	360 U	340 U	360 U	360 U
Inorganics (mg/kg)										
ARSENIC	**20**	**20**	7.3	4.9	3	7.1 J	6.3 J	8	4.1 U	11.1
BERYLLIUM	--	--	0.23 U	0.21 U	0.23 U	0.3 J	0.18 UJ	0.22	0.23	0.34 U
CHROMIUM	**18**	--	10.7 J	18.2 J	6 UJ	8.7 J	7.7 J	11.7 J	10.4 J	**25.6 J**
COBALT	--	--	5.9	9.6	2.6 U	7.3 J	3.9 J	10.2	6.7	24
IRON	--	--	17000	24100	7440	16100	14300	20500	14500	43600
LEAD	--	--	8.3 J	23.4 J	2.1 J	12.8 J	2.1 J	4.3 J	3.9 J	13.3 J
MANGANESE	**1,037**		149	155	89.2	310 J	86.2 J	227	156	495
TCLP Metals (µg/L) *(for reference only)*										
LEAD	--	--	**45.4**	12.2	1 U	23.5	2.4 U	3 UJ	1 U	5.1 UJ

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID			MW-07					MW-08	MW-09				
SAMPLE ID			DSY-S-MW07-1618	DSY-S-MW07-1618-D	DSY-S-MW07-2224	DSY-S-MW07-3436	DSY-S-MW07-0810	DSY-S-MW08-0810	DSY-S-MW09-1012	DSY-S-MW09-1012-D	DSY-S-MW09-2022	DSY-S-MW09-3032	DSY-S-MW09-3638
(duplicate?)				(duplicate)						(duplicate)			
SAMPLE DATE			08/14/96	08/14/96	08/14/96	08/15/96	08/14/96	08/27/96	08/28/96	08/28/96	08/28/96	08/29/96	08/29/96
DEPTH INTERVAL (ft)			16 - 18	16 - 18	22 - 24	34 - 36	8 - 10	8 - 10	10 - 12	10 - 12	20 - 22	30 - 32	36 - 38
Depth to Groundwater (ft)			13.2	13.2	13.2	13.2	13.2	8	8.8	8.8	8.8	8.8	8.8
HHRA Subarea	**Residential**	**Industrial**	*CSY*					*B234*	*B234*				
Tier 2 Agreement Subarea	**PRG**	**PRG**	Central					Central	Central				
Semivolatiles (µg/kg)													
BENZO(A)ANTHRACENE	**150**	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	53 J	70 J	370 UJ	380 U	360 U
BENZO(A)PYRENE	**15**	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	~~41 J~~	~~42 J~~	370 UJ	380 U	360 U
BENZO(B)FLUORANTHENE	**150**	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	63 J	390 UJ	370 UJ	380 U	360 U
BENZO(G,H,I)PERYLENE	--	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	380 UJ	390 UJ	370 UJ	380 U	360 U
BENZO(K)FLUORANTHENE	--	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	380 UJ	390 UJ	370 UJ	380 U	360 U
CHRYSENE	**400**	--	51 J	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	54 J	41 J	370 UJ	380 U	360 U
DIBENZO(A,H)ANTHRACENE	**15**	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	380 UJ	390 UJ	370 UJ	380 U	360 U
INDENO(1,2,3-CD)PYRENE	--	--	360 UJ	390 UJ	380 UJ	380 UJ	370 UJ	340 UJ	380 UJ	390 UJ	370 UJ	380 U	360 U
NAPHTHALENE	--	--	360 UJ	390 UJ	380 UJ	380 UJ	49 J	340 UJ	380 UJ	390 UJ	370 UJ	380 U	360 U
Inorganics (mg/kg)													
ARSENIC	**20**	**20**	~~20.9~~	18.4	5	3.9	~~20.3~~	~~20.7~~	17.8	19	9.8	9.7	4.4
BERYLLIUM	--	--	0.38 J	0.38 J	0.21 U	0.26 J	0.41 J	0.3	0.32	0.31	0.3	0.21 U	0.21
CHROMIUM	**18**	--	12.3	11	8.2	10.3	10.5	16.1 J	16.3 J	10.6 J	16.5 J	~~21.6 J~~	~~23.8 J~~
COBALT	--	--	11.4	11.4	4.6	6.4	10.2	13.7	11.2	8.8	13	15.9	16.1
IRON	--	--	28400	26200	15100	15100	25200	30200	31000	28200	31800	36800	40400
LEAD	--	--	37.1 J	35.1 J	2.6 J	4.5 J	7.6 J	17.3 J	24.2 J	23.8 J	6.8 J	17.8 J	3.1 J
MANGANESE	**1,037**		364	336	92.5	147	396	502	251	246	462	391	728
TCLP Metals (µg/L) *(for reference only)*													
LEAD	--	--	37.1 U	38.1 U	1.8 UJ	1 U	1.8 UJ	2.6 UJ	15.8 J	21.8 J	1.9 UJ	5.4 UJ	2.8 UJ

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

~~Sample/Result from below the water table (not in vadose zone)~~

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID			S-42-5			S-42-5 (Sump S-42)										
SAMPLE ID			S1	E1	S42 SWS	N1-0	N1-A	N1-50	N1-B	N1-100	N1-C	N1-150	N1-D	N1-200	N1-E	N1-250
(duplicate?)																
SAMPLE DATE			05/18/00	05/18/00	05/16/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00	05/18/00
DEPTH INTERVAL (ft)			8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8	8 - 8
Depth to Groundwater (ft)			~8	~8	~8	~8	~8	~8	~8	~8	~8	~8	~8	~8	~8	~8
HHRA Subarea	**Residential**	**Industrial**	*CSY*			*CSY*										
Tier 2 Agreement Subarea	**PRG**	**PRG**	Central			Central										
Semivolatiles (µg/kg)																
BENZO(A)ANTHRACENE	**150**	--	370 U	38 J	75 J	330 U	310 U	120 J	**1300**	140 J	330 U	64 J	330 U	360 U	330 U	**280 J**
BENZO(A)PYRENE	**15**	--	370 U	**39 J**	**49 J**	330 U	310 U	**98 J**	**690**	**140 J**	330 U	**54 J**	330 U	360 U	330 U	**230 J**
BENZO(B)FLUORANTHENE	**150**	--	370 U	44 J	71 J	330 U	310 U	140 J	**910**	**170 J**	330 U	63 J	330 U	360 U	330 U	**300 J**
BENZO(G,H,I)PERYLENE	--	--	370 U	340 U	330 U	330 U	310 U	360 U	330 U	56 J	330 U	340 U	330 U	360 U	330 U	120 J
BENZO(K)FLUORANTHENE	--	--	370 U	340 U	330 U	330 U	310 U	60 J	350	84 J	330 U	42 J	330 U	360 U	330 U	180 J
CHRYSENE	**400**	--	370 U	42 J	90 J	330 U	310 U	140 J	**1300**	170 J	330 U	82 J	330 U	360 U	330 U	350
DIBENZO(A,H)ANTHRACENE	**15**	--	370 U	340 U	330 U	330 U	310 U	360 U	330 U	330 U	330 U	340 U	330 U	360 U	330 U	**46 J**
INDENO(1,2,3-CD)PYRENE	--	--	370 U	340 U	330 U	330 U	310 U	62 J	330 U	66 J	330 U	340 U	330 U	360 U	330 U	140 J
NAPHTHALENE	--	--	370 U	340 U	330 U	1 J	310 U	360 U	330 U	330 U	330 U	340 U	330 U	360 U	330 U	330 U
Inorganics (mg/kg)																
ARSENIC	**20**	**20**	**25**	**25**	**21**	10	19	17	**27**	15	20	18	16	20	**21**	11
BERYLLIUM	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	**18**	--	14	15	13	**22**	12	12	13	12	14	14	13	15	16	13
COBALT	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	--	--	15	29	17	14	13	16	12	20	11	14	12	11	45	14
MANGANESE	**1,037**		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals (µg/L) *(for reference only)*																
LEAD	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND
PAGE 6 OF 10

LOCATION ID			S-42-5 (Sump S-42)				SB-01	SB-03	SB-04	SB-06	SB-09	SB-10	SB-14		SB-15	SB201	SB202
SAMPLE ID			S42 BOT	S42 SWE	S42 SWN	S42 SWW	DSY-SB-01-0911	DSY-SB-03-0911	DSY-SB-04-0406	DSY-SB-06-0204	DSY-SB-09-1416	DSY-SB-10-1416	DSY-SB-14-0103	DSY-SB-14-0103-D	DSY-SB-15-0103	DSY-SB201-SO-0204	DSY-SB202-SO-0204
(duplicate?)														(duplicate)			
SAMPLE DATE			05/16/00	05/16/00	05/17/00	05/16/00	09/03/96	09/03/96	09/04/96	09/04/96	09/05/96	09/05/96	09/06/96	09/06/96	09/06/96	02/11/11	02/09/11
DEPTH INTERVAL (ft)			8 - 8	8 - 8	8 - 8	8 - 8	9 - 11	9 - 11	4 - 6	2 - 4	14 - 16	14 - 16	1 - 3	1 - 3	1 - 3	2 - 4	2 - 4
Depth to Groundwater (ft)			~8	~8	~8	~8	~8	~8	~6	~6	~8	~8	8	8	8	?	?
HHRA Subarea	**Residential**	**Industrial**	*CSY*				*CSY*	*CSY*	*B234*	*B234*	*CSY*	*CSY*	*B234*		*B234*	*South*	*South*
Tier 2 Agreement Subarea	**PRG**	**PRG**	Central				Central	Central	Central	Central	Central	Central	Central		Central	Central	Central
Semivolatiles (µg/kg)																	
BENZO(A)ANTHRACENE	**150**	--	340 U	320 U	**360**	370 U	530 U	510 U	490 U	440 U	84 J	480 UJ	67 J	400 U	400 U	3.66 UJ	3.61 UJ
BENZO(A)PYRENE	**15**	--	340 U	320 U	**370**	370 U	~~74 J~~	510 U	490 U	440 U	~~73 J~~	480 UJ	**58 J**	400 U	400 UJ	3.66 U	3.61 U
BENZO(B)FLUORANTHENE	**150**	--	340 U	320 U	**470**	370 U	81 J	510 U	490 U	440 U	130 J	480 UJ	100 J	400 U	400 UJ	3.66 U	3.61 U
BENZO(G,H,I)PERYLENE	--	--	340 U	320 U	250 J	370 U	61 J	510 U	490 U	440 U	430 UJ	480 UJ	450 U	400 U	400 UJ	3.66 U	3.61 U
BENZO(K)FLUORANTHENE	--	--	340 U	320 U	150	370 U	530 U	510 U	490 U	440 U	65 J	480 UJ	450 U	400 U	400 UJ	3.66 U	3.61 U
CHRYSENE	**400**	--	340 U	320 U	**460**	370 U	530 U	510 U	490 U	440 U	88 J	480 UJ	62 J	400 U	110 J	3.66 U	3.61 U
DIBENZO(A,H)ANTHRACENE	**15**	--	340 U	320 U	310 U	370 U	530 U	510 U	490 U	440 U	430 UJ	480 UJ	450 U	400 U	400 UJ	3.66 U	3.61 U
INDENO(1,2,3-CD)PYRENE	--	--	340 U	320 U	240 J	370 U	530 U	510 U	490 U	440 U	430 UJ	480 UJ	450 U	400 U	400 UJ	3.66 U	3.61 U
NAPHTHALENE	--	--	340 U	2 J	310 U	370 U	530 U	510 U	490 U	440 U	430 UJ	480 UJ	450 U	400 U	400 UJ	3.66 U	3.61 U
Inorganics (mg/kg)																	
ARSENIC	**20**	**20**	16	**21**	**22**	15	~~**24**~~	17	3.5 U	7.7	15.7	17.8	17.7	17.9	16.1	15.9	**26.3**
BERYLLIUM	--	--	NA	NA	NA	NA	0.25 J	0.23 U	0.21 U	0.23 U	0.45 J	0.52	0.44	0.46	0.32 J	0.418 J	0.392 J
CHROMIUM	**18**	--	13	13	15	12	15.9	13.6	8.1	**60.2**	13.1	~~**18.4**~~	14.3	13.2	14.5	**21.2**	**18.2**
COBALT	--	--	NA	NA	NA	NA	14.7	11.8	3.9 U	6.3	12	12.1	10.8	9.6	12.8	17.9	21.1
IRON	--	--	NA	NA	NA	NA	36000	32300	9520	29200	25700	31100	24200	24400	28400	44400	45500
LEAD	--	--	15	10	26	16	12.5 J	15.5 J	1.5 J	1.3 UJ	16.1 J	8.2 J	12.5 J	29.5 J	5.3 J	9.49 J	13.6 J
MANGANESE	**1,037**		NA	NA	NA	NA	551 J	451 J	93.2 J	236 J	366 J	311 J	352 J	302 J	289 J	488 J	681 J
TCLP Metals (µg/L) *(for reference only)*																	
LEAD	--	--	NA	NA	NA	NA	9.6 U	14.1 U	1.3 UJ	1 U	7.8 U	4.2 U	3.1 U	5.3 U	6.1 U	NA	NA

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

~~Sample/Result from below the water table (not in vadose zone)~~

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	SB204	SB205	SB206	SB207	SB210	SB211	SB212	SB213	SB214	TP-05	TP-06	TP-08	
SAMPLE ID			DSY-SB204-SO-0810	DSY-SB205-SO-088.5	DSY-SB206-SO-0810	DSY-SB207-SO-1012	DSY-SO-SB210-0102	DSY-SO-SB211-0102	DSY-SO-SB212-0204	DSY-SO-SB213-0203	DSY-SO-SB214-0203	DSY-S-TP05-1213	DSY-S-TP06-1213	DSY-S-TP08-0406	DSY-S-TP08-0910
(duplicate?)															
SAMPLE DATE			02/11/11	02/15/11	02/14/11	02/15/11	02/25/11	02/25/11	02/25/11	02/25/11	02/25/11	07/29/96	07/29/96	07/29/96	07/29/96
DEPTH INTERVAL (ft)			8 - 10	8 - 8.5	8 - 10	10 - 12	1 - 2	1 - 2	2 - 4	2 - 3	2 - 3	12 - 13	12 - 13	4 - 6	9 - 10
Depth to Groundwater (ft)			?	?	?	?	?	?	?	?	?	?	?	?	?
HHRA Subarea			*North*	*North*	*North*	*North*	*PCB*	*PCB*	*PCB*	*PCB*	*PCB*	*South*	*South*	*B234*	
Tier 2 Agreement Subarea			Central	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central	
Semivolatiles (µg/kg)															
BENZO(A)ANTHRACENE	**150**	--	3.42 UJ	27 J	3.53 UJ	3.63 UJ	41.3	38.1	60.5	32.5	**252**	NA	NA	48 J	3600 U
BENZO(A)PYRENE	**15**	--	3.42 U	**23.3**	3.53 U	3.63 U	**26.3**	**29.9**	**38.3**	**18.9**	**172**	NA	NA	**55 J**	3600 U
BENZO(B)FLUORANTHENE	**150**	--	3.42 U	41.1	3.53 U	2.65 J	38.8	44.4	57.9	26.6	**336**	NA	NA	80 J	3600 U
BENZO(G,H,I)PERYLENE	--	--	3.42 U	21.6	3.53 U	2.51 J	15.7	21	20	10.7 J	91.1	NA	NA	45 J	3600 U
BENZO(K)FLUORANTHENE	--	--	3.42 U	11.2	3.53 U	3.63 U	16.1	17.5	25.6	11.3 J	124	NA	NA	68 J	3600 U
CHRYSENE	**400**	--	3.42 U	32.1	3.53 U	3.63 U	28.6	30.4	44.7	20.5	356	NA	NA	54 J	3600 U
DIBENZO(A,H)ANTHRACENE	**15**	--	3.42 U	**23.3**	3.53 U	3.63 U	3.83 U	7.48 J	7.89 J	3.9 U	**43.7**	NA	NA	350 U	3600 U
INDENO(1,2,3-CD)PYRENE	--	--	3.42 U	18	3.53 U	3.63 U	12.3 J	18.5	17.4	10.2 J	82.7	NA	NA	41 J	3600 U
NAPHTHALENE	--	--	3.42 U	3.54 J	3.53 U	3.63 U	2.5 J	9.04 J	5.06 J	3.9 U	175	NA	NA	350 U	3600 U
Inorganics (mg/kg)															
ARSENIC	**20**	**20**	3.62	7.42	4.44	9.79	13 J	13.5 J	1.47 J	11.8 J	**47.2 J**	~~23.2~~	~~21.6~~	8.7	3.2
BERYLLIUM	--	--	0.176 J	0.314 J	0.204 J	0.34 J	0.511 J	0.607	0.697	0.507 J	0.759	0.38 J	0.39 J	0.67	0.2 J
CHROMIUM	**18**	--	4.98	9.49	5.27	8.77	15.4	12	0.788	**18.5**	11.6	15	16.5	**18.2**	9.3
COBALT	--	--	5.15	4.54	3.68	5.85	11.1 J	8.75 J	1.29 J	12.4 J	17 J	29.9	16.3	9.9	4.1
IRON	--	--	9830	18300	12200	20900	35900	23600	6800	30900	22100	30800	34100	22300	13000
LEAD	--	--	1.96 J	13.8 J	2.81 J	8.23 J	12 J	16.1 J	2.49 J	17 J	81.4 J	10.6 J	15.8 J	67.2 J	7.1 J
MANGANESE	**1,037**		169 J	145 J	95.7 J	171 J	428	358	305	346	**1190**	800	512	305	150
TCLP Metals (µg/L) *(for reference only)*															
LEAD	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.8 U	3.4 U

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	TP-09		TP-10		TP-11		TP-12		TP-13			TP-14	TP-15	
SAMPLE ID			DSY-S-TP09-0406	DSY-S-TP09-0910	DSY-S-TP10-0507	DSY-S-TP10-1213	DSY-S-TP11-0507	DSY-S-TP11-1213	DSY-S-TP12-0507	DSY-S-TP12-1213	DSY-S-TP13-0506	DSY-S-TP13-0506-D	DSY-S-TP13-1011	B6-S6	DSY-S-TP15-0506	DSY-S-TP15-1112
(duplicate?)												(duplicate)				
SAMPLE DATE			07/29/96	07/29/96	07/29/96	07/29/96	07/26/96	07/26/96	07/26/96	07/26/96	07/26/96	07/26/96	07/26/96	01/20/99	07/25/96	07/25/96
DEPTH INTERVAL (ft)			4 - 6	9 - 10	5 - 7	12 - 13	5 - 7	12 - 13	5 - 7	12 - 13	5 - 6	5 - 6	10 - 11	1 - 1.5	5 - 6	11 - 12
Depth to Groundwater (ft)			?	?	?	?	>13	>13	>13	>13	10	10	10	>6	11.5	11.5
HHRA Subarea			*B234*		*B234*		*CSY*		*CSY*			*CSY*		*PCB*	*CSY*	
Tier 2 Agreement Subarea			Central		Central		Central		Central			Central		Central	Central	
Semivolatiles (µg/kg)																
BENZO(A)ANTHRACENE	**150**	--	NA	NA	NA	NA	NA	390 UJ	NA	NA	390 U	400 U	NA	90 J	NA	NA
BENZO(A)PYRENE	**15**	--	NA	NA	NA	NA	NA	390 U	NA	NA	390 U	400 UJ	NA	**87 J**	NA	NA
BENZO(B)FLUORANTHENE	**150**	--	NA	NA	NA	NA	NA	390 U	NA	NA	390 U	400 UJ	NA	150 J	NA	NA
BENZO(G,H,I)PERYLENE	--	--	NA	NA	NA	NA	NA	390 U	NA	NA	390 U	400 UJ	NA	45 J	NA	NA
BENZO(K)FLUORANTHENE	--	--	NA	NA	NA	NA	NA	390 U	NA	NA	390 U	400 UJ	NA	52 J	NA	NA
CHRYSENE	**400**	--	NA	NA	NA	NA	NA	390 UJ	NA	NA	390 U	400 U	NA	130 J	NA	NA
DIBENZO(A,H)ANTHRACENE	**15**	--	NA	NA	NA	NA	NA	390 U	NA	NA	390 U	400 UJ	NA	420 U	NA	NA
INDENO(1,2,3-CD)PYRENE	--	--	NA	NA	NA	NA	NA	390 U	NA	NA	390 U	400 UJ	NA	420 U	NA	NA
NAPHTHALENE	--	--	NA	NA	NA	NA	NA	390 UJ	NA	NA	390 UJ	400 U	NA	420 U	NA	NA
Inorganics (mg/kg)																
ARSENIC	**20**	**20**	11.7	15.9	3	17.3	**22**	**36.9**	**24.1**	**37.3**	16.1	18	15.7	16	11.4	6.1 J
BERYLLIUM	--	--	0.37 J	0.46	0.17 U	0.27 J	0.53	0.48	0.52	0.44 J	0.4 J	0.42 J	0.54	NA	0.49	0.39 J
CHROMIUM	**18**	--	**22.5**	**32.5**	6.2 J	13	8.9	17.8	10.4	12.6	13.3	14.3	9.6	10	10.1	6.8
COBALT	--	--	14	25	3.1	11.3	11.4	20.2 J	12.7	18.5	10 J	11 J	9	NA	13.6	8.5
IRON	--	--	36200	50000	10600	25100	25800	40100	30200	35000	25400	24700	26000	NA	25200	17300
LEAD	--	--	12.9 J	34.6 J	4.1 J	7.7 J	8.5 J	11.3	12.1	21.2	11.8	11.3	24.1	23	11.2	5.7
MANGANESE	**1,037**		398	**2450**	78.6	344	323	612 J	315	514	529 J	584 J	373	NA	326	225
TCLP Metals (µg/L) *(for reference only)*																
LEAD	--	--	NA	NA	NA	NA	NA	**56.2**	NA	NA	5.5	5	NA	NA	NA	NA

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
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Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	TP-16		TP-17		TP-18		TP-19		TP-20		TP-25	
SAMPLE ID			DSY-S-TP16-0506	DSY-S-TP16-1112	DSY-S-TP17-0507	DSY-S-TP17-1112	DSY-S-TP18-0507	DSY-S-TP18-1011	DSY-S-TP19-0507	DSY-S-TP19-1011	DSY-S-TP20-0507	DSY-S-TP20-1011	DSY-S-TP25-0507	DSY-S-TP25-1011
(duplicate?)														
SAMPLE DATE			07/25/96	07/25/96	07/25/96	07/25/96	07/24/96	07/24/96	07/24/96	07/24/96	07/24/96	07/24/96	07/25/96	07/25/96
DEPTH INTERVAL (ft)			5 - 6	11 - 12	5 - 7	11 - 12	5 - 7	10 - 11	5 - 7	10 - 11	5 - 7	10 - 11	5 - 7	10 - 11
Depth to Groundwater (ft)			11	11	11	11	10.5	10.5	10.5	10.5	10.8	10.8	10.5	10.5
HHRA Subarea			*North*		*CSY*		*North*		*North*		*North*		*CSY*	
Tier 2 Agreement Subarea			Central		Central		Central		Central		Central		Central	
Semivolatiles (µg/kg)														
BENZO(A)ANTHRACENE	**150**	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	47 J
BENZO(A)PYRENE	**15**	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	**42 J**
BENZO(B)FLUORANTHENE	**150**	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	70 J
BENZO(G,H,I)PERYLENE	--	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	400 UJ
BENZO(K)FLUORANTHENE	--	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	400 UJ
CHRYSENE	**400**	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	67 J
DIBENZO(A,H)ANTHRACENE	**15**	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	400 UJ
INDENO(1,2,3-CD)PYRENE	--	--	NA	11000 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	400 UJ
NAPHTHALENE	--	--	NA	11000 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	400 U
Inorganics (mg/kg)														
ARSENIC	**20**	**20**	3.1 J	16.6	13.6	8.7	4.4 J	3.8 J	2.7 J	3 J	3.9 J	4.3 J	15.6	13
BERYLLIUM	--	--	0.21 U	0.27 J	0.4 J	0.24 J	0.21 U	0.22 U	0.2 U	0.25 U	0.21 U	0.25 U	0.44 J	0.38 J
CHROMIUM	**18**	--	2.2	12.3	6.3	7.2	3.4	4.3	3.6	3.4	4	4.4	10.1	13
COBALT	--	--	2.6 UJ	9.4 J	16.2	10.6	3.1 UJ	6	3.1 UJ	5.7	3 UJ	5.8	13.1	10.1 J
IRON	--	--	8170	23600	17700	20400	10900	11100	8340	8020	11200	12000	27400	24800
LEAD	--	--	1.6 J	16.1	13	10.5	2.7	4.6	2.1	1.9 J	3.2	4	26.4	18.6
MANGANESE	**1,037**		102	262 J	340	524	75	421	55.4	83.6	70.4	173	377	378 J
TCLP Metals (µg/L) *(for reference only)*														
LEAD	--	--	NA	6.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.9

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

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2-10B - PRG EXCEEDANCES IN SUBSURFACE SOIL
CURRENT SITE CONDITIONS (POST-REMOVAL ACTION[S])
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID	Residential PRG	Industrial PRG	TP-26			TP-27		TP-28		TP-DPSOIL		TP-01	TP-02
SAMPLE ID			DSY-S-TP26-0305	DSY-S-TP26-0406	DSY-S-TP26-0910	DSY-S-TP27-0507	DSY-S-TP27-1011	DSY-S-TP28-0507	DSY-S-TP28-1314	DPSOIL02	DPSOIL03	DSY-S-TP01-1112	DSY-S-TP02-1516
(duplicate?)													
SAMPLE DATE			07/29/96	07/26/96	07/26/96	08/21/96	08/21/96	08/21/96	08/21/96	02/17/99	02/17/99	08/22/96	08/22/96
DEPTH INTERVAL (ft)			3 - 5	4 - 6	9 - 10	5 - 7	10 - 11	5 - 7	13 - 14	3 - 3	5 - 5	11 - 12	15 - 16
Depth to Groundwater (ft)			>10	>10	>10	?	?	?	?	?	?	?	?
HHRA Subarea			*B234*			*North*		*North*		*CSY*		*South*	*South*
Tier 2 Agreement Subarea			Central			Central		Central		Central		Southern	Southern
Semivolatiles (µg/kg)													
BENZO(A)ANTHRACENE	**150**	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
BENZO(A)PYRENE	**15**	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
BENZO(B)FLUORANTHENE	**150**	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	43 J	NA
BENZO(G,H,I)PERYLENE	--	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
BENZO(K)FLUORANTHENE	--	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
CHRYSENE	**400**	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
DIBENZO(A,H)ANTHRACENE	**15**	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
INDENO(1,2,3-CD)PYRENE	--	--	3900 U	NA	NA	NA	NA	NA	NA	390 U	360 U	360 UJ	NA
NAPHTHALENE	--	--	**2200 J**	NA	NA	NA	NA	NA	NA	77 J	360 U	360 UJ	NA
Inorganics (mg/kg)													
ARSENIC	**20**	**20**	1.2 J	**42**	17.8	4.1 UJ	4.7 UJ	13.7 J	7.7 J	NA	NA	7.7 J	7.8 J
BERYLLIUM	--	--	0.19 U	0.44 J	0.51	0.2 UJ	0.18 UJ	0.35 J	0.35 J	NA	NA	0.21 UJ	0.34 J
CHROMIUM	**18**	--	2.2 J	14.8	**20.1**	5.7 J	3.7 J	14.2 J	11.9 J	NA	NA	6.6 J	10.9 J
COBALT	--	--	1.1 J	11.5	11.5	4 J	3 J	14.3 J	10.8 J	NA	NA	4.4 J	9.1 J
IRON	--	--	4060	25500	24700	10400	6970	27100	20800	NA	NA	16800	19700
LEAD	--	--	3.2 J	75 J	28.4 J	2.5 J	1.6 J	15.4 J	8 J	NA	NA	7.6 J	34.2 J
MANGANESE	**1,037**		108	342	363	106 J	55.4 J	302 J	320 J	NA	NA	104 J	353 J
TCLP Metals (µg/L) *(for reference only)*													
LEAD	--	--	1.7 UJ	NA	NA	NA	NA	NA	NA	NA	NA	2.9 U	NA

Notes

See Selected Soil PRGs in Table 2-9b.

Exceeds Industrial PRG (Preliminary Remediation Goal)

Exceeds Residential PRG, and below or no Industrial PRG

Exceeds RIDEM GA Leachability Criteria

Sample/Result from below the water table (not in vadose zone)

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

Tier 2 Subarea - Three Soil Action subareas per Tier 2 Agreement:
Northern, Central, and Southern Areas

µg - micgrogram mg - milligram kg - kilogram L - liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between PQL and MDL

B - blank contamination R - rejected (unusable data)

TABLE 2-11
SUMMARY OF GROUNDWATER COCS AND PRGs - SITE-WIDE
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

Combined COCs/PRGs for site-wide groundwater per Tier 2 Agreement (January 2014). Attainment Area is site boundary.

Chemical of Concern (COC)	COC Selection basis	Site-Wide Maximum Concentration (µg/L)	Candiate Preliminary Remediation Goals (PRGs)				Selected Groundwater Site-Wide PRGs	
			EPA MCL[1] (µg/L)	RIDEM GA Groundwater Objective [2] (µg/L)	Calculated Risk-Based PRGs: Target Cancer Risk Level 10^{-6} (µg/L)	Calculated Risk-Based PRGs: Hazard Index 1 (µg/L)	Groundwater (µg/L)	PRG Selection Basis
Trichloroethene (TCE)	HHRA	12.2	5	5	1.1	2.6	5	EPA MCL
Arsenic	HHRA	78.1	10	10	0.120	4.7	10	EPA MCL
Cobalt	HHRA	24.8	--	--	--	4.7	4.7	Noncancer risk-based value for child resident
Iron	HHRA	65,800	--	--	--	11,000	11,000	Noncancer risk-based value for child resident
Manganese	HHRA	9,100	300 [3]	--	--	320	300	EPA Lifetime Health Advisory Level
Vinyl Chloride	EPA Request [5]	100 [5]	2	2	--	--	2	EPA MCL

Notes:

Candidate PRG selected as PRG / Final PRG

COC Selection basis - All COCs above, except vinyl chloride,[5] are risk-based COCs retained from each subarea-specific baseline human health risk assessment (HHRA) in the SASE Addendum Report (Tetra Tech, 2013).

Combined groundwater COCs and most conservative PRG candidates from all subareas for site-wide groundwater.

No groundwater COCs are based solely on an ARAR (Applicable or Relevant and Appropriate Requirement)-exceedance, because RIDEM GA Groundwater Objective not more stringent than EPA MCL.

1. MCL (Maximum Concentration Level) from EPA (U.S. Environmental Protection Agency) Primary Drinking Water Standards (EPA, April 2012).
2. RIDEM (Rhode Island Department of Environmental Management) GA [Aquifer] Groundwater Objective, DEM-DSR-01-93, November 2011.
3. Manganese is cited based on an exceedance of the EPA Lifetime Health Advisory Level, which was used in lieu of an MCL at the request of EPA.
4. Site-wide data set considers groundwater data collected in 2011 supporting the Data Gaps Investigation (SASE Addendum), only.
5. Vinyl chloride is included as a groundwater COC at the request of EPA, based on data from groundwater samples collected at MW-104 (upgradient well) in 1996. Although the source of the vinyl chloride measured at MW-104 must be upgradient of Site 19 - On-Shore Derecktor Shipyard, groundwater within the site will be monitored and subject to land use controls (LUCs) to protect receptors from potential future vapor intrusion from this analyte.

'-- - no value / not applicable µg/L - microgram(s) per liter

TABLE 2-12 - EXCEEDANCES OF PRGS IN GROUNDWATER (Y2011)
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND

LOCATION ID (DSY-MW#)	Site-Wide PRG	MW223	MW02A	MW03	MW11A		MW12	MW204	MW220	MW221	MW222	MW218	MW219		MW08
SAMPLE DATE		03/16/11	02/24/11	02/24/11	02/26/11	02/26/11	03/03/11	03/17/11	03/01/11	03/02/11	03/02/11	03/01/11	03/16/11	03/16/11	03/01/11
Duplicate?					Parent	Duplicate							Parent	Duplicate	
SAMPLE ID		DSY-GW-MW223-031611	DSY-GW-MW02A-022411	DSY-GW-MW03-022411	DSY-GW-MW11A-022611	DSY-GW-MW11A-022611-D	DSY-GW-MW12-030311	DSY-GW-MW204-031711	DSY-GW-MW220-030111	DSY-GW-MW221-030211	DSY-GW-MW222-030211	DSY-GW-MW218-030111	DSY-GW-MW219-031611	DSY-GW-MW219-031611-D	DSY-GW-MW08 030111
Well Screen Interval (feet bgs)		41 - 51	16 - 26	7 - 17	5 - 10		15 - 25	8 - 18	5 - 20	3 - 15	4 - 14	10 - 20	10 - 20		6.5 - 11.5
HHRA Subarea		Upgradient	North Waterfront Area									Central Shipyard Area			Building 234 Area
Volatile Organic Compounds (µg/L)															
1,1-DICHLOROETHENE	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.25 J
ACETONE	--	5 U	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	3.28 J	5 U
CIS-1,2-DICHLOROETHENE	--	0.5 U	0.291 J	0.5 U	0.284 J	0.361 J	3.73	0.5 U	4.26	1.49	0.5 U	0.5 U	0.5 U	0.5 U	12.7
TETRACHLOROETHENE	--	0.5 U	0.5 U	0.696 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL 1,2-DICHLOROETHENE	--	0.5 U	0.291 J	0.5 U	0.953 J	1.04 J	8.54	0.5 U	5.36	1.49	0.5 U	0.5 U	0.5 U	0.5 U	12.7
TRANS-1,2-DICHLOROETHENE	--	0.5 U	0.5 U	0.5 U	0.669 J	0.683 J	4.81	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	**5**	0.5 U	0.5 U	7.35	5.15	4.97	9.61	3.16	0.5 U	12.2	5.48	0.5 U	0.5 U	0.5 U	3.9
VINYL CHLORIDE	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.47	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.263 J
Total Metals (µg/L)															
ALUMINUM	--	NA	NA	NA	NA	NA	NA	337	NA	NA	NA	52.9	312	274	53.7
ARSENIC	**10**	NA	NA	NA	NA	NA	NA	1.5 UJ	NA	NA	NA	27.8	74.5 J	78.1 J	1.32 J
BARIUM	--	NA	NA	NA	NA	NA	NA	11.6	NA	NA	NA	86.6	34	34.9	17
CADMIUM	--	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	0.5 U	1.53	1.41	0.286 J
CALCIUM	--	NA	NA	NA	NA	NA	NA	29100 J	NA	NA	NA	79700	38400 J	40000 J	46800
CHROMIUM	--	NA	NA	NA	NA	NA	NA	0.508 J	NA	NA	NA	5 U	1 U	1 U	1 U
COBALT	**4.7**	NA	NA	NA	NA	NA	NA	2.5 U	NA	NA	NA	24.8	13.7	14.1	1.74 J
COPPER	--	NA	NA	NA	NA	NA	NA	2 U	NA	NA	NA	2 U	2 U	2 U	1.57 J
IRON	**11,000**	NA	NA	NA	NA	NA	NA	605 J	NA	NA	NA	11100	61900 J	65800 J	459
LEAD	--	NA	NA	NA	NA	NA	NA	0.75 U	NA	NA	NA	3.75 U	1.28	1.07	0.75 U
MAGNESIUM	--	NA	NA	NA	NA	NA	NA	7110 J	NA	NA	NA	16700	8090 J	8400 J	9790
MANGANESE	**300**	NA	NA	NA	NA	NA	NA	53.9	NA	NA	NA	9100	4510	4880	532
NICKEL	--	NA	NA	NA	NA	NA	NA	3.38	NA	NA	NA	4.64	1.5 U	1.5 U	2.08 J
POTASSIUM	--	NA	NA	NA	NA	NA	NA	1660	NA	NA	NA	11000	5970	6200	5120
SELENIUM	--	NA	NA	NA	NA	NA	NA	1.25 U	NA	NA	NA	6.25 U	1.55 J	1.24 J	1.25 U
SODIUM	--	NA	NA	NA	NA	NA	NA	40100	NA	NA	NA	62700	34400	35400	111000
ZINC	--	NA	NA	NA	NA	NA	NA	6.65	NA	NA	NA	3.59 J	1.58 J	1.52 J	29.8 J

TABLE 2-12 - EXCEEDANCES OF PRGS IN GROUNDWATER (Y2011)
FEASIBILITY STUDY
SITE 19 - ON-SHORE DERECKTOR SHIPYARD
NAVSTA NEWPORT, RHODE ISLAND
PAGE 2 of 2

LOCATION ID (DSY-MW#)	Site-Wide PRG	MW223	MW02A	MW03	MW11A		MW12	MW204	MW220	MW221	MW222	MW218	MW219		MW08
SAMPLE DATE		03/16/11	02/24/11	02/24/11	02/26/11	02/26/11	03/03/11	03/17/11	03/01/11	03/02/11	03/02/11	03/01/11	03/16/11	03/16/11	03/01/11
Duplicate?					Parent	Duplicate							Parent	Duplicate	
SAMPLE ID		DSY-GW-MW223-031611	DSY-GW-MW02A-022411	DSY-GW-MW03-022411	DSY-GW-MW11A-022611	DSY-GW-MW11A-022611-D	DSY-GW-MW12-030311	DSY-GW-MW204-031711	DSY-GW-MW220-030111	DSY-GW-MW221-030211	DSY-GW-MW222-030211	DSY-GW-MW218-030111	DSY-GW-MW219-031611	DSY-GW-MW219-031611-D	DSY-GW-MW08 030111
Well Screen Interval (feet bgs)		41 - 51	16 - 26	7 - 17	5 - 10		15 - 25	8 - 18	5 - 20	3 - 15	4 - 14	10 - 20	10 - 20		6.5 - 11.5
HHRA Subarea		Upgradient	North Waterfront Area									Central Shipyard Area			Building 234 Area
Dissolved Metals (µg/L)															
ALUMINUM	--	NA	NA	NA	NA	NA	NA	72	NA	NA	NA	29.7 J	36.9 J	38 J	36.6 J
ARSENIC	**10**	NA	NA	NA	NA	NA	NA	1.5 UJ	NA	NA	NA	29.1	77.1 J	78.9 J	1.37 J
BARIUM	--	NA	NA	NA	NA	NA	NA	11.5	NA	NA	NA	84.4	34.4	33.7	16.1
CADMIUM	--	NA	NA	NA	NA	NA	NA	0.5 U	NA	NA	NA	0.5 U	1.62	1.52	0.274 J
CALCIUM	--	NA	NA	NA	NA	NA	NA	30800 J	NA	NA	NA	76600	39400 J	39000 J	47800
COBALT	**4.7**	NA	NA	NA	NA	NA	NA	2.5 U	NA	NA	NA	24.2	13.7	13.6	1.78 J
COPPER	--	NA	NA	NA	NA	NA	NA	1.19 J	NA	NA	NA	2 U	2 U	2 U	1.17 J
IRON	**11,000**	NA	NA	NA	NA	NA	NA	50.5 J	NA	NA	NA	9900	63900 J	62600 J	423
LEAD	--	NA	NA	NA	NA	NA	NA	0.75 U	NA	NA	NA	3.75 U	0.667 J	0.488 J	0.75 U
MAGNESIUM	--	NA	NA	NA	NA	NA	NA	7450 J	NA	NA	NA	16200	8260 J	8090 J	9790
MANGANESE	**300**	NA	NA	NA	NA	NA	NA	53.3	NA	NA	NA	8680	4980	4610	531
NICKEL	--	NA	NA	NA	NA	NA	NA	3.39	NA	NA	NA	4.73	1.75 U	1.75 U	1.75 J
POTASSIUM	--	NA	NA	NA	NA	NA	NA	1770	NA	NA	NA	10800	6390	6240	5010
SELENIUM	--	NA	NA	NA	NA	NA	NA	1.25 U	NA	NA	NA	6.25 U	1.34 J	1.44 J	1.25 U
SODIUM	--	NA	NA	NA	NA	NA	NA	42300	NA	NA	NA	61900	35800	35900	114000
ZINC	--	NA	NA	NA	NA	NA	NA	6.48	NA	NA	NA	3.5 J	2.5 U	2.5 U	16.6
Water Quality Parameters*															
pH	--	6.81	8.6	5.5	6.6		8	6.1	7.26	5.9	7.4	6.5	7		6.3
Dissolved Oxygen (mg/L)	--	0.3	0.2	4.1	0.4		0.3	2.5	1	0.8	6.4	0.3	0.3		0.4
Oxidation-Reduction Potential (ORP) (mV)	--	-57.7	-144.5	52.4	-169.9		-18.8	203.7	-88.9	144.9	134	7.7	-109.4		92.7
Salinity (parts per thousand)	--	0.29	0.4	0.21	0.26		0.31	NA	3.1	0.86	0.52	0.43	NA		0.44

Notes

See Selected Groundwater PRGs in Table 2-11.

Exceeds Industrial PRG (Preliminary Remediation Goal)

MW11A installed as temporary well via Direct Push due to Coast Guard construction project.

HHRA Subarea - Five subareas for investigation and risk assessment:
North Waterfront; Central Shipyard; PCB Removal Area; Building 234 Area; and South Waterfront

µg/L - microgram(s) per liter

NA - Not analyzed or no value

U - Not detected above associated value (detection limit)

J - estimated value between the PQL and MDL

*Water Quality Parameter values were measured with field water quality meter.

LIST OF TABLES
RAGS PART D TABLE 9 - NORTH WATERFRONT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.	Reasonable Maximum Exposures
9.1.RME	Current Adolescent Trespassers - North Waterfront
9.2.RME	Current Adult Trespassers - North Waterfront
9.3.RME	Current Lifelong Trespassers - North Waterfront
9.4.RME	Current Industrial Workers - North Waterfront
9.5.RME	Future Adolescent Trespassers - North Waterfront
9.6.RME	Future Adult Trespassers - North Waterfront
9.7.RME	Future Lifelong Trespassers - North Waterfront
9.8.RME	Future Industrial Workers - North Waterfront
9.9.RME	Current/Future Construction Workers - North Waterfront
9.10.RME	Hypothetical Child Residents - North Waterfront
9.11.RME	Hypothetical Adult Residents - North Waterfront
9.12.RME	Hypothetical Lifelong Residents - North Waterfront

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	2E-08	--	5E-08	--	7E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	4E-07	--	5E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	6E-08	--	8E-08	NA	--	--	--	--
			Chrysene	2E-10	--	6E-10	--	8E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	3E-07	--	4E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-09	--	2E-08	--	3E-08	NA	--	--	--	--
			Chromium VI	6E-07	--	- -	--	6E-07	None Specified	0.0009	--	--	0.0009
			Cobalt	- -	--	- -	--	--	Thyroid	0.006	--	--	0.006
			Iron	- -	--	- -	--	- -	GS	0.007	--	--	0.007
			Manganese	- -	--	- -	--	- -	CNS	0.003	--	--	0.003
			Chemical Total	9E-07	--	8E-07	--	2E-06		0.02	--	--	0.02
		Exposure Point Total						2E-06					0.02
	Exposure Medium Total							2E-06					0.02
	Air	North Waterfront	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-15	--	--	9E-15	NA	--	--	--	--
			Chromium VI	--	8E-10	--	--	8E-10	Respiratory	--	0.0000002	--	0.0000002
			Cobalt	--	2E-11	--	--	2E-11	Respiratory	--	0.000002	--	0.000002
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.000009	--	0.000009
			Chemical Total	--	8E-10	--	--	8E-10		- -	0.00001	- -	0.00001
		Exposure Point Total						8E-10					0.00001
	Exposure Medium Total							8E-10					0.00001
Medium Total								2E-06					0.02
Receptor Total							Receptor Risk Total	2E-06				Receptor HI Total	0.02

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	9E-09	--	5E-09	--	1E-08	NA	--	--	--	--
			Benzo(a)pyrene	6E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	5E-09	--	2E-08	NA	--	--	--	--
			Chrysene	9E-11	--	5E-11	--	1E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-08	--	3E-08	--	7E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-09	--	2E-09	--	6E-09	NA	--	--	--	--
			Chromium VI	3E-07	--	--	--	3E-07	None Specified	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Thyroid	0.004	--	--	0.004
			Iron	--	--	--	--	--	GS	0.005	--	--	0.005
			Manganese	--	--	--	--	--	CNS	0.002	--	--	0.002
			Chemical Total	4E-07	--	7E-08	--	5E-07		0.01	--	--	0.01
		Exposure Point Total						5E-07					0.01
	Exposure Medium Total							5E-07					0.01
	Air	North Waterfront	Benzo(a)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-15	--	--	6E-15	NA	--	--	--	--
			Chromium VI	--	5E-10	--	--	5E-10	Respiratory	--	0.0000002	--	0.0000002
			Cobalt	--	4E-11	--	--	4E-11	Respiratory	--	0.000002	--	0.000002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.000009	--	0.000009
			Chemical Total	--	6E-10	--	--	6E-10		--	0.00001	--	0.00001
		Exposure Point Total						6E-10					0.00001
	Exposure Medium Total							6E-10					0.00001
Medium Total								5E-07					0.01
Receptor Total							Receptor Risk Total	5E-07				Receptor HI Total	0.01

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	3E-08	--	6E-08	--	9E-08					
			Benzo(a)pyrene	2E-07	--	4E-07	--	6E-07					
			Benzo(b)fluoranthene	3E-08	--	7E-08	--	1E-07					
			Chrysene	3E-10	--	6E-10	--	9E-10					
			Dibenzo(a,h)anthracene	2E-07	--	3E-07	--	5E-07					
			Indeno(1,2,3-cd)pyrene	1E-08	--	3E-08	--	4E-08					
			Chromium VI	9E-07	--	- -	--	9E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	1E-06	--	9E-07	--	2E-06					
		Exposure Point Total						2E-06					
	Exposure Medium Total							2E-06					
	Air	North Waterfront	Benzo(a)anthracene	--	4E-14	--	--	4E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14					
			Chrysene	--	4E-15	--	--	4E-15					
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13					
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14					
			Chromium VI	--	1E-09	--	--	1E-09					
			Cobalt	--	5E-11	--	--	5E-11					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	1E-09	--	--	1E-09					
		Exposure Point Total						1E-09					
	Exposure Medium Total							1E-09					
Medium Total								2E-06					
Receptor Total							Receptor Risk Total	2E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	4E-07	--	4E-07	--	8E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-08	--	6E-08	--	1E-07	NA	--	--	--	--
			Chrysene	6E-10	--	5E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-07	--	3E-07	--	6E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Chromium VI	2E-06	--	--	--	2E-06	None Specified	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Thyroid	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Manganese	--	--	--	--	--	CNS	0.009	--	--	0.009
			Chemical Total	3E-06	--	8E-07	--	4E-06		0.06	--	--	0.06
		Exposure Point Total						4E-06					0.06
	Exposure Medium Total							4E-06					0.06
	Air	North Waterfront	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Chromium VI	--	7E-09	--	--	7E-09	Respiratory	--	0.000002	--	0.000002
			Cobalt	--	5E-10	--	--	5E-10	Respiratory	--	0.00002	--	0.00002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00010	--	0.00010
			Chemical Total	--	7E-09	--	--	7E-09		--	0.0001	--	0.0001
		Exposure Point Total						7E-09					0.0001
	Exposure Medium Total							7E-09					0.0001
Medium Total								4E-06					0.06
Receptor Total							Receptor Risk Total	4E-06				Receptor HI Total	0.06

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	2E-08	--	5E-08	--	7E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	4E-07	--	5E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	6E-08	--	8E-08	NA	--	--	--	--
			Chrysene	2E-10	--	5E-10	--	7E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	3E-07	--	4E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9E-09	--	3E-08	--	3E-08	NA	--	--	--	--
			Chromium VI	8E-07	--	- -	--	8E-07	None Specified	0.001	--	--	0.001
			Cobalt	- -	--	- -	--	- -	Thyroid	0.007	--	--	0.007
			Iron	- -	--	- -	--	- -	GS	0.007	--	--	0.007
			Chemical Total	1E-06	--	8E-07	--	2E-06		0.01	--	--	0.01
		Exposure Point Total						2E-06					0.01
	Exposure Medium Total							2E-06					0.01
	Air	North Waterfront	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	2E-11	--	--	2E-11	Respiratory	--	0.000003	--	0.000003
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.000003	- -	0.000003
		Exposure Point Total						1E-09					0.000003
	Exposure Medium Total							1E-09					0.000003
Medium Total								2E-06					0.01
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	4E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	5E-08	--	7E-08	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.002	--	--	0.002
			Chromium VI	6E-07	--	- -	--	6E-07	None Specified	0.0010	--	--	0.0010
			Cobalt	- -	--	- -	--	- -	Thyroid	0.008	--	--	0.008
			Iron	- -	--	- -	--	- -	GS	0.008	--	--	0.008
			Chemical Total	7E-07	--	2E-07	--	8E-07		0.02	--	--	0.02
		Exposure Point Total						8E-07					0.02
	Exposure Medium Total							8E-07					0.02
	Air	North Waterfront	Benzo(a)pyrene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.000003	--	0.000003
			Chromium VI	--	8E-10	--	--	8E-10	Respiratory	--	0.0000002	--	0.0000002
			Cobalt	--	2E-11	--	--	2E-11	Respiratory	--	0.000003	--	0.000003
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	8E-10	--	--	8E-10		- -	0.000006	- -	0.000006
		Exposure Point Total						8E-10					0.000006
	Exposure Medium Total							8E-10					0.000006
Medium Total								8E-07					0.02

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	8E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Benzo(a)pyrene	6E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	5E-09	--	1E-08	NA	--	--	--	--
			Chrysene	8E-11	--	4E-11	--	1E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-08	--	3E-08	--	7E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-09	--	2E-09	--	6E-09	NA	--	--	--	--
			Chromium VI	4E-07	--	--	--	4E-07	None Specified	0.0008	--	--	0.0008
			Cobalt	--	--	--	--	--	Thyroid	0.005	--	--	0.005
			Iron	--	--	--	--	--	GS	0.005	--	--	0.005
			Chemical Total	5E-07	--	7E-08	--	6E-07		0.01	--	--	0.01
		Exposure Point Total						6E-07					0.01
	Exposure Medium Total							6E-07					0.01
	Air	North Waterfront	Benzo(a)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-15	--	--	7E-15	NA	--	--	--	--
			Chromium VI	--	6E-10	--	--	6E-10	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	4E-11	--	--	4E-11	Respiratory	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	7E-10	--	--	7E-10		--	0.000003	--	0.000003
		Exposure Point Total						7E-10					0.000003
	Exposure Medium Total							7E-10					0.000003
Medium Total								6E-07					0.01
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	9E-09	--	5E-09	--	1E-08	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.001	--	--	0.001
			Chromium VI	3E-07	--	--	--	3E-07	None Specified	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Thyroid	0.005	--	--	0.005
			Iron	--	--	--	--	--	GS	0.005	--	--	0.005
			Chemical Total	3E-07	--	1E-08	--	3E-07		0.01	--	--	0.01
		Exposure Point Total						3E-07					0.01
	Exposure Medium Total							3E-07					0.01
	Air	North Waterfront	Benzo(a)pyrene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.000003	--	0.000003
			Chromium VI	--	5E-10	--	--	5E-10	Respiratory	--	0.0000002	--	0.0000002
			Cobalt	--	4E-11	--	--	4E-11	Respiratory	--	0.000003	--	0.000003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	6E-10	--	--	6E-10		--	0.000006	--	0.000006
		Exposure Point Total						6E-10					0.000006
	Exposure Medium Total							6E-10					0.000006
Medium Total								3E-07					0.01

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	3E-08	--	5E-08	--	8E-08					
			Benzo(a)pyrene	2E-07	--	4E-07	--	6E-07					
			Benzo(b)fluoranthene	3E-08	--	6E-08	--	9E-08					
			Chrysene	3E-10	--	5E-10	--	8E-10					
			Dibenzo(a,h)anthracene	2E-07	--	3E-07	--	5E-07					
			Indeno(1,2,3-cd)pyrene	1E-08	--	3E-08	--	4E-08					
			Chromium VI	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	2E-06	--	9E-07	--	2E-06					
		Exposure Point Total						2E-06					
	Exposure Medium Total							2E-06					
	Air	North Waterfront	Benzo(a)anthracene	--	3E-14	--	--	3E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14					
			Chrysene	--	3E-15	--	--	3E-15					
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13					
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14					
			Chromium VI	--	2E-09	--	--	2E-09					
			Cobalt	--	6E-11	--	--	6E-11					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								2E-06					
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	5E-08	--	1E-07	--	2E-07					
			Dibenzo(a,h)anthracene	3E-08	--	6E-08	--	9E-08					
			Aluminum	- -	--	- -	--	- -					
			Chromium VI	9E-07	--	- -	--	9E-07					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	1E-06	--	2E-07	--	1E-06					
		Exposure Point Total						1E-06					
	Exposure Medium Total							1E-06					
	Air	North Waterfront	Benzo(a)pyrene	--	7E-14	--	--	7E-14					
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14					
			Aluminum	--	- -	--	--	- -					
			Chromium VI	--	1E-09	--	--	1E-09					
			Cobalt	--	7E-11	--	--	7E-11					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	1E-09	--	--	1E-09					
		Exposure Point Total						1E-09					
	Exposure Medium Total							1E-09					
Medium Total								1E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	5E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	4E-07	--	4E-07	--	8E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Chrysene	5E-10	--	5E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-07	--	3E-07	--	6E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Chromium VI	2E-06	--	--	--	2E-06	None Specified	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Thyroid	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.02	--	--	0.02
			Chemical Total	3E-06	--	7E-07	--	4E-06		0.05	--	--	0.05
		Exposure Point Total						4E-06					0.05
	Exposure Medium Total							4E-06					0.05
	Air	North Waterfront	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Chromium VI	--	8E-09	--	--	8E-09	Respiratory	--	0.000003	--	0.000003
			Cobalt	--	5E-10	--	--	5E-10	Respiratory	--	0.00003	--	0.00003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	9E-09	--	--	9E-09		--	0.00003	--	0.00003
		Exposure Point Total						9E-09					0.00003
	Exposure Medium Total							9E-09					0.00003
Medium Total								4E-06					0.05
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	1E-07	--	1E-07	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.007	--	--	0.007
			Chromium VI	2E-06	--	--	--	2E-06	None Specified	0.004	--	--	0.004
			Cobalt	--	--	--	--	--	Thyroid	0.03	--	--	0.03
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Chemical Total	2E-06	--	1E-07	--	2E-06		0.07	--	--	0.07
		Exposure Point Total						2E-06					0.07
	Exposure Medium Total							2E-06					0.07
	Air	North Waterfront	Benzo(a)pyrene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.00003	--	0.00003
			Chromium VI	--	7E-09	--	--	7E-09	Respiratory	--	0.000002	--	0.000002
			Cobalt	--	6E-10	--	--	6E-10	Respiratory	--	0.00003	--	0.00003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	7E-09	--	--	7E-09		--	0.00006	--	0.00006
		Exposure Point Total						7E-09					0.00006
	Exposure Medium Total							7E-09					0.00006
Medium Total								2E-06					0.07

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	North Waterfront	cis-1,2-Dichloroethene	- -	--	- -	--	- -	Kidney	0.02	--	0.0002	0.02
			Trichloroethene	2E-06	--	3E-08	--	2E-06	Immune System, Developmental	0.2	--	0.004	0.2
			Vinyl Chloride	4E-06	--	2E-08	--	4E-06	Liver	0.005	--	0.00002	0.005
			Aluminum	- -	--	- -	--	- -	CNS	0.003	--	0.000001	0.003
			Chromium VI	9E-07	--	3E-08	--	9E-07	None Specified	0.002	--	0.00006	0.002
			Iron	- -	--	- -	--	- -	GS	0.008	--	0.000004	0.008
			Manganese	- -	--	- -	--	- -	CNS	0.02	--	0.0002	0.02
			Chemical Total	7E-06	--	8E-08	--	7E-06		0.3	--	0.004	0.3
		Exposure Point Total						7E-06					0.3
	Exposure Medium Total							7E-06					0.3
Medium Total								7E-06					0.3
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					1E-05	Total Hazard Indices for Surface Soil and Groundwater				0.4
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					9E-06	Total Hazard Indices for Subsurface Soil and Groundwater				0.4

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	4E-09	--	1E-09	--	5E-09	NA	--	--	--	--
			Benzo(a)pyrene	3E-08	--	1E-08	--	4E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	2E-09	--	6E-09	NA	--	--	--	--
			Chrysene	4E-11	--	1E-11	--	5E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	8E-09	--	3E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-09	--	7E-10	--	3E-09	NA	--	--	--	--
			Chromium VI	2E-07	--	--	--	2E-07	None Specified	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Thyroid	0.004	--	--	0.004
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Chemical Total	2E-07	--	2E-08	--	2E-07		0.05	--	--	0.05
		Exposure Point Total						2E-07					0.05
	Exposure Medium Total							2E-07					0.05
	Air	North Waterfront	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Chrysene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Chromium VI	--	1E-06	--	--	1E-06	Respiratory	--	0.01	--	0.01
			Cobalt	--	9E-08	--	--	9E-08	Respiratory	--	0.03	--	0.03
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-06	--	--	1E-06		--	0.04	--	0.04
		Exposure Point Total						1E-06					0.04
	Exposure Medium Total							1E-06					0.04
Medium Total								2E-06					0.09
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	8E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-09	--	2E-09	--	6E-09	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Chromium VI	1E-07	--	--	--	1E-07	None Specified	0.0009	--	--	0.0009
			Cobalt	--	--	--	--	--	Thyroid	0.005	--	--	0.005
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Chemical Total	1E-07	--	5E-09	--	1E-07		0.07	--	--	0.07
		Exposure Point Total						1E-07					0.07
	Exposure Medium Total							1E-07					0.07
	Air	North Waterfront	Benzo(a)pyrene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.1	--	0.1
			Chromium VI	--	1E-06	--	--	1E-06	Respiratory	--	0.009	--	0.009
			Cobalt	--	9E-08	--	--	9E-08	Respiratory	--	0.04	--	0.04
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-06	--	--	1E-06		--	0.2	--	0.2
		Exposure Point Total						1E-06					0.2
	Exposure Medium Total							1E-06					0.2
Medium Total								1E-06					0.2

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	North Waterfront	cis-1,2-Dichloroethene	--	--	--	--	--	Kidney	0.00005	--	0.0003	0.0004
			Trichloroethene	2E-09	--	1E-08	--	2E-08	Liver, Kidney	0.006	--	0.04	0.05
			Vinyl Chloride	4E-09	--	1E-08	--	2E-08	Liver	0.001	--	0.004	0.005
			Aluminum	--	--	--	--	--	CNS	0.00009	--	0.00005	0.0001
			Chromium VI	9E-10	--	4E-08	--	4E-08	None Specified	0.000006	--	0.0003	0.0003
			Iron	--	--	--	--	--	GS	0.0002	--	0.0001	0.0003
			Manganese	--	--	--	--	--	CNS	0.0006	--	0.008	0.008
			Chemical Total	7E-09	--	6E-08	--	7E-08		0.008	--	0.05	0.06
		Exposure Point Total						7E-08					0.06
	Exposure Medium Total							7E-08					0.06
	Air	North Waterfront	cis-1,2-Dichloroethene	--	--	--	--	--	NA	--	--	--	--
			Trichloroethene	--	3E-09	--	--	3E-09	Liver, Kidney	--	0.00009	--	0.00009
			Vinyl Chloride	--	5E-10	--	--	5E-10	Liver	--	0.0001	--	0.0001
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Chromium VI	--	--	--	--	--	Respiratory	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	3E-09	--	--	3E-09		--	0.0002	--	0.0002
		Exposure Point Total						3E-09					0.0002
	Exposure Medium Total							3E-09					0.0002
Medium Total								7E-08					0.06
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					2E-06	Total Hazard Indices for Surface Soil and Groundwater				0.2
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					1E-06	Total Hazard Indices for Subsurface Soil and Groundwater				0.3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Benzo(a)pyrene	7E-06	--	3E-06	--	9E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	4E-07	--	1E-06	NA	--	--	--	--
			Chrysene	9E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-06	--	2E-06	--	7E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Chromium VI	4E-05	--	--	--	4E-05	None Specified	0.06	--	--	0.06
			Cobalt	--	--	--	--	--	Thyroid	0.3	--	--	0.3
			Iron	--	--	--	--	--	GS	0.3	--	--	0.3
			Chemical Total	5E-05	--	5E-06	--	6E-05		0.7	--	--	0.7
		Exposure Point Total						6E-05					0.7
	Exposure Medium Total							6E-05					0.7
	Air	North Waterfront	Benzo(a)anthracene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Chrysene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Chromium VI	--	5E-08	--	--	5E-08	Respiratory	--	0.00001	--	0.00001
			Cobalt	--	5E-10	--	--	5E-10	Respiratory	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	5E-08	--	--	5E-08		--	0.0001	--	0.0001
		Exposure Point Total						5E-08					0.0001
	Exposure Medium Total							5E-08					0.0001
Medium Total								6E-05					0.7
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	2E-06	--	7E-07	--	3E-06	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-06	--	4E-07	--	1E-06	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.10	--	--	0.10
			Chromium VI	3E-05	--	--	--	3E-05	None Specified	0.05	--	--	0.05
			Cobalt	--	--	--	--	--	Thyroid	0.4	--	--	0.4
			Iron	--	--	--	--	--	GS	0.4	--	--	0.4
			Chemical Total	4E-05	--	1E-06	--	4E-05		0.9	--	--	0.9
		Exposure Point Total						4E-05					0.9
	Exposure Medium Total							4E-05					0.9
	Air	North Waterfront	Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Chromium VI	--	4E-08	--	--	4E-08	Respiratory	--	0.000010	--	0.000010
			Cobalt	--	6E-10	--	--	6E-10	Respiratory	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	4E-08	--	--	4E-08		--	0.0003	--	0.0003
		Exposure Point Total						4E-08					0.0003
	Exposure Medium Total							4E-08					0.0003
Medium Total								4E-05					0.9

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	North Waterfront	cis-1,2-Dichloroethene	- -	--	- -	--	- -	Kidney	0.1	--	0.02	0.2
			Trichloroethene (Mutagenic)	3E-06	--	5E-07	--	4E-06	NA	--	--	--	--
			Trichloroethene (Nonmutagenic)	2E-06	--	4E-07	--	3E-06	Immune System, Developmental	2	--	0.3	2
			Vinyl Chloride	8E-05	--	4E-06	--	8E-05	Liver	0.03	--	0.002	0.03
			Aluminum	- -	--	- -	--	- -	CNS	0.02	--	0.0001	0.02
			Chromium VI	7E-06	--	4E-06	--	1E-05	None Specified	0.01	--	0.006	0.02
			Iron	- -	--	- -	--	- -	GS	0.06	--	0.0004	0.06
			Manganese	- -	--	- -	--	- -	CNS	0.1	--	0.02	0.2
			Chemical Total	9E-05	--	9E-06	--	1E-04		2	--	0.3	2
		Exposure Point Total						1E-04					2
	Exposure Medium Total							1E-04					2
	Air	North Waterfront	cis-1,2-Dichloroethene	--	- -	--	--	- -	NA	--	--	--	--
			Trichloroethene (Mutagenic)	--	3E-06	--	--	3E-06	NA	--	--	--	--
			Trichloroethene (Nonmutagenic)	--	2E-06	--	--	2E-06	Liver, Kidney	--	3	--	3
			Vinyl Chloride	--	3E-06	--	--	3E-06	Liver	--	0.007	--	0.007
			Aluminum	--	- -	--	--	- -	CNS	--	--	--	--
			Chromium VI	--	- -	--	--	- -	Respiratory	--	--	--	--
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	--	--	--
			Chemical Total	--	8E-06	--	--	8E-06		- -	3	- -	3
		Exposure Point Total						8E-06					3
	Exposure Medium Total							8E-06					3
Medium Total								1E-04					5
Receptor Total				Total Cancer Risks for Surface Soil and Groundwater				2E-04	Total Hazard Indices for Surface Soil and Groundwater				6
Receptor Total				Total Cancer Risks for Subsurface Soil and Groundwater				1E-04	Total Hazard Indices for Subsurface Soil and Groundwater				6

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organs - Surface Soil and Groundwater

Total CNS HI	0.2
Total Developmental HI	2
Total GS HI	0.4
Total Kidney HI	3
Total Liver HI	3
Total Respiratory HI	0.0001
Total None Specified HI	0.07
Total Thyroid HI	0.3

Target Organs - Suburface Soil and Groundwater

Total CNS HI	0.3
Total Developmental HI	2
Total GS HI	0.4
Total Kidney HI	3
Total Liver HI	3
Total Respiratory HI	0.0001
Total None Specified HI	0.06
Total Thyroid HI	0.4

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	5E-07	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	8E-08	--	2E-07	NA	--	--	--	--
			Chrysene	1E-09	--	7E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-07	--	4E-07	--	1E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Chromium VI	6E-06	--	--	--	6E-06	None Specified	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Thyroid	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.03	--	--	0.03
			Chemical Total	8E-06	--	1E-06	--	9E-06		0.08	--	--	0.08
		Exposure Point Total						9E-06					0.08
	Exposure Medium Total							9E-06					0.08
	Air	North Waterfront	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	8E-12	--	--	8E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-13	--	--	7E-13	NA	--	--	--	--
			Chromium VI	--	6E-08	--	--	6E-08	Respiratory	--	0.00001	--	0.00001
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	6E-08	--	--	6E-08		--	0.0001	--	0.0001
		Exposure Point Total						6E-08					0.0001
	Exposure Medium Total							6E-08					0.0001
Medium Total								9E-06					0.08
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	8E-08	--	2E-07	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Chromium VI	5E-06	--	--	--	5E-06	None Specified	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Thyroid	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Chemical Total	5E-06	--	2E-07	--	5E-06		0.09	--	--	0.09
		Exposure Point Total						5E-06					0.09
	Exposure Medium Total							5E-06					0.09
	Air	North Waterfront	Benzo(a)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.0001	--	0.0001
			Chromium VI	--	5E-08	--	--	5E-08	Respiratory	--	0.000010	--	0.000010
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.0001	--	0.0001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	5E-08	--	--	5E-08		--	0.0003	--	0.0003
		Exposure Point Total						5E-08					0.0003
	Exposure Medium Total							5E-08					0.0003
Medium Total								5E-06					0.09

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	North Waterfront	cis-1,2-Dichloroethene	- -	--	- -	--	- -	Kidney	0.06	--	0.007	0.07
			Trichloroethene (Mutagenic)	2E-06	--	3E-07	--	2E-06	NA	--	--	--	--
			Trichloroethene (Nonmutagenic	4E-06	--	7E-07	--	5E-06	ne System, Developm	0.7	--	0.1	0.8
			Vinyl Chloride	1E-05	--	5E-07	--	1E-05	Liver	0.01	--	0.0007	0.01
			Aluminum	- -	--	- -	--	- -	CNS	0.009	--	0.00005	0.009
			Chromium VI	4E-06	--	2E-06	--	6E-06	None Specified	0.005	--	0.002	0.007
			Iron	- -	--	- -	--	- -	GS	0.02	--	0.0001	0.02
			Manganese	- -	--	- -	--	- -	CNS	0.06	--	0.008	0.07
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.8	--	0.1	1.0
		Exposure Point Total						2E-05					1.0
	Exposure Medium Total							2E-05					1.0
	Air	North Waterfront	cis-1,2-Dichloroethene	--	- -	--	--	- -	NA	--	--	--	--
			Trichloroethene (Mutagenic)	--	4E-06	--	--	4E-06	NA	--	--	--	--
			Trichloroethene (Nonmutagenic	--	6E-06	--	--	6E-06	Liver, Kidney	--	3	--	3
			Vinyl Chloride	--	1E-06	--	--	1E-06	Liver	--	0.007	--	0.007
			Aluminum	--	- -	--	--	- -	CNS	--	--	--	--
			Chromium VI	--	- -	--	--	- -	Respiratory	--	--	--	--
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	--	--	--
			Chemical Total	--	1E-05	--	--	1E-05		- -	3	- -	3
		Exposure Point Total						1E-05					3
	Exposure Medium Total							1E-05					3
Medium Total								3E-05					4
Receptor Total				Total Cancer Risks for Surface Soil and Groundwater				4E-05	Total Hazard Indices for Surface Soil and Groundwater				4
Receptor Total				Total Cancer Risks for Subsurface Soil and Groundwater				4E-05	Total Hazard Indices for Subsurface Soil and Groundwater				4

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organs - Surface Soil and Groundwater

Total CNS HI	0.08
Total Developmental HI	0.8
Total GS HI	0.06
Total Kidney HI	3
Total Liver HI	3
Total Respiratory HI	0.0001
Total None Specified HI	0.01
Total Thyroid HI	0.04

Target Organs - Suburface Soil and Groundwater

Total CNS HI	0.09
Total Developmental HI	0.8
Total GS HI	0.06
Total Kidney HI	3
Total Liver HI	3
Total Respiratory HI	0.0001
Total None Specified HI	0.01
Total Thyroid HI	0.04

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	North Waterfront	Benzo(a)anthracene	1E-06	--	4E-07	--	1E-06					
			Benzo(a)pyrene	8E-06	--	3E-06	--	1E-05					
			Benzo(b)fluoranthene	1E-06	--	5E-07	--	2E-06					
			Chrysene	1E-08	--	4E-09	--	1E-08					
			Dibenzo(a,h)anthracene	6E-06	--	2E-06	--	8E-06					
			Indeno(1,2,3-cd)pyrene	5E-07	--	2E-07	--	7E-07					
			Chromium VI	5E-05	--	- -	--	5E-05					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	6E-05	--	6E-06	--	7E-05					
		Exposure Point Total						7E-05					
	Exposure Medium Total							7E-05					
	Air	North Waterfront	Benzo(a)anthracene	--	2E-12	--	--	2E-12					
			Benzo(a)pyrene	--	2E-11	--	--	2E-11					
			Benzo(b)fluoranthene	--	3E-12	--	--	3E-12					
			Chrysene	--	2E-13	--	--	2E-13					
			Dibenzo(a,h)anthracene	--	1E-11	--	--	1E-11					
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12					
			Chromium VI	--	1E-07	--	--	1E-07					
			Cobalt	--	3E-09	--	--	3E-09					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	1E-07	--	--	1E-07					
		Exposure Point Total						1E-07					
	Exposure Medium Total							1E-07					
Medium Total								7E-05					
Subsurface Soil	Subsurface Soil	North Waterfront	Benzo(a)pyrene	2E-06	--	8E-07	--	3E-06					
			Dibenzo(a,h)anthracene	1E-06	--	4E-07	--	2E-06					
			Aluminum	- -	--	- -	--	- -					
			Chromium VI	4E-05	--	- -	--	4E-05					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	4E-05	--	1E-06	--	4E-05					
		Exposure Point Total						4E-05					
	Exposure Medium Total							4E-05					
	Air	North Waterfront	Benzo(a)pyrene	--	5E-12	--	--	5E-12					
			Dibenzo(a,h)anthracene	--	3E-12	--	--	3E-12					
			Aluminum	--	- -	--	--	- -					
			Chromium VI	--	9E-08	--	--	9E-08					
			Cobalt	--	3E-09	--	--	3E-09					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	9E-08	--	--	9E-08					
		Exposure Point Total						9E-08					
	Exposure Medium Total							9E-08					
Medium Total								4E-05					

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	North Waterfront	cis-1,2-Dichloroethene	- -	--	- -	--	- -					
			Trichloroethene (Mutagenic)	5E-06	--	9E-07	--	6E-06					
			Trichloroethene (Nonmutagenic	7E-06	--	1E-06	--	8E-06					
			Vinyl Chloride	9E-05	--	5E-06	--	9E-05					
			Aluminum	- -	--	- -	--	- -					
			Chromium VI	1E-05	--	6E-06	--	2E-05					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	1E-05	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					
	Air	North Waterfront	cis-1,2-Dichloroethene	--	- -	--	--	- -					
			Trichloroethene (Mutagenic)	--	6E-06	--	--	6E-06					
			Trichloroethene (Nonmutagenic	--	8E-06	--	--	8E-06					
			Vinyl Chloride	--	5E-06	--	--	5E-06					
			Aluminum	--	- -	--	--	- -					
			Chromium VI	--	- -	--	--	- -					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	2E-05	--	--	2E-05					
		Exposure Point Total						2E-05					
	Exposure Medium Total							2E-05					
Medium Total								1E-04					
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					2E-04					
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					2E-04					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

LIST OF TABLES
RAGS PART D TABLE 9 - CENTRAL SHIPYARD
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.	Reasonable Maximum Exposures
9.1.RME	Current Adolescent Trespassers - Central Shipyard
9.2.RME	Current Adult Trespassers - Central Shipyard
9.3.RME	Current Lifelong Trespassers - Central Shipyard
9.4.RME	Current Industrial Workers - Central Shipyard
9.5.RME	Future Adolescent Trespassers - Central Shipyard
9.6.RME	Future Adult Trespassers - Central Shipyard
9.7.RME	Future Lifelong Trespassers - Central Shipyard
9.8.RME	Future Industrial Workers - Central Shipyard
9.9.RME	Current/Future Construction Workers - North Waterfront
9.10.RME	Hypothetical Child Residents - Central Shipyard
9.11.RME	Hypothetical Adult Residents - Central Shipyard
9.12.RME	Hypothetical Lifelong Residents - Central Shipyard

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Cecntral Shipyard	Arsenic	1E-06	--	9E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.04
			Chromium VI	9E-07	--	--	--	9E-07	None Specified	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese	--	--	--	--	--	CNS	0.005	--	--	0.005
			Chemical Total	2E-06	--	9E-07	--	3E-06		0.05	--	0.01	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
	Air	Cecntral Shipyard	Arsenic	--	3E-11	--	--	3E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	4E-11	--	--	4E-11	Respiratory	--	0.000005	--	0.000005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	1E-09	--	--	1E-09		--	0.00003	--	0.00003
		Exposure Point Total						1E-09					0.00003
	Exposure Medium Total							1E-09					0.00003
Medium Total								3E-06					0.07
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	0.07

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.02	--	0.002	0.02
			Chromium VI	4E-07	--	--	--	4E-07	None Specified	0.0010	--	--	0.0010
			Cobalt	--	--	--	--	--	Thyroid	0.009	--	--	0.009
			Iron	--	--	--	--	--	GS	0.009	--	--	0.009
			Manganese	--	--	--	--	--	CNS	0.004	--	--	0.004
			Chemical Total	2E-06	--	2E-07	--	3E-06		0.04	--	0.002	0.04
		Exposure Point Total						3E-06					0.04
	Exposure Medium Total							3E-06					0.04
	Air	Central Shipyard	Arsenic	--	6E-11	--	--	6E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	8E-10	--	--	8E-10	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	8E-11	--	--	8E-11	Respiratory	--	0.000005	--	0.000005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	9E-10	--	--	9E-10		--	0.00003	--	0.00003
		Exposure Point Total						9E-10					0.00003
	Exposure Medium Total							9E-10					0.00003
Medium Total								3E-06					0.04
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	0.04

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Arsenic	3E-06	--	1E-06	--	4E-06					
			Chromium VI	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	5E-06	--	1E-06	--	6E-06					
		Exposure Point Total						6E-06					
	Exposure Medium Total							6E-06					
	Air	Central Shipyard	Arsenic	--	9E-11	--	--	9E-11					
			Chromium VI	--	2E-09	--	--	2E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								6E-06					
Receptor Total							Receptor Risk Total	6E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Arsenic	1E-05	--	3E-06	--	2E-05	Skin, CVS	0.08	--	0.02	0.10
			Chromium VI	3E-06	--	--	--	3E-06	None Specified	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Thyroid	0.05	--	--	0.05
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Manganese	--	--	--	--	--	CNS	0.02	--	--	0.02
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.2	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Central Shipyard	Arsenic	--	8E-10	--	--	8E-10	Skin, CVS	--	0.00003	--	0.00003
			Chromium VI	--	1E-08	--	--	1E-08	Respiratory	--	0.000003	--	0.000003
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.00005	--	0.00005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0003	--	0.0003
		Exposure Point Total						1E-08					0.0003
	Exposure Medium Total							1E-08					0.0003
Medium Total								2E-05					0.2
Receptor Total							Receptor Risk Total	2E-05				Receptor HI Total	0.2

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	2E-08	--	7E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	3E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-08	--	8E-08	--	1E-07	NA	--	--	--	--
			Chrysene	2E-10	--	7E-10	--	1E-09	NA	--	--	--	--
			Arsenic	1E-06	--	9E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Chromium VI	1E-06	--	--	--	1E-06	None Specified	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese	--	--	--	--	--	CNS	0.005	--	--	0.005
			Chemical Total	2E-06	--	1E-06	--	4E-06		0.05	--	0.01	0.07
		Exposure Point Total						4E-06					0.07
	Exposure Medium Total							4E-06					0.07
	Air	Central Shipyard	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Chrysene	--	3E-15	--	--	3E-15	NA	--	--	--	--
			Arsenic	--	3E-11	--	--	3E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	4E-11	--	--	4E-11	Respiratory	--	0.000005	--	0.000005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	1E-09	--	--	1E-09		--	0.00003	--	0.00003
		Exposure Point Total						1E-09					0.00003
	Exposure Medium Total							1E-09					0.00003
Medium Total								4E-06					0.07

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	2E-08	--	7E-08	--	9E-08	NA	--	--	--	--
			Benzo(a)pyrene	2E-07	--	5E-07	--	6E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	6E-08	--	8E-08	NA	--	--	--	--
			Chrysene	2E-10	--	7E-10	--	9E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-08	--	6E-08	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.003	--	--	0.003
			Arsenic	1E-06	--	7E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Chromium VI	7E-07	--	--	--	7E-07	None Specified	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Chemical Total	2E-06	--	1E-06	--	3E-06		0.04	--	0.01	0.05
		Exposure Point Total						3E-06					0.05
	Exposure Medium Total							3E-06					0.05
	Air	Central Shipyard	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	3E-15	--	--	3E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.000004	--	0.000004
			Arsenic	--	2E-11	--	--	2E-11	Skin, CVS	--	0.000002	--	0.000002
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	3E-11	--	--	3E-11	Respiratory	--	0.000004	--	0.000004
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-09	--	--	1E-09		--	0.00001	--	0.00001
		Exposure Point Total						1E-09					0.00001
	Exposure Medium Total							1E-09					0.00001
Medium Total								3E-06					0.05
Receptor Total							Receptor Risk Total	7E-06				Receptor HI Total	0.1

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	1E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	3E-08	--	8E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	7E-09	--	2E-08	NA	--	--	--	--
			Chrysene	1E-10	--	6E-11	--	2E-10	NA	--	--	--	--
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Chromium VI	5E-07	--	--	--	5E-07	None Specified	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Thyroid	0.009	--	--	0.009
			Iron	--	--	--	--	--	GS	0.009	--	--	0.009
			Manganese	--	--	--	--	--	CNS	0.003	--	--	0.003
			Chemical Total	2E-06	--	3E-07	--	3E-06		0.04	--	0.002	0.04
		Exposure Point Total						3E-06					0.04
	Exposure Medium Total							3E-06					0.04
	Air	Central Shipyard	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-14	--	--	9E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Arsenic	--	6E-11	--	--	6E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	8E-10	--	--	8E-10	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	7E-11	--	--	7E-11	Respiratory	--	0.000005	--	0.000005
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	1E-09	--	--	1E-09		--	0.00003	--	0.00003
		Exposure Point Total						1E-09					0.00003
	Exposure Medium Total							1E-09					0.00003
Medium Total								3E-06					0.04

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	1E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	8E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	5E-09	--	1E-08	NA	--	--	--	--
			Chrysene	1E-10	--	6E-11	--	2E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.002	--	--	0.002
			Arsenic	1E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.001	0.01
			Chromium VI	4E-07	--	- -	--	4E-07	None Specified	0.0008	--	--	0.0008
			Cobalt	- -	--	- -	--	- -	Thyroid	0.008	--	--	0.008
			Iron	- -	--	--	--	- -	GS	0.007	--	--	0.007
			Chemical Total	2E-06	--	2E-07	--	2E-06		0.03	--	0.001	0.03
		Exposure Point Total						2E-06					0.03
	Exposure Medium Total							2E-06					0.03
	Air	Central Shipyard	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Chrysene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.000004	--	0.000004
			Arsenic	--	5E-11	--	--	5E-11	Skin, CVS	--	0.000002	--	0.000002
			Chromium VI	--	6E-10	--	--	6E-10	Respiratory	--	0.0000003	--	0.0000003
			Cobalt	--	6E-11	--	--	6E-11	Respiratory	--	0.000004	--	0.000004
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	7E-10	--	--	7E-10		- -	0.00001	- -	0.00001
		Exposure Point Total						7E-10					0.00001
	Exposure Medium Total							7E-10					0.00001
Medium Total								2E-06					0.03
Receptor Total							Receptor Risk Total	5E-06				Receptor HI Total	0.07

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	4E-08	--	8E-08	--	1E-07					
			Benzo(a)pyrene	2E-07	--	4E-07	--	5E-07					
			Benzo(b)fluoranthene	4E-08	--	9E-08	--	1E-07					
			Chrysene	4E-10	--	8E-10	--	1E-09					
			Arsenic	3E-06	--	1E-06	--	4E-06					
			Chromium VI	1E-06	--	- -	--	1E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	5E-06	--	2E-06	--	7E-06					
		Exposure Point Total						7E-06					
	Exposure Medium Total							7E-06					
	Air	Central Shipyard	Benzo(a)anthracene	--	5E-14	--	--	5E-14					
			Benzo(a)pyrene	--	2E-13	--	--	2E-13					
			Benzo(b)fluoranthene	--	5E-14	--	--	5E-14					
			Chrysene	--	5E-15	--	--	5E-15					
			Arsenic	--	9E-11	--	--	9E-11					
			Chromium VI	--	2E-09	--	--	2E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								7E-06					

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	3E-08	--	7E-08	--	1E-07					
			Benzo(a)pyrene	2E-07	--	5E-07	--	7E-07					
			Benzo(b)fluoranthene	3E-08	--	6E-08	--	9E-08					
			Chrysene	3E-10	--	7E-10	--	1E-09					
			Dibenzo(a,h)anthracene	6E-08	--	1E-07	--	2E-07					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-08	--	8E-08					
			Aluminum	--	--	--	--	--					
			Arsenic	3E-06	--	9E-07	--	3E-06					
			Chromium VI	1E-06	--	--	--	1E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Chemical Total	4E-06	--	2E-06	--	6E-06					
		Exposure Point Total						6E-06					
	Exposure Medium Total							6E-06					
	Air	Central Shipyard	Benzo(a)anthracene	--	4E-14	--	--	4E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14					
			Chrysene	--	4E-15	--	--	4E-15					
			Dibenzo(a,h)anthracene	--	8E-14	--	--	8E-14					
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14					
			Aluminum	--	--	--	--	--					
			Arsenic	--	7E-11	--	--	7E-11					
			Chromium VI	--	2E-09	--	--	2E-09					
			Cobalt	--	9E-11	--	--	9E-11					
			Iron	--	--	--	--	--					
			Chemical Total	--	2E-09	--	--	2E-09					
		Exposure Point Total						2E-09					
	Exposure Medium Total							2E-09					
Medium Total								6E-06					
Receptor Total							Receptor Risk Total	1E-05					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	8E-08	--	7E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	4E-07	--	3E-07	--	7E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	9E-08	--	7E-08	--	2E-07	NA	--	--	--	--
			Chrysene	8E-10	--	7E-10	--	1E-09	NA	--	--	--	--
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.08	--	0.02	0.09
			Chromium VI	3E-06	--	--	--	3E-06	None Specified	0.0008	--	--	0.0008
			Cobalt	--	--	--	--	--	Thyroid	0.005	--	--	0.005
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese	--	--	--	--	--	CNS	0.02	--	--	0.02
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.1	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Central Shipyard	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Chrysene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Arsenic	--	8E-10	--	--	8E-10	Skin, CVS	--	0.00003	--	0.00003
			Chromium VI	--	1E-08	--	--	1E-08	Respiratory	--	0.000004	--	0.000004
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.00002	--	0.00002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0002	--	0.0002
		Exposure Point Total						1E-08					0.0002
	Exposure Medium Total							1E-08					0.0002
Medium Total								2E-05					0.2
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	7E-08	--	6E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	5E-07	--	4E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Chrysene	7E-10	--	6E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	1E-07	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	4E-08	--	9E-08	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.010	--	--	0.010
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.06	--	0.01	0.07
			Chromium VI	2E-06	--	--	--	2E-06	None Specified	0.0007	--	--	0.0007
			Cobalt	--	--	--	--	--	Thyroid	0.004	--	--	0.004
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Chemical Total	1E-05	--	3E-06	--	2E-05		0.1	--	0.01	0.1
		Exposure Point Total						2E-05					0.1
	Exposure Medium Total							2E-05					0.1

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Central Shipyard	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.00004	--	0.00004
			Arsenic	--	6E-10	--	--	6E-10	Skin, CVS	--	0.00003	--	0.00003
			Chromium VI	--	8E-09	--	--	8E-09	Respiratory	--	0.000003	--	0.000003
			Cobalt	--	8E-10	--	--	8E-10	Respiratory	--	0.00001	--	0.00001
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-08	--	--	1E-08		--	0.00008	--	0.00008
		Exposure Point Total						1E-08					0.00008
	Exposure Medium Total							1E-08					0.00008
Medium Total								2E-05					0.1
Groundwater	Groundwater	Central Shipyard	Aluminum	--	--	--	--	--	CNS	0.003	--	0.000001	0.003
			Arsenic	4E-04	--	2E-07	--	4E-04	Skin, CVS	3	--	0.001	3
			Cadmium	--	--	--	--	--	Kidney	0.03	--	0.0003	0.03
			Cobalt	--	--	--	--	--	Thyroid	0.08	--	0.00001	0.08
			Iron	--	--	--	--	--	GS	0.9	--	0.0004	0.9
			Manganese	--	--	--	--	--	CNS	4	--	0.04	4
			Chemical Total	4E-04	--	2E-07	--	4E-04		7	--	0.04	7
		Exposure Point Total						4E-04					7
	Exposure Medium Total							4E-04					7
Medium Total								4E-04					7
Receptor Total			Total Cancer Risks for Surface Soil and Subsurface Soil					4E-04	Total Hazard Indices for Surface Soil and Subsurface Soil				7
Receptor Total			Total Cancer Risks for Subsurface Soil and Subsurface Soil					4E-04	Total Hazard Indices for Ssubsurface Soil and Subsurface Soil				7

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Oragn HIs - Surface Soil and Groundwater

Total CNS HI	4
Total CVS HI	3
Total GS HI	1
Total Respiratory HI	0.00002
Total None Specified HI	0.001
Total Skin HI	3
Total Thyroid HI	0.09

Target Oragn HIs - Subsurface Soil and Groundwater

Total CNS HI	4
Total CVS HI	3
Total GS HI	1
Total Respiratory HI	0.00002
Total None Specified HI	0.001
Total Skin HI	3
Total Thyroid HI	0.08

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	5E-09	--	2E-09	--	7E-09	NA	--	--	--	--
			Benzo(a)pyrene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-09	--	2E-09	--	8E-09	NA	--	--	--	--
			Chrysene	5E-11	--	2E-11	--	7E-11	NA	--	--	--	--
			Arsenic	9E-07	--	8E-08	--	9E-07	Skin, CVS	0.1	--	0.01	0.1
			Chromium VI	2E-07	--	--	--	2E-07	None Specified	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Thyroid	0.008	--	--	0.008
			Iron	--	--	--	--	--	GS	0.08	--	--	0.08
			Manganese	--	--	--	--	--	CNS	0.03	--	--	0.03
			Chemical Total	1E-06	--	9E-08	--	1E-06		0.3	--	0.01	0.3
		Exposure Point Total						1E-06					0.3
	Exposure Medium Total							1E-06					0.3
	Air	Central Shipyard	Benzo(a)anthracene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	5E-11	--	--	5E-11	NA	--	--	--	--
			Chrysene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Arsenic	--	1E-07	--	--	1E-07	Skin, CVS	--	0.1	--	0.1
			Chromium VI	--	2E-06	--	--	2E-06	Respiratory	--	0.01	--	0.01
			Cobalt	--	2E-07	--	--	2E-07	Respiratory	--	0.06	--	0.06
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.7	--	0.7
			Chemical Total	--	2E-06	--	--	2E-06		--	0.9	--	0.9
		Exposure Point Total						2E-06					0.9
	Exposure Medium Total							2E-06					0.9
Medium Total								3E-06					1

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	5E-09	--	2E-09	--	7E-09	NA	--	--	--	--
			Benzo(a)pyrene	3E-08	--	1E-08	--	5E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-09	--	2E-09	--	6E-09	NA	--	--	--	--
			Chrysene	5E-11	--	2E-11	--	7E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-09	--	1E-09	--	5E-09	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	7E-07	--	6E-08	--	7E-07	Skin, CVS	0.1	--	0.009	0.1
			Chromium VI	2E-07	--	--	--	2E-07	None Specified	0.001	--	--	0.001
			Cobalt	--	--	--	--	--	Thyroid	0.007	--	--	0.007
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Chemical Total	9E-07	--	8E-08	--	1E-06		0.2	--	0.009	0.2
		Exposure Point Total						1E-06					0.2
	Exposure Medium Total							1E-06					0.2
	Air	Central Shipyard	Benzo(a)anthracene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Chrysene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	7E-11	--	--	7E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.2	--	0.2
			Arsenic	--	1E-07	--	--	1E-07	Skin, CVS	--	0.1	--	0.1
			Chromium VI	--	1E-06	--	--	1E-06	Respiratory	--	0.01	--	0.01
			Cobalt	--	1E-07	--	--	1E-07	Respiratory	--	0.05	--	0.05
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	2E-06	--	--	2E-06		--	0.3	--	0.3
		Exposure Point Total						2E-06					0.3
	Exposure Medium Total							2E-06					0.3
Medium Total								3E-06					0.5
Groundwater	Groundwater	Central Shipyard	Aluminum	--	--	--	--	--	CNS	0.00008	--	0.00004	0.0001
			Arsenic	4E-07	--	2E-07	--	7E-07	Skin, CVS	0.07	--	0.03	0.1
			Cadmium	--	--	--	--	--	Kidney	0.0008	--	0.01	0.009
			Cobalt	--	--	--	--	--	Thyroid	0.002	--	0.0004	0.003
			Iron	--	--	--	--	--	GS	0.02	--	0.01	0.04
			Manganese	--	--	--	--	--	CNS	0.1	--	1	1
			Chemical Total	4E-07	--	2E-07	--	7E-07		0.2	--	1	2
		Exposure Point Total						7E-07					2
	Exposure Medium Total							7E-07					2
Medium Total								7E-07					2
Receptor Total			Total Cancer Risks for Surface Soil and Subsurface Soil					4E-06	Total Hazard Indices for Surface Soil and Subsurface Soil				3
Receptor Total			Total Cancer Risks for Subsurface Soil and Subsurface Soil					3E-06	Total Hazard Indices for Ssuburface Soil and Subsurface Soil				2

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Oragn HIs - Surface Soil and Groundwater

Total CNS HI	2
Total CVS HI	0.4
Total GS HI	0.1
Total Respiratory HI	0.08
Total None Specified HI	0.001
Total Skin HI	0.4
Total Thyroid HI	0.01

Target Oragn HIs - Subsurface Soil and Groundwater

Total CNS HI	2
Total CVS HI	0.3
Total GS HI	0.1
Total Respiratory HI	0.06
Total None Specified HI	0.001
Total Skin HI	0.3
Total Thyroid HI	0.009

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	1E-06	--	5E-07	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	6E-06	--	2E-06	--	8E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	5E-07	--	2E-06	NA	--	--	--	--
			Chrysene	1E-08	--	5E-09	--	2E-08	NA	--	--	--	--
			Arsenic	4E-05	--	3E-06	--	4E-05	Skin, CVS	1	--	0.08	1
			Chromium VI	5E-05	--	--	--	5E-05	None Specified	0.07	--	--	0.07
			Cobalt	--	--	--	--	--	Thyroid	0.6	--	--	0.6
			Iron	--	--	--	--	--	GS	0.6	--	--	0.6
			Manganese	--	--	--	--	--	CNS	0.2	--	--	0.2
			Chemical Total	1E-04	--	6E-06	--	1E-04		3	--	0.08	3
		Exposure Point Total						1E-04					3
	Exposure Medium Total							1E-04					3
	Air	Central Shipyard	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Arsenic	--	8E-10	--	--	8E-10	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	6E-08	--	--	6E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0008	--	0.0008
			Chemical Total	--	6E-08	--	--	6E-08		--	0.001	--	0.001
		Exposure Point Total						6E-08					0.001
	Exposure Medium Total							6E-08					0.001
Medium Total								1E-04					3

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	1E-06	--	4E-07	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	8E-06	--	3E-06	--	1E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	4E-07	--	1E-06	NA	--	--	--	--
			Chrysene	1E-08	--	4E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	7E-07	--	3E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.1	--	--	0.1
			Arsenic	3E-05	--	3E-06	--	3E-05	Skin, CVS	0.8	--	0.07	0.9
			Chromium VI	4E-05	--	--	--	4E-05	None Specified	0.06	--	--	0.06
			Cobalt	--	--	--	--	--	Thyroid	0.5	--	--	0.5
			Iron	--	--	--	--	--	GS	0.5	--	--	0.5
			Chemical Total	8E-05	--	7E-06	--	9E-05		2	--	0.07	2
		Exposure Point Total						9E-05					2
	Exposure Medium Total							9E-05					2
	Air	Central Shipyard	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	9E-12	--	--	9E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Chrysene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	6E-10	--	--	6E-10	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	4E-08	--	--	4E-08	Respiratory	--	0.00001	--	0.00001
			Cobalt	--	8E-10	--	--	8E-10	Respiratory	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	5E-08	--	--	5E-08		--	0.0005	--	0.0005
		Exposure Point Total						5E-08					0.0005
	Exposure Medium Total							5E-08					0.0005
Medium Total								9E-05					2
Groundwater	Groundwater	Central Shipyard	Aluminum	--	--	--	--	--	CNS	0.02	--	0.0001	0.02
			Arsenic	6E-04	--	4E-06	--	6E-04	Skin, CVS	17	--	0.1	17
			Cadmium	--	--	--	--	--	Kidney	0.2	--	0.0	0.2
			Cobalt	--	--	--	--	--	Thyroid	5	--	0.01	5
			Iron	--	--	--	--	--	GS	6	--	0.04	6
			Manganese	--	--	--	--	--	CNS	24	--	4	28
			Chemical Total	6E-04	--	4E-06	--	6E-04		52	--	4	57
		Exposure Point Total						6E-04					57
	Exposure Medium Total							6E-04					57
Medium Total								6E-04					57
Receptor Total				Total Cancer Risks for Surface Soil and Subsurface Soil				8E-04	Total Hazard Indices for Surface Soil and Subsurface Soil				59
Receptor Total				Total Cancer Risks for Subsurface Soil and Subsurface Soil				7E-04	Total Hazard Indices for Ssuburface Soil and Subsurface Soil				59

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Oragn His - Surface Soil and Groundwater

Total CNS HI	28
Total CVS HI	18
Total GS HI	7
Total Respiratory HI	0.0002
Total None Specified HI	0.1
Total Skin HI	18
Total Thyroid HI	6

Target Oragn His - Subsurface Soil and Groundwater

Total CNS HI	28
Total CVS HI	18
Total GS HI	7
Total Respiratory HI	0.0002
Total None Specified HI	0.1
Total Skin HI	18
Total Thyroid HI	6

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	9E-07	--	5E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Chrysene	2E-09	--	1E-09	--	3E-09	NA	--	--	--	--
			Arsenic	2E-05	--	2E-06	--	2E-05	Skin, CVS	0.1	--	0.01	0.1
			Chromium VI	7E-06	--	--	--	7E-06	None Specified	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Thyroid	0.07	--	--	0.07
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Manganese	--	--	--	--	--	CNS	0.02	--	--	0.02
			Chemical Total	3E-05	--	3E-06	--	3E-05		0.3	--	0.01	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3
	Air	Central Shipyard	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	8E-12	--	--	8E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Arsenic	--	3E-09	--	--	3E-09	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	8E-08	--	--	8E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	4E-09	--	--	4E-09	Respiratory	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0008	--	0.0008
			Chemical Total	--	9E-08	--	--	9E-08		--	0.001	--	0.001
		Exposure Point Total						9E-08					0.001
	Exposure Medium Total							9E-08					0.001
Medium Total								3E-05					0.3

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	2E-07	--	9E-08	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	6E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	8E-08	--	2E-07	NA	--	--	--	--
			Chrysene	2E-09	--	9E-10	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-07	--	7E-08	--	2E-07	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.08	--	0.01	0.09
			Chromium VI	6E-06	--	--	--	6E-06	None Specified	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Thyroid	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.2	--	0.01	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2
	Air	Central Shipyard	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	2E-09	--	--	2E-09	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	6E-08	--	--	6E-08	Respiratory	--	0.00001	--	0.00001
			Cobalt	--	3E-09	--	--	3E-09	Respiratory	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	7E-08	--	--	7E-08		--	0.0005	--	0.0005
		Exposure Point Total						7E-08					0.0005
	Exposure Medium Total							7E-08					0.0005
Medium Total								2E-05					0.2
Groundwater	Groundwater	Central Shipyard	Aluminum	--	--	--	--	--	CNS	0.009	--	0.00004	0.009
			Arsenic	1E-03	--	6E-06	--	1E-03	Skin, CVS	7	--	0.04	7
			Cadmium	--	--	--	--	--	Kidney	0.08	--	0.01	0.09
			Cobalt	--	--	--	--	--	Thyroid	2	--	0.005	2
			Iron	--	--	--	--	--	GS	3	--	0.01	3
			Manganese	--	--	--	--	--	CNS	10	--	1	12
			Chemical Total	1E-03	--	6E-06	--	1E-03		22	--	1	24
		Exposure Point Total						1E-03					24
	Exposure Medium Total							1E-03					24
Medium Total								1E-03					24
Receptor Total				Total Cancer Risks for Surface Soil and Subsurface Soil				1E-03	Total Hazard Indices for Surface Soil and Subsurface Soil				24
Receptor Total				Total Cancer Risks for Subsurface Soil and Subsurface Soil				1E-03	Total Hazard Indices for Ssuburface Soil and Subsurface Soil				24

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Oragn His - Surface Soil and Groundwater

Total CNS HI	12
Total CVS HI	7
Total GS HI	3
Total Respiratory HI	0.0002
Total None Specified HI	0.01
Total Skin HI	7
Total Thyroid HI	2

Target Oragn His - Subsurface Soil and Groundwater

Total CNS HI	12
Total CVS HI	7
Total GS HI	3
Total Respiratory HI	0.0002
Total None Specified HI	0.01
Total Skin HI	7
Total Thyroid HI	2

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Central Shipyard	Benzo(a)anthracene	1E-06	--	6E-07	--	2E-06					
			Benzo(a)pyrene	7E-06	--	3E-06	--	9E-06					
			Benzo(b)fluoranthene	2E-06	--	6E-07	--	2E-06					
			Chrysene	1E-08	--	6E-09	--	2E-08					
			Arsenic	6E-05	--	5E-06	--	6E-05					
			Chromium VI	6E-05	--	--	--	6E-05					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	1E-04	--	9E-06	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					
	Air	Central Shipyard	Benzo(a)anthracene	--	3E-12	--	--	3E-12					
			Benzo(a)pyrene	--	1E-11	--	--	1E-11					
			Benzo(b)fluoranthene	--	4E-12	--	--	4E-12					
			Chrysene	--	3E-13	--	--	3E-13					
			Arsenic	--	4E-09	--	--	4E-09					
			Chromium VI	--	1E-07	--	--	1E-07					
			Cobalt	--	5E-09	--	--	5E-09					
			Iron	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	--	1E-07	--	--	1E-07					
		Exposure Point Total						1E-07					
	Exposure Medium Total							1E-07					
Medium Total								1E-04					

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Central Shipyard	Benzo(a)anthracene	1E-06	--	5E-07	--	2E-06					
			Benzo(a)pyrene	9E-06	--	4E-06	--	1E-05					
			Benzo(b)fluoranthene	1E-06	--	5E-07	--	2E-06					
			Chrysene	1E-08	--	5E-09	--	2E-08					
			Dibenzo(a,h)anthracene	2E-06	--	9E-07	--	3E-06					
			Indeno(1,2,3-cd)pyrene	1E-06	--	4E-07	--	1E-06					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	4E-05	--	4E-06	--	5E-05					
			Chromium VI	4E-05	--	- -	--	4E-05					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	1E-05	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					
	Air	Central Shipyard	Benzo(a)anthracene	--	3E-12	--	--	3E-12					
			Benzo(a)pyrene	--	2E-11	--	--	2E-11					
			Benzo(b)fluoranthene	--	3E-12	--	--	3E-12					
			Chrysene	--	3E-13	--	--	3E-13					
			Dibenzo(a,h)anthracene	--	5E-12	--	--	5E-12					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	3E-09	--	--	3E-09					
			Chromium VI	--	1E-07	--	--	1E-07					
			Cobalt	--	4E-09	--	--	4E-09					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	1E-07	--	--	1E-07					
		Exposure Point Total						1E-07					
	Exposure Medium Total							1E-07					
Medium Total								1E-04					
Groundwater	Groundwater	Central Shipyard	Aluminum	- -	--	- -	--	- -					
			Arsenic	2E-03	--	1E-05	--	2E-03					
			Cadmium	- -	--	- -	--	- -					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	2E-03	--	1E-05	--	2E-03					
		Exposure Point Total						2E-03					
	Exposure Medium Total							2E-03					
Medium Total								2E-03					
Receptor Total			Total Cancer Risks for Surface Soil and Subsurface Soil					2E-03					
Receptor Total			Total Cancer Risks for Subsurface Soil and Subsurface Soil					2E-03					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

LIST OF TABLES
RAGS PART D TABLE 9 - FORMER BUILDING 234
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.	Reasonable Maximum Exposures
9.1.RME	Current Adolescent Trespassers - Former Building 234
9.2.RME	Current Adult Trespassers - Former Building 234
9.3.RME	Current Lifelong Trespassers - Former Building 234
9.4.RME	Current Industrial Workers - Former Building 234
9.5.RME	Future Adolescent Trespassers - Former Building 234
9.6.RME	Future Adult Trespassers - Former Building 234
9.7.RME	Future Lifelong Trespassers - Former Building 234
9.8.RME	Future Industrial Workers - Former Building 234
9.9.RME	Current/Future Construction Workers - North Waterfront
9.10.RME	Hypothetical Child Residents - Former Building 234
9.11.RME	Hypothetical Adult Residents - Former Building 234
9.12.RME	Hypothetical Lifelong Residents - Former Building 234

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	3E-08	--	8E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-07	--	7E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Chrysene	3E-10	--	1E-09	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Arsenic	1E-06	--	7E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Beryllium	--	--	--	--	--	GS	0.0004	--	--	0.0004
			Cadmium	--	--	--	--	--	Kidney	0.007	--	0.003	0.010
			Chromium VI	5E-06	--	--	--	5E-06	None Specified	0.007	--	--	0.007
			Cobalt	--	--	--	--	--	Thyroid	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.006	--	--	0.006
			Chemical Total	6E-06	--	2E-06	--	8E-06		0.07	--	0.01	0.08
		Exposure Point Total						8E-06					0.08
	Exposure Medium Total							8E-06					0.08
	Air	Former Building 234	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Chrysene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Arsenic	--	2E-11	--	--	2E-11	Skin, CVS	--	0.000002	--	0.000002
			Beryllium	--	2E-12	--	--	2E-12	Respiratory	--	0.0000003	--	0.0000003
			Cadmium	--	7E-12	--	--	7E-12	Kidney, Respiratory	--	0.000001	--	0.000001
			Chromium VI	--	6E-09	--	--	6E-09	Respiratory	--	0.000002	--	0.000002
			Cobalt	--	5E-11	--	--	5E-11	Respiratory	--	0.000007	--	0.000007
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	6E-09	--	--	6E-09		--	0.00003	--	0.00003
		Exposure Point Total						6E-09					0.00003
	Exposure Medium Total							6E-09					0.00003
Medium Total								8E-06					0.08
Receptor Total							Receptor Risk Total	8E-06				Receptor HI Total	0.08

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	1E-08	--	7E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Chrysene	2E-10	--	8E-11	--	2E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	1E-08	--	4E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Arsenic	1E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.001	0.01
			Beryllium	--	--	--	--	--	GS	0.0003	--	--	0.0003
			Cadmium	--	--	--	--	--	Kidney	0.005	--	0.0004	0.005
			Chromium VI	2E-06	--	--	--	2E-06	None Specified	0.005	--	--	0.005
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.009	--	--	0.009
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.004	--	--	0.004
			Chemical Total	4E-06	--	3E-07	--	4E-06		0.05	--	0.002	0.05
		Exposure Point Total						4E-06					0.05
	Exposure Medium Total							4E-06					0.05
	Air	Former Building 234	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Chrysene	--	3E-15	--	--	3E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Arsenic	--	4E-11	--	--	4E-11	Skin, CVS	--	0.000002	--	0.000002
			Beryllium	--	4E-12	--	--	4E-12	Respiratory	--	0.0000003	--	0.0000003
			Cadmium	--	1E-11	--	--	1E-11	Kidney, Respiratory	--	0.000001	--	0.000001
			Chromium VI	--	4E-09	--	--	4E-09	Respiratory	--	0.000002	--	0.000002
			Cobalt	--	1E-10	--	--	1E-10	Respiratory	--	0.000007	--	0.000007
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	4E-09	--	--	4E-09		--	0.00003	--	0.00003
		Exposure Point Total						4E-09					0.00003
	Exposure Medium Total							4E-09					0.00003
Medium Total								4E-06					0.05
Receptor Total							Receptor Risk Total	4E-06				Receptor HI Total	0.05

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	4E-08	--	8E-08	--	1E-07					
			Benzo(a)pyrene	3E-07	--	7E-07	--	1E-06					
			Benzo(b)fluoranthene	6E-08	--	1E-07	--	2E-07					
			Chrysene	5E-10	--	1E-09	--	2E-09					
			Dibenzo(a,h)anthracene	8E-08	--	2E-07	--	2E-07					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-08	--	7E-08					
			Arsenic	2E-06	--	8E-07	--	3E-06					
			Beryllium	- -	--	- -	--	- -					
			Cadmium	- -	--	- -	--	- -					
			Chromium VI	7E-06	--	- -	--	7E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Lead	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	1E-05	--	2E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Former Building 234	Benzo(a)anthracene	--	5E-14	--	--	5E-14					
			Benzo(a)pyrene	--	5E-13	--	--	5E-13					
			Benzo(b)fluoranthene	--	7E-14	--	--	7E-14					
			Chrysene	--	6E-15	--	--	6E-15					
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13					
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14					
			Arsenic	--	7E-11	--	--	7E-11					
			Beryllium	--	7E-12	--	--	7E-12					
			Cadmium	--	2E-11	--	--	2E-11					
			Chromium VI	--	1E-08	--	--	1E-08					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	- -	--	--	- -					
			Lead	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	1E-08	--	--	1E-08					
		Exposure Point Total						1E-08					
	Exposure Medium Total							1E-08					
Medium Total								1E-05					
Receptor Total							Receptor Risk Total	1E-05					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	8E-08	--	7E-08	--	2E-07	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	6E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	1E-07	--	2E-07	NA	--	--	--	--
			Chrysene	1E-09	--	9E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	4E-08	--	9E-08	NA	--	--	--	--
			Arsenic	9E-06	--	2E-06	--	1E-05	Skin, CVS	0.06	--	0.01	0.07
			Beryllium	--	--	--	--	--	GS	0.002	--	--	0.002
			Cadmium	--	--	--	--	--	Kidney	0.03	--	0.003	0.03
			Chromium VI	1E-05	--	--	--	1E-05	None Specified	0.03	--	--	0.03
			Cobalt	--	--	--	--	--	Thyroid	0.07	--	--	0.07
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.02	--	--	0.02
			Chemical Total	3E-05	--	3E-06	--	3E-05		0.2	--	0.01	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3
	Air	Former Building 234	Benzo(a)anthracene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Chrysene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Arsenic	--	6E-10	--	--	6E-10	Skin, CVS	--	0.00002	--	0.00002
			Beryllium	--	6E-11	--	--	6E-11	Respiratory	--	0.000003	--	0.000003
			Cadmium	--	2E-10	--	--	2E-10	Kidney, Respiratory	--	0.00001	--	0.00001
			Chromium VI	--	5E-08	--	--	5E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.00007	--	0.00007
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Chemical Total	--	5E-08	--	--	5E-08		--	0.0003	--	0.0003
		Exposure Point Total						5E-08					0.0003
	Exposure Medium Total							5E-08					0.0003
Medium Total								3E-05					0.3
Receptor Total							Receptor Risk Total	3E-05				Receptor HI Total	0.3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	2E-08	--	7E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-07	--	6E-07	--	9E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Chrysene	3E-10	--	8E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Arsenic	9E-07	--	6E-07	--	2E-06	Skin, CVS	0.01	--	0.009	0.02
			Beryllium	--	--	--	--	--	GS	0.0005	--	--	0.0005
			Cadmium	--	--	--	--	--	Kidney	0.007	--	0.003	0.010
			Chromium VI	5E-06	--	--	--	5E-06	None Specified	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Thyroid	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.005	--	--	0.005
			Chemical Total	6E-06	--	2E-06	--	8E-06		0.06	--	0.01	0.07
		Exposure Point Total						8E-06					0.07
	Exposure Medium Total							8E-06					0.07
	Air	Former Building 234	Benzo(a)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Chrysene	--	3E-15	--	--	3E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Arsenic	--	2E-11	--	--	2E-11	Skin, CVS	--	0.000002	--	0.000002
			Beryllium	--	2E-12	--	--	2E-12	Respiratory	--	0.0000003	--	0.0000003
			Cadmium	--	7E-12	--	--	7E-12	Kidney, Respiratory	--	0.000001	--	0.000001
			Chromium VI	--	7E-09	--	--	7E-09	Respiratory	--	0.000002	--	0.000002
			Cobalt	--	5E-11	--	--	5E-11	Respiratory	--	0.000006	--	0.000006
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	7E-09	--	--	7E-09		--	0.00003	--	0.00003
		Exposure Point Total						7E-09					0.00003
	Exposure Medium Total							7E-09					0.00003
Medium Total								8E-06					0.07

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	5E-08	--	1E-07	--	2E-07	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.003	--	--	0.003
			Arsenic	1E-06	--	9E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Chromium VI	1E-06	--	- -	--	1E-06	None Specified	0.002	--	--	0.002
			Cobalt	- -	--	- -	--	- -	Thyroid	0.01	--	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.01	--	--	0.01
			Manganese	- -	--	- -	--	- -	CNS	0.007	--	--	0.007
			Chemical Total	3E-06	--	1E-06	--	4E-06		0.06	--	0.01	0.07
		Exposure Point Total						4E-06					0.07
	Exposure Medium Total							4E-06					0.07
	Air	Former Building 234	Benzo(a)pyrene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.000005	--	0.000005
			Arsenic	--	3E-11	--	--	3E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	2E-09	--	--	2E-09	Respiratory	--	0.0000005	--	0.0000005
			Cobalt	--	3E-11	--	--	3E-11	Respiratory	--	0.000004	--	0.000004
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.00003	--	0.00003
			Chemical Total	--	2E-09	--	--	2E-09		- -	0.00004	- -	0.00004
		Exposure Point Total						2E-09					0.00004
	Exposure Medium Total							2E-09					0.00004
Medium Total								4E-06					0.07

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	1E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Chrysene	1E-10	--	7E-11	--	2E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	1E-08	--	4E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	7E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Arsenic	1E-06	--	2E-07	--	1E-06	Skin, CVS	0.01	--	0.001	0.01
			Beryllium	- -	--	- -	--	- -	GS	0.0003	--	--	0.0003
			Cadmium	- -	--	- -	--	- -	Kidney	0.005	--	0.0004	0.005
			Chromium VI	2E-06	--	- -	--	2E-06	None Specified	0.006	--	--	0.006
			Cobalt	- -	--	- -	--	- -	Thyroid	0.01	--	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.008	--	--	0.008
			Lead	- -	--	- -	--	- -	NA	--	--	--	--
			Manganese	- -	--	- -	--	- -	CNS	0.004	--	--	0.004
			Chemical Total	4E-06	--	2E-07	--	4E-06		0.04	--	0.002	0.05
		Exposure Point Total						4E-06					0.05
	Exposure Medium Total							4E-06					0.05
	Air	Former Building 234	Benzo(a)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Chrysene	--	2E-15	--	--	2E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Arsenic	--	4E-11	--	--	4E-11	Skin, CVS	--	0.000002	--	0.000002
			Beryllium	--	5E-12	--	--	5E-12	Respiratory	--	0.0000003	--	0.0000003
			Cadmium	--	1E-11	--	--	1E-11	Kidney, Respiratory	--	0.000001	--	0.000001
			Chromium VI	--	4E-09	--	--	4E-09	Respiratory	--	0.000002	--	0.000002
			Cobalt	--	9E-11	--	--	9E-11	Respiratory	--	0.000006	--	0.000006
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Lead	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.00002	--	0.00002
			Chemical Total	--	5E-09	--	--	5E-09		- -	0.00003	- -	0.00003
		Exposure Point Total						5E-09					0.00003
	Exposure Medium Total							5E-09					0.00003
Medium Total								4E-06					0.05

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	2E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.002	--	--	0.002
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Chromium VI	7E-07	--	- -	--	7E-07	None Specified	0.002	--	--	0.002
			Cobalt	- -	--	- -	--	- -	Thyroid	0.008	--	--	0.008
			Iron	- -	--	- -	--	- -	GS	0.008	--	--	0.008
			Manganese	- -	--	- -	--	- -	CNS	0.005	--	--	0.005
			Chemical Total	3E-06	--	2E-07	--	3E-06		0.04	--	0.002	0.04
		Exposure Point Total						3E-06					0.04
	Exposure Medium Total							3E-06					0.04
	Air	Former Building 234	Benzo(a)pyrene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.000005	--	0.000005
			Arsenic	--	6E-11	--	--	6E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000005	--	0.0000005
			Cobalt	--	7E-11	--	--	7E-11	Respiratory	--	0.000004	--	0.000004
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.00003	--	0.00003
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.00004	- -	0.00004
		Exposure Point Total						1E-09					0.00004
	Exposure Medium Total							1E-09					0.00004
Medium Total								3E-06					0.04

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	4E-08	--	8E-08	--	1E-07					
			Benzo(a)pyrene	3E-07	--	7E-07	--	1E-06					
			Benzo(b)fluoranthene	5E-08	--	1E-07	--	2E-07					
			Chrysene	4E-10	--	9E-10	--	1E-09					
			Dibenzo(a,h)anthracene	8E-08	--	2E-07	--	2E-07					
			Indeno(1,2,3-cd)pyrene	2E-08	--	5E-08	--	7E-08					
			Arsenic	2E-06	--	8E-07	--	3E-06					
			Beryllium	--	--	--	--	--					
			Cadmium	--	--	--	--	--					
			Chromium VI	8E-06	--	--	--	8E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Lead	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	1E-05	--	2E-06	--	1E-05					
		Exposure Point Total						1E-05					
	Exposure Medium Total							1E-05					
	Air	Former Building 234	Benzo(a)anthracene	--	5E-14	--	--	5E-14					
			Benzo(a)pyrene	--	4E-13	--	--	4E-13					
			Benzo(b)fluoranthene	--	7E-14	--	--	7E-14					
			Chrysene	--	6E-15	--	--	6E-15					
			Dibenzo(a,h)anthracene	--	1E-13	--	--	1E-13					
			Indeno(1,2,3-cd)pyrene	--	3E-14	--	--	3E-14					
			Arsenic	--	6E-11	--	--	6E-11					
			Beryllium	--	7E-12	--	--	7E-12					
			Cadmium	--	2E-11	--	--	2E-11					
			Chromium VI	--	1E-08	--	--	1E-08					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	--	--	--	--					
			Lead	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	--	1E-08	--	--	1E-08					
		Exposure Point Total						1E-08					
	Exposure Medium Total							1E-08					
Medium Total								1E-05					

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	7E-08	--	1E-07	--	2E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	3E-06	--	1E-06	--	4E-06					
			Chromium VI	2E-06	--	- -	--	2E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	5E-06	--	1E-06	--	7E-06					
		Exposure Point Total						7E-06					
	Exposure Medium Total							7E-06					
	Air	Former Building 234	Benzo(a)pyrene	--	9E-14	--	--	9E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	9E-11	--	--	9E-11					
			Chromium VI	--	3E-09	--	--	3E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	3E-09	--	--	3E-09					
		Exposure Point Total						3E-09					
	Exposure Medium Total							3E-09					
Medium Total								7E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	8E-08	--	7E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	7E-07	--	6E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	9E-08	--	2E-07	NA	--	--	--	--
			Chrysene	9E-10	--	8E-10	--	2E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-08	--	4E-08	--	9E-08	NA	--	--	--	--
			Arsenic	9E-06	--	2E-06	--	1E-05	Skin, CVS	0.05	--	0.01	0.06
			Beryllium	--	--	--	--	--	GS	0.002	--	--	0.002
			Cadmium	--	--	--	--	--	Kidney	0.03	--	0.003	0.03
			Chromium VI	2E-05	--	--	--	2E-05	None Specified	0.03	--	--	0.03
			Cobalt	--	--	--	--	--	Thyroid	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.02	--	--	0.02
			Chemical Total	3E-05	--	3E-06	--	3E-05		0.2	--	0.01	0.2
		Exposure Point Total						3E-05					0.2
	Exposure Medium Total							3E-05					0.2
	Air	Former Building 234	Benzo(a)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Chrysene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Arsenic	--	5E-10	--	--	5E-10	Skin, CVS	--	0.00002	--	0.00002
			Beryllium	--	6E-11	--	--	6E-11	Respiratory	--	0.000004	--	0.000004
			Cadmium	--	2E-10	--	--	2E-10	Kidney, Respiratory	--	0.00001	--	0.00001
			Chromium VI	--	6E-08	--	--	6E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.00006	--	0.00006
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Chemical Total	--	6E-08	--	--	6E-08		--	0.0003	--	0.0003
		Exposure Point Total						6E-08					0.0003
	Exposure Medium Total							6E-08					0.0003
Medium Total								3E-05					0.2
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	1E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.01	--	--	0.01
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.08	--	0.02	0.09
			Chromium VI	4E-06	--	--	--	4E-06	None Specified	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Thyroid	0.04	--	--	0.04
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Manganese	--	--	--	--	--	CNS	0.03	--	--	0.03
			Chemical Total	2E-05	--	3E-06	--	2E-05		0.2	--	0.02	0.2
		Exposure Point Total						2E-05					0.2
	Exposure Medium Total							2E-05					0.2

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Former Building 234	Benzo(a)pyrene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.00005	--	0.00005
			Arsenic	--	7E-10	--	--	7E-10	Skin, CVS	--	0.00003	--	0.00003
			Chromium VI	--	2E-08	--	--	2E-08	Respiratory	--	0.000005	--	0.000005
			Cobalt	--	9E-10	--	--	9E-10	Respiratory	--	0.00005	--	0.00005
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.0003	--	0.0003
			Chemical Total	--	2E-08	--	--	2E-08		- -	0.0004	- -	0.0004
		Exposure Point Total						2E-08					0.0004
	Exposure Medium Total							2E-08					0.0004
Medium Total								2E-05					0.2
Groundwater	Groundwater	Former Building 234	cis-1,2-Dichloroethene	- -	--	- -	--	- -	Kidney	0.06	--	0.0007	0.06
			Trichloroethene	6E-07	--	1E-08	--	6E-07	ne System, Developr	0.08	--	0.001	0.08
			Vinyl Chloride	7E-07	--	3E-09	--	7E-07	Liver	0.0009	--	0.000004	0.0009
			Aluminum	- -	--	- -	--	- -	CNS	0.0005	--	0.0000002	0.0005
			Arsenic	7E-06	--	3E-09	--	7E-06	Skin, CVS	0.04	--	0.00002	0.04
			Cobalt	- -	--	- -	--	- -	Thyroid	0.06	--	0.00001	0.06
			Iron	- -	--	- -	--	- -	GS	0.006	--	0.000003	0.006
			Manganese	- -	--	- -	--	- -	CNS	0.2	--	0.002	0.2
			Chemical Total	8E-06	--	2E-08	--	8E-06		0.5	--	0.004	0.5
		Exposure Point Total						8E-06					0.5
	Exposure Medium Total							8E-06					0.5
Medium Total								8E-06					0.5
Receptor Total			Total Cancer Risk for Surface Soil and Groundwater					4E-05	Total Hazard Index for Surface Soil and Groundwater				0.7
Receptor Total			Total Cancer Risk for Subsurface Soil and Groundwater					3E-05	Total Hazard Index for Subsurface Soil and Groundwater				0.7

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	5E-09	--	2E-09	--	7E-09	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	8E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Chrysene	6E-11	--	2E-11	--	9E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	4E-09	--	2E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Arsenic	6E-07	--	5E-08	--	6E-07	Skin, CVS	0.09	--	0.008	0.1
			Beryllium	--	--	--	--	--	GS	0.001	--	--	0.001
			Cadmium	--	--	--	--	--	Kidney	0.04	--	0.003	0.05
			Chromium VI	1E-06	--	--	--	1E-06	None Specified	0.008	--	--	0.008
			Cobalt	--	--	--	--	--	Thyroid	0.010	--	--	0.010
			Iron	--	--	--	--	--	GS	0.07	--	--	0.07
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.03	--	--	0.03
			Chemical Total	2E-06	--	8E-08	--	2E-06		0.3	--	0.01	0.3
		Exposure Point Total						2E-06					0.3
	Exposure Medium Total							2E-06					0.3
	Air	Former Building 234	Benzo(a)anthracene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	4E-10	--	--	4E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Chrysene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	9E-11	--	--	9E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Arsenic	--	9E-08	--	--	9E-08	Skin, CVS	--	0.09	--	0.09
			Beryllium	--	1E-08	--	--	1E-08	Respiratory	--	0.01	--	0.01
			Cadmium	--	3E-08	--	--	3E-08	Kidney, Respiratory	--	0.06	--	0.06
			Chromium VI	--	9E-06	--	--	9E-06	Respiratory	--	0.08	--	0.08
			Cobalt	--	2E-07	--	--	2E-07	Respiratory	--	0.08	--	0.08
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.8	--	0.8
			Chemical Total	--	1E-05	--	--	1E-05		--	1	--	1
		Exposure Point Total						1E-05					1
	Exposure Medium Total							1E-05					1
Medium Total								1E-05					1
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	1E-08	--	4E-09	--	1E-08	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	8E-07	--	8E-08	--	9E-07	Skin, CVS	0.1	--	0.01	0.1
			Chromium VI	3E-07	--	--	--	3E-07	None Specified	0.002	--	--	0.002
			Cobalt	--	--	--	--	--	Thyroid	0.007	--	--	0.007
			Iron	--	--	--	--	--	GS	0.08	--	--	0.08
			Manganese	--	--	--	--	--	CNS	0.05	--	--	0.05
			Chemical Total	1E-06	--	8E-08	--	1E-06		0.3	--	0.01	0.3
		Exposure Point Total						1E-06					0.3
	Exposure Medium Total							1E-06					0.3

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Former Building 234	Benzo(a)pyrene	--	7E-11	--	--	7E-11	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.2	--	0.2
			Arsenic	--	1E-07	--	--	1E-07	Skin, CVS	--	0.1	--	0.1
			Chromium VI	--	3E-06	--	--	3E-06	Respiratory	--	0.02	--	0.02
			Cobalt	--	1E-07	--	--	1E-07	Respiratory	--	0.06	--	0.06
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	1	--	1
			Chemical Total	--	3E-06	--	--	3E-06		--	2	--	2
		Exposure Point Total						3E-06					2
	Exposure Medium Total							3E-06					2
Medium Total								4E-06					2
Groundwater	Groundwater	Former Building 234	cis-1,2-Dichloroethene	--	--	--	--	--	Kidney	0.0002	--	0.0010	0.001
			Trichloroethene	7E-10	--	4E-09	--	5E-09	Liver, Kidney	0.002	--	0.01	0.02
			Vinyl Chloride	7E-10	--	2E-09	--	3E-09	Liver	0.0002	--	0.0007	0.0009
			Aluminum	--	--	--	--	--	CNS	0.00001	--	0.000007	0.00002
			Arsenic	7E-09	--	4E-09	--	1E-08	Skin, CVS	0.001	--	0.0006	0.002
			Cobalt	--	--	--	--	--	Thyroid	0.0001	--	0.00003	0.0002
			Iron	--	--	--	--	--	GS	0.0002	--	0.00009	0.0003
			Manganese	--	--	--	--	--	CNS	0.006	--	0.07	0.08
			Chemical Total	9E-09	--	1E-08	--	2E-08		0.009	--	0.09	0.10
		Exposure Point Total						2E-08					0.10
	Exposure Medium Total							2E-08					0.10
	Air	Former Building 234	cis-1,2-Dichloroethene	--	--	--	--	--	NA	--	--	--	--
			Trichloroethene	--	9E-10	--	--	9E-10	Liver, Kidney	--	0.00003	--	0.00003
			Vinyl Chloride	--	9E-11	--	--	9E-11	Liver	--	0.00002	--	0.00002
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	Skin, CVS	--	--	--	--
			Cobalt	--	--	--	--	--	Respiratory	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	1E-09	--	--	1E-09		--	0.00005	--	0.00005
		Exposure Point Total						1E-09					0.00005
	Exposure Medium Total							1E-09					0.00005
Medium Total								2E-08					0.10
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					1E-05	Total Hazard Indices for Surface Soil and Groundwater				1
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					4E-06	Total Hazard Indices for Subsurface Soil and Groundwater				2

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organ HIs - Surface Soil and Groundwater

Total CNS HI	0.9
Total CVS HI	0.2
Total GS HI	0.07
Total Kidney HI	0.1
Total Liver HI	0.02
Total Respiratory HI	0.2
Total None Specified HI	0.008
Total Skin HI	0.2
Total Thyroid HI	0.01

Target Organ HIs - Subsurface Soil and Groundwater

Total CNS HI	2
Total CVS HI	0.3
Total GS HI	0.08
Total Kidney HI	0.02
Total Liver HI	0.02
Total Respiratory HI	0.08
Total None Specified HI	0.002
Total Skin HI	0.3
Total Thyroid HI	0.008

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	1E-06	--	5E-07	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	1E-05	--	4E-06	--	2E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-06	--	7E-07	--	3E-06	NA	--	--	--	--
			Chrysene	2E-08	--	6E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-06	--	1E-06	--	4E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Arsenic	3E-05	--	2E-06	--	3E-05	Skin, CVS	0.7	--	0.06	0.8
			Beryllium	--	--	--	--	--	GS	0.02	--	--	0.02
			Cadmium	--	--	--	--	--	Kidney	0.3	--	0.02	0.4
			Chromium VI	3E-04	--	--	--	3E-04	None Specified	0.4	--	--	0.4
			Cobalt	--	--	--	--	--	Thyroid	0.8	--	--	0.8
			Iron	--	--	--	--	--	GS	0.5	--	--	0.5
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.3	--	--	0.3
			Chemical Total	3E-04	--	9E-06	--	3E-04		3	--	0.08	3
		Exposure Point Total						3E-04					3
	Exposure Medium Total							3E-04					3
	Air	Former Building 234	Benzo(a)anthracene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Arsenic	--	5E-10	--	--	5E-10	Skin, CVS	--	0.00010	--	0.00010
			Beryllium	--	6E-11	--	--	6E-11	Respiratory	--	0.00002	--	0.00002
			Cadmium	--	2E-10	--	--	2E-10	Kidney, Respiratory	--	0.00006	--	0.00006
			Chromium VI	--	3E-07	--	--	3E-07	Respiratory	--	0.00008	--	0.00008
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0008	--	0.0008
			Chemical Total	--	3E-07	--	--	3E-07		--	0.001	--	0.001
		Exposure Point Total						3E-07					0.001
	Exposure Medium Total							3E-07					0.001
Medium Total								3E-04					3
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	2E-06	--	9E-07	--	3E-06	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.2	--	--	0.2
			Arsenic	4E-05	--	3E-06	--	4E-05	Skin, CVS	1.0	--	0.08	1
			Chromium VI	7E-05	--	--	--	7E-05	None Specified	0.1	--	--	0.1
			Cobalt	--	--	--	--	--	Thyroid	0.6	--	--	0.6
			Iron	--	--	--	--	--	GS	0.6	--	--	0.6
			Manganese	--	--	--	--	--	CNS	0.4	--	--	0.4
			Chemical Total	1E-04	--	4E-06	--	1E-04		3	--	0.08	3
		Exposure Point Total						1E-04					3
	Exposure Medium Total							1E-04					3

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Former Building 234	Benzo(a)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	7E-10	--	--	7E-10	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	9E-08	--	--	9E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	9E-10	--	--	9E-10	Respiratory	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.001	--	0.001
			Chemical Total	--	9E-08	--	--	9E-08		--	0.002	--	0.002
		Exposure Point Total						9E-08					0.002
	Exposure Medium Total							9E-08					0.002
Medium Total								1E-04					3
Groundwater	Groundwater	Former Building 234	cis-1,2-Dichloroethene	--	--	--	--	--	Kidney	0.4	--	0.05	0.5
			Trichloroethene (Mutagenic)	1E-06	--	2E-07	--	1E-06	NA	--	--	--	--
			Trichloroethene (Nonmutagenic	8E-07	--	1E-07	--	9E-07	ne System, Developm	0.5	--	0.08	0.6
			Vinyl Chloride	1E-05	--	7E-07	--	1E-05	Liver	0.006	--	0.0003	0.006
			Aluminum	--	--	--	--	--	CNS	0.003	--	0.00002	0.003
			Arsenic	1E-05	--	7E-08	--	1E-05	Skin, CVS	0.3	--	0.002	0.3
			Cobalt	--	--	--	--	--	Thyroid	0.4	--	0.0010	0.4
			Iron	--	--	--	--	--	GS	0.04	--	0.0003	0.04
			Manganese	--	--	--	--	--	CNS	1	--	0.2	2
			Chemical Total	3E-05	--	1E-06	--	3E-05		3	--	0.4	3
		Exposure Point Total						3E-05					3
	Exposure Medium Total							3E-05					3
	Air	Former Building 234	cis-1,2-Dichloroethene	--	--	--	--	--	NA	--	--	--	--
			Trichloroethene (Mutagenic)	--	9E-07	--	--	9E-07	NA	--	--	--	--
			Trichloroethene (Nonmutagenic	--	5E-07	--	--	5E-07	Liver, Kidney	--	0.9	--	0.9
			Vinyl Chloride	--	6E-07	--	--	6E-07	Liver	--	0.001	--	0.001
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	Skin, CVS	--	--	--	--
			Cobalt	--	--	--	--	--	Respiratory	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	2E-06	--	--	2E-06		--	0.9	--	0.9
		Exposure Point Total						2E-06					0.9
	Exposure Medium Total							2E-06					0.9
Medium Total								3E-05					4
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					3E-04	Total Hazard Indices for Surface Soil and Groundwater				7
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					1E-04	Total Hazard Indices for Subsurface Soil and Groundwater				7

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organ HIs - Surface Soil and Groundwater

Total CNS HI	2
Total CVS HI	1
Total Developmental HI	0.6
Total GS HI	0.6
Total Kidney HI	2
Total Liver HI	0.9
Total Respiratory HI	0.0004
Total None Specified HI	0.4

Target Organ HIs - Subsurface Soil and Groundwater

Total CNS HI	2
Total CVS HI	1
Total Developmental HI	0.6
Total GS HI	1
Total Kidney HI	1
Total Liver HI	0.9
Total Respiratory HI	0.0002
Total None Specified HI	0.1

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	9E-07	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Chrysene	2E-09	--	1E-09	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			Arsenic	1E-05	--	1E-06	--	1E-05	Skin, CVS	0.07	--	0.009	0.08
			Beryllium	--	--	--	--	--	GS	0.002	--	--	0.002
			Cadmium	--	--	--	--	--	Kidney	0.04	--	0.003	0.04
			Chromium VI	4E-05	--	--	--	4E-05	None Specified	0.04	--	--	0.04
			Cobalt	--	--	--	--	--	Thyroid	0.08	--	--	0.08
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.03	--	--	0.03
			Chemical Total	5E-05	--	3E-06	--	6E-05		0.3	--	0.01	0.3
		Exposure Point Total						6E-05					0.3
	Exposure Medium Total							6E-05					0.3
	Air	Former Building 234	Benzo(a)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Chrysene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-12	--	--	4E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Arsenic	--	2E-09	--	--	2E-09	Skin, CVS	--	0.00010	--	0.00010
			Beryllium	--	3E-10	--	--	3E-10	Respiratory	--	0.00002	--	0.00002
			Cadmium	--	7E-10	--	--	7E-10	Kidney, Respiratory	--	0.00006	--	0.00006
			Chromium VI	--	4E-07	--	--	4E-07	Respiratory	--	0.00008	--	0.00008
			Cobalt	--	5E-09	--	--	5E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Lead	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0008	--	0.0008
			Chemical Total	--	4E-07	--	--	4E-07		--	0.001	--	0.001
		Exposure Point Total						4E-07					0.001
	Exposure Medium Total							4E-07					0.001
Medium Total								6E-05					0.3
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	3E-07	--	2E-07	--	5E-07	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	2E-05	--	2E-06	--	2E-05	Skin, CVS	0.1	--	0.01	0.1
			Chromium VI	1E-05	--	--	--	1E-05	None Specified	0.01	--	--	0.01
			Cobalt	--	--	--	--	--	Thyroid	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Manganese	--	--	--	--	--	CNS	0.04	--	--	0.04
			Chemical Total	3E-05	--	2E-06	--	3E-05		0.3	--	0.01	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Former Building 234	Benzo(a)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.0002	--	0.0002
			Arsenic	--	3E-09	--	--	3E-09	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	1E-07	--	--	1E-07	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	4E-09	--	--	4E-09	Respiratory	--	0.0002	--	0.0002
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.001	--	0.001
			Chemical Total	--	1E-07	--	--	1E-07		--	0.002	--	0.002
		Exposure Point Total						1E-07					0.002
	Exposure Medium Total							1E-07					0.002
Medium Total								3E-05					0.3
Groundwater	Groundwater	Former Building 234	cis-1,2-Dichloroethene	--	--	--	--	--	Kidney	0.2	--	0.02	0.2
			Trichloroethene (Mutagenic)	6E-07	--	1E-07	--	7E-07	NA	--	--	--	--
			Trichloroethene (Nonmutagenic	1E-06	--	2E-07	--	2E-06	Immune System, Developmental	0.2	--	0.04	0.2
			Vinyl Chloride	2E-06	--	9E-08	--	2E-06	Liver	0.002	--	0.0001	0.003
			Aluminum	--	--	--	--	--	CNS	0.001	--	0.000008	0.001
			Arsenic	2E-05	--	1E-07	--	2E-05	Skin, CVS	0.1	--	0.0006	0.1
			Cobalt	--	--	--	--	--	Thyroid	0.2	--	0.0003	0.2
			Iron	--	--	--	--	--	GS	0.02	--	0.00009	0.02
			Manganese	--	--	--	--	--	CNS	0.6	--	0.08	0.7
			Chemical Total	2E-05	--	5E-07	--	2E-05		1	--	0.1	1
		Exposure Point Total						2E-05					1
	Exposure Medium Total							2E-05					1
	Air	Former Building 234	cis-1,2-Dichloroethene	--	--	--	--	--	NA	--	--	--	--
			Trichloroethene (Mutagenic)	--	1E-06	--	--	1E-06	NA	--	--	--	--
			Trichloroethene (Nonmutagenic	--	2E-06	--	--	2E-06	Liver, Kidney	--	0.9	--	0.9
			Vinyl Chloride	--	2E-07	--	--	2E-07	Liver	--	0.001	--	0.001
			Aluminum	--	--	--	--	--	CNS	--	--	--	--
			Arsenic	--	--	--	--	--	Skin, CVS	--	--	--	--
			Cobalt	--	--	--	--	--	Respiratory	--	--	--	--
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	--	--	--
			Chemical Total	--	3E-06	--	--	3E-06		--	0.9	--	0.9
		Exposure Point Total						3E-06					0.9
	Exposure Medium Total							3E-06					0.9
Medium Total								3E-05					2
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					8E-05	Total Hazard Indices for Surface Soil and Groundwater				3
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					6E-05	Total Hazard Indices for Subsurface Soil and Groundwater				3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organ His - Surface Soil and Groundwater

Total CNS HI	0.7
Total CVS HI	0.2
Total Developmental HI	0.2
Total GS HI	0.08
Total Kidney HI	1
Total Liver HI	0.9
Total Respiratory HI	0.0004
Total None Specified HI	0.04
Total Skin HI	0.2
Total Thyroid HI	0.2

Target Organ His - Subsurface Soil and Groundwater

Total CNS HI	0.7
Total CVS HI	0.2
Total Developmental HI	0.2
Total GS HI	0.1
Total Kidney HI	1
Total Liver HI	0.9
Total Respiratory HI	0.0002
Total None Specified HI	0.01
Total Skin HI	0.2
Total Thyroid HI	0.2

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Former Building 234	Benzo(a)anthracene	1E-06	--	6E-07	--	2E-06					
			Benzo(a)pyrene	1E-05	--	5E-06	--	2E-05					
			Benzo(b)fluoranthene	2E-06	--	8E-07	--	3E-06					
			Chrysene	2E-08	--	7E-09	--	2E-08					
			Dibenzo(a,h)anthracene	3E-06	--	1E-06	--	4E-06					
			Indeno(1,2,3-cd)pyrene	9E-07	--	3E-07	--	1E-06					
			Arsenic	4E-05	--	4E-06	--	4E-05					
			Beryllium	--	--	--	--	--					
			Cadmium	--	--	--	--	--					
			Chromium VI	3E-04	--	--	--	3E-04					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Lead	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	4E-04	--	1E-05	--	4E-04					
		Exposure Point Total						4E-04					
	Exposure Medium Total							4E-04					
	Air	Former Building 234	Benzo(a)anthracene	--	3E-12	--	--	3E-12					
			Benzo(a)pyrene	--	3E-11	--	--	3E-11					
			Benzo(b)fluoranthene	--	4E-12	--	--	4E-12					
			Chrysene	--	4E-13	--	--	4E-13					
			Dibenzo(a,h)anthracene	--	7E-12	--	--	7E-12					
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12					
			Arsenic	--	3E-09	--	--	3E-09					
			Beryllium	--	3E-10	--	--	3E-10					
			Cadmium	--	9E-10	--	--	9E-10					
			Chromium VI	--	7E-07	--	--	7E-07					
			Cobalt	--	6E-09	--	--	6E-09					
			Iron	--	--	--	--	--					
			Lead	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	--	7E-07	--	--	7E-07					
		Exposure Point Total						7E-07					
	Exposure Medium Total							7E-07					
Medium Total								4E-04					
Subsurface Soil	Subsurface Soil	Former Building 234	Benzo(a)pyrene	3E-06	--	1E-06	--	4E-06					
			Aluminum	--	--	--	--	--					
			Arsenic	5E-05	--	5E-06	--	6E-05					
			Chromium VI	9E-05	--	--	--	9E-05					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	1E-04	--	6E-06	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Air	Former Building 234	Benzo(a)pyrene	--	6E-12	--	--	6E-12					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	4E-09	--	--	4E-09					
			Chromium VI	--	2E-07	--	--	2E-07					
			Cobalt	--	4E-09	--	--	4E-09					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	2E-07	--	--	2E-07					
		Exposure Point Total						2E-07					
	Exposure Medium Total							2E-07					
Medium Total								1E-04					
Groundwater	Groundwater	Former Building 234	cis-1,2-Dichloroethene	- -	--	- -	--	- -					
			Trichloroethene (Mutagenic)	2E-06	--	3E-07	--	2E-06					
			Trichloroethene (Nonmutagenic	2E-06	--	4E-07	--	2E-06					
			Vinyl Chloride	2E-05	--	8E-07	--	2E-05					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	3E-05	--	2E-07	--	3E-05					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	5E-05	--	2E-06	--	5E-05					
		Exposure Point Total						5E-05					
	Exposure Medium Total							5E-05					
	Air	Former Building 234	cis-1,2-Dichloroethene	--	- -	--	--	- -					
			Trichloroethene (Mutagenic)	--	2E-06	--	--	2E-06					
			Trichloroethene (Nonmutagenic	--	2E-06	--	--	2E-06					
			Vinyl Chloride	--	8E-07	--	--	8E-07					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	- -	--	--	- -					
			Cobalt	--	- -	--	--	- -					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	5E-06	--	--	5E-06					
		Exposure Point Total						5E-06					
	Exposure Medium Total							5E-06					
Medium Total								6E-05					
Receptor Total			Total Cancer Risks for Surface Soil and Groundwater					4E-04					
Receptor Total			Total Cancer Risks for Subsurface Soil and Groundwater					2E-04					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

LIST OF TABLES
RAGS PART D TABLE 9 - SOUTH WATERFRONT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.	Reasonable Maximum Exposures
9.1.RME	Future Adolescent Trespassers - South Waterfront
9.2.RME	Future Adult Trespassers - South Waterfront
9.3.RME	Future Lifelong Trespassers - South Waterfront
9.4.RME	Future Industrial Workers - South Waterfront
9.5.RME	Current/Future Construction Workers - North Waterfront
9.6.RME	Hypothetical Child Residents - South Waterfront
9.7.RME	Hypothetical Adult Residents - South Waterfront
9.8.RME	Hypothetical Lifelong Residents - South Waterfront

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	South Waterfront	Aluminum	- -	--	- -	--	- -	CNS	0.004	--	--	0.004
			Arsenic	1E-06	--	9E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Chromium VI	1E-06	--	- -	--	1E-06	None Specified	0.002	--	--	0.002
			Cobalt	- -	--	- -	--	- -	Thyroid	0.02	--	--	0.02
			Iron	- -	--	- -	--	- -	GS	0.02	--	--	0.02
			Chemical Total	2E-06	--	9E-07	--	3E-06		0.06	--	0.01	0.08
		Exposure Point Total						3E-06					0.08
	Exposure Medium Total							3E-06					0.08
	Air	South Waterfront	Aluminum	--	- -	--	--	- -	CNS	--	0.000006	--	0.000006
			Arsenic	--	3E-11	--	--	3E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000004	--	0.0000004
			Cobalt	--	6E-11	--	--	6E-11	Respiratory	--	0.000008	--	0.000008
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.00002	- -	0.00002
		Exposure Point Total						1E-09					0.00002
	Exposure Medium Total							1E-09					0.00002
Medium Total								3E-06					0.08
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	0.08

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	- -	--	- -	--	- -	CNS	0.003	--	--	0.003
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Chromium VI	5E-07	--	- -	--	5E-07	None Specified	0.001	--	--	0.001
			Cobalt	- -	--	- -	--	- -	Thyroid	0.01	--	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.01	--	--	0.01
			Chemical Total	2E-06	--	2E-07	--	3E-06		0.05	--	0.002	0.05
		Exposure Point Total						3E-06					0.05
	Exposure Medium Total							3E-06					0.05
	Air	South Waterfront	Aluminum	--	- -	--	--	- -	CNS	--	0.000006	--	0.000006
			Arsenic	--	6E-11	--	--	6E-11	Skin, CVS	--	0.000003	--	0.000003
			Chromium VI	--	9E-10	--	--	9E-10	Respiratory	--	0.0000004	--	0.0000004
			Cobalt	--	1E-10	--	--	1E-10	Respiratory	--	0.000008	--	0.000008
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.00002	- -	0.00002
		Exposure Point Total						1E-09					0.00002
	Exposure Medium Total							1E-09					0.00002
Medium Total								3E-06					0.05
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	0.05

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	- -	--	- -	--	- -					
			Arsenic	3E-06	--	1E-06	--	4E-06					
			Chromium VI	2E-06	--	- -	--	2E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	5E-06	--	1E-06	--	6E-06					
		Exposure Point Total						6E-06					
	Exposure Medium Total							6E-06					
	Air	South Waterfront	Aluminum	--	- -	--	--	- -					
			Arsenic	--	9E-11	--	--	9E-11					
			Chromium VI	--	2E-09	--	--	2E-09					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	3E-09	--	--	3E-09					
		Exposure Point Total						3E-09					
	Exposure Medium Total							3E-09					
Medium Total								6E-06					
Receptor Total							Receptor Risk Total	6E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.08	--	0.02	0.09
			Chromium VI	3E-06	--	--	--	3E-06	None Specified	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Thyroid	0.08	--	--	0.08
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Chemical Total	2E-05	--	2E-06	--	2E-05		0.2	--	0.02	0.3
		Exposure Point Total						2E-05					0.3
	Exposure Medium Total							2E-05					0.3
	Air	South Waterfront	Aluminum	--	--	--	--	--	CNS	--	0.00007	--	0.00007
			Arsenic	--	8E-10	--	--	8E-10	Skin, CVS	--	0.00003	--	0.00003
			Chromium VI	--	1E-08	--	--	1E-08	Respiratory	--	0.000004	--	0.000004
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.00008	--	0.00008
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0002	--	0.0002
		Exposure Point Total						1E-08					0.0002
	Exposure Medium Total							1E-08					0.0002
Medium Total								2E-05					0.3
Receptor Total							Receptor Risk Total	2E-05				Receptor HI Total	0.3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	- -	--	- -	--	- -	CNS	0.03	--	--	0.03
			Arsenic	9E-07	--	8E-08	--	9E-07	Skin, CVS	0.1	--	0.01	0.1
			Chromium VI	2E-07	--	- -	--	2E-07	None Specified	0.002	--	--	0.002
			Cobalt	- -	--	- -	--	- -	Thyroid	0.01	--	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.1	--	--	0.1
			Chemical Total	1E-06	--	8E-08	--	1E-06		0.3	--	0.01	0.3
		Exposure Point Total						1E-06					0.3
	Exposure Medium Total							1E-06					0.3
	Air	South Waterfront	Aluminum	--	- -	--	--	- -	CNS	--	0.3	--	0.3
			Arsenic	--	1E-07	--	--	1E-07	Skin, CVS	--	0.1	--	0.1
			Chromium VI	--	2E-06	--	--	2E-06	Respiratory	--	0.02	--	0.02
			Cobalt	--	3E-07	--	--	3E-07	Respiratory	--	0.1	--	0.1
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	2E-06	--	--	2E-06		- -	0.5	- -	0.5
		Exposure Point Total						2E-06					0.5
	Exposure Medium Total							2E-06					0.5
Medium Total								3E-06					0.8
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	0.8

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	--	--	--	--	--	CNS	0.2	--	--	0.2
			Arsenic	4E-05	--	3E-06	--	4E-05	Skin, CVS	1	--	0.08	1
			Chromium VI	6E-05	--	--	--	6E-05	None Specified	0.08	--	--	0.08
			Cobalt	--	--	--	--	--	Thyroid	1	--	--	1
			Iron	--	--	--	--	--	GS	0.8	--	--	0.8
			Chemical Total	9E-05	--	3E-06	--	1E-04		3	--	0.08	3
		Exposure Point Total						1E-04					3
	Exposure Medium Total							1E-04					3
	Air	South Waterfront	Aluminum	--	--	--	--	--	CNS	--	0.0003	--	0.0003
			Arsenic	--	8E-10	--	--	8E-10	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	6E-08	--	--	6E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Chemical Total	--	7E-08	--	--	7E-08		--	0.0008	--	0.0008
		Exposure Point Total						7E-08					0.0008
	Exposure Medium Total							7E-08					0.0008
Medium Total								1E-04					3
Receptor Total							Receptor Risk Total	1E-04				Receptor HI Total	3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Total CNS HI	0.2
Total CVS HI	1
Total GS HI	0.8
Total Respiratory HI	0.0004
Total None Specified HI	0.08
Total Skin HI	1
Total Thyroid HI	1

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	- -	--	- -	--	- -	CNS	0.02	--	--	0.02
			Arsenic	2E-05	--	2E-06	--	2E-05	Skin, CVS	0.1	--	0.01	0.1
			Chromium VI	8E-06	--	- -	--	8E-06	None Specified	0.009	--	--	0.009
			Cobalt	- -	--	- -	--	- -	Thyroid	0.1	--	--	0.1
			Iron	- -	--	- -	--	- -	GS	0.08	--	--	0.08
			Chemical Total	2E-05	--	2E-06	--	3E-05		0.3	--	0.01	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3
	Air	South Waterfront	Aluminum	--	- -	--	--	- -	CNS	--	0.0003	--	0.0003
			Arsenic	--	3E-09	--	--	3E-09	Skin, CVS	--	0.0001	--	0.0001
			Chromium VI	--	9E-08	--	--	9E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	6E-09	--	--	6E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Chemical Total	--	1E-07	--	--	1E-07		- -	0.0008	- -	0.0008
		Exposure Point Total						1E-07					0.0008
	Exposure Medium Total							1E-07					0.0008
Medium Total								3E-05					0.3
Receptor Total							Receptor Risk Total	3E-05				Receptor HI Total	0.3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Hypothetical
Receptor Population: Residents
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	South Waterfront	Aluminum	- -	--	- -	--	- -					
			Arsenic	6E-05	--	5E-06	--	6E-05					
			Chromium VI	6E-05	--	- -	--	6E-05					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Chemical Total	1E-04	--	5E-06	--	1E-04					
		Exposure Point Total						1E-04					
	Exposure Medium Total							1E-04					
	Air	South Waterfront	Aluminum	--	- -	--	--	- -					
			Arsenic	--	4E-09	--	--	4E-09					
			Chromium VI	--	2E-07	--	--	2E-07					
			Cobalt	--	8E-09	--	--	8E-09					
			Iron	--	- -	--	--	- -					
			Chemical Total	--	2E-07	--	--	2E-07					
		Exposure Point Total						2E-07					
	Exposure Medium Total							2E-07					
Medium Total								1E-04					
Receptor Total							Receptor Risk Total	1E-04					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

LIST OF TABLES
RAGS PART D TABLE 9 - PCB REMOVAL AREA
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

Table No.	Reasonable Maximum Exposures
9.1.RME	Current Adolescent Trespassers - PCB Removal Area
9.2.RME	Current Adult Trespassers - PCB Removal Area
9.3.RME	Current Lifelong Trespassers - PCB Removal Area
9.4.RME	Current Industrial Workers - PCB Removal Area
9.5.RME	Future Adolescent Trespassers - PCB Removal Area
9.6.RME	Future Adult Trespassers - PCB Removal Area
9.7.RME	Future Lifelong Trespassers - PCB Removal Area
9.8.RME	Future Industrial Workers - PCB Removal Area
9.9.RME	Current/Future Construction Workers - North Waterfront
9.10.RME	Hypothetical Child Residents - PCB Removal Area
9.11.RME	Hypothetical Adult Residents - PCB Removal Area
9.12.RME	Hypothetical Lifelong Residents - PCB Removal Area

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCb Removal Area	Benzo(a)anthracene	1E-08	--	3E-08	--	4E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	3E-07	--	4E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0000006	--	0.000002	0.000002
			Benzo(k)fluoranthene	7E-10	--	2E-09	--	3E-09	NA	--	--	--	--
			Chrysene	1E-10	--	3E-10	--	4E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-08	--	4E-08	--	6E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	6E-09	--	2E-08	--	2E-08	NA	--	--	--	--
			Total Aroclors	2E-09	--	6E-09	--	7E-09	NA	--	--	--	--
			Arsenic	1E-06	--	8E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Cobalt	--	--	--	--	--	Thyroid	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese	--	--	--	--	--	CNS	0.007	--	--	0.007
			Chemical Total	1E-06	--	1E-06	--	3E-06		0.06	--	0.01	0.07
		Exposure Point Total						3E-06					0.07
	Exposure Medium Total							3E-06					0.07
	Air	PCb Removal Area	Benzo(a)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Chrysene	--	1E-15	--	--	1E-15	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	7E-15	--	--	7E-15	NA	--	--	--	--
			Total Aroclors	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Arsenic	--	3E-11	--	--	3E-11	Skin, CVS	--	0.000003	--	0.000003
			Cobalt	--	6E-11	--	--	6E-11	Respiratory	--	0.000008	--	0.000008
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	8E-11	--	--	8E-11		--	0.00004	--	0.00004
		Exposure Point Total						8E-11					0.00004
	Exposure Medium Total							8E-11					0.00004
Medium Total								3E-06					0.07
Receptor Total							Receptor Risk Total	3E-06				Receptor HI Total	0.07

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early Life Exposure to Carcinogens (2005).

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	5E-09	--	3E-09	--	8E-09	NA	--	--	--	--
			Benzo(a)pyrene	5E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	7E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0000005	--	0.0000002	0.0000007
			Benzo(k)fluoranthene	3E-10	--	2E-10	--	5E-10	NA	--	--	--	--
			Chrysene	5E-11	--	3E-11	--	8E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-09	--	4E-09	--	1E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Total Aroclors	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.008	--	--	0.008
			Manganese	--	--	--	--	--	CNS	0.005	--	--	0.005
			Chemical Total	2E-06	--	2E-07	--	2E-06		0.04	--	0.002	0.04
		Exposure Point Total						2E-06					0.04
	Exposure Medium Total							2E-06					0.04
	Air	PCB Removal Area	Benzo(a)anthracene	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	8E-14	--	--	8E-14	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	5E-15	--	--	5E-15	NA	--	--	--	--
			Chrysene	--	9E-16	--	--	9E-16	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	4E-15	--	--	4E-15	NA	--	--	--	--
			Total Aroclors	--	8E-15	--	--	8E-15	NA	--	--	--	--
			Arsenic	--	5E-11	--	--	5E-11	Skin, CVS	--	0.000003	--	0.000003
			Cobalt	--	1E-10	--	--	1E-10	Respiratory	--	0.000008	--	0.000008
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	2E-10	--	--	2E-10		--	0.00004	--	0.00004
		Exposure Point Total						2E-10					0.00004
	Exposure Medium Total							2E-10					0.00004
Medium Total								2E-06					0.04
Receptor Total							Receptor Risk Total	2E-06				Receptor HI Total	0.04

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	2E-08	--	3E-08	--	5E-08					
			Benzo(a)pyrene	1E-07	--	3E-07	--	5E-07					
			Benzo(b)fluoranthene	2E-08	--	5E-08	--	7E-08					
			Benzo(g,h,i)perylene	- -	--	- -	--	- -					
			Benzo(k)fluoranthene	1E-09	--	2E-09	--	3E-09					
			Chrysene	2E-10	--	4E-10	--	5E-10					
			Dibenzo(a,h)anthracene	2E-08	--	4E-08	--	7E-08					
			Indeno(1,2,3-cd)pyrene	9E-09	--	2E-08	--	3E-08					
			Total Aroclors	4E-09	--	7E-09	--	1E-08					
			Arsenic	3E-06	--	1E-06	--	4E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	3E-06	--	1E-06	--	5E-06					
		Exposure Point Total						5E-06					
	Exposure Medium Total							5E-06					
	Air	PCB Removal Area	Benzo(a)anthracene	--	2E-14	--	--	2E-14					
			Benzo(a)pyrene	--	2E-13	--	--	2E-13					
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14					
			Benzo(g,h,i)perylene	--	- -	--	--	- -					
			Benzo(k)fluoranthene	--	1E-14	--	--	1E-14					
			Chrysene	--	2E-15	--	--	2E-15					
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14					
			Indeno(1,2,3-cd)pyrene	--	1E-14	--	--	1E-14					
			Total Aroclors	--	1E-14	--	--	1E-14					
			Arsenic	--	8E-11	--	--	8E-11					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	3E-10	--	--	3E-10					
		Exposure Point Total						3E-10					
	Exposure Medium Total							3E-10					
Medium Total								5E-06					
Receptor Total							Receptor Risk Total	5E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	3E-08	--	3E-08	--	6E-08	NA	--	--	--	--
			Benzo(a)pyrene	3E-07	--	3E-07	--	6E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	5E-08	--	4E-08	--	9E-08	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.000002	--	0.000002	0.000004
			Benzo(k)fluoranthene	2E-09	--	2E-09	--	4E-09	NA	--	--	--	--
			Chrysene	4E-10	--	3E-10	--	7E-10	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-08	--	4E-08	--	8E-08	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Total Aroclors	2E-08	--	2E-08	--	3E-08	NA	--	--	--	--
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.07	--	0.01	0.08
			Cobalt	--	--	--	--	--	Thyroid	0.07	--	--	0.07
			Iron	--	--	--	--	--	GS	0.04	--	--	0.04
			Manganese	--	--	--	--	--	CNS	0.03	--	--	0.03
			Chemical Total	1E-05	--	3E-06	--	1E-05		0.2	--	0.01	0.2
		Exposure Point Total						1E-05					0.2
	Exposure Medium Total							1E-05					0.2
	Air	PCB Removal Area	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Chrysene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	6E-14	--	--	6E-14	NA	--	--	--	--
			Total Aroclors	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Arsenic	--	7E-10	--	--	7E-10	Skin, CVS	--	0.00003	--	0.00003
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.00008	--	0.00008
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	0.0003	--	--	0.0003
			Chemical Total	--	2E-09	--	--	2E-09		--	0.0004	--	0.0004
		Exposure Point Total						2E-09					0.0004
	Exposure Medium Total							2E-09					0.0004
Medium Total								1E-05					0.2
Receptor Total							Receptor Risk Total	1E-05				Receptor HI Total	0.2

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	5E-07	--	1E-06	--	2E-06	NA	--	--	--	--
			Benzo(a)pyrene	4E-06	--	1E-05	--	2E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-07	--	2E-06	--	2E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00002	--	0.00005	0.00007
			Benzo(k)fluoranthene	2E-08	--	6E-08	--	8E-08	NA	--	--	--	--
			Chrysene	5E-09	--	1E-08	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	7E-07	--	2E-06	--	3E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	2E-07	--	5E-07	--	7E-07	NA	--	--	--	--
			Total Aroclors	3E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Arsenic	1E-06	--	8E-07	--	2E-06	Skin, CVS	0.02	--	0.01	0.03
			Cobalt	--	--	--	--	--	Thyroid	0.02	--	--	0.02
			Iron	--	--	--	--	--	GS	0.01	--	--	0.01
			Manganese	--	--	--	--	--	CNS	0.007	--	--	0.007
			Chemical Total	7E-06	--	2E-05	--	3E-05		0.06	--	0.01	0.07
		Exposure Point Total						3E-05					0.07
	Exposure Medium Total							3E-05					0.07
	Air	PCB Removal Area	Benzo(a)anthracene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	7E-13	--	--	7E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	8E-13	--	--	8E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Total Aroclors	--	7E-14	--	--	7E-14	NA	--	--	--	--
			Arsenic	--	3E-11	--	--	3E-11	Skin, CVS	--	0.000003	--	0.000003
			Cobalt	--	6E-11	--	--	6E-11	Respiratory	--	0.000008	--	0.000008
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	9E-11	--	--	9E-11		--	0.00004	--	0.00004
		Exposure Point Total						9E-11					0.00004
	Exposure Medium Total							9E-11					0.00004
Medium Total								3E-05					0.07

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	1E-08	--	3E-08	--	5E-08	NA	--	--	--	--
			Benzo(a)pyrene	1E-07	--	4E-07	--	5E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-08	--	8E-08	--	1E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	4E-08	--	1E-07	--	1E-07	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.004	--	--	0.004
			Arsenic	2E-06	--	1E-06	--	3E-06	Skin, CVS	0.03	--	0.02	0.05
			Chromium VI	1E-06	--	- -	--	1E-06	None Specified	0.002	--	--	0.002
			Cobalt	- -	--	- -	--	- -	Thyroid	0.02	--	--	0.02
			Iron	- -	--	- -	--	- -	GS	0.01	--	--	0.01
			Manganese	- -	--	- -	--	- -	CNS	0.010	--	--	0.010
			Chemical Total	3E-06	--	2E-06	--	5E-06		0.08	--	0.02	0.10
		Exposure Point Total						5E-06					0.10
	Exposure Medium Total							5E-06					0.10
	Air	PCB Removal Area	Benzo(a)anthracene	--	1E-14	--	--	1E-14	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-14	--	--	5E-14	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.000006	--	0.000006
			Arsenic	--	4E-11	--	--	4E-11	Skin, CVS	--	0.000005	--	0.000005
			Chromium VI	--	1E-09	--	--	1E-09	Respiratory	--	0.0000004	--	0.0000004
			Cobalt	--	5E-11	--	--	5E-11	Respiratory	--	0.000006	--	0.000006
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.00003	--	0.00003
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.00005	- -	0.00005
		Exposure Point Total						1E-09					0.00005
	Exposure Medium Total							1E-09					0.00005
Medium Total								5E-06					0.10

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Benzo(a)pyrene	2E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00001	--	0.000007	0.00002
			Benzo(k)fluoranthene	1E-08	--	5E-09	--	1E-08	NA	--	--	--	--
			Chrysene	2E-09	--	1E-09	--	3E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-07	--	2E-07	--	5E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	8E-08	--	4E-08	--	1E-07	NA	--	--	--	--
			Total Aroclors	4E-08	--	2E-08	--	7E-08	NA	--	--	--	--
			Arsenic	2E-06	--	2E-07	--	2E-06	Skin, CVS	0.01	--	0.002	0.02
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.009	--	--	0.009
			Manganese	--	--	--	--	--	CNS	0.005	--	--	0.005
			Chemical Total	5E-06	--	2E-06	--	6E-06		0.04	--	0.002	0.04
		Exposure Point Total						6E-06					0.04
	Exposure Medium Total							6E-06					0.04
	Air	PCB Removal Area	Benzo(a)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-13	--	--	2E-13	NA	--	--	--	--
			Chrysene	--	4E-14	--	--	4E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Total Aroclors	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Arsenic	--	5E-11	--	--	5E-11	Skin, CVS	--	0.000003	--	0.000003
			Cobalt	--	1E-10	--	--	1E-10	Respiratory	--	0.000008	--	0.000008
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.00002	--	0.00002
			Chemical Total	--	2E-10	--	--	2E-10		--	0.00004	--	0.00004
		Exposure Point Total						2E-10					0.00004
	Exposure Medium Total							2E-10					0.00004
Medium Total								6E-06					0.04

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	6E-09	--	3E-09	--	9E-09	NA	--	--	--	--
			Benzo(a)pyrene	7E-08	--	3E-08	--	1E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-08	--	7E-09	--	2E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-08	--	9E-09	--	3E-08	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.003	--	--	0.003
			Arsenic	3E-06	--	3E-07	--	3E-06	Skin, CVS	0.02	--	0.003	0.02
			Chromium VI	5E-07	--	- -	--	5E-07	None Specified	0.001	--	--	0.001
			Cobalt	- -	--	- -	--	- -	Thyroid	0.01	--	--	0.01
			Iron	- -	--	- -	--	- -	GS	0.01	--	--	0.01
			Manganese	- -	--	- -	--	- -	CNS	0.007	--	--	0.007
			Chemical Total	3E-06	--	4E-07	--	4E-06		0.05	--	0.003	0.06
		Exposure Point Total						4E-06					0.06
	Exposure Medium Total							4E-06					0.06
	Air	PCB Removal Area	Benzo(a)anthracene	--	9E-15	--	--	9E-15	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-14	--	--	2E-14	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-14	--	--	3E-14	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.000006	--	0.000006
			Arsenic	--	9E-11	--	--	9E-11	Skin, CVS	--	0.000005	--	0.000005
			Chromium VI	--	9E-10	--	--	9E-10	Respiratory	--	0.0000004	--	0.0000004
			Cobalt	--	1E-10	--	--	1E-10	Respiratory	--	0.000006	--	0.000006
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.00003	--	0.00003
			Chemical Total	--	1E-09	--	--	1E-09		- -	0.00005	- -	0.00005
		Exposure Point Total						1E-09					0.00005
	Exposure Medium Total							1E-09					0.00005
Medium Total								4E-06					0.06

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	7E-07	--	1E-06	--	2E-06					
			Benzo(a)pyrene	6E-06	--	1E-05	--	2E-05					
			Benzo(b)fluoranthene	9E-07	--	2E-06	--	3E-06					
			Benzo(g,h,i)perylene	--	--	--	--	--					
			Benzo(k)fluoranthene	3E-08	--	6E-08	--	9E-08					
			Chrysene	7E-09	--	1E-08	--	2E-08					
			Dibenzo(a,h)anthracene	1E-06	--	2E-06	--	3E-06					
			Indeno(1,2,3-cd)pyrene	3E-07	--	5E-07	--	8E-07					
			Total Aroclors	8E-08	--	1E-07	--	2E-07					
			Arsenic	3E-06	--	1E-06	--	4E-06					
			Cobalt	--	--	--	--	--					
			Iron	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	1E-05	--	2E-05	--	3E-05					
		Exposure Point Total						3E-05					
	Exposure Medium Total							3E-05					
	Air	PCB Removal Area	Benzo(a)anthracene	--	9E-13	--	--	9E-13					
			Benzo(a)pyrene	--	8E-12	--	--	8E-12					
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12					
			Benzo(g,h,i)perylene	--	--	--	--	--					
			Benzo(k)fluoranthene	--	4E-13	--	--	4E-13					
			Chrysene	--	9E-14	--	--	9E-14					
			Dibenzo(a,h)anthracene	--	1E-12	--	--	1E-12					
			Indeno(1,2,3-cd)pyrene	--	3E-13	--	--	3E-13					
			Total Aroclors	--	2E-13	--	--	2E-13					
			Arsenic	--	8E-11	--	--	8E-11					
			Cobalt	--	2E-10	--	--	2E-10					
			Iron	--	--	--	--	--					
			Manganese	--	--	--	--	--					
			Chemical Total	--	3E-10	--	--	3E-10					
		Exposure Point Total						3E-10					
	Exposure Medium Total							3E-10					
Medium Total								3E-05					

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Trespassers
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	2E-08	--	4E-08	--	6E-08					
			Benzo(a)pyrene	2E-07	--	4E-07	--	6E-07					
			Benzo(b)fluoranthene	4E-08	--	8E-08	--	1E-07					
			Dibenzo(a,h)anthracene	5E-08	--	1E-07	--	2E-07					
			Aluminum	- -	--	- -	--	- -					
			Arsenic	5E-06	--	2E-06	--	6E-06					
			Chromium VI	2E-06	--	- -	--	2E-06					
			Cobalt	- -	--	- -	--	- -					
			Iron	- -	--	- -	--	- -					
			Manganese	- -	--	- -	--	- -					
			Chemical Total	7E-06	--	2E-06	--	9E-06					
		Exposure Point Total						9E-06					
	Exposure Medium Total							9E-06					
	Air	PCB Removal Area	Benzo(a)anthracene	--	2E-14	--	--	2E-14					
			Benzo(a)pyrene	--	3E-13	--	--	3E-13					
			Benzo(b)fluoranthene	--	5E-14	--	--	5E-14					
			Dibenzo(a,h)anthracene	--	8E-14	--	--	8E-14					
			Aluminum	--	- -	--	--	- -					
			Arsenic	--	1E-10	--	--	1E-10					
			Chromium VI	--	2E-09	--	--	2E-09					
			Cobalt	--	1E-10	--	--	1E-10					
			Iron	--	- -	--	--	- -					
			Manganese	--	- -	--	--	- -					
			Chemical Total	--	3E-09	--	--	3E-09					
		Exposure Point Total						3E-09					
	Exposure Medium Total							3E-09					
Medium Total								9E-06					

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	1E-06	--	1E-06	--	3E-06	NA	--	--	--	--
			Benzo(a)pyrene	1E-05	--	1E-05	--	2E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-06	--	2E-06	--	3E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	- -	--	- -	--	- -	Kidney	0.00007	--	0.00006	0.0001
			Benzo(k)fluoranthene	6E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Chrysene	1E-08	--	1E-08	--	3E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	2E-06	--	4E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	5E-07	--	5E-07	--	1E-06	NA	--	--	--	--
			Total Aroclors	3E-07	--	3E-07	--	6E-07	NA	--	--	--	--
			Arsenic	1E-05	--	2E-06	--	1E-05	Skin, CVS	0.07	--	0.01	0.09
			Cobalt	- -	--	- -	--	- -	Thyroid	0.07	--	--	0.07
			Iron	- -	--	- -	--	- -	GS	0.04	--	--	0.04
			Manganese	- -	--	- -	--	- -	CNS	0.03	--	--	0.03
			Chemical Total	3E-05	--	2E-05	--	5E-05		0.2	--	0.01	0.2
		Exposure Point Total						5E-05					0.2
	Exposure Medium Total							5E-05					0.2
	Air	PCB Removal Area	Benzo(a)anthracene	--	5E-12	--	--	5E-12	NA	--	--	--	--
			Benzo(a)pyrene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	6E-12	--	--	6E-12	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	- -	--	--	- -	NA	--	--	--	--
			Benzo(k)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Chrysene	--	5E-13	--	--	5E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Total Aroclors	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Arsenic	--	7E-10	--	--	7E-10	Skin, CVS	--	0.00003	--	0.00003
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.00008	--	0.00008
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.0003	--	0.0003
			Chemical Total	--	2E-09	--	--	2E-09		- -	0.0004	- -	0.0004
		Exposure Point Total						2E-09					0.0004
	Exposure Medium Total							2E-09					0.0004
Medium Total								5E-05					0.2

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Industrial Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	4E-08	--	3E-08	--	7E-08	NA	--	--	--	--
			Benzo(a)pyrene	4E-07	--	4E-07	--	8E-07	NA	--	--	--	--
			Benzo(b)fluoranthene	8E-08	--	7E-08	--	2E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	1E-07	--	2E-07	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.02	--	--	0.02
			Arsenic	2E-05	--	4E-06	--	2E-05	Skin, CVS	0.1	--	0.02	0.1
			Chromium VI	3E-06	--	--	--	3E-06	None Specified	0.006	--	--	0.006
			Cobalt	--	--	--	--	--	Thyroid	0.06	--	--	0.06
			Iron	--	--	--	--	--	GS	0.05	--	--	0.05
			Manganese	--	--	--	--	--	CNS	0.04	--	--	0.04
			Chemical Total	2E-05	--	4E-06	--	3E-05		0.3	--	0.02	0.3
		Exposure Point Total						3E-05					0.3
	Exposure Medium Total							3E-05					0.3
	Air	PCB Removal Area	Benzo(a)anthracene	--	1E-13	--	--	1E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-13	--	--	3E-13	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-13	--	--	4E-13	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.00007	--	0.00007
			Arsenic	--	1E-09	--	--	1E-09	Skin, CVS	--	0.00005	--	0.00005
			Chromium VI	--	1E-08	--	--	1E-08	Respiratory	--	0.000004	--	0.000004
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.00006	--	0.00006
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.0004	--	0.0004
			Chemical Total	--	1E-08	--	--	1E-08		--	0.0005	--	0.0005
		Exposure Point Total						1E-08					0.0005
	Exposure Medium Total							1E-08					0.0005
Medium Total								3E-05					0.3

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	1E-07	--	4E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	9E-07	--	3E-07	--	1E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-07	--	5E-08	--	2E-07	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0001	--	0.00005	0.0002
			Benzo(k)fluoranthene	4E-09	--	2E-09	--	6E-09	NA	--	--	--	--
			Chrysene	1E-09	--	4E-10	--	1E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	1E-07	--	6E-08	--	2E-07	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4E-08	--	1E-08	--	5E-08	NA	--	--	--	--
			Total Aroclors	2E-08	--	8E-09	--	3E-08	NA	--	--	--	--
			Arsenic	8E-07	--	7E-08	--	9E-07	Skin, CVS	0.1	--	0.01	0.1
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.08	--	--	0.08
			Manganese	--	--	--	--	--	CNS	0.04	--	--	0.04
			Chemical Total	2E-06	--	5E-07	--	2E-06		0.2	--	0.01	0.2
		Exposure Point Total						2E-06					0.2
	Exposure Medium Total							2E-06					0.2
	Air	PCB Removal Area	Benzo(a)anthracene	--	8E-10	--	--	8E-10	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-09	--	--	7E-09	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-09	--	--	1E-09	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Chrysene	--	7E-11	--	--	7E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	1E-09	--	--	1E-09	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Total Aroclors	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Arsenic	--	1E-07	--	--	1E-07	Skin, CVS	--	0.1	--	0.1
			Cobalt	--	2E-07	--	--	2E-07	Respiratory	--	0.1	--	0.1
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	1	--	1
			Chemical Total	--	3E-07	--	--	3E-07		--	1	--	1
		Exposure Point Total						3E-07					1
	Exposure Medium Total							3E-07					1
Medium Total								2E-06					1

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Current/Future
Receptor Population: Construction Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	3E-09	--	1E-09	--	4E-09	NA	--	--	--	--
			Benzo(a)pyrene	3E-08	--	1E-08	--	4E-08	NA	--	--	--	--
			Benzo(b)fluoranthene	6E-09	--	2E-09	--	8E-09	NA	--	--	--	--
			Dibenzo(a,h)anthracene	8E-09	--	3E-09	--	1E-08	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	0.03	--	--	0.03
			Arsenic	1E-06	--	1E-07	--	1E-06	Skin, CVS	0.2	--	0.02	0.2
			Chromium VI	2E-07	--	--	--	2E-07	None Specified	--	--	--	--
			Cobalt	--	--	--	--	--	Thyroid	0.01	--	--	0.01
			Iron	--	--	--	--	--	GS	0.09	--	--	0.09
			Manganese	--	--	--	--	--	CNS	0.06	--	--	0.06
			Chemical Total	1E-06	--	1E-07	--	1E-06		0.4	--	0.02	0.4
		Exposure Point Total						1E-06					0.4
	Exposure Medium Total							1E-06					0.4
	Air	PCB Removal Area	Benzo(a)anthracene	--	2E-11	--	--	2E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	6E-11	--	--	6E-11	NA	--	--	--	--
			Aluminum	--	--	--	--	--	CNS	--	0.3	--	0.3
			Arsenic	--	2E-07	--	--	2E-07	Skin, CVS	--	0.2	--	0.2
			Chromium VI	--	2E-06	--	--	2E-06	Respiratory	--	0.02	--	0.02
			Cobalt	--	2E-07	--	--	2E-07	Respiratory	--	0.08	--	0.08
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	1	--	1
			Chemical Total	--	2E-06	--	--	2E-06		--	2	--	2
		Exposure Point Total						2E-06					2
	Exposure Medium Total							2E-06					2
Medium Total								3E-06					2

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organ HI - Subsurface Soi	
Total CNS HI	1
Total CVS HI	0.4
Total GS HI	0.1
Total Respiratory HI	0.1
Total Skin HI	0.4
Total Thyroid HI	0.01

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	2E-05	--	9E-06	--	3E-05	NA	--	--	--	--
			Benzo(a)pyrene	2E-04	--	8E-05	--	3E-04	NA	--	--	--	--
			Benzo(b)fluoranthene	3E-05	--	1E-05	--	4E-05	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.0009	--	0.0003	0.001
			Benzo(k)fluoranthene	1E-06	--	4E-07	--	1E-06	NA	--	--	--	--
			Chrysene	2E-07	--	9E-08	--	3E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-05	--	1E-05	--	5E-05	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9E-06	--	3E-06	--	1E-05	NA	--	--	--	--
			Total Aroclors	9E-07	--	4E-07	--	1E-06	NA	--	--	--	--
			Arsenic	4E-05	--	3E-06	--	4E-05	Skin, CVS	0.9	--	0.08	1
			Cobalt	--	--	--	--	--	Thyroid	1.0	--	--	1.0
			Iron	--	--	--	--	--	GS	0.6	--	--	0.6
			Manganese	--	--	--	--	--	CNS	0.3	--	--	0.3
			Chemical Total	3E-04	--	1E-04	--	5E-04		3	--	0.08	3
		Exposure Point Total						5E-04					3
	Exposure Medium Total							5E-04					3
	Air	PCB Removal Area	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	2E-10	--	--	2E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Chrysene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	9E-12	--	--	9E-12	NA	--	--	--	--
			Total Aroclors	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Arsenic	--	7E-10	--	--	7E-10	Skin, CVS	--	0.0001	--	0.0001
			Cobalt	--	2E-09	--	--	2E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.001	--	0.001
			Chemical Total	--	3E-09	--	--	3E-09		--	0.002	--	0.002
		Exposure Point Total						3E-09					0.002
	Exposure Medium Total							3E-09					0.002
Medium Total								5E-04					3

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	6E-07	--	2E-07	--	8E-07	NA	--	--	--	--
			Benzo(a)pyrene	7E-06	--	3E-06	--	1E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	1E-06	--	5E-07	--	2E-06	NA	--	--	--	--
			Dibenzo(a,h)anthracene	2E-06	--	7E-07	--	3E-06	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.2	--	--	0.2
			Arsenic	6E-05	--	5E-06	--	6E-05	Skin, CVS	1	--	0.1	2
			Chromium VI	6E-05	--	- -	--	6E-05	None Specified	0.08	--	--	0.08
			Cobalt	- -	--	- -	--	- -	Thyroid	0.8	--	--	0.8
			Iron	- -	--	- -	--	- -	GS	0.7	--	--	0.7
			Manganese	- -	--	- -	--	- -	CNS	0.5	--	--	0.5
			Chemical Total	1E-04	--	9E-06	--	1E-04		4	--	0.1	4
		Exposure Point Total						1E-04					4
	Exposure Medium Total							1E-04					4
	Air	PCB Removal Area	Benzo(a)anthracene	--	6E-13	--	--	6E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Benzo(b)fluoranthene	--	1E-12	--	--	1E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.0003	--	0.0003
			Arsenic	--	1E-09	--	--	1E-09	Skin, CVS	--	0.0002	--	0.0002
			Chromium VI	--	6E-08	--	--	6E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	1E-09	--	--	1E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.002	--	0.002
			Chemical Total	--	7E-08	--	--	7E-08		- -	0.002	- -	0.002
		Exposure Point Total						7E-08					0.002
	Exposure Medium Total							7E-08					0.002
Medium Total								1E-04					4

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

Target Organ HIs

Surface Soil		Subsurface Soil	
Total CNS HI	0.3	Total CNS HI	0.7
Total CVS HI	1	Total CVS HI	2
Total GS HI	0.6	Total GS HI	0.7
Total Kidney HI	0.001	Total Respiratory HI	0.0003
Total Respiratory HI	0.0003	Total None Specified HI	0.08
Total Skin HI	1	Total Skin HI	2
Total Thyroid HI	1	Total Thyroid HI	0.8

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	PCB Removal Area	Benzo(a)anthracene	4E-06	--	2E-06	--	5E-06	NA	--	--	--	--
			Benzo(a)pyrene	3E-05	--	2E-05	--	5E-05	NA	--	--	--	--
			Benzo(b)fluoranthene	4E-06	--	2E-06	--	7E-06	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	Kidney	0.00009	--	0.00005	0.0001
			Benzo(k)fluoranthene	2E-07	--	8E-08	--	2E-07	NA	--	--	--	--
			Chrysene	4E-08	--	2E-08	--	5E-08	NA	--	--	--	--
			Dibenzo(a,h)anthracene	5E-06	--	3E-06	--	8E-06	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	1E-06	--	7E-07	--	2E-06	NA	--	--	--	--
			Total Aroclors	4E-07	--	2E-07	--	6E-07	NA	--	--	--	--
			Arsenic	2E-05	--	2E-06	--	2E-05	Skin, CVS	0.10	--	0.01	0.1
			Cobalt	--	--	--	--	--	Thyroid	0.1	--	--	0.1
			Iron	--	--	--	--	--	GS	0.06	--	--	0.06
			Manganese	--	--	--	--	--	CNS	0.04	--	--	0.04
			Chemical Total	6E-05	--	3E-05	--	9E-05		0.3	--	0.01	0.3
		Exposure Point Total						9E-05					0.3
	Exposure Medium Total							9E-05					0.3
	Air	PCB Removal Area	Benzo(a)anthracene	--	3E-11	--	--	3E-11	NA	--	--	--	--
			Benzo(a)pyrene	--	3E-10	--	--	3E-10	NA	--	--	--	--
			Benzo(b)fluoranthene	--	4E-11	--	--	4E-11	NA	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	NA	--	--	--	--
			Benzo(k)fluoranthene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Chrysene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	5E-11	--	--	5E-11	NA	--	--	--	--
			Indeno(1,2,3-cd)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Total Aroclors	--	7E-12	--	--	7E-12	NA	--	--	--	--
			Arsenic	--	3E-09	--	--	3E-09	Skin, CVS	--	0.0001	--	0.0001
			Cobalt	--	6E-09	--	--	6E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	--	--	--	--	NA	--	--	--	--
			Manganese	--	--	--	--	--	CNS	--	0.001	--	0.001
			Chemical Total	--	9E-09	--	--	9E-09		--	0.002	--	0.002
		Exposure Point Total						9E-09					0.002
	Exposure Medium Total							9E-09					0.002
Medium Total								9E-05					0.3

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURES
FORMER DERECKTOR SHIPYARD, NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	PCB Removal Area	Benzo(a)anthracene	9E-08	--	5E-08	--	1E-07	NA	--	--	--	--
			Benzo(a)pyrene	1E-06	--	5E-07	--	2E-06	NA	--	--	--	--
			Benzo(b)fluoranthene	2E-07	--	1E-07	--	3E-07	NA	--	--	--	--
			Dibenzo(a,h)anthracene	3E-07	--	1E-07	--	4E-07	NA	--	--	--	--
			Aluminum	- -	--	- -	--	- -	CNS	0.02	--	--	0.02
			Arsenic	2E-05	--	3E-06	--	3E-05	Skin, CVS	0.2	--	0.02	0.2
			Chromium VI	8E-06	--	- -	--	8E-06	None Specified	0.009	--	--	0.009
			Cobalt	- -	--	- -	--	- -	Thyroid	0.09	--	--	0.09
			Iron	- -	--	- -	--	- -	GS	0.07	--	--	0.07
			Manganese	- -	--	- -	--	- -	CNS	0.05	--	--	0.05
			Chemical Total	3E-05	--	4E-06	--	4E-05		0.4	--	0.02	0.4
		Exposure Point Total						4E-05					0.4
	Exposure Medium Total							4E-05					0.4
	Air	PCB Removal Area	Benzo(a)anthracene	--	9E-13	--	--	9E-13	NA	--	--	--	--
			Benzo(a)pyrene	--	1E-11	--	--	1E-11	NA	--	--	--	--
			Benzo(b)fluoranthene	--	2E-12	--	--	2E-12	NA	--	--	--	--
			Dibenzo(a,h)anthracene	--	3E-12	--	--	3E-12	NA	--	--	--	--
			Aluminum	--	- -	--	--	- -	CNS	--	0.0003	--	0.0003
			Arsenic	--	4E-09	--	--	4E-09	Skin, CVS	--	0.0002	--	0.0002
			Chromium VI	--	9E-08	--	--	9E-08	Respiratory	--	0.00002	--	0.00002
			Cobalt	--	5E-09	--	--	5E-09	Respiratory	--	0.0003	--	0.0003
			Iron	--	- -	--	--	- -	NA	--	--	--	--
			Manganese	--	- -	--	--	- -	CNS	--	0.002	--	0.002
			Chemical Total	--	1E-07	--	--	1E-07		- -	0.002	- -	0.002
		Exposure Point Total						1E-07					0.002
	Exposure Medium Total							1E-07					0.002
Medium Total								4E-05					0.4

Notes:
1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

SCREENING RISK EVALUATION FOR VAPOR INTRUSION

VISL CALCULATIONS – NORTH WATERFRONT GROUNDWATER

OSWER VAPOR INTRUSION ASSESSMENT

Groundwater Concentration to Indoor Air Concentration (GWC-IAC) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Residential	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Site Groundwater Concentration Cgw (ug/L)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator I
	156-59-2	Dichloroethylene, 1,2-cis-	4.3E+00	5.71E-01	No IUR	No RfC					
	156-60-5	Dichloroethylene, 1,2-trans-	4.8E+00	6.53E-01	No IUR	1.0E-02			6.00E-02	P	
x	127-18-4	Tetrachloroethylene	7.0E-01	3.83E-01	4.1E-08	9.2E-03	2.60E-07	I	4.00E-02	I	
x	79-01-6	Trichloroethylene	3.3E+01	1.04E+01	**2.4E-05**	**5.0E+00**	see note	I	2.00E-03	I	TCE
x	75-01-4	Vinyl Chloride	1.5E+00	1.45E+00	**9.0E-06**	1.4E-02	4.40E-06	I	1.00E-01	I	VC
x		Trichloroethylene				**Symbol**	**Value**	**Symbol**	**Value**			**Symbol**	**Value**
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.										

OSWER VAPOR INTRUSION ASSESSMENT

Vapor Intrusion Screening Level (VISL) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Residential	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source?	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source?	Target Indoor Air Conc. @ TCR = 1E-06 or THQ = 1	Toxicity Basis	Target Sub-Slab and Exterior Soil Gas Conc. @ TCR = 1E-06 or THQ = 1	Target Ground Water Conc. @ TCR = 1E-06 or THQ = 1	Is Target Ground Water Conc. < MCL?	Temperature for Groundwater Vapor Conc.	Lower Explosive Limit**	LEL Source	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator	Target Indoor Air Conc. for Carcinogens @ TCR = 1E-06	Target Indoor Air Conc. for Non-Carcinogens @ THQ = 1
			Cvp > Cia,target/AFss?	Cvp > Cia,target/AFgw?	MIN(Cia,c;Cia,nc)		Csg	Cgw	Cgw<MCL?	Tgw or 25	LEL		IUR		RfC		I	Cia,c	Cia,nc
	CAS	Chemical Name	Yes/No	Yes/No	(ug/m^3)	C/NC	(ug/m^3)	(ug/L)	Yes/No (MCL ug/L)	C	(% by vol)		(ug/m^3)$^{-1}$		(mg/m^3)			(ug/m^3)	(ug/m^3)
x	540-59-0	Dichloroethylene, 1,2- (Mixed Isomers)	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	--	20									
	156-59-2	Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	No (70)	20	9.7	M							
	156-60-5	Dichloroethylene, 1,2-trans-	Yes	Yes	6.3E+01	NC	6.3E+02	4.6E+02	No (100)	20	9.7	M			6.00E-02	P			6.3E+01
x	127-18-4	Tetrachloroethylene	Yes	Yes	9.4E+00	C	9.4E+01	1.7E+01	No (5)	20			2.60E-07	I	4.00E-02	I		9.4E+00	4.2E+01
x	79-01-6	Trichloroethylene	Yes	Yes	4.3E-01	C	4.3E+00	1.4E+00	Yes (5)	20	8	N	see note	I	2.00E-03	I	TCE	4.3E-01	2.1E+00
x	75-01-4	Vinyl Chloride	Yes	Yes	1.6E-01	C	1.6E+00	1.6E-01	Yes (2)	20	3.6	N	4.40E-06	I	1.00E-01	I	VC	1.6E-01	1.0E+02
x		Trichloroethylene				Symbol	Value	Symbol	Value	Symbol	Value								
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.																

OSWER VAPOR INTRUSION ASSESSMENT

Groundwater Concentration to Indoor Air Concentration (GWC-IAC) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Site Groundwater Concentration Cgw (ug/L)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR ($(ug/m^3)^{-1}$)	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator I
	156-59-2	Dichloroethylene, 1,2-cis-	4.3E+00	5.71E-01	No IUR	No RfC					
	156-60-5	Dichloroethylene, 1,2-trans-	4.8E+00	6.53E-01	No IUR	2.5E-03			6.00E-02	P	
x	127-18-4	Tetrachloroethylene	7.0E-01	3.83E-01	8.1E-09	2.2E-03	2.60E-07	I	4.00E-02	I	
x	79-01-6	Trichloroethylene	3.3E+01	1.04E+01	**3.5E-06**	**1.2E+00**	see note	I	2.00E-03	I	TCE
x	75-01-4	Vinyl Chloride	1.5E+00	1.45E+00	5.2E-07	3.3E-03	4.40E-06	I	1.00E-01	I	VC
x		Trichloroethylene				**Symbol**	**Value**	**Symbol**	**Value**			**Symbol**	**Value**
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.										

OSWER VAPOR INTRUSION ASSESSMENT

Vapor Intrusion Screening Level (VISL) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source?	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source?	Target Indoor Air Conc. @ TCR = 1E-06 or THQ = 1	Toxicity Basis	Target Sub-Slab and Exterior Soil Gas Conc. @ TCR = 1E-06 or THQ = 1	Target Ground Water Conc. @ TCR = 1E-06 or THQ = 1	Is Target Ground Water Conc. < MCL?	Temperature for Groundwater Vapor Conc.	Lower Explosive Limit**	LEL Source	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator	Target Indoor Air Conc. for Carcinogens @ TCR = 1E-06	Target Indoor Air Conc. for Non-Carcinogens @ THQ = 1
			Cvp > Cia,target/AFss?	Cvp > Cia,target/AFgw?	MIN(Cia,c;Cia,nc)		Csg	Cgw	Cgw<MCL?	Tgw or 25	LEL		IUR		RfC		I	Cia,c	Cia,nc
			Yes/No	Yes/No	(ug/m^3)	C/NC	(ug/m^3)	(ug/L)	Yes/No (MCL ug/L)	C	(% by vol)		($ug/m^3)^{-1}$		(mg/m^3)			(ug/m^3)	(ug/m^3)
x	540-59-0	Dichloroethylene, 1,2- (Mixed Isomers)	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	--	20									
	156-59-2	Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	No (70)	20	9.7	M							
	156-60-5	Dichloroethylene, 1,2-trans-	Yes	Yes	2.6E+02	NC	2.6E+03	1.9E+03	No (100)	20	9.7	M			6.00E-02	P			2.6E+02
x	127-18-4	Tetrachloroethylene	Yes	Yes	4.7E+01	C	4.7E+02	8.6E+01	No (5)	20			2.60E-07	I	4.00E-02	I		4.7E+01	1.8E+02
x	79-01-6	Trichloroethylene	Yes	Yes	3.0E+00	C	3.0E+01	9.5E+00	No (5)	20	8	N	see note	I	2.00E-03	I	TCE	3.0E+00	8.8E+00
x	75-01-4	Vinyl Chloride	Yes	Yes	2.8E+00	C	2.8E+01	2.8E+00	No (2)	20	3.6	N	4.40E-06	I	1.00E-01	I	VC	2.8E+00	4.4E+02
x		Trichloroethylene				Symbol	Value	Symbol	Value	Symbol	Value								
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.																

SCREENING RISK EVALUATION FOR VAPOR INTRUSION

VISL CALCULATIONS – NORTH WATERFRONT SOIL GAS

OSWER VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Residential	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

	CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ		Inhalation Unit Risk IUR (ug/m^3)$^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i	
	107-13-1	Acrylonitrile	2.8E+00	2.80E-01	**7.8E-06**	1.3E-01		6.80E-05	I	2.00E-03	I		
x	71-43-2	Benzene	6.7E-01	6.70E-02	2.1E-07	2.1E-03		7.80E-06	I	3.00E-02	I		
	106-99-0	Butadiene, 1,3-	1.3E+01	1.30E+00	**1.6E-05**	6.2E-01		3.00E-05	I	2.00E-03	I		
x	75-34-3	Dichloroethane, 1,1-	2.5E-01	2.50E-02	1.6E-08	No RfC		1.60E-06	CA				
x	540-59-0	Dichloroethylene, 1,2- (Mixed Isomers)	3.1E+01	3.11E+00	No IUR	No RfC							
	156-59-2	Dichloroethylene, 1,2-cis-	2.7E+01	2.70E+00	No IUR	No RfC							
	156-60-5	Dichloroethylene, 1,2-trans-	4.1E+00	4.10E-01	No IUR	6.6E-03				6.00E-02	P		
x	127-18-4	Tetrachloroethylene	1.2E+01	1.20E+00	1.3E-07	2.9E-02		2.60E-07	I	4.00E-02	I		
x	71-55-6	Trichloroethane, 1,1,1-	2.6E-01	2.60E-02	No IUR	5.0E-06				5.00E+00	I		
x	79-01-6	Trichloroethylene	1.2E+02	1.20E+01	**2.8E-05**	**5.8E+00**		see note	I	2.00E-03	I	TCE	
x	75-01-4	Vinyl Chloride	7.6E-01	7.60E-02	4.7E-07	7.3E-04		4.40E-06	I	1.00E-01	I	VC	
x		Trichloroethylene				**Symbol**	**Value**	**Symbol**	**Value**			**Symbol**	**Value**
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.										

OSWER VAPOR INTRUSION ASSESSMENT
Vapor Intrusion Screening Level (VISL) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Residential	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source?	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source?	Target Indoor Air Conc. @ TCR = 1E-06 or THQ = 1	Toxicity Basis	Target Sub-Slab and Exterior Soil Gas Conc. @ TCR = 1E-06 or THQ = 1	Target Ground Water Conc. @ TCR = 1E-06 or THQ = 1	Is Target Ground Water Conc. < MCL?	Temperature for Groundwater Vapor Conc.	Lower Explosive Limit**	LEL Source	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator	Target Indoor Air Conc. for Carcinogens @ TCR = 1E-06	Target Indoor Air Conc. for Non-Carcinogens @ THQ = 1
			Cvp > Cia,target/AFss?	Cvp > Cia,target/AFgw?	MIN(Cia,c;Cia,nc)		Csg	Cgw	Cgw<MCL?	Tgw or 25	LEL		IUR		RfC			Cia,c	Cia,nc
			Yes/No	Yes/No	(ug/m^3)	C/NC	(ug/m^3)	(ug/L)	Yes/No (MCL ug/L)	C	(% by vol)		(ug/m^3)$^{-1}$		(mg/m^3)			(ug/m^3)	(ug/m^3)
	107-13-1	Acrylonitrile	Yes	Yes	3.6E-02	C	3.6E-01	8.2E+00	--	20	3	N	6.80E-05	I	2.00E-03	I		3.6E-02	2.1E+00
x	71-43-2	Benzene	Yes	Yes	3.1E-01	C	3.1E+00	1.7E+00	Yes (5)	20	1.2	N	7.80E-06	I	3.00E-02	I		3.1E-01	3.1E+01
	106-99-0	Butadiene, 1,3-	Yes	Yes	8.1E-02	C	8.1E-01	3.1E-02	--	20	2	N	3.00E-05	I	2.00E-03	I		8.1E-02	2.1E+00
x	75-34-3	Dichloroethane, 1,1-	Yes	Yes	1.5E+00	C	1.5E+01	8.2E+00	--	20	5.4	N	1.60E-06	CA				1.5E+00	
x	75-35-4	Dichloroethylene, 1,1-	Yes	Yes	2.1E+02	NC	2.1E+03	2.3E+02	No (7)	20	6.5	N			2.00E-01	I			2.1E+02
x	540-59-0	Dichloroethylene, 1,2- (Mixed Isomers)	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	--	20									
	156-59-2	Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	No (70)	20	9.7	M							
	156-60-5	Dichloroethylene, 1,2-trans-	Yes	Yes	6.3E+01	NC	6.3E+02	4.6E+02	No (100)	20	9.7	M			6.00E-02	P			6.3E+01
x	127-18-4	Tetrachloroethylene	Yes	Yes	9.4E+00	C	9.4E+01	1.7E+01	No (5)	20			2.60E-07	I	4.00E-02	I		9.4E+00	4.2E+01
x	71-55-6	Trichloroethane, 1,1,1-	Yes	Yes	5.2E+03	NC	5.2E+04	9.3E+03	No (200)	20	7.5	N			5.00E+00	I			5.2E+03
x	79-01-6	Trichloroethylene	Yes	Yes	4.3E-01	C	4.3E+00	1.4E+00	Yes (5)	20	8	N	see note	I	2.00E-03	I	TCE	4.3E-01	2.1E+00
x	75-01-4	Vinyl Chloride	Yes	Yes	1.6E-01	C	1.6E+00	1.6E-01	Yes (2)	20	3.6	N	4.40E-06	I	1.00E-01	I	VC	1.6E-01	1.0E+02
x		Trichloroethylene				Symbol	Value	Symbol	Value	Symbol	Value								
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.																

OSWER VAPOR INTRUSION ASSESSMENT

Sub-slab or Exterior Soil Gas Concentration to Indoor Air Concentration (SGC-IAC) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR_SG	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ_SG	1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)

	CAS	Chemical Name	Site Sub-slab or Exterior Soil Gas Concentration Csg (ug/m^3)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR ($ug/m^3)^{-1}$	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator i
	107-13-1	Acrylonitrile	2.8E+00	2.80E-01	**1.6E-06**	3.2E-02	6.80E-05	I	2.00E-03	I	
x	71-43-2	Benzene	6.7E-01	6.70E-02	4.3E-08	5.1E-04	7.80E-06	I	3.00E-02	I	
	106-99-0	Butadiene, 1,3-	1.3E+01	1.30E+00	**3.2E-05**	1.5E-01	3.00E-05	I	2.00E-03	I	
x	75-34-3	Dichloroethane, 1,1-	2.5E-01	2.50E-02	3.3E-09	No RfC	1.60E-06	CA			
x	540-59-0	Dichloroethylene, 1,2- (Mixed Isomers)	3.1E+01	3.11E+00	No IUR	No RfC					
	156-59-2	Dichloroethylene, 1,2-cis-	2.7E+01	2.70E+00	No IUR	No RfC					
	156-60-5	Dichloroethylene, 1,2-trans-	4.1E+00	4.10E-01	No IUR	1.6E-03			6.00E-02	P	
x	127-18-4	Tetrachloroethylene	1.2E+01	1.20E+00	2.5E-08	6.8E-03	2.60E-07	I	4.00E-02	I	
x	71-55-6	Trichloroethane, 1,1,1-	2.6E-01	2.60E-02	No IUR	1.2E-06			5.00E+00	I	
x	79-01-6	Trichloroethylene	1.2E+02	1.20E+01	**4.0E-06**	**1.4E+00**	see note	I	2.00E-03	I	TCE
x	75-01-4	Vinyl Chloride	7.6E-01	7.60E-02	2.7E-08	1.7E-04	4.40E-06	I	1.00E-01	I	VC
x		Trichloroethylene				**Symbol**	**Value**	**Symbol**	**Value**			**Symbol**	**Value**
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.										

OSWER VAPOR INTRUSION ASSESSMENT
Vapor Intrusion Screening Level (VISL) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source?	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source?	Target Indoor Air Conc. @ TCR = 1E-06 or THQ = 1	Toxicity Basis	Target Sub-Slab and Exterior Soil Gas Conc. @ TCR = 1E-06 or THQ = 1	Target Ground Water Conc. @ TCR = 1E-06 or THQ = 1	Is Target Ground Water Conc. < MCL?	Temperature for Groundwater Vapor Conc.	Lower Explosive Limit**	LEL Source	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator	Target Indoor Air Conc. for Carcinogens @ TCR = 1E-06	Target Indoor Air Conc. for Non-Carcinogens @ THQ = 1
			Cvp > Cla,target/AFss?	Cvp > Cla,target/AFgw?	MIN(Cla,c;Cla,nc)		Csg	Cgw	Cgw<MCL?	Tgw or 25	LEL		IUR		RfC		I	Cla,c	Cla,nc
			Yes/No	Yes/No	(ug/m^3)	C/NC	(ug/m^3)	(ug/L)	Yes/No (MCL ug/L)	C	(% by vol)		(ug/m^3)$^{-1}$		(mg/m^3)			(ug/m^3)	(ug/m^3)
	107-13-1	Acrylonitrile	Yes	Yes	1.8E-01	C	1.8E+00	4.1E+01	--	20	3	N	6.80E-05	I	2.00E-03	I		1.8E-01	8.8E+00
x	71-43-2	Benzene	Yes	Yes	1.6E+00	C	1.6E+01	8.7E+00	No (5)	20	1.2	N	7.80E-06	I	3.00E-02	I		1.6E+00	1.3E+02
	106-99-0	Butadiene, 1,3-	Yes	Yes	4.1E-01	C	4.1E+00	1.6E-01	--	20	2	N	3.00E-05	I	2.00E-03	I		4.1E-01	8.8E+00
x	75-34-3	Dichloroethane, 1,1-	Yes	Yes	7.7E+00	C	7.7E+01	4.1E+01	--	20	5.4	N	1.60E-06	CA				7.7E+00	
x	75-35-4	Dichloroethylene, 1,1-	Yes	Yes	8.8E+02	NC	8.8E+03	9.9E+02	No (7)	20	6.5	N			2.00E-01	I			8.8E+02
x	540-59-0	Dichloroethylene, 1,2- (Mixed Isomers)	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	--	20									
	156-59-2	Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	No (70)	20	9.7	M							
	156-60-5	Dichloroethylene, 1,2-trans-	Yes	Yes	2.6E+02	NC	2.6E+03	1.9E+03	No (100)	20	9.7	M			6.00E-02	P			2.6E+02
x	127-18-4	Tetrachloroethylene	Yes	Yes	4.7E+01	C	4.7E+02	8.6E+01	No (5)	20			2.60E-07	I	4.00E-02	I		4.7E+01	1.8E+02
x	71-55-6	Trichloroethane, 1,1,1-	Yes	Yes	2.2E+04	NC	2.2E+05	3.9E+04	No (200)	20	7.5	N			5.00E+00	I			2.2E+04
x	79-01-6	Trichloroethylene	Yes	Yes	3.0E+00	C	3.0E+01	9.5E+00	No (5)	20	8	N	see note	I	2.00E-03	I	TCE	3.0E+00	8.8E+00
x	75-01-4	Vinyl Chloride	Yes	Yes	2.8E+00	C	2.8E+01	2.8E+00	No (2)	20	3.6	N	4.40E-06	I	1.00E-01	I	VC	2.8E+00	4.4E+02
x		Trichloroethylene				Symbol	Value	Symbol	Value	Symbol	Value								
x		Vinyl Chloride	See the Navigation Guide equation for Cla,c for vinyl chloride.																

SCREENING RISK EVALUATION FOR VAPOR INTRUSION

VISL CALCULATIONS – FORMER BUILDING 234 GROUNDWATER

OSWER VAPOR INTRUSION ASSESSMENT

Groundwater Concentration to Indoor Air Concentration (GWC-IAC) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Residential	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Site Groundwater Concentration Cgw (ug/L)	Calculated Indoor Air Concentration Cia (ug/m³)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR (ug/m³)⁻¹	IUR Source*	Reference Concentration RfC (mg/m³)	RFC Source*	Mutagenic Indicator I
x	75-35-4	Dichloroethylene, 1,1-	2.5E-01	2.22E-01	No IUR	1.1E-03			2.00E-01	I	
	156-59-2	Dichloroethylene, 1,2-cis-	1.3E+01	1.70E+00	No IUR	No RfC					
x	79-01-6	Trichloroethylene	4.0E+00	1.26E+00	**2.9E-06**	6.1E-01	see note	I	2.00E-03	I	TCE
x	75-01-4	Vinyl Chloride	1.0E+02	9.87E+01	**6.1E-04**	9.5E-01	4.40E-06	I	1.00E-01	I	VC

			Symbol	Value	Symbol	Value		Symbol	Value
x		Trichloroethylene							
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.						

OSWER VAPOR INTRUSION ASSESSMENT
Vapor Intrusion Screening Level (VISL) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Residential	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source?	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source?	Target Indoor Air Conc. @ TCR = 1E-06 or THQ = 1	Toxicity Basis	Target Sub-Slab and Exterior Soil Gas Conc. @ TCR = 1E-06 or THQ = 1	Target Ground Water Conc. @ TCR = 1E-05 or THQ = 1	Is Target Ground Water Conc. < MCL?	Temperature for Groundwater Vapor Conc.	Lower Explosive Limit**	LEL Source	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator	Target Indoor Air Conc. for Carcinogens @ TCR = 1E-06	Target Indoor Air Conc. for Non-Carcinogens @ THQ = 1
			Cvp > Cia,targetVAFss?	Cvp > Cia,target/AFgw?	MIN(Cia,c;Cia,nc)		Csg	Cgw	Cgw<MCL?	Tgw or 25	LEL		IUR		RfC		I	Cia,c	Cia,nc
	CAS	Chemical Name	Yes/No	Yes/No	(ug/m^3)	C/NC	(ug/m^3)	(ug/L)	Yes/No (MCL ug/L)	C	(% by vol)		(ug/m^3)$^{-1}$		(mg/m^3)			(ug/m^3)	(ug/m^3)
x	75-35-4	Dichloroethylene, 1,1-	Yes	Yes	2.1E+02	NC	2.1E+03	2.3E+02	No (7)	20	6.5	N			2.00E-01	I			2.1E+02
	156-59-2	Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	No (70)	20	9.7	M							
x	79-01-6	Trichloroethylene	Yes	Yes	4.3E-01	C	4.3E+00	1.4E+00	Yes (5)	20	8	N	see note	I	2.00E-03	I	TCE	4.3E-01	2.1E+00
x	75-01-4	Vinyl Chloride	Yes	Yes	1.6E-01	C	1.6E+00	1.6E-01	Yes (2)	20	3.6	N	4.40E-06	I	1.00E-01	I	VC	1.6E-01	1.0E+02
x		Trichloroethylene				Symbol	Value	Symbol	Value	Symbol	Value								
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.																

OSWER VAPOR INTRUSION ASSESSMENT

Groundwater Concentration to Indoor Air Concentration (GWC-IAC) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens (for comparison to the calculated VI carcinogenic risk in column F)
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens (for comparison to the calculated VI hazard in column G)
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Site Groundwater Concentration Cgw (ug/L)	Calculated Indoor Air Concentration Cia (ug/m^3)	VI Carcinogenic Risk CR	VI Hazard HQ	Inhalation Unit Risk IUR ($(ug/m^3)^{-1}$)	IUR Source*	Reference Concentration RfC (mg/m^3)	RFC Source*	Mutagenic Indicator I
x	75-35-4	Dichloroethylene, 1,1-	2.5E-01	2.22E-01	No IUR	2.5E-04			2.00E-01	I	
	156-59-2	Dichloroethylene, 1,2-cis-	1.3E+01	1.70E+00	No IUR	No RfC					
x	79-01-6	Trichloroethylene	4.0E+00	1.26E+00	4.2E-07	1.4E-01	see note	I	2.00E-03	I	TCE
x	75-01-4	Vinyl Chloride	1.0E+02	9.87E+01	**3.5E-05**	2.3E-01	4.40E-06	I	1.00E-01	I	VC
x		Trichloroethylene				**Symbol**	**Value**	**Symbol**	**Value**		**Symbol**	**Value**
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.									

OSWER VAPOR INTRUSION ASSESSMENT

Vapor Intrusion Screening Level (VISL) Calculator Version 2.0, May 2012 RSLs

Parameter	Symbol	Value	Instructions
Exposure Scenario	Scenario	Commercial	Select residential or commercial scenario from pull down list
Target Risk for Carcinogens	TCR	1.00E-06	Enter target risk for carcinogens
Target Hazard Quotient for Non-Carcinogens	THQ	1	Enter target hazard quotient for non-carcinogens
Average Groundwater Temperature (°C)	Tgw	20	Enter average of the stabilized groundwater temperature to correct Henry's Law Constant for groundwater target concentrations

	CAS	Chemical Name	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source?	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source?	Target Indoor Air Conc. @ TCR = 1E-06 or THQ = 1	Toxicity Basis	Target Sub-Slab and Exterior Soil Gas Conc. @ TCR = 1E-06 or THQ = 1	Target Ground Water Conc. @ TCR = 1E-06 or THQ = 1	Is Target Ground Water Conc. < MCL?	Temperature for Groundwater Vapor Conc.	Lower Explosive Limit**	LEL Source	Inhalation Unit Risk	IUR Source*	Reference Concentration	RFC Source*	Mutagenic Indicator	Target Indoor Air Conc. for Carcinogens @ TCR = 1E-06	Target Indoor Air Conc. for Non-Carcinogens @ THQ = 1
			Cvp > Cia,target/AFss?	Cvp > Cia,target/AFgw?	MIN(Cia,c;Cia,nc)		Csg	Cgw	Cgw<MCL?	Tgw or 25	LEL		IUR		RfC		I	Cia,c	Cia,nc
	CAS	Chemical Name	Yes/No	Yes/No	(ug/m^3)	C/NC	(ug/m^3)	(ug/L)	Yes/No (MCL ug/L)	C	(% by vol)		(ug/m^3)$^{-1}$		(mg/m^3)			(ug/m^3)	(ug/m^3)
x	75-35-4	Dichloroethylene, 1,1-	Yes	Yes	8.8E+02	NC	8.8E+03	9.9E+02	No (7)	20	6.5	N			2.00E-01	I			8.8E+02
	156-59-2	Dichloroethylene, 1,2-cis-	No Inhal. Tox. Info	No Inhal. Tox. Info	--	--	--	--	No (70)	20	9.7	M							
x	79-01-6	Trichloroethylene	Yes	Yes	3.0E+00	C	3.0E+01	9.5E+00	No (5)	20	8	N	see note	I	2.00E-03	I	TCE	3.0E+00	8.8E+00
x	75-01-4	Vinyl Chloride	Yes	Yes	2.8E+00	C	2.8E+01	2.8E+00	No (2)	20	3.6	N	4.40E-06	I	1.00E-01	I	VC	2.8E+00	4.4E+02
x		Trichloroethylene				Symbol	Value	Symbol	Value	Symbol	Value								
x		Vinyl Chloride	See the Navigation Guide equation for Cia,c for vinyl chloride.																

Appendix D

Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered Guidance

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TABLE D-1
ASSESSMENT OF CHEMICAL-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Federal				
EPA Human Health Assessment Cancer Slope Factors (CSFs)	None	To Be Considered	Guidance values used to evaluate the potential carcinogenic hazards caused by exposure to contaminants.	Used to compute the individual incremental cancer risk resulting from exposure to carcinogenic contaminants in soil. Soil and asphalt/pavement covers (i.e., encapsulation) and LUCs will prevent exposure to contaminants in soil exceeding risk levels.
Reference Doses (RfDs)	None	To Be Considered	Guidance values used to evaluate the potential non-carcinogenic hazards caused by exposure to contaminants.	Used to calculate potential non-carcinogenic hazards caused by exposure to contaminants in soil. Soil and asphalt/pavement covers (i.e., encapsulation) and LUCs will prevent exposure to contaminants exceeding risk levels.
Guidelines for Carcinogen Risk Assessment	EPA/630/P-03/001F (March 2005)	To Be Considered	Guidance for assessing cancer risk.	Used to calculate potential carcinogenic risks caused by exposure to contaminants. Soil and asphalt/pavement covers (i.e., encapsulation) and LUCs will prevent exposure to contaminants exceeding risk levels.
Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	EPA/630/R-03/003F (March 2005)	To Be Considered	Guidance of assessing cancer risks to children.	Used to calculate potential carcinogenic risks to children caused by exposure to soil contaminants. Soil and asphalt/pavement covers (i.e., encapsulation) and LUCs will prevent exposure to contaminants exceeding risk levels.
Recommendations of the Technical Review Workgroup for Lead for an approach to Assessing Risks Associated with Adult Exposure to Lead In Soil	EPA-540-R-03-001 (January 2003)	To Be Considered	EPA Guidance for evaluating risks posed by lead in soil.	Used to evaluate risks from lead in soil. Soil and asphalt/pavement covers (i.e., encapsulation) and LUCs will prevent exposure to contaminants exceeding risk levels.

TABLE D-1
ASSESSMENT OF CHEMICAL-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
State				
State of Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations), amended in November 2011	Code of Rhode Island Rules (CRIR) 12-180-001 DEM-DSR-01-93, Section 8.02 (with the exception of 8.02A(iv)-TPH)	Applicable	These regulations set remediation standards for contaminated media. These standards are applicable to a CERCLA remedy when they are more stringent than federal standards. Establishes criteria for soil and both direct contact and leachability of contaminants in soil.	RIDEM Residential and Industrial DECs were used, and Leachability Criteria were considered, in the development of cleanup levels for soil. Soil and asphalt/pavement covers (i.e., encapsulation) and LUCs will prevent exposure to site contaminants exceeding cleanup levels. Additional soil sampling in the Northern Area will be performed after the ROD is finalized. The scope of the PRD sampling and subsequent evaluation will be determined during the work planning phase. This Pre-Remedial Design (PRD) soil sampling will evaluate whether construction stockpiles of contaminated debris/soil has impacted On-Shore soil and if any soil actions are necessary in the Northern Area. Currently soil action only is necessary in the Central Area. Any remedy changes will be addressed via an Explanation of Significant Difference (ESD). Navy and RIDEM agree that TPH issues at this site will be addressed under the RIDEM UST Program if required.

TABLE D-2
ASSESSMENT OF LOCATION-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Federal				
Floodplain Management and Protection of Wetlands	44 Code of Federal Regulations (CFR) 9	Relevant and Appropriate	Implements Executive Order 11990 (Protection of Wetlands) and Executive Order 11988 (Floodplain Management). Prohibits activities that adversely affect federally-regulated resource areas unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands and floodplains that may result from such use.	While there are no jurisdictional wetlands at the site (although regulated habitats are adjacent to the site in Narragansett Bay), the majority of the site is located within the 100-year coastal floodplain. The Navy's remedial measures will prevent contamination within the floodplain from migrating from the covered areas and posing a risk to adjacent floodplain, wetlands and aquatic habitats. Public comment on the proposed remedy within coastal floodplain was solicited through the Proposed Plan. No negative comments were received.
Coastal Zone Management Act	Coastal Zone Management Act, 16 USC 1451 *et. seq.*	Applicable	Requires that any actions must be conducted in a manner consistent with state-approved management programs.	The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements will be met during the remedial action.
Endangered Species Act	16 U.S. Code (USC) 1531 et seq.; 50 CFR Parts 200 and 402	Applicable	Regulates activities affecting federally listed endangered or threatened species or their critical habitat.	The Navy will consult with the appropriate federal resource agencies to ensure that construction activities will be conducted to minimize disturbance to adjacent aquatic habitats in Narragansett Bay that may be used by the federally endangered Atlantic Sturgeon, loggerhead turtle, and Kemps-ridley turtle. Appropriate federal agencies will be consulted to confirm methods to minimize adverse effects from contamination migrating from the site to coastal waters. Erosion and sediment controls during construction and site restoration (revegetation of unpaved surfaces) will prevent impacts to habitats in the Bay.

TABLE D-2
ASSESSMENT OF LOCATION-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
National Historic Landmarks (Historic Sites Act)	16 USC §461 et seq.; 36 CFR Part 65	Applicable	The purpose of the National Historic Landmarks program is to identify and designate National Historic Landmarks, and encourage the long range preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States.	There are no known landmarks; however, features with potential historical/cultural significance will be evaluated during the remedial design phase. Should the remedy impact historical properties/structures determined to be protected by this standard, activities will be coordinated with the Department of the Interior.
Protection of Historic Properties (National Historic Preservation Act)	16 USC §470 et seq., 36 CFR Part 800	Applicable	Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment.	There are no known historical features at the site; however, features with potential historical/cultural significance will be evaluated during the remedial design phase. Should the remedy impact properties/structures determined to be protected by this standard, activities will be coordinated with the Advisory Council on Historic Preservation.
State				
Coastal Resources Management	RIGL 46-23-1 *et seq.*	Applicable	Sets standards for management and protection of coastal resources.	The entire site is located in a coastal resource management area. Therefore, applicable coastal resource management requirements (e.g., soil actions within 200 feet of coastal features) will be met for the remedy.
Rhode Island Historical Preservation Act	RIGL 42-45 et seq.	Relevant and Appropriate	Requires action to take into account effects on properties included on or eligible for the National register of Historic Places and minimizes harm to National Historic Landmarks.	There are no known historical features at the site; however, features with potential historical/cultural significance will be evaluated during the remedial design phase. Should the remedy impact properties/structures determined to be protected by this standard, activities will be coordinated with the State Agency.

TABLE D-3
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCs
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Federal				
Clean Air Act (CAA), National Emission Standards for Hazardous Air Pollutants (NESHAPS), Standards for Inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations	42 U.S.C. §§7411 & 7412; 40 C.F.R. §61.151	Relevant and Appropriate	NESHAPS standards for preventing air releases of asbestos disposal sites, including dust suppression, and land use controls.	Only elements applicable to asbestos mixed with soil, and only if Pre-Remedial Design (PRD) soil sampling (to be performed after ROD is finalized) determines ACM issue warranting action in soil in the Northern Area. Currently soil action only is necessary in the Central Area. Any remedy changes will be addressed via an Explanation of Significant Difference (ESD).
Framework for Investigating Asbestos-Contaminated Superfund Sites	OSWER Directive #9200.0-68 (Sept. 2008)	To Be Considered	Guidance on investigating and characterizing the potential human exposure from asbestos contamination in outdoor soil at Superfund sites.	Guidance allows response actions at a site without further characterization, after review of historical and current information, if review of the site conditions supports a response.
State				
Clean Air Act - Fugitive Dust Control	RIGL 23-23 *et seq.*; Code of Rhode Island Rules (CRIR) 12-31- 05	Applicable	Requires that reasonable precaution be taken to prevent particulate matter from becoming airborne.	Engineering controls such as water spraying and covering staged clean fill will be used to minimize dust. In addition, the new soil covers will be re-vegetated immediately after placement.
Clean Air Act - Emissions Detrimental to Persons or Property	RIGL 23-23 *et seq.*; CRIR 12-31- 07	Applicable	Prohibits emissions of contaminants which may be injurious to humans, plant or animal life, or cause damage to property, or reasonably interfere with the enjoyment of life and property.	Monitoring of air emissions during remedial activities will be used to assess compliance with these standards if threshold levels are reached.
Clean Air Act – Air Toxics	RIGL 23-23 *et seq.*; CRIR 12-31-22	Applicable	Prohibits the emission of specified contaminants at rates which would result in ground level concentrations greater than acceptable ambient levels or acceptable ambient levels as set in the regulations.	Emissions of air toxics during remedial actions such as excavation would be controlled through control of fugitive dust emissions. Emissions of air toxics during earthwork will be controlled.

TABLE D-3
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCs
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Soil Erosion and Sediment Control Handbook, 1989	None	To Be Considered	Identifies soil erosion and sediment (E&S) control requirements for construction activities involving land disturbance activities.	A compliant erosion and sediment control plan will be prepared, and erosion and sediment controls will be installed / used during earthwork activities.
Standards for Identification and Listing of Hazardous Waste, Rules and Regulations for Hazardous Waste Management	CRIR 12-030-003, Rule 5.8	Applicable	Rhode Island is delegated to administer the federal RCRA statute through its state regulations. Defines the listed and characteristic hazardous wastes.	No media or investigation- / construction-derived wastes are expected to be hazardous. However, any hazardous wastes generated during the remedial action will be containerized, tested, and disposed in accordance with this ARAR.
Standards for Generators of Hazardous Waste, Rules and Regulations for Hazardous Waste Management	RIGL 23-19.1 et seq.; CRIR 12-030-003 Rule 5.2, 5.3, 5.4 and 5.8	Applicable	Establishes manifesting, pre-transport, and recordkeeping requirements for hazardous waste.	No media or investigation- / construction-derived wastes are expected to be hazardous. However, any hazardous wastes generated during the remedial action will be managed in accordance with this ARAR.
Rules and Regulations for Groundwater Quality (Well Standards)	Appendix 1	Applicable	Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells.	Existing monitoring wells will be protected during this remedial action. Additional monitoring wells will be installed as part of the groundwater portion of the remedy (See Table D-6).
State of Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations), amended in November 2011	CRIR 12-180-001, DEM-DSR-01-93, Section 12.04	Applicable	This portion of the RIDEM Remediation Regulations specify remediation requirements for arsenic-contaminated soil. The rule specifies encapsulation and excavation options depending on the concentration of arsenic to be addressed.	Encapsulation/cover types detailed in Section 12.04 will be followed for the remedy to address soil contaminated with arsenic. This rule was followed to develop the cover alternative in the Feasibility Study.

TABLE D-3
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
SOIL ALTERNATIVE S-2: COVERS AND LUCs
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Drilling of Drinking Water Wells; Rules and Regulations Governing the Enforcement of Chapter 46- 13.2 Relating to the Drilling of Drinking Water Wells	Rule 7.01	Applicable	Prohibits installing drinking water wells near pollution sources or potential contamination sources. Establishes standards for decommissioning monitoring wells (Rule 9.03).	Monitoring wells will be properly decommissioned when no longer needed.

TABLE D-4
ASSESSMENT OF CHEMICAL-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Federal				
EPA Human Health Assessment Cancer Slope Factors (CSFs)	None	To Be Considered	Guidance values used to evaluate the potential carcinogenic hazards caused by exposure to contaminants.	Used to compute the individual incremental cancer risk resulting from exposure to carcinogenic contaminants in groundwater. Land Use Controls (LUCs) will prevent exposure to contaminants in groundwater exceeding risk levels until Remedial Action Objectives (RAOs) are met / until MNA achieves the cleanup goals (estimated at 15 to 30 years).
Reference Doses (RfDs)	None	To Be Considered	Guidance values used to compute human health hazard resulting from exposure to non-carcinogens in site media.	Used to calculate potential non-carcinogenic hazards caused by exposure to contaminants. LUCs will prevent exposure to contaminants in groundwater exceeding risk levels until MNA achieves the cleanup goals.
EPA VISL Calculator	VISL Calculator Version 2.0, May 2012 RSLs (or latest version /update).	To Be Considered	Guidance values to evaluate vapor intrusion risk.	The VISL will be used to calculate indoor air screening values for use during [future] vapor intrusion evaluations (triggered by new construction) until RAOs are met / until MNA achieves the cleanup goals.
Guidelines for Carcinogen Risk Assessment	EPA/630/P-03/001F (March 2005)	To Be Considered	Guidance for assessing cancer risk.	Used to calculate potential carcinogenic risks caused by exposure to contaminants . LUCs will prevent exposure to contaminants in groundwater exceeding risk levels until MNA achieves the cleanup goals.

TABLE D-4
ASSESSMENT OF CHEMICAL-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	EPA/630/R-03/003F (March 2005)	To Be Considered	Guidance of assessing cancer risks to children.	Used to calculate potential carcinogenic risks to children caused by exposure to contaminants. LUCs will prevent exposure to contaminants in groundwater exceeding risk levels until MNA achieves the cleanup goals.
Safe Drinking Water Act, National Primary Drinking Water Regulations - Maximum Contaminant Levels (MCLs)	40 Code of Federal Regulations (CFR) 141 Subpart G	Applicable	Establishes maximum contaminant levels (MCLs) for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate cleanup standards for aquifers and surface water bodies that are potential drinking water sources.	MCLs were used in the development of cleanup levels, based on the use of the groundwater for residential purposes. LUCs will prevent use of contaminated groundwater until MNA achieves the cleanup goals. Periodic monitoring of COCs will verify that MCLs (i.e., cleanup levels) are not exceeded.
Safe Drinking Water Act, National Primary Drinking Water Regulations - Maximum Contaminant Level Goals (MCLGs)	40 CFR 141 Subpart F	Relevant and Appropriate for non-zero MCLGs only	Establishes maximum contaminant level goals (MCLGs) for public water supplies. MCLGs are health goals for drinking water sources. These unenforceable health goals are available for a number of organic and inorganic compounds.	MCLGs were considered in development of cleanup goals based on the use of the groundwater for residential purposes. LUCs will prevent use of contaminated groundwater until MNA achieves the cleanup goals. Periodic monitoring of COCs will verify that relevant and appropriate non-zero MCLGs are not exceeded.

TABLE D-4
ASSESSMENT OF CHEMICAL-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to Be Taken to Attain ARAR
Drinking Water Health Advisories (EPA Office of Water, 2012)	EPA 822-S-12-001; 2012 Edition of the Drinking Water Standards and Health Advisories	To Be Considered	Health Advisories are estimates of risk from consumption of contaminated drinking water. They consider non-carcinogenic effects only. To be considered for contaminants in groundwater that may be used for drinking water where the standard is more conservative than either federal or state criteria or regulatory standards, or there are no criteria for the contaminant.	EPA Lifetime Health Advisory Level for manganese (0.3 milligrams per liter) was used [in lieu of an MCL at the request of EPA] as an indication of non-carcinogenic risk. Under federal standards, groundwater within the site is considered a potential drinking water source and therefore groundwater must achieve these standards (not considering of salinity conditions near the Bay). LUCs will prevent exposure to contaminant in groundwater exceeding the advisory level (selected as the cleanup level) until MNA achieves the cleanup goals.
State				
State of Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations), amended in November 2011	Code of Rhode Island Rules (CRIR) 12-180-001, DEM-DSR-01-93, Section 8.02, and 8.03 (with the exception of 8.02A(iv)-TPH)	Applicable	These regulations set remediation standards for contaminated media. These standards are applicable to a CERCLA remedy when they are more stringent than federal standards. Establishes criteria for groundwater and both direct contact and leachability of contaminants in soil.	RIDEM [Aquifer Class “GA”] Groundwater Objectives (equivalent to federal MCLs) will be met. LUCs will prevent use of contaminated groundwater until MNA achieves the cleanup goals. Monitoring conducted as part of the MNA remedy will evaluate compliance with the groundwater cleanup levels.

TABLE D-5
ASSESSMENT OF LOCATION-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to be Taken to Attain ARAR
Federal				
Floodplain Management and Protection of Wetlands	44 Code of Federal Regulations (CFR) 9	Relevant and Appropriate	Implements Executive Order 11990 (Protection of Wetlands) and Executive Order 11988 (Floodplain Management). Prohibits activities that adversely affect federally-regulated resource areas unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands and floodplains that may result from such use.	While there are no jurisdictional wetlands at the site (although regulated habitats are adjacent to the site in Narragansett Bay), the majority of the site is located within the 100-year coastal floodplain. The Navy's remedial measures will prevent groundwater contamination beneath the floodplain from migrating and posing a risk to adjacent floodplain, wetlands and aquatic habitats. Public comment on the proposed remedy within coastal floodplain was solicited through the Proposed Plan. No negative comments were received.
Coastal Zone Management Act	Coastal Zone Management Act, 16 USC 1451 *et. seq.*	Applicable	Requires that any actions must be conducted in a manner consistent with state-approved management programs.	The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements will be addressed.
Endangered Species Act	16 U.S. Code (USC) 1531 et seq.; 50 CFR Parts 200 and 402	Applicable	Regulates activities affecting federally listed endangered or threatened species or their critical habitat.	Based on previous studies and risk assessments, MNA is not anticipated to impact adjacent aquatic habitats in Narragansett Bay. However, appropriate federal agencies will be consulted to find ways to minimize adverse effects from contamination migrating from the site to coastal waters.
State				
Coastal Resources Management	RIGL 46-23-1 *et seq.*	Applicable	Sets standards for management and protection of coastal resources.	The entire site is located in a coastal resource management area. Therefore, activities conducted under this remedy will be conducted in compliance with applicable coastal resource management requirements.

TABLE D-6
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to be Taken to Attain ARAR
Federal				
EPA Groundwater Protection Strategy	August 1984; NCP Preamble, Vol. 55, No. 46, March 8, 1990, 40 CFR 300, p. 8733); Guidelines for Ground-Water Classification (November 1986)	To Be Considered	The Groundwater Protection Strategy provides a common reference for preserving clean groundwater and protecting the public health from the effects of past contamination. Guidelines for consistency in groundwater protection programs focus on the highest beneficial use of a groundwater aquifer and define three classes of groundwater. These documents defined Class I, II and III groundwater.	Guidance standards will be met, because the selection of cleanup goals considered federal drinking water standards, nonzero Maximum Contaminant Level Goals (MCLGs), and more stringent state groundwater standards and risk-based standards. Land Use Controls (LUCs) will prevent exposure to contaminated groundwater until MNA meets cleanup goals (estimated at 15 to 30 years).
Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites	OSWER Directive 9200.4-17P (April 21, 1999)	To Be Considered	EPA guidance regarding the use of monitored natural attenuation (MNA) for the cleanup of contaminated soil and groundwater. In particular, a reasonable time frame for achieving cleanup standard though monitored attenuation would be comparable to that which could be achieved through active restoration.	The MNA component of this groundwater alternative will meet these standards only if natural attenuation will attain all groundwater cleanup standards for each COC within a timeframe that is reasonable compared to that offered by other methods.
Safe Drinking Water Act, National Primary Drinking Water Regulations - Maximum Contaminant Levels (MCLs)	40 Code of Federal Regulations (CFR) 141 Subpart G	Applicable	Establishes maximum contaminant levels (MCLs) for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate cleanup standards for aquifers and surface water bodies that are potential drinking water sources.	MCLs will be met. LUCs will prevent use of contaminated groundwater until MNA achieves the cleanup goals. Monitoring conducted as part of the MNA remedy will evaluate compliance with the groundwater cleanup levels.

TABLE D-6
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to be Taken to Attain ARAR
Safe Drinking Water Act, National Primary Drinking Water Regulations - Maximum Contaminant Level Goals (MCLGs)	40 CFR 141 Subpart F	Relevant and Appropriate for non-zero MCLGs only	Establishes maximum contaminant level goals (MCLGs) for public water supplies. MCLGs are health goals for drinking water sources. These unenforceable health goals are available for a number of organic and inorganic compounds.	MCLGs were considered in the selection of cleanup levels based on the use of the groundwater for residential purposes. LUCs will prevent use of contaminated groundwater until MNA achieves the cleanup goals. Periodic monitoring of COCs will verify that relevant and appropriate non-zero MCLGs are not exceeded.
Drinking Water Health Advisories (EPA Office of Water, 2012)	EPA 822-S-12-001; 2012 Edition of the Drinking Water Standards and Health Advisories	To Be Considered	Health Advisories are estimates of risk from consumption of contaminated drinking water. They consider non-carcinogenic effects only. To be considered for contaminants in groundwater that may be used for drinking water where the standard is more conservative than either federal or state criteria or regulatory standards, or there are no criteria for the contaminant.	EPA Lifetime Health Advisory Level for manganese (0.3 milligrams per liter) was used [in lieu of an MCL at the request of EPA] as an indication of non-carcinogenic risk. Under federal standards, groundwater within the site is considered a potential drinking water source and therefore groundwater must achieve these standards (not considering of salinity conditions near the Bay). LUCs will prevent exposure to contaminants in groundwater exceeding the advisory level (selected as cleanup level) until MNA achieves the cleanup level.

TABLE D-6
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to be Taken to Attain ARAR
State				
Standards for Identification and Listing of Hazardous Waste, Rules and Regulations for Hazardous Waste Management	CRIR 12-030- 003, Rule 5.8	Applicable	Rhode Island is delegated to administer the federal RCRA statute through its state regulations. Defines the listed and characteristic hazardous wastes.	These regulations apply to all waste generated during actions at the site, such as investigation-derived waste from well installations (soil cuttings) and groundwater sampling (purge water). These regulations will be used to determine whether or not a solid waste is hazardous. Based on historical investigations and waste characterizations, soil cuttings, purged groundwater, decontamination fluids, etc. are not expected to be hazardous at OU12.
Standards for Generators of Hazardous Waste, Rules and Regulations for Hazardous Waste Management	RIGL 23-19.1 et seq.; CRIR 12-030-003 Rule 5.2, 5.3, 5.4 and 5.8	Applicable	Establishes manifesting, pre-transport, and recordkeeping requirements for hazardous waste.	These regulations would apply to any waste generated at the site that is determined to be hazardous. Based on historical investigations and waste characterizations, soil cuttings, purged groundwater, decontamination fluids, etc. are not expected to be hazardous.
Drilling of Drinking Water Wells; Rules and Regulations Governing the Enforcement of Chapter 46- 13.2 Relating to the Drilling of Drinking Water Wells	Rule 7.01	Applicable	Prohibits installing drinking water wells near pollution sources or potential contamination sources. Establishes standards for decommissioning monitoring wells (Rule 9.03).	LUCs will prevent the installation of residential groundwater wells near pollution sources or potential contamination sources until MNA meets cleanup levels.

TABLE D-6
ASSESSMENT OF ACTION-SPECIFIC ARARs AND TBCs
GROUNDWATER ALTERNATIVE G-2: MNA AND LUCS
SITE 19 – ON-SHORE DERECKTOR SHIPYARD (OU12)
NAVSTA NEWPORT, RHODE ISLAND

Requirement	Citation	Status	Synopsis of Requirement	Action to be Taken to Attain ARAR
Rules and Regulations for Groundwater Quality (Well Standards)	Appendix 1	Applicable	Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells.	Applies to the abandonment of existing monitoring wells.
Water Pollution Control (Water Quality Regulations)	RIGL 42-16 et seq.; CRIR 12-190-001	Applicable	Establishes water use classification and water quality criteria for waters of the state.	Groundwater concentrations can be compared against these criteria during the long-term monitoring events.

Appendix E

Public Hearing Transcript

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FINAL

PUBLIC HEARING

RE: PROPOSED PLANS, OU 5 and OU 12, SITE 19

FORMER DERECKTOR SHIPYARD

WEDNESDAY, MAY 21, 2014

COURTYARD BY MARRIOTT

9 COMMERCE DRIVE, MIDDLETOWN, RHODE ISLAND

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Hearings ◆ Conferences ◆ Legal Proceedings

(The Public Hearing regarding Proposed Plans of Site 19, Former Derecktor Shipyard)

MR. STEPHEN PARKER: It's 7:40, and so the next part of this is to hold the Public Hearing, during which we will hear your comments on the two Proposed Plans, one for OU 5 and the other for OU 12 which are part of Site 19 at the Former Derecktor Shipyard.

So if you have a comment, please just state your name and who you represent, and then give us your comment, and we will ensure that it's recorded for the record and published in the responsive summary. I'll open it to the floor.

MS. MARGARET KIRSCHNER: I'll ask something I didn't ask a moment ago. This is Margaret Kirschner from Newport.

There's a clear distinction about the source of the contamination being from the Derecktor years. I'm wondering, would it make a difference in the work or the plan or the remediation if that distinction had not been made? You know, just general pier operations, what would normally be found in that sort of environment, considering the age of the site from World War II, is that distinction important, or, based on the work that

was done, would all the contaminants have been found anyway?

MR. PARKER: Okay. Thanks. That's a good comment. Good question.

MS. KATHY ABBASS: I'm Kathy Abbass with the Rhode Island Marine Archeology Project.

I would like to follow up. The kinds of things they have always said they found is exactly the kind of stuff that you find around shipyards elsewhere in the state. It's just that the Navy is responsible for cleaning this up. I understand, because I had asked that very early on, if you're making the Navy clean this up, why aren't you doing that at other areas of the Shipyard that have used exactly the same kind of technology? That's an issue that's outside what we are discussing here tonight.

But I did want to remind you of a couple of historical things that I always bring to your attention. One is that around the area where the chemical storage and fuel storage was, that originally 200 years ago had been a wetland to begin with, and so that has obviously been filled in over the years. There's still a little stream in there and the culvert that goes under the

railroad tracks and all of that. So I presume when you're doing the monitoring and all of that that you'll pay attention to the fact that was a wetland and it probably has whatever that structure is beneath it.

The other thing is what you could find when you're doing your removal: isolated cultural finds that could be historically significant. I don't think the area you're working in is where the Revolutionary War frigate, the Juneau, was lost because I think we found her elsewhere, but there could be materials from World War II that could come up when you're doing that. You might want to just pay attention to that because to be historically significant now means it has to be older than fifty years. Now World War II is in that category, too.

I do note from other areas around the Base and elsewhere that one of the things that Navy guys love to do is take their coffee mugs out and throw them into the water when they were through with them instead of going back and taking them and washing them. So, I mean, there's a lot of that kind of debris to be found. We actually found a lot of it. So you might just keep an eye out for that sort of thing.

MR. PARKER: Thank you.

MR. DAVID BROWN: David Brown, just a farm boy, became an agricultural economist, quite a bit with watersheds and that kind of thing.

Point Number 1, I think a competent job has been done in pinpointing the remaining site problems and remedial options, including the soil and the groundwater and offshore, so I think you have done a pretty thorough job.

On the groundwater and, in turn, offshore, I think we may need a fuller picture of what the flows are and to what extent there are flows from nearby offsite places and what's happening to the water that's on Site 19 and really whether it's just staying there and to what extent it's flowing into the contaminated offshore area.

If it's like a bowl, then maybe the cleanup becomes neater. But if it's like a flow and going out still and a lot of it is coming from offshore, that implies, to me, having a companion action on adjacent Navy sites, even on the civilian sites upstream, up the hill, to try to reduce the flows that are coming down onto Site 19 or into Site 19, either surface water or groundwater. And I know this means working between

programs, but more and more people who are with it, organizations, are not just thinking stovepipes of agencies, but how to do it in sync. Otherwise, the cleanup you do will be kind of a waste of money if it's just got more stuff coming down. And, in turn, this would fit what's happening on the Island where we're becoming very concerned about steering flows of water down into storm systems and treating it like a bowl, but treating more upstream like a sponge, how to absorb runoff.

So you have a lot of houses and Navy housing, and so on. This gets into Dave's area (Dave Dorocz, Public Works). That while you're at the cleanup on Site 19, maybe you could at least try to nudge the Navy to have kind of a reduced runoff approach for its lands nearby. And forget whether it's one agency or another or one program or another. I've been in programs wherein inter-agency cooperation have been able to be worked out without necessarily having a fixed mandate to do it.

MR. PARKER: Thank you.

Anything else? I'll take silence as a no.

MS. KIRSCHNER: Can I ask another question? In the bay, in the cove, when you remove target sites and

you determine the extent of the removal based on the average remainder of the, like an aggregate contamination, is that correct, is that achieved in one design of, for instance, the targeted sites that you chose, or could that be achieved by some other combination of removal? Is that a broad approach -- Can you achieve an acceptable aggregate result in the cove by other combinations of dredging, for instance, with that sort of treatment of your samples? And I could maybe write my question or discuss it, I could discuss it with you.

MR. PARKER: I understand what you're asking.

MS. KIRSCHNER: It's kind of a general process question.

MR. PARKER: I understand.

All right. Well, if there's nothing else, close the hearing. I want to thank everybody for coming and enduring the long discussions. That's it. Thank you.

(At 7:56 p.m. the hearing was adjourned.)

REPORTER'S CERTIFICATION

I hereby certify that the foregoing 7 pages contain a true and correct transcript of all my stenographic notes to the best of my ability taken in the matter of the Former Derecktor Shipyard held at the Courtyard by Marriott on Wednesday, May 21, 2014.

RUTH E. HULKE, CSR NO. 114893

Appendix F

Data Technical Memorandum for June 2014 Groundwater and Soil Additional Sampling Effort (Tetra Tech, September 2014)

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TETRA TECH

FINAL

TECHNICAL MEMORANDUM

DATE: September 8, 2014

TO: NAVSTA Newport RPM Team

FROM: Tetra Tech, Inc.

SUBJECT: **June 2014 Additional Groundwater and Soil Sampling Data**
Site 19 – On-Shore Derecktor Shipyard (OU12)
Naval Station Newport, Rhode Island
CLEAN Contract No. N62472-03-D-0057, CTO 165

1.0 INTRODUCTION

This document provides the analytical and field parameter data from the sampling effort conducted in June 2014 at Site 19 – On-Shore Derecktor Shipyard (Operable Unit [OU] 12), Naval Station Newport, Rhode Island.

2.0 FIELDWORK

Fieldwork was performed in June 2014 in accordance with the work plan (Tetra Tech, June 2014) with the following exceptions / notations, which were detailed to the RPM Team in a Field Modification Record form emailed on June 20, 2014. Upgradient site-specific background well MW223 could not be sampled due to access issues in the fenced NUWC compound. The well could not be located visually through the chain link fence. The expected location was covered by a newly paved road, suggesting the well was destroyed/covered. Per the work plan, new pre-pack temporary wells were to be installed when a planned well was unusable. Temporary well MW11B was installed to collect a sample at the location of unusable well MW11A. Temporary well MW104A was installed at the location of unusable well MW104. The 4-inch casing of MW104, screened 5 to 25 feet below ground surface (bgs), was broken and caved in, precluding access to the groundwater. The 1-inch pre-pack, temporary well MW104A was pushed to 4 feet into the bedrock (encountered at 10 feet bgs) until refusal, resulting in a screen interval of 4 to 14 feet bgs. Monitoring well construction diagrams for MW11B and MW104A are provided in Attachment A. Field sample logs also are provide in Attachment A.

3.0 RESULTS

Soil leachability data results are provided with GA Leachability Criteria in Table 1. Groundwater data results are provided with GA Groundwater Objectives, federal MCLs, and OU12 ROD Cleanup Levels in

Table 2. Table 2 also provides field parameter data for the groundwater samples. Quality control (QC) equipment rinsate blank and trip blank results are provided in Table 3. The QC data results indicate soil and groundwater sample data were not impacted by cross-contamination between sample locations. The data were validated. Data validation memoranda, which include the raw analytical data, are provided in Attachment B.

REFERENCES

Tetra Tech, 2014. *Work Plan Addendum No. 2, Additional Groundwater and Soil Sampling, Site 19 – On-Shore Derecktor Shipyard (OU12), Naval Station Newport, Newport, Rhode Island*. June.

ENCLOSURES

Table 1	Soil Leachability Sample Results
Table 2	Groundwater Sample Results
Table 3	Quality Control Blank Results
Figure 1	Soil Sample Locations
Figure 2	Groundwater Sample Locations
Attachment A	Sample Log Sheets and Monitoring Well Completion Diagrams
Attachment B	Data Validation Memoranda

Table 1 - Soil Leachability Sample Results
June 2014 Additional Sampling Effort
Site 19 - On-Shore Derector Shipyard (OU12)
Naval Station Newport, Rhode Island

2014 LOCATION ID	RIDEM GA Leachability Criteria	DSY-SB-301	DSY-SB-302	DSY-SB-303	DSY-SB-304		
HISTORICAL LOCATION ID		*TP-08*	*TP-10*	*TP-11*	*TP-16*		
2014 SAMPLE ID		DSY-SB301-0001	DSY-SB302-0001	DSY-SB303-1213	DSY-SB304-0001	DSY-SB304-0001-D	DSY-SB304-0001-AVG
SAMPLE DATE		06/16/2014	06/16/2014	06/19/2014	06/16/2014	06/16/2014	06/16/2014
SAMPLE DEPTH INTERVAL (ft bgs)		0 - 1	0 - 1	12 - 13	0 - 1	0 - 1	0 - 1
INORGANICS (µg/L)							
SPLP-Lead *(leachate test result from soil sample)*	40	5 U	5 U	5 U	15.2	25.4	20.3
SEMIVOLATILES (mg/kg)							
NAPHTHALENE *(total naphthalene in soil sample)*	0.8	NA	NA	NA	0.14 U	0.14 U	0.14 U

2014 LOCATION ID	RIDEM GA Leachability Criteria	DSY-SB-305	DSY-SB-306	DSY-SB-307
HISTORICAL LOCATION ID		*TP-26*	*TP-28*	*MW-08*
2014 SAMPLE ID		DSY-SB305-0305	DSY-SB306-0001	DSY-SB307-0.51.5
SAMPLE DATE		06/19/2014	06/19/2014	06/19/2014
SAMPLE DEPTH INTERVAL (ft bgs)		3 - 5	0 - 1	0.5 - 1.5
INORGANICS (µg/L)				
SPLP-Lead *(leachate test result from soil sample)*	40	NA	5 U	5 U
SEMIVOLATILES (mg/kg)				
NAPHTHALENE *(total naphthalene in soil sample)*	0.8	0.15 U	NA	NA

Notes
No exceedances of GA Leachability Criteria.
SPLP - Synthetic Precipitation Leaching Procedure
TP - Test Pit
MW - Monitoring Well

Table 2 - Groundwater Results
June 2014 Additional Sampling Effort
Site 19 - On-Shore Derector Shipyard (OU12)
Naval Station Newport, Rhode Island

LOCATION	GA Groundwater Objective	Federal MCL	OU12 Groundwater Cleanup Goal	DSY-MW-02	DSY-MW-03	DSY-MW-08	DSY-MW-11B		DSY-MW-12	DSY-MW-104A	DSY-MW204	DSY-MW218
SAMPLE ID				DSY-MW02A-0614	DSY-MW03-0614	DSY-MW08-0614	DSY-MW11B-0614	DSY-MW11B-0614-D	DSY-MW12-0614	DSY-MW104A-0614	DSY-MW204-0614	DSY-MW218-0614
SAMPLE DATE				06/13/2014	06/12/2014	06/12/2014	06/20/2014	06/20/2014	06/16/2014	06/20/2014	06/13/2014	06/12/2014
DUPLICATE?							Parent Sample	Duplicate Sample				
Volatile Organic Compounds (VOCs) (µg/L)												
1,1,1-TRICHLOROETHANE	200	200	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	5	5	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	7	7	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	70	70	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.2	0.2	--	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 U	1 U
1,2-DIBROMOETHANE	0.05	0.05	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	600	600	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	5	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROPROPANE	5	5	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE	600	NC	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	75	75	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	35	2.5 U	2.5 U
2-HEXANONE	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-METHYL-2-PENTANONE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ACETONE	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	20	2.5 U	2.5 U
BENZENE	5	5	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	--	80	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	--	80	--	1 UJ	1 UJ	1 UJ	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ
BROMOMETHANE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CARBON DISULFIDE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	5	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	--	80	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	--	80	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	70	70	--	0.5 U	0.5 U	7	8.3	8.1	1.9	0.5 U	0.5 U	0.5 U
CIS-1,3-DICHLOROPROPENE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CYCLOHEXANE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	700	700	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	--	10000	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL ACETATE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	40	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.6	0.5 U	0.5 U
METHYLENE CHLORIDE	5	5	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	--	10000	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	100	100	--	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ
TETRACHLOROETHENE	5	5	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.92 J	1 U
TOLUENE	1000	1000	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL XYLENES	10000	10000	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	--	1 U	1 U	1 U	1 U	1	1.2	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	--	--	--	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ
TRICHLOROETHENE	5	5	5	0.5 U	3.1	3.3	0.5 U	0.5 U	0.64 J	0.99 J	2.6	0.5 U
TRICHLOROFLUOROMETHANE	--	--	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL CHLORIDE	2	2	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)												
2-METHYLNAPHTHALENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
ACENAPHTHENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
ACENAPHTHYLENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
ANTHRACENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
BENZO(A)ANTHRACENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
BENZO(A)PYRENE	0.2	0.2	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 UJ	0.1 U
BENZO(B)FLUORANTHENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 UJ	0.1 U
BENZO(G,H,I)PERYLENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 UJ	0.1 U
BENZO(K)FLUORANTHENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 UJ	0.1 U
CHRYSENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 UJ	0.1 U
DIBENZO(A,H)ANTHRACENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
FLUORANTHENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
FLUORENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
INDENO(1,2,3-CD)PYRENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 UJ	0.1 U
NAPHTHALENE	20	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
PHENANTHRENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U
PYRENE	--	--	--	NA	NA	0.1 U	NA	NA	NA	NA	0.1 U	0.1 U

Table 2 - Groundwater Results
June 2014 Additional Sampling Effort
Site 19 - On-Shore Derector Shipyard (OU12)
Naval Station Newport, Rhode Island

LOCATION	GA Groundwater Objective	Federal MCL	OU12 Groundwater Cleanup Goal	DSY-MW-02	DSY-MW-03	DSY-MW-08	DSY-MW-11B		DSY-MW-12	DSY-MW-104A	DSY-MW204	DSY-MW218
SAMPLE ID				DSY-MW02A-0614	DSY-MW03-0614	DSY-MW08-0614	DSY-MW11B-0614	DSY-MW11B-0614-D	DSY-MW12-0614	DSY-MW104A-0614	DSY-MW204-0614	DSY-MW218-0614
SAMPLE DATE				06/13/2014	06/12/2014	06/12/2014	06/20/2014	06/20/2014	06/16/2014	06/20/2014	06/13/2014	06/12/2014
DUPLICATE?							Parent Sample	Duplicate Sample				
Total (Unfiltered) Inorganics (µg/L)												
ALUMINUM	--	--	--	NA	NA	100 U	NA	NA	NA	2000	87.7 J	100 U
ANTIMONY	6	6	--	NA	NA	15 U	NA	NA	NA	15 U	15 U	15 U
ARSENIC	--	10	10	NA	NA	5 U	NA	NA	NA	5.2 J	5 U	**155**
BARIUM	2000	2000	--	NA	NA	18.3 J	NA	NA	NA	392	18.6 J	35.2 J
BERYLLIUM	4	4	--	NA	NA	1 U	NA	NA	NA	1 U	1 U	1 U
CADMIUM	5	5	--	NA	NA	1.5 U	NA	NA	NA	1.5 U	1.5 U	1.5 U
CALCIUM	--	--	--	NA	NA	74700	NA	NA	NA	124000	54500	90400
CHROMIUM	100	100	--	NA	NA	1 U	NA	NA	NA	10.7 J	1 U	1 U
COBALT	--	--	4.7	NA	NA	1 U	NA	NA	NA	12.4 J	1 U	17.4 J
COPPER	--	1300	--	NA	NA	5 U	NA	NA	NA	54.6	5 U	5 U
IRON	--	--	11000	NA	NA	420	NA	NA	NA	3830	81.6 J	56200
LEAD	15	15	--	NA	NA	5 U	NA	NA	NA	13.7	5 U	5 U
MAGNESIUM	--	--	--	NA	NA	13700	NA	NA	NA	30100	13000	21700
MANGANESE	--	--	300	NA	NA	458	NA	NA	NA	7600	33.4 J	6980
MERCURY	2	2	--	NA	NA	0.05 U	NA	NA	NA	0.09 U	0.05 U	0.05 U
NICKEL	100	--	--	NA	NA	1.3 U	NA	NA	NA	46.5 J	2.9 J	1.2 U
POTASSIUM	--	--	--	NA	NA	7740	NA	NA	NA	43300	2940	11600
SELENIUM	50	50	--	NA	NA	20 U	NA	NA	NA	20 U	20 U	20 U
SILVER	--	--	--	NA	NA	10 U	NA	NA	NA	10 U	10 U	10 U
SODIUM	--	--	--	NA	NA	273000	NA	NA	NA	604000	80100	81400
THALLIUM	2	2	--	NA	NA	10 U	NA	NA	NA	10 U	10 U	10 U
VANADIUM	--	--	--	NA	NA	2 U	NA	NA	NA	3.1 J	2 U	2 U
ZINC	--	--	--	NA	NA	10.6 U	NA	NA	NA	87.2	11.4 J	7.5 U
Dissolved (Filtered) Inorganics (µg/L)												
ALUMINUM	--	--	--	NA	NA	100 U	NA	NA	NA	100 U	100 U	100 U
ANTIMONY	6	6	--	NA	NA	15 U	NA	NA	NA	15 U	15 U	15 U
ARSENIC	--	10	10	NA	NA	5 U	NA	NA	NA	5 U	5 U	**134**
BARIUM	2000	2000	--	NA	NA	18.5 J	NA	NA	NA	253	21.7 J	33.2 J
BERYLLIUM	4	4	--	NA	NA	1 U	NA	NA	NA	1 U	1 U	1 U
CADMIUM	5	5	--	NA	NA	1.5 U	NA	NA	NA	1.5 U	1.5 U	1.5 U
CALCIUM	--	--	--	NA	NA	76900	NA	NA	NA	108000	55900	86900
CHROMIUM	100	100	--	NA	NA	1 U	NA	NA	NA	1 U	1 U	1 U
COBALT	--	--	4.7	NA	NA	1 U	NA	NA	NA	8.5 J	1 U	16.5 J
COPPER	--	1300	--	NA	NA	5 U	NA	NA	NA	19.8 J	4 J	5 U
IRON	--	--	11000	NA	NA	413	NA	NA	NA	50 U	50 U	53400
LEAD	15	15	--	NA	NA	5 U	NA	NA	NA	5 U	5 U	5 U
MAGNESIUM	--	--	--	NA	NA	13900	NA	NA	NA	24900	13500	20600
MANGANESE	--	--	300	NA	NA	502	NA	NA	NA	6260	37.1 J	6770
MERCURY	2	2	--	NA	NA	0.05 U	NA	NA	NA	0.05 U	0.05 U	0.05 U
NICKEL	100	--	--	NA	NA	1.2 U	NA	NA	NA	31 J	3.3 J	1.3 U
POTASSIUM	--	--	--	NA	NA	7800	NA	NA	NA	33200	3050	11300
SELENIUM	50	50	--	NA	NA	20 U	NA	NA	NA	20 U	13.1 J	20 U
SILVER	--	--	--	NA	NA	10 U	NA	NA	NA	10 U	10 U	10 U
SODIUM	--	--	--	NA	NA	282000	NA	NA	NA	472000	82400	79600
THALLIUM	2	2	--	NA	NA	10 U	NA	NA	NA	10 U	10 U	10 U
VANADIUM	--	--	--	NA	NA	2 U	NA	NA	NA	2 U	1.2 J	2 U
ZINC	--	--	--	NA	NA	7.5 U	NA	NA	NA	36.6 J	13 J	7.5 U
Dissolved Gases (µg/L)												
ETHANE	--	--	--	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	NA	1.3 U	1.3 U
ETHENE	--	--	--	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	NA	1.6 U	1.6 U
METHANE	--	--	--	10	0.72	12	14	16	4.4	NA	0.61 U	570
MNA PARAMETERS (mg/L)												
ALKALINITY	--	--	--	140	20 U	64	150	160	100	NA	49	320
CHLORIDE	--	--	--	130	160	510	81	80	94	NA	190	130
NITRATE-N	--	10	--	0.042 U	1.4 J	0.38	0.042 U	0.042 U	0.042 U	NA	2.3 J	0.042 U
NITRITE-N	--	1	--	0.013 UJ	0.013 UJ	0.013 U	0.013 U	0.013 U	0.013 U	NA	0.013 UJ	0.013 U
SULFATE	--	--	--	40 J	23 J	9.3	31	32	27	NA	25 J	8.8
SULFIDE	--	--	--	0.29	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	NA	0.03 U	0.03 U
TOTAL ORGANIC CARBON	--	--	--	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	12
Field-Measured Parameters												
SALINITY (‰)	--	--	--	0.04	0.03	0.09	0.03		0.03	NA	0.04	0.05
TEMPERATURE (C)	--	--	--	14.5	15.3	17	18		17.1	NA	16.3	15.4
DISSOLVED OXYGEN (mg/L)	--	--	--	0.26	5.2	0	0		0.82	NA	0.9	0.28
SPECIFIC CONDUCTANCE (mS/cm)	--	--	--	0.824	0.597	1.82	0.616		0.596	NA	0.775	1.02
OXIDATION REDUCTION POTENTIAL (mV)	--	--	--	-193	241	159	-180		-155	NA	272	-144
TURBIDITY (NTU)	--	--	--	2.3	4.9	0.9	9		10	NA	3.4	6.8
pH (standard units)	--	--	--	8.3	5.39	5.99	7.53		6.96	NA	5.79	6.84

NA - not analyzed or not applicable
U - not detected above associated value J - estimated value

Table 2 - Groundwater Results
June 2014 Additional Sampling Effort
Site 19 - On-Shore Derector Shipyard (OU12)
Naval Station Newport, Rhode Island

LOCATION	GA Groundwater Objective	Federal MCL	OU12 Groundwater Cleanup Goal	DSY-MW219		DSY-MW220	DSY-MW221	DSY-MW222
SAMPLE ID				DSY-MW219-0614	DSY-MW219-0614-D	DSY-MW220-0614	DSY-MW221-0614	DSY-MW222-0614
SAMPLE DATE				06/12/2014	06/12/2014	06/12/2014	06/12/2014	06/12/2014
DUPLICATE?				Parent Sample	Duplicate Sample			
Volatile Organic Compounds (VOCs) (µg/L)								
1,1,1-TRICHLOROETHANE	200	200	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	5	5	--	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	7	7	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	70	70	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
1,2-DIBROMO-3-CHLOROPROPANE	0.2	0.2	--	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	0.05	0.05	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	600	600	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	5	5	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROPROPANE	5	5	--	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROBENZENE	600	NC	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DICHLOROBENZENE	75	75	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-BUTANONE	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2-HEXANONE	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-METHYL-2-PENTANONE	--	--	--	1 U	1 U	1 U	1 U	1 U
ACETONE	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
BENZENE	5	5	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMODICHLOROMETHANE	--	80	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOFORM	--	80	--	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
BROMOMETHANE	--	--	--	1 U	1 U	1 U	1 U	1 U
CARBON DISULFIDE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	5	5	--	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	--	80	--	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROFORM	--	80	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROMETHANE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	70	70	--	0.5 U	0.5 U	1.9	1.1	0.5 U
CIS-1,3-DICHLOROPROPENE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CYCLOHEXANE	--	--	--	1 U	1 U	1 U	1 U	1 U
DICHLORODIFLUOROMETHANE	--	--	--	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	700	700	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	--	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
M+P-XYLENES	--	10000	--	1 U	1 U	1 U	1 U	1 U
METHYL ACETATE	--	--	--	1 U	1 U	1 U	1 U	1 U
METHYL CYCLOHEXANE	--	--	--	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYL ETHER	40	--	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	5	5	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
O-XYLENE	--	10000	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
STYRENE	100	100	--	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
TETRACHLOROETHENE	5	5	--	1 U	1 U	1 U	1 U	1 U
TOLUENE	1000	1000	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL XYLENES	10000	10000	--	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	--	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	--	--	--	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
TRICHLOROETHENE	5	5	5	0.5 U	0.5 U	0.5 U	**9.1**	**6.5**
TRICHLOROFLUOROMETHANE	--	--	--	1 U	1 U	1 U	1 U	1 U
VINYL CHLORIDE	2	2	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)								
2-METHYLNAPHTHALENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
ACENAPHTHENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
ACENAPHTHYLENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
ANTHRACENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
BENZO(A)ANTHRACENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
BENZO(A)PYRENE	0.2	0.2	--	0.1 U	0.1 U	NA	NA	NA
BENZO(B)FLUORANTHENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
BENZO(G,H,I)PERYLENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
BENZO(K)FLUORANTHENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
CHRYSENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
FLUORANTHENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
FLUORENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
NAPHTHALENE	20	--	--	0.1 U	0.1 U	NA	NA	NA
PHENANTHRENE	--	--	--	0.1 U	0.1 U	NA	NA	NA
PYRENE	--	--	--	0.1 U	0.1 U	NA	NA	NA

Table 2 - Groundwater Results
June 2014 Additional Sampling Effort
Site 19 - On-Shore Derector Shipyard (OU12)
Naval Station Newport, Rhode Island

LOCATION	GA Groundwater Objective	Federal MCL	OU12 Groundwater Cleanup Goal	DSY-MW219		DSY-MW220	DSY-MW221	DSY-MW222
SAMPLE ID				DSY-MW219-0614	DSY-MW219-0614-D	DSY-MW220-0614	DSY-MW221-0614	DSY-MW222-0614
SAMPLE DATE				06/12/2014	06/12/2014	06/12/2014	06/12/2014	06/12/2014
DUPLICATE?				Parent Sample	Duplicate Sample			
Total (Unfiltered) Inorganics (µg/L)								
ALUMINUM	--	--	--	100 U	100 U	NA	NA	NA
ANTIMONY	6	6	--	15 U	15 U	NA	NA	NA
ARSENIC	--	10	10	**106**	**115**	NA	NA	NA
BARIUM	2000	2000	--	32.9 J	30.9 J	NA	NA	NA
BERYLLIUM	4	4	--	1 U	1 U	NA	NA	NA
CADMIUM	5	5	--	1.5 U	1.5 U	NA	NA	NA
CALCIUM	--	--	--	54800	57800	NA	NA	NA
CHROMIUM	100	100	--	1 U	1 U	NA	NA	NA
COBALT	--	--	4.7	11.2 J	11.5 J	NA	NA	NA
COPPER	--	1300	--	5 U	5 U	NA	NA	NA
IRON	--	--	11000	70800	76300	NA	NA	NA
LEAD	15	15	--	5 U	5 U	NA	NA	NA
MAGNESIUM	--	--	--	10500	11200	NA	NA	NA
MANGANESE	--	--	300	4830	5210	NA	NA	NA
MERCURY	2	2	--	0.05 U	0.05 U	NA	NA	NA
NICKEL	100	--	--	1 U	1 U	NA	NA	NA
POTASSIUM	--	--	--	8650	9300	NA	NA	NA
SELENIUM	50	50	--	20 U	20 U	NA	NA	NA
SILVER	--	--	--	10 U	10 U	NA	NA	NA
SODIUM	--	--	--	38100	40900	NA	NA	NA
THALLIUM	2	2	--	10 U	10 U	NA	NA	NA
VANADIUM	--	--	--	2 U	2 U	NA	NA	NA
ZINC	--	--	--	7.5 U	7.5 U	NA	NA	NA
Dissolved (Filtered) Inorganics (µg/L)								
ALUMINUM	--	--	--	100 U	100 U	NA	NA	NA
ANTIMONY	6	6	--	15 U	15 U	NA	NA	NA
ARSENIC	--	10	10	**94**	**97**	NA	NA	NA
BARIUM	2000	2000	--	28.2 J	28.6 J	NA	NA	NA
BERYLLIUM	4	4	--	1 U	1 U	NA	NA	NA
CADMIUM	5	5	--	1.5 U	1.5 U	NA	NA	NA
CALCIUM	--	--	--	55000	56500	NA	NA	NA
CHROMIUM	100	100	--	1 U	1 U	NA	NA	NA
COBALT	--	--	4.7	11.2 J	11.2 J	NA	NA	NA
COPPER	--	1300	--	5 U	5 U	NA	NA	NA
IRON	--	--	11000	70800	72000	NA	NA	NA
LEAD	15	15	--	5 U	5 U	NA	NA	NA
MAGNESIUM	--	--	--	10600	10800	NA	NA	NA
MANGANESE	--	--	300	4910	5010	NA	NA	NA
MERCURY	2	2	--	0.05 U	0.05 U	NA	NA	NA
NICKEL	100	--	--	1 U	1 U	NA	NA	NA
POTASSIUM	--	--	--	8640	8850	NA	NA	NA
SELENIUM	50	50	--	20 U	12.6 J	NA	NA	NA
SILVER	--	--	--	10 U	10 U	NA	NA	NA
SODIUM	--	--	--	38100	39000	NA	NA	NA
THALLIUM	2	2	--	10 U	10 U	NA	NA	NA
VANADIUM	--	--	--	2 U	2 U	NA	NA	NA
ZINC	--	--	--	7.5 U	7.5 U	NA	NA	NA
Dissolved Gases (µg/L)								
ETHANE	--	--	--	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
ETHENE	--	--	--	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
METHANE	--	--	--	34 J	48 J	35	0.92	0.61 U
MNA PARAMETERS (mg/L)								
ALKALINITY	--	--	--	210	210	170	31	190
CHLORIDE	--	--	--	47	47	130	93	91
NITRATE-N	--	10	--	0.042 U	0.042 U	0.042 U	0.42 J	1.2
NITRITE-N	--	1	--	0.013 U	0.013 U	0.013 U	0.013 UJ	0.013 U
SULFATE	--	--	--	21	21	45	36 J	23
SULFIDE	--	--	--	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
TOTAL ORGANIC CARBON	--	--	--	12	12	5 U	5 U	5 U
Field-Measured Parameters								
SALINITY (‰)	--	--	--	0.03		0.04	0.02	0.03
TEMPERATURE (C)	--	--	--	13.7		16.3	16.0	14.6
DISSOLVED OXYGEN (mg/L)	--	--	--	0		0.01	0.23	2.5
SPECIFIC CONDUCTANCE (mS/cm)	--	--	--	0.689		0.807	0.489	0.716
OXIDATION REDUCTION POTENTIAL (mV)	--	--	--	-120		-149	119	132
TURBIDITY (NTU)	--	--	--	13.6		45.3	1.3	4.1
pH (standard units)	--	--	--	6.66		7.15	5.99	7.43

NA - not analyzed or not applicable
U - not detected above associated value J - estimated value

Table 3 - Quality Control Blank Results
June 2014 Additional Sampling Effort
Site 19 - On-Shore Derector Shipyard (OU12)
Naval Station Newport, Rhode Island

LOCATION	QC					
SAMPLE ID	DSY-MW-RB01-	DSY-SB-RB01-061714	DSY-TB01-061214	DSY-TB02-061214	DSY-TB03-061614	DSY-TB04-062014
SAMPLE DATE	06/13/2014	06/17/2014	06/12/2014	06/12/2014	06/16/2014	06/20/2014
TYPE	Equipment Rinsate Blank	Equipment Rinsate Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
VOLATILE ORGANIC COMPOUNDS (VOCs) (µg/L						
ACETONE	3.9 J	NA	2.5 U	2.5 U	2.5 U	2.5 U
TOTAL METALS (µg/L)						
ANTIMONY	10.3 J	15 U	NA	NA	NA	NA
BARIUM	4.2 J	3 U	NA	NA	NA	NA
COBALT	0.82 J	1 U	NA	NA	NA	NA
POTASSIUM	119 J	100 U	NA	NA	NA	NA
SODIUM	271 J	122 J	NA	NA	NA	NA
VANADIUM	1.3 J	2 U	NA	NA	NA	NA
FILTERED METALS (µg/L)						
POTASSIUM	119 J	NA	NA	NA	NA	NA
SODIUM	201 J	NA	NA	NA	NA	NA

No PAH detections in equipment rinsate blanks
Equipment rinsate blank results and trip blank results do not indicate sample data issues
NA - not analyzed or not applicable
U - not detected above associated value
J - estimated value

Bing Maps aerial:
Aerial photograph from ESRI Bing Maps map service
(© 2010 Microsoft Corporation and its data suppliers).

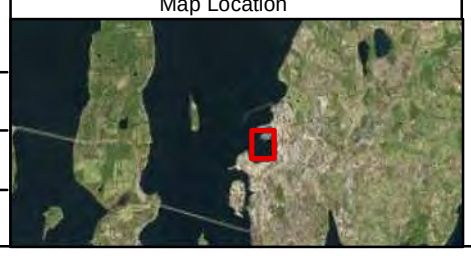
SB306 (TP-28)
SB304 (TP-16)
SB303 (TP-11)
SB302 (TP-10)
SB307 (MW-08)
SB305 (TP-26)
SB301 (TP-08)

Narragansett Bay

Coddington Cove

Soil Sample
Railroad
Site Boundary

Map Location



0 100 200 400
Scale in Feet

Map by: MC 8/26/14
Approved: EC 8/26/14
Project #: 112G04095

Figure 1
Soil Sample Locations (June 2014)
Site 19- On-Shore Derecktor Shipyard (OU12)
Naval Station Newport, Rhode Island

\GIS files\Newport RI\MAP DOCS\MXD\Site 19\site19 soilloc 082614.mxd

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Bing Maps aerial:
Aerial photograph from ESRI Bing Maps map service
(© 2010 Microsoft Corporation and its data suppliers).

Note: New Temporary well DSY-MW-11B was installed at same screen depth (5 to 10 feet) as the previous (2011) temporay well DSY-MW11A

Note: Well DSY-MW223 was not sampled in June 2014 due to NUWC compund access issues. The well likely neds to be replaced if this location is needed in the future.

Note: New Temporary Well DSY-MW-104A was installed at screen depth 4 to 14 feet. Bedrock was encountered at 10 feet. Unusable well DSY-MW-104 is screened 5 to 25 feet.

DSY-MW-11
DSY-MW11A
DSY-MW-11B
DSY-MW223
DSY-MW222
DSY-MW-03
DSY-MW221
DSY-MW-12
DSY-MW220
DSY-MW-02
DSY-MW02A
DSY-MW204
DSY-MW-04
DSY-MW-05
DSY-MW218
DSY-MW219
DSY-MW-07
DSY-MW-104
DSY-MW-104A
DSY-MW-08

0073 0072 0068 0687 0052 1281 0062 0001A 0001 0042 0002 0003 0006 0005 0007 A18 0084 0009A A8 0234 1098 1286 0450

Narragansett Bay

Coddington Cove

Existing or Temporary Monitoring Well Sampled in June 2014
Former or Unusable Monitoring Well
Railroad
Site Boundary

Map Location

0 100 200 400
Scale in Feet

TETRA TECH

Map by: MC 8/26/14
Approved: EC 8/26/14
Project #: 112G04095

\\GIS files\Newport RI\MAP DOCS\MXD\Site 19\site19 mwloc082614.mxd MMC

Figure 2
Groundwater Sample Locations (June 2014)
Site 19- On-Shore Derecktor Shipyard (OU12)
Naval Station Newport, Rhode Island

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Attachment A

Sample Log Sheets
and
Monitoring Well Completion Diagrams

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Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DSY-SB301-0001
Sample Location: DSY-SB301
Sampled By: J. Birkett
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-16-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1350	0-1' bgs	brown	F, sand some organics and silt dry tr. C. sand and sm. pebbles
Method: Disposable trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

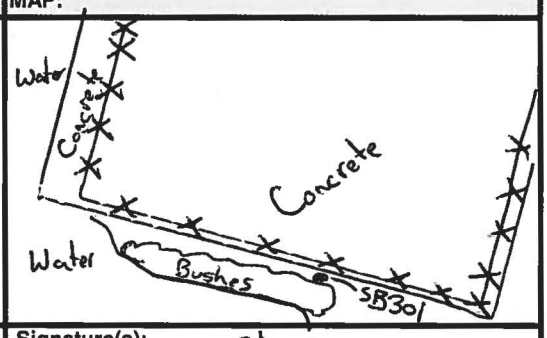
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	1 ~~4~~ 8-oz glass jar	yes	
Naphthalene	4-oz glass jar	no	

OBSERVATIONS / NOTES:

Taken off concrete pad (~1') in dirt

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Jon Birkett

Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

Sample ID No.: DSY-SB302-0001
Sample Location: DSY-SB302
Sampled By: J. Birkett
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-16-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1420	0-1' bgs	Brown	dry F. sand some organics and silt tr. small pebbles
Method: Disposable trowel			
Monitor Reading (ppm): 11.5			

COMPOSITE SAMPLE DATA:

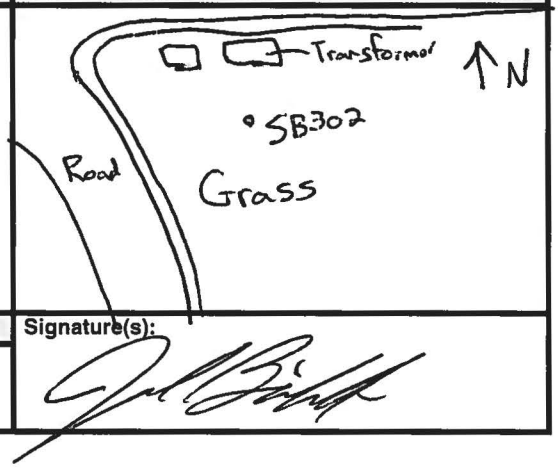
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	1 4 8-oz glass jar	Yes	
Naphthalene	4-oz glass jar	No	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DSY-SB30 3-1213
Sample Location: DSY-SB30 3
Sampled By: J. Birkett
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-19-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: ~~1455~~ 1355	12-13' bgs	brn	Silt and sand w/ chunks of weathered bedrock moist
Method: Disposable trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	1 ~~4~~ 8-oz glass jar	Yes	
Naphthalene	4-oz glass jar	No	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

Sample ID No.: DSY-SB304-0001
Sample Location: DSY-SB304
Sampled By: J. Birkett
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-16-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1525	0-1' bgs	Brown	F. sand some silt tr. sm. moist pebbles
Method: Disposable trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

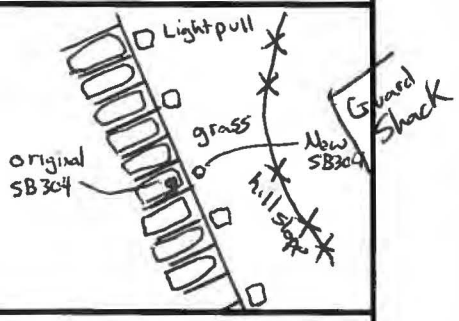
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	2 ~~4~~ 8-oz glass jar	yes	
Naphthalene	2 4-oz glass jar	yes	

OBSERVATIONS / NOTES:

Move point ~3-4' off asphalt and curb into grass

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.: (1200)
Yes	DSY-SB-Dup01-061614

Signature(s):

Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: DSY-SB30 5-0305
Sample Location: DSY-SB30 5
Sampled By: J. Birkett
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-19-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0940	3-5' bgs	dk Gray dk brn lt brn	Sand and gravel Silty F. Sand tr. SM. gravel Moist Silty F. Sand
Method: Disposable trowel			
Monitor Reading (ppm): 8.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	8-oz glass jar	NO	
Naphthalene	4-oz glass jar	YES	

OBSERVATIONS / NOTES:

Concrete from 0-1.5' w/ two layers of 3/4" rebar

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

Sample ID No.: DSY-SB306-0001
Sample Location: DSY-SB306
Sampled By: J. Birkett
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-19-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1820	0-1' bgs	brn-blk Silt, sand, w	Silt and sand some gravel Moist
Method: Disposable trowel			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	8-oz glass jar	Yes No	
Naphthalene	4-oz glass jar		

OBSERVATIONS / NOTES:

Area reworked since previously sampling: In asphalt in front of gate

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

Sample ID No.: DSY-SB30 7-0.5-1.5
Sample Location: DSY-SB30 7
Sampled By: J. Birkett
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-19-14	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1030	0.5-1.5' bgs	lt brn	F-C sand tr. med gravel moist
Method: Disposable trowel			
Monitor Reading (ppm): 16.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP Lead	1 ~~4~~ 8-oz glass jar	Yes	
Naphthalene	4-oz glass jar	No	

OBSERVATIONS / NOTES:

Asphalt 0-0.5' bgs punch through w/rig hand auger to 1.5' bgs

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DSY-MW02A-0614
Sample Location: DSY-MW02A
Sampled By: P. Seward
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 6-13-14 / Time: 0940	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Method: Low Flow - Peristaltic	colorless	8.30	0.824	14.47	2.25	0.26	0.4	-193

PURGE DATA:

Date: 6-13-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" Schedule 40 PVC								
Total Well Depth (TD): 28.50								
Static Water Level (WL): 11.15								
One Casing Volume(gal/L): 4.65								
Start Purge (hrs): 0850								
End Purge (hrs): 0935								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 4								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2X 40-mL glass vial	Yes
Monitored Natural Attenuation	Anions	4°C	1X 250-mL plastic bottle	Yes
	Sulfide	Zn Acetate/ NaOH/4°C	1X 250-mL plastic bottle	Yes
	Alkalinity	4°C	1X 250-mL plastic bottle	Yes
	Total Organic Carbon	~~HCl & 4°C~~ H2SO4	1X 40-mL glass vial	Yes
	Methane, ethane, ethene	HCl & 4°C	2X 40-mL glass vial	Yes
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	Yes
	PAHs	4°C	1-L amber glass bottle	Yes

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 0.15 mg/L
Ferrous Iron test kit result: 0 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Peter

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW02A
PROJECT NUMBER: 112G04095 **DATE:** 6-13-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0850	11.15	300	8.01	0.939	4.39	0.91	15.32	-175	0.4	clear - colorless
0900	11.15	300	8.11	0.840	4.66	0.78	15.04	-177	0.4	" "
0905	11.15	300	8.11	0.828	4.11	0.43	14.87	-182	0.4	" "
0910	11.15	280	8.18	0.831	2.69	0.25	14.69	-189	0.4	" "
0915	11.15	280	8.25	0.833	2.12	0.24	14.61	-195	0.4	" "
0920	11.15	280	8.28	0.840	1.96	0.26	14.52	-197	0.4	" "
0925	11.15	280	8.27	0.835	1.17	0.24	14.43	-196	0.4	" "
0930	11.15	280	8.34	0.836	2.02	0.25	14.40	-195	0.4	" "
0935	11.15	280	8.30	0.829	2.25	0.26	14.47	-193	0.4	" "

SIGNATURE(S): Peter C. M

Initial WL = 11.15 TD = 28.50 purged 4 gal
Test kit results DO = 0.15 ppm Ferrous Fe = 0.0 ppm

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW03-0614
Sample Location: DSY-MW03
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-12-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 1647	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	5.39	0.597	15.32	4.85	5.20	0.3	241

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 2 " Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 5.78								
One Casing Volume(gal/L):								
Start Purge (hrs): 1555								
End Purge (hrs): 1647								
Total Purge Time (min): 52								
Total Vol. Purged (gal/L): 3 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative		Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2	40-mL glass vial	yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	1	250-mL plastic bottle	yes
	Sulfide	Zn Acetate/ NaOH/4°C	1	250-mL plastic bottle	yes
	~~Alkalinity~~	~~4°C~~		~~250-mL plastic bottle~~	—
	Total Organic Carbon	HCl & 4°C	1	40-mL glass vial	yes
	Methane, ethane, ethene	HCl & 4°C	2	40-mL glass vial	yes
	Total TAL Metals	HNO3 & 4°C		250-mL plastic bottle	—
	Dissolved TAL Metals	HNO3 & 4°C		250-mL plastic bottle	—
	PAHs	4°C		1-L amber glass bottle	—

OBSERVATIONS / NOTES:

Tubing pulled 2 feet off bottom of well

Other MNA parameters:
Dissolved Oxygen test kit result: 4.0 mg/L
Ferrous Iron test kit result: 5.2 mg/L

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

7.95

TD 173

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19
PROJECT NUMBER: 112G04095
WELL ID.: DSY-MW 03
DATE: 6-12-14

7.78

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1555	7.78									starts brown sandy
1600	7.86	250	6.27	0.538	—	8.17	23.10	175	0.3	tan tint w/white suspended matter
1605	7.89	250	5.48	0.571	6.75	8.16	18.40	193	0.3	clear w/white matter
1610	7.93	250	5.33	0.587	35.1	8.15	16.13	215	0.3	clear " "
1615	7.95	250	5.47	0.586	22.0	5.11	16.06	217	0.3	" "
1620	7.95	250	5.46	0.592	18.8	5.05	15.76	225	0.3	" "
1625	7.95	250	5.39	0.600	10.6	5.23	15.53	231	0.3	clear
1630	7.95	250	5.36	0.604	8.24	5.24	15.37	235	0.3	clear 2 gal
1635	7.95	250	5.36	0.601	5.49	5.18	15.29	239	0.3	clear
1640	7.95	250	5.38	0.597	6.92	5.22	15.30	241	0.3	clear
1645	7.95	250	5.39	0.597	4.85	5.20	15.32	241	0.3	clear
1647	Collect	sample								

SIGNATURE(S): [signature]

PAGE 1 OF 1

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW-08-0614
Sample Location: DSY-MW-08
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-12-14 / Time: 1002	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Method: Low Flow - Peristaltic	clear	5.99	1.82	17.00	0.94	0.00	0.9	159

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 8.34								
One Casing Volume(gal/L):								
Start Purge (hrs): 0905								
End Purge (hrs): 1002								
Total Purge Time (min): 57								
Total Vol. Purged (gal/L): 3 1/2 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative		Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2	40-mL glass vial	yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	1	250-mL plastic bottle	yes
	Sulfide	Zn Acetate/ NaOH/4°C	1	250-mL plastic bottle	yes
	~~Alkalinity~~	~~4°C~~		~~250-mL plastic bottle~~	—
	Total Organic Carbon	~~H_2SO_4~~ HCl & 4°C	1	40-mL glass vial	yes
	Methane, ethane, ethene	HCl & 4°C	2	40-mL glass vial	yes
	Total TAL Metals	HNO3 & 4°C	1	250-mL plastic bottle	yes
	Dissolved TAL Metals	HNO3 & 4°C	1	250-mL plastic bottle	yes
	PAHs	4°C	2	1-L amber glass bottle	yes

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 0.3 mg/L
Ferrous Iron test kit result: 0.8 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW-08
PROJECT NUMBER: 112G04095 **DATE:** 6-12-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0905	8.34	300								
0910	8.47	~~325~~ 295	5.95	1.75	—	1.53	16.77	242	0.9	tan tint some sand
0915	8.46	~~601~~ 300	6.01	1.75	25.6	0.47	16.84	238	0.9	clear
0920	8.45	300	6.01	1.77	19.4	0.11	16.81	236	0.9	clear
0925	8.45	300	6.01	1.78	18.01	0.02	17.01	229	0.9	clear
0930	8.45	300	6.01	1.80	9.79	0.00	17.17	212	0.9	clear 1¼ gal
0935	8.45	300	6.00	1.80	5.63	0.00	17.24	198	0.9	clear
0940	8.45	300	5.99	1.81	2.25	0.00	16.93	186	0.9	clear
0945	8.45	300	5.99	1.82	1.31	0.00	16.85	170	0.9	clear
0950	8.45	300	5.99	1.82	0.72	0.00	16.84	165	0.9	clear
0955	8.45	300	5.99	1.82	0.63	0.00	16.93	161	0.9	clear 3 gal
1000	8.45	300	5.99	1.82	0.94	0.00	17.00	159	0.9	clear
1002	Collect	Sample								

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW11B-0614
Sample Location: DSY-MW11B
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-20-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 0857	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	7.53	0.616	18.03	9.04	0.00	0.3	-180

PURGE DATA:

Date: 6-20-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm):								
Well Casing Diameter & Material Type: 1 " Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 6.43								
One Casing Volume(gal/L):								
Start Purge (hrs): 0755								
End Purge (hrs): 0857								
Total Purge Time (min): 62								
Total Vol. Purged (gal/L): 2 1/2 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	40-mL glass vial	yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	250-mL plastic bottle	yes
	Sulfide	Zn Acetate/ NaOH/4°C	250-mL plastic bottle	yes
	~~Alkalinity~~	~~4°C~~	~~250-mL plastic bottle~~	—
	Total Organic Carbon	HCl & 4°C	40-mL glass vial	yes
	Methane, ethane, ethene	HCl & 4°C	40-mL glass vial	yes
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	NO
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	NO
	PAHs	4°C	1-L amber glass bottle	NO

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 0.6 mg/L
Ferrous Iron test kit result: 1.0 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	DSY-MW-Dup02-062014 (1200)

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW118
PROJECT NUMBER: 112G04095 **DATE:** 6-20-13

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0755	6.43									
0800	7.50	175	6.04	0.693	—	2.42	17.85	-8	0.3	gray color
0805	7.64	175	7.18	0.650	229	0.69	17.44	-112	0.3	gray tint
0810	7.65	175	7.32	0.631	109	0.23	17.46	-134	0.3	" "
0815	7.66	175	7.42	0.625	31.7	0.00	17.52	-151	0.3	clear
0820	7.67	175	7.46	0.623	26.7	0.00	17.74	-160	0.3	clear
0825	7.67	175	7.49	0.621	15.6	0.00	17.62	-168	0.3	clear 1 gal
0830	7.67	175	7.51	0.620	11.6	0.00	17.65	-172	0.3	clear
0835	7.67	175	7.51	0.619	10.7	0.00	17.65	-175	0.3	clear
0840	7.67	175	7.52	0.618	14.0	0.00	17.65	-177	0.3	clear
0845	7.67	175	7.53	0.617	32.6	0.00	17.69	-179	0.3	clear
0850	7.67	175	7.53	0.616	12.9	0.00	17.81	-180	0.3	clear
0855	7.67	175	7.53	0.616	9.04	0.00	18.03	-180	0.3	clear 2½ gal
0857	Collect sample									

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW 12-0614
Sample Location: DSY-MW 12
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-16-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 1717	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	6.96	0.596	17.10	9.95	0.82	0.3	-155

PURGE DATA:

Date: 6-16-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2" Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 7.94								
One Casing Volume(gal/L):								
Start Purge (hrs): 1620								
End Purge (hrs): 1717								
Total Purge Time (min): 57								
Total Vol. Purged (gal/L): 3½ gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2 40-mL glass vial	Yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	1 250-mL plastic bottle	Yes
	Sulfide	Zn Acetate/ NaOH/4°C	1 250-mL plastic bottle	Yes
	~~Alkalinity~~	~~4°C~~	~~250-mL plastic bottle~~	—
	Total Organic Carbon	H_3PO_4 ~~HCl~~ & 4°C	1 40-mL glass vial	Yes
	Methane, ethane, ethene	HCl & 4°C	2 40-mL glass vial	Yes
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	PAHs	4°C	1-L amber glass bottle	No

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 0.0 mg/L
Ferrous Iron test kit result: 4.4 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW12
PROJECT NUMBER: 112G04095 **DATE:** 6-16-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1620	7.94									
1625	7.95	300	6.27	0.649	—	1.66	19.84	102	0.3	clear w/orange tint
1630	7.95	300	6.71	0.609	105	1.06	18.21	-92	0.3	clear w/orange tint
1635	7.95	300	6.80	0.601	105	0.87	17.61	-119	0.3	" "
1640	7.95	275	6.90	0.604	43.5	0.29	17.44	-134	0.3	" "
1645	7.95	275	6.92	0.603	24.9	0.55	17.55	-139	0.3	clear 1¼ gal
1650	7.95	275	6.94	0.601	16.5	0.36	17.49	-145	0.3	clear
1655	7.95	275	6.95	0.601	11.2	0.42	17.36	-151	0.3	clear
1700	7.95	275	6.96	0.599	9.26	0.71	17.18	-152	0.3	clear
1705	7.95	275	6.95	0.597	10.0	0.58	17.13	-153	0.3	clear
1710	7.95	275	6.95	0.595	9.46	0.67	17.21	-154	0.3	clear 3 gal
1715	7.95	275	6.96	0.596	9.95	0.82	17.10	-155	0.3	clear
1717	Collect	sample								

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW104A-0614
Sample Location: DSY-MW104A
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-20-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 0725	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	—	—	—	—	—	—	—

PURGE DATA:

Date: 6-20-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 1 " Schedule 40 PVC								
Total Well Depth (TD): 1								
Static Water Level (WL): 11.98								
One Casing Volume(gal/L):								
Start Purge (hrs): 0720								
End Purge (hrs): 0725								
Total Purge Time (min): —								
Total Vol. Purged (gal/L): —								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	40-mL glass vial	yes
Monitored Natural Attenuation	Anions	4°C	250-mL plastic bottle	NO
	Sulfide	Zn Acetate/ NaOH/4°C	250-mL plastic bottle	NO
	Alkalinity	4°C	250-mL plastic bottle	NO
	Total Organic Carbon	HCl & 4°C	40-mL glass vial	NO
	Methane, ethane, ethene	HCl & 4°C	40-mL glass vial	NO
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	yes
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	yes
	PAHs	4°C	1-L amber glass bottle	No

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: — mg/L
Ferrous Iron test kit result: — mg/L

Tubing pulled 2 feet off bottom of well
Well only produced ~250mL before drying up.
Well installed within weathered bedrock

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19
PROJECT NUMBER: 112G04095
WELL ID.: DSY-MW104A
DATE: 6-20-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0720	11.98	—	—	—	clear	—	—	—	—	
0725	Collect sample because there is very little water in well and will recharge very slowly									
	was only able to fill VOC vials and total metals bottle before it went dry									
		Filled	Dissolved Metals at 1030							

SIGNATURE(S):

PAGE 1 OF 1

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GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW-204-0614
Sample Location: DSY-MW 204
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-13-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 1000	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	5.79	0.175	16.26	3.39	0.90	0.4	272

PURGE DATA:

Date: 6-13-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2 " Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 10.60								
One Casing Volume(gal/L):								
Start Purge (hrs): 0855								
End Purge (hrs): 1000								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 3 1/2 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative		Container Requirements	Collected
	TCL VOCs	HCl & 4°C	6	40-mL glass vial	yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	2	250-mL plastic bottle	yes
	Sulfide	Zn Acetate/ NaOH/4°C	2	250-mL plastic bottle	yes
	~~Alkalinity~~	~~4°C~~		~~250-mL plastic bottle~~	—
	Total Organic Carbon	~~H$_2$SO$_4$~~ HCl & 4°C	3	40-mL glass vial	yes
	Methane, ethane, ethene	HCl & 4°C	6	40-mL glass vial	yes
	Total TAL Metals	HNO3 & 4°C	2	250-mL plastic bottle	yes
	Dissolved TAL Metals	HNO3 & 4°C	2	250-mL plastic bottle	yes
	PAHs	4°C	4	1-L amber glass bottle	yes

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 1.0 mg/L
Ferrous Iron test kit result: 0.0 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:
yes	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW 204
PROJECT NUMBER: 112G04095 **DATE:** 6-13-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0745	10.60	soft bottom,								
	Spend time trying to clear			Sediment,	but keep	clogging	tubing, took ~4	gal out,	before low flow start	
0855	10.60	300	5.75	0.774	—	1.75	16.50	273	0.4	tan tint
0905	10.60	300	5.73	0.795	799	1.08	15.97	277	0.4	clear
0915	10.60	300	5.72	0.793	88.5	1.04	15.96	277	0.4	
0926	10.60	300	5.74	0.785	46.2	0.97	15.85	276	0.4	clear
0925	10.60	300	5.76	0.789	17.5	0.99	15.89	275	0.4	clear
0930	10.60	300	5.77	0.786	12.3	0.97	15.95	275	0.4	clear
0935	10.60	300	5.78	0.783	9.60	0.94	16.03	274	0.4	
0940	10.60	300	5.79	0.779	7.41	0.90	16.22	273	0.4	clear
0945	10.60	300	5.80	0.775	5.34	0.88	16.24	272	0.4	clear
0950	10.60	300	5.80	0.772	4.46	0.86	16.26	272	0.4	clear
0955	10.60	300	5.79	0.775	3.39	0.90	16.26	272	0.4	
1000	Collect sample									

SIGNATURE(S): _____

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW 218-0614
Sample Location: DSY-MW 218
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-12-14 / Time: 1407	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Method: Low Flow - Peristaltic	clear	6.84	1.02	15.43	6.75	0.28	0.5	-144

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm):								
Well Casing Diameter & Material Type: 2 " Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 15.16								
One Casing Volume(gal/L):								
Start Purge (hrs): 1345								
End Purge (hrs): 1407								
Total Purge Time (min): 52								
Total Vol. Purged (gal/L): 3 1/4 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative		Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2	40-mL glass vial	yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	1	250-mL plastic bottle	yes
	Sulfide	Zn Acetate/ NaOH/4°C	1	250-mL plastic bottle	yes
	~~Alkalinity~~	~~4°C~~		~~250-mL plastic bottle~~	—
	Total Organic Carbon	H_3PO_4 ~~HCl~~ & 4°C	1	40-mL glass vial	yes
	Methane, ethane, ethene	HCl & 4°C	2	40-mL glass vial	yes
	Total TAL Metals	HNO3 & 4°C	1	250-mL plastic bottle	yes
	Dissolved TAL Metals	HNO3 & 4°C	1	250-mL plastic bottle	yes
	PAHs	4°C	2	1-L amber glass bottle	yes

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 0.05 mg/L
Ferrous Iron test kit result: 5.4 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW 218
PROJECT NUMBER: 112G04095 **DATE:** 6-12-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1315	15.16									
1320	15.17	300	6.73	1.01	—	2.48	17.04	-97	0.5	tan tint
1325	15.17	300	6.75	1.01	34.9	1.36	15.99	-124	0.5	clear
1330	15.17	300	6.77	1.02	10.5	0.29	15.49	-135	0.5	clear
1335	15.17	250	6.79	1.03	10.6	0.25	15.55	-139	0.5	clear
1340	15.17	250	6.81	1.02	11.9	0.25	15.43	-141	0.5	clear
1345	15.17	250	6.82	1.02	13.3	0.23	15.36	-142	0.5	clear
1350	15.17	250	6.83	1.02	14.1	0.27	15.38	-143	0.5	clear
1355	15.17	250	6.84	1.02	8.90	0.24	15.22	-143	0.5	clear 2¼ gal
1400	15.17	250	6.84	1.02	7.77	0.26	15.25	-144	0.5	clear
1405	15.17	250	6.84	1.02	6.75	0.28	15.43	-144	0.5	clear
1407	Collect	Sample								

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW219-0614
Sample Location: DSY-MW219
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-12-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 1227	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	6.66	0.685	13.73	13.6	0.00	0.3	-120

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm):								
Well Casing Diameter & Material Type: 2" Schedule 40 PVC								
Total Well Depth (TD):								
Static Water Level (WL): 14.96								
One Casing Volume(gal/L):								
Start Purge (hrs): 1050								
End Purge (hrs): 1227								
Total Purge Time (min): 97								
Total Vol. Purged (gal/L): 5 1/2 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative		Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2	40-mL glass vial	yes
Monitored Natural Attenuation	Anions + Alkalinity	4°C	1	250-mL plastic bottle	yes
Monitored Natural Attenuation	Sulfide	Zn Acetate/ NaOH/4°C	1	250-mL plastic bottle	yes
Monitored Natural Attenuation	~~Alkalinity~~	~~4°C~~	~~1~~	~~250-mL plastic bottle~~	—
Monitored Natural Attenuation	Total Organic Carbon	~~H_3PO_4 HCl~~ & 4°C	1	40-mL glass vial	yes
Monitored Natural Attenuation	Methane, ethane, ethene	HCl & 4°C	2	40-mL glass vial	yes
	Total TAL Metals	HNO3 & 4°C	1	250-mL plastic bottle	yes
	Dissolved TAL Metals	HNO3 & 4°C	1	250-mL plastic bottle	yes
	PAHs	4°C	2	1-L amber glass bottle	yes

OBSERVATIONS / NOTES:

Tubing pulled 2 feet off bottom of well

Other MNA parameters:
Dissolved Oxygen test kit result: 0.0 mg/L
Ferrous Iron test kit result: 4.8 mg/L

Circle if Applicable:

MS/MSD: —
Duplicate ID No.: DSY-MW-Dup01-061214 (1300)

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW219
PROJECT NUMBER: 112G04095 **DATE:** ~~10~~ 6-12-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1050	14.96									started brown sand
1055	15.08	250	6.46	0.578	—	0.67	22.32	-36	0.3	clear
1100	15.11	250	6.61	0.605	299	0.31	21.64	-86	0.3	clear
1105	15.10	250	6.61	0.623	220	0.17	20.85	-101	0.3	clear
1110	15.10	250	6.61	0.639	214	0.03	20.24	-107	0.3	clear
1115	15.10	250	6.58	0.667	203	0.00	16.59	-108	0.3	clear
1120	15.10	250	6.58	0.652	204	0.00	15.85	-105	0.3	clear
1125	15.10	250	6.59	0.660	160	0.00	15.52	-97	0.3	clear
1130	15.10	250	6.57	0.661	120	0.00	15.12	-97	0.3	clear 2 gal
1135	15.10	250	6.52	0.663	107	0.00	14.48	-97	0.3	clear
1140	15.10	250	6.53	0.668	88.2	0.00	14.29	-100	0.3	clear
1145	15.10	250	6.57	0.671	56.3	0.00	14.17	-105	0.3	clear
1150	15.10	250	6.59	0.673	50.3	0.00	14.13	-107	0.3	clear
1155	15.10	250	6.61	0.675	45.3	0.00	14.05	-110	0.3	clear
1200	15.10	250	6.62	0.677	40.8	0.00	13.91	-112	0.3	clear 4 gal
1205	15.10	250	6.63	0.678	33.4	0.00	13.70	-113	0.3	clear
1210	15.10	250	6.65	0.681	27.8	0.00	13.70	-114	0.3	clear
1215	15.10	250	6.66	0.683	19.2	0.00	13.72	-116	0.3	clear
1220	15.10	250	6.66	0.685	14.6	0.00	13.70	-118	0.3	clear
1225	15.10	250	6.66	0.689	13.6	0.00	13.73	-120	0.3	clear 5 1/4 gal
1227	Collect	Sample								

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW220-0614
Sample Location: DSY-MW220
Sampled By: P. Seward
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-12-14 / Time: 1410	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Method: Low Flow - Peristaltic	colorless	7.15	0.807	16.31	45.3	0.01	0.4	-149

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2 " Schedule 40 PVC								
Total Well Depth (TD): 18.92								
Static Water Level (WL): 7.55								
One Casing Volume(gal/L): 3.08 gal								
Start Purge (hrs): 1250								
End Purge (hrs): 1405								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 4								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2 X 40-mL glass vial	Yes
Monitored Natural Attenuation	Anions	4°C	1 X 250-mL plastic bottle *	Yes
	Sulfide	Zn Acetate/ NaOH/4°C	1 X 250-mL plastic bottle	Yes
	Alkalinity	4°C	1 X 250-mL plastic bottle *	Yes
	Total Organic Carbon	HCl & 4°C	1 X 40-mL glass vial	Yes
	Methane, ethane, ethene	HCl & 4°C	2 X 40-mL glass vial	Yes
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	NO
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	NO
	PAHs	4°C	1-L amber glass bottle	NO

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 0 mg/L
Ferrous Iron test kit result: 3 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Peter C. Seward

* Alkalinity & Anions are in the same unpreserved 250 ml poly bottle

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW 220
PROJECT NUMBER: 112G04095 **DATE:** 6-12-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1250	7.57	210	7.37	0.876	606	1.19	17.87	-125	0.4	
1300	7.57	210	7.33	0.819	429	0.25	16.56	-139	0.4	orange ~~slightly~~ turbid
1305	7.57	210	7.33	0.834	315	0.06	16.32	-139	0.4	" "
1310	7.57	210	7.32	0.835	232	0.01	16.01	-140	0.4	" "
1315	7.57	210	7.29	0.818	166	0.01	16.07	-138	0.4	orange - less turbid
1320	7.57	210	7.28	0.818	131	0.01	16.00	-140	0.4	" "
1325	7.57	210	7.26	0.806	100	0.01	16.04	-140	0.4	" "
1330	7.57	210	7.24	0.808	86.8	0.01	16.08	-142	0.4	" "
1335	7.57	210	7.21	0.806	62.1	0.01	16.14	-144	0.4	clear colorless
1340	7.57	210	7.19	0.807	59.6	0.01	16.21	-146	0.4	clear - colorless
1345	7.57	210	7.22	0.805	51.3	0.01	16.27	-148	0.4	" "
1350	7.57	210	7.19	0.808	50.8	0.01	16.20	-147	0.4	" "
1355	7.57	210	7.15	0.809	45.0	0.01	16.26	-147	0.4	" "
1400	7.57	210	7.16	0.807	44.6	0.01	16.30	-149	0.4	" "
1405	7.57	210	7.15	0.807	45.3	0.01	16.31	-149	0.4	" "
		turbidity	values	within 10%	everything	else has	stabilized	- purge	complete.	

SIGNATURE(S): _____ **PAGE___OF___**

initial WL = 7.55' to top of pvc TD = 18.92 ft below top of pvc

Field Kits DO - 0.0 mg/L Ferrous Fe = 3 mg/L

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DSY-MW221-0614
Sample Location: DSY-MW221
Sampled By: P. Seward
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 6-12-14 / Time: 1700	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	ORP (mV)
Method: Low Flow - Peristaltic	clear	599	0.489	15.95	1.27	0.23	0.2	119

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2 " Schedule 40 PVC								
Total Well Depth (TD): 13.45								
Static Water Level (WL): 7.30								
One Casing Volume(gal/L): 2.19								
Start Purge (hrs): 1610								
End Purge (hrs): 1655								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 3								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2 x 40-mL glass vial	Yes
Monitored Natural Attenuation	Anions	4°C	1 x 250-mL plastic bottle *	Yes
	Sulfide	Zn Acetate/ NaOH/4°C	1 x 250-mL plastic bottle	Yes
	Alkalinity	4°C	1 x 250-mL plastic bottle *	Yes
	Total Organic Carbon	HCl & 4°C	1 x 40-mL glass vial	Yes
	Methane, ethane, ethene	HCl & 4°C	2 x 40-mL glass vial	Yes
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	PAHs	4°C	1-L amber glass bottle	No

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 1.0 mg/L
Ferrous Iron test kit result: 1.0 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Anions & alkalinity are in the same bottle.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW22J

PROJECT NUMBER: 112G04095 **DATE:** 6-12-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
~~1600~~ 1610	7.40	250	6.69	0.576	130	3.59	17.55	151	0.3	tan - turbid
1615	7.40	250	6.30	0.547	26.0	1.82	16.67	144	0.3	clear - colorless
1620	7.40	250	6.17	0.531	10.2	1.22	16.49	128	0.3	clear - colorless
1625	7.40	250	6.05	0.507	4.13	0.77	16.27	120	0.2	" "
1630	7.40	250	5.94	0.499	2.50	0.54	16.16	121	0.2	" "
1635	7.40	250	6.08	0.493	1.97	0.39	16.28	111	0.2	" "
1640	7.40	250	6.03	0.489	1.76	0.25	16.08	113	0.2	" "
1645	7.40	250	6.01	0.487	1.11	0.20	16.00	113	0.2	" "
1650	7.40	250	5.98	0.489	1.36	0.22	15.96	116	0.2	" "
1655	7.40	250	5.99	0.489	1.27	0.23	15.95	119	0.2	" "

SIGNATURE(S): Peter C. Sl

Initial WL = 7.30 TD = 13.45

Field test kits DO = 1.0 ppm Ferrous Fe = 1.0 ppm

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: DSY-MW-221-0614
Sample Location: DSY-MW 221
Sampled By: J. Birkett
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 6-17-14	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	ORP
Time: 1610	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	(%)	(mV)
Method: Low Flow - Peristaltic	clear	5.88	0.603	17.29	8.73	2.42	0.3	269

PURGE DATA:

Date: 6-17-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 2 " Schedule 40 PVC								
Total Well Depth (TD): —								
Static Water Level (WL): 7.30								
One Casing Volume(gal/L):								
Start Purge (hrs): 1550								
End Purge (hrs): 1610								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 1 1/4 gal								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	40-mL glass vial	NO
Monitored Natural Attenuation	Anions	4°C	250-mL plastic bottle	NO
	Sulfide	Zn Acetate/ NaOH/4°C	250-mL plastic bottle	NO
	Alkalinity	4°C	250-mL plastic bottle	NO
	Total Organic Carbon	H_3PO_4 ~~HCl~~ & 4°C	1 40-mL glass vial	yes
	Methane, ethane, ethene	HCl & 4°C	40-mL glass vial	NO
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	NO
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	NO
	PAHs	4°C	1-L amber glass bottle	NO

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: — mg/L
Ferrous Iron test kit result: — mg/L

Tubing pulled 2 feet off bottom of well

See log sheet from 6-12-14 for other analysis parameters

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW 221
PROJECT NUMBER: 112G04095 **DATE:** 6-17-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1550	7.30									
1555	7.35	250	5.94	0.693	25.6	4.38	18.45	287	0.3	clear
1600	7.36	250	5.93	0.645	31.2	3.24	17.50	282	0.3	clear
1605	7.36	250	5.89	0.611	17.2	3.10	17.43	274	0.3	clear
1610	7.36	250	5.88	0.603	8.73	2.42	17.29	269	0.3	clear
1610	Collect sample for TOC only									

SIGNATURE(S):

Tetra Tech

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project No.: 112G04095

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DSY-MW222-0614
Sample Location: DSY-MW222
Sampled By: P. Seward
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 6-12-14 / Time: 1020	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity ppt	ORP (mV)
Method: Low Flow - Peristaltic	colorless	7.43	0.716	14.62	4.11	2.50	0.3	132

PURGE DATA:

Date: 6-12-14	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: Low Flow - Peristaltic	See Low Flow Purge Sheet For Details							
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2 " Schedule 40 PVC								
Total Well Depth (TD): 12.75								
Static Water Level (WL): 6.55								
One Casing Volume(gal/L): 2.08 gal								
Start Purge (hrs): 0930								
End Purge (hrs): 1015								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 4								

SAMPLE COLLECTION INFORMATION:

	Analysis	Preservative	Container Requirements	Collected
	TCL VOCs	HCl & 4°C	2 x 40-mL glass vial	Yes
Monitored Natural Attenuation	Anions	4°C	1 x 250-mL plastic bottle *	Yes
	Sulfide	Zn Acetate/ NaOH/4°C	1 x 250-mL plastic bottle	Yes
	Alkalinity	4°C	1 x 250-mL plastic bottle *	Yes
	Total Organic Carbon	~~H2SO4~~ HCl & 4°C	1 x 40-mL glass vial	Yes
	Methane, ethane, ethene	HCl & 4°C	2 x 40-mL glass vial	Yes
	Total TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	Dissolved TAL Metals	HNO3 & 4°C	250-mL plastic bottle	No
	PAHs	4°C	1-L amber glass bottle	No

OBSERVATIONS / NOTES:

Other MNA parameters:
Dissolved Oxygen test kit result: 3.5 mg/L
Ferrous Iron test kit result: 0.0 mg/L

Tubing pulled 2 feet off bottom of well

Circle if Applicable:

MS/MSD	Duplicate ID No.:
~~MS/MSD~~	~~Duplicate ID No.:~~

Signature(s): Peter C

* Anions and alkalinity were in the same bottle

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAVSTA Newport Site 19 **WELL ID.:** DSY-MW- 222 - 0614
PROJECT NUMBER: 112G04095 **DATE:** 6-12-14

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0930	6.70	200	6.85	0.709	230	3.81	15.08	148	0.3	cloudy -
0935	6.70	210	7.06	0.694	146	3.81	14.91	144	0.3	"
0940	6.70	210	7.20	0.714	78.2	2.51	14.58	141	0.3	"
0945	6.70	210	7.29	0.714	51.7	2.50	14.61	136	0.3	"
0950	6.70	210	7.35	0.713	36.6	2.48	14.65	131	0.3	clear - colorless
0955	6.70	210	7.36	0.716	24.3	2.46	14.64	130	0.3	" "
1000	6.70	210	7.36	0.716	12.6	2.50	14.71	128	0.3	" "
1005	6.70	210	7.39	0.719	4.32	2.45	14.66	129	0.3	" "
1010	6.70	210	7.42	0.718	4.19	2.49	14.65	130	0.3	" "
1015	6.70	210	7.43	0.716	4.11	2.50	14.62	132	0.3	" "
			purge	~ 4.0	gallons					

SIGNATURE(S): Peter C. Leonard DSY-MW222-0614 **PAGE** 1 **OF** 1

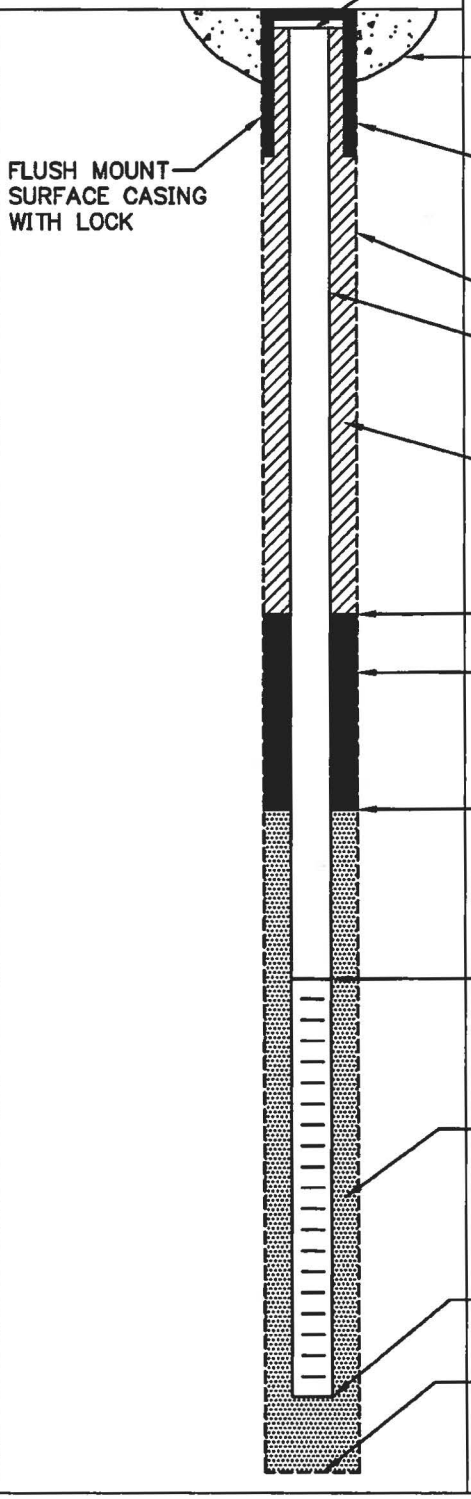
Initial WL = 6.55 TD = 12.75 from top of puc
pulled tubing ~ 2 feet from bottom
DO field test kit = 3.5 ppm
Ferrous Fe test kit = 0.0 ppm

WELL NO.: DSY-MW11B

Tetra Tech

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT NAVSTA Newport Site 19	LOCATION DSY-MW11B	DRILLER Jason Fredericks
PROJECT NO. 112G04095	BORING DSY-MW11B	DRILLING METHOD DPT
DATE BEGUN 6-19-14	DATE COMPLETED 6-19-14	
FIELD GEOLOGIST J. Birkett		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER: -0.25'

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

DIAMETER OF HOLE: 2½"

TYPE OF RISER PIPE: Schedule 40 PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: / 2'

TYPE OF SEAL: Bentonite

ELEVATION/DEPTH TOP OF SAND: / 4'

ELEVATION/DEPTH TOP OF SCREEN: / 5'

TYPE OF SCREEN: Prepack Schedule 40 PVC

SLOT SIZE x LENGTH: 0.010" x 5'

TYPE OF SAND PACK: Silica Sand (#2)

DIAMETER OF HOLE IN BEDROCK: 2½"

ELEVATION / DEPTH BOTTOM OF SCREEN: / 10'

ELEVATION / DEPTH BOTTOM OF SAND: / 10'

ELEVATION/DEPTH BOTTOM OF HOLE: / 10'

BACKFILL MATERIAL BELOW SAND: NA

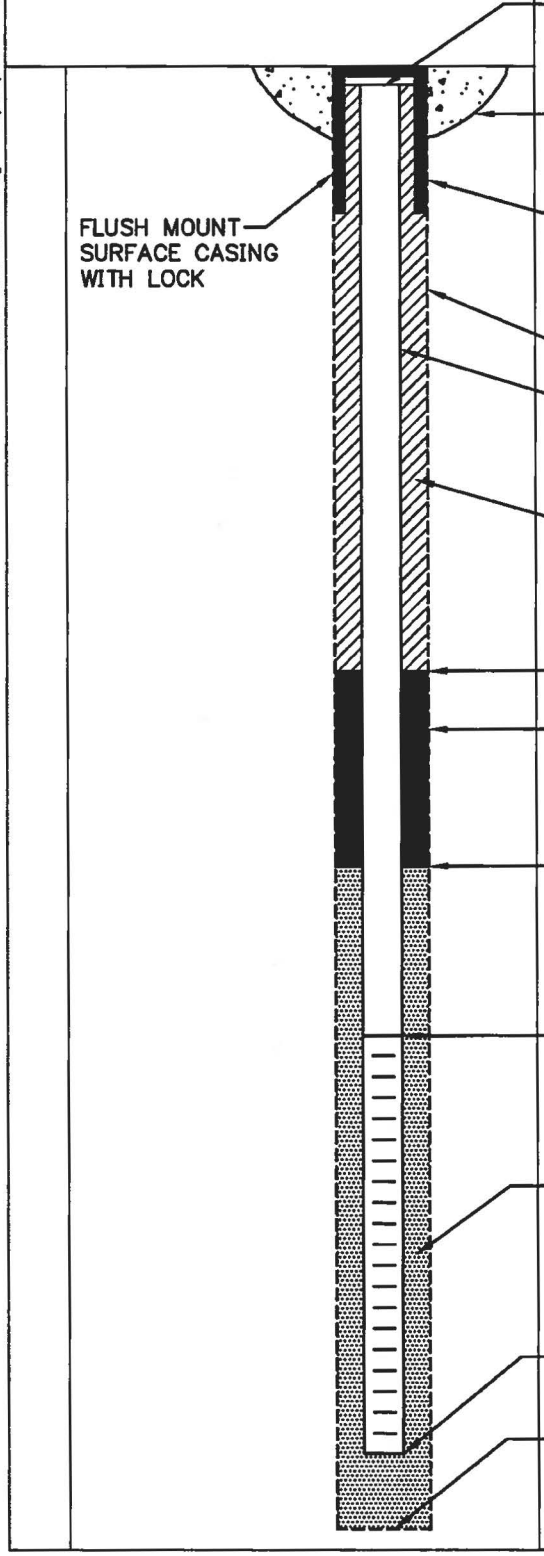
ACAD: FORM_MWFM.dwg 07/20/99 INL

WELL NO.: DSY-MW104A

Tetra Tech

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT NAVSTA Newport Site 19	LOCATION MW104	DRILLER Jason Frederick
PROJECT NO. 112G04095	BORING DSY-MW104	DRILLING METHOD DPT
DATE BEGUN 6-19-14	DATE COMPLETED 6-19-14	
FIELD GEOLOGIST J. Birkett		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER: -0.25'

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: 4" Steel

I.D. OF PROTECTIVE CASING: 4"

DIAMETER OF HOLE: 2½"

TYPE OF RISER PIPE: Schedule 40 PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: / 1'

TYPE OF SEAL: Bentonite

ELEVATION/DEPTH TOP OF SAND: / 3'

ELEVATION/DEPTH TOP OF SCREEN: / 4'

TYPE OF SCREEN: Schedule 40 PVC w/Prepack sand

SLOT SIZE x LENGTH: 0.010" x 10'

TYPE OF SAND PACK: #2 Silica Sand

DIAMETER OF HOLE IN BEDROCK: 2½"

ELEVATION / DEPTH BOTTOM OF SCREEN: / 14'

ELEVATION / DEPTH BOTTOM OF SAND: / 14'

ELEVATION/DEPTH BOTTOM OF HOLE: / 14'

BACKFILL MATERIAL BELOW SAND: NA

ACAD: FORM_MWFM.dwg 07/20/99 INL

Tetra Tech

QA SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Sample ID Number: DSY- TB01-061214
Project Number: 112G04095
Sampled By: Lab
Sample Location: Lab
C.O.C. Number:
QA Sample Type:

[X] Trip Blank
[] Rinsate Blank
[] Source Water Blank
[] Other Blank

SAMPLING DATA:		WATER SOURCE:	
Date:	6-12-14	[X] Laboratory Prepared	[] Tap
Time:	0910	[] Purchased	[] Fire Hydrant
Method:	Lab prep	[] Other	

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):		RINSATE INFORMATION (If Applicable):	
Product Name:		Media Type:	
Supplier:		Equipment Used:	
Manufacturer:		Equipment Type:	
Order Number:			[] Dedicated
Lot Number:			[] Reusable
Expiration Date:			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SPLP Lead	Cool 4°C & HCl	250-mL plastic bottle	—
Naphthalene	Cool 4°C	1-L amber glass bottle	—
TCL VOC	Cool 4°C & HCl	2 40-mL glass vials	yes
PAHs	Cool 4°C	1-L amber glass bottle	—
Total TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	—
Dissolved TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	—

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech

QA SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project Number: 112G04095
Sample Location: Lab
QA Sample Type:

Sample ID Number: DSY-TB02-061214
Sampled By: Lab
C.O.C. Number:

[X] Trip Blank
[] Source Water Blank
[] Rinsate Blank
[] Other Blank

SAMPLING DATA:	WATER SOURCE:
Date: 6-12-14	[X] Laboratory Prepared [] Tap
Time: 1520	[] Purchased [] Fire Hydrant
Method: Lab prep	[] Other

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):	RINSATE INFORMATION (If Applicable):
Product Name:	Media Type:
Supplier:	Equipment Used:
Manufacturer:	Equipment Type:
Order Number:	[] Dedicated
Lot Number:	[] Reusable
Expiration Date:	

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SPLP Lead	Cool 4°C & HCl	250-mL plastic bottle	—
Naphthalene	Cool 4°C	1-L amber glass bottle	—
TCL VOC	Cool 4°C & HCl	2 40-mL glass vials	yes
PAHs	Cool 4°C	1-L amber glass bottle	—
Total TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	—
Dissolved TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	—

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech

QA SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Sample ID Number: DSY-TB03-061614
Project Number: 112G04095
Sampled By: Lab
Sample Location: Lab
C.O.C. Number:
QA Sample Type:

[X] Trip Blank
[] Rinsate Blank
[] Source Water Blank
[] Other Blank

SAMPLING DATA:

Date: 6-16-14
Time: 1400
Method: Lab prep

WATER SOURCE:

[X] Laboratory Prepared
[] Tap
[] Purchased
[] Fire Hydrant
[] Other

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Nice! Distilled Water
Supplier: Walgreens
Manufacturer: Aspire Water Company
Order Number:
Lot Number:
Expiration Date: 6-28-16

RINSATE INFORMATION (If Applicable):

Media Type:
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SPLP Lead	Cool 4°C & HCl	250-mL plastic bottle	no
Naphthalene	Cool 4°C	1-L amber glass bottle	no
TCL VOC	Cool 4°C & HCl	2 40-mL glass vials	yes
PAHs	Cool 4°C	1-L amber glass bottle	no
Total TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	no
Dissolved TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	no

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech

QA SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project Number: 112G04095
Sample Location:
QA Sample Type:

Sample ID Number: DSY-TB04-062614
Sampled By: Lab
C.O.C. Number:

[X] Trip Blank
[] Source Water Blank
[] Rinsate Blank
[] Other Blank

SAMPLING DATA:		WATER SOURCE:	
Date:	6-20-14	[X] Laboratory Prepared	[] Tap
Time:	0700	[] Purchased	[] Fire Hydrant
Method:	Lab prep	[] Other	

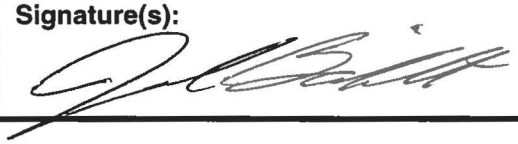
PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):		RINSATE INFORMATION (If Applicable):	
Product Name:		Media Type:	
Supplier:		Equipment Used:	
Manufacturer:		Equipment Type:	
Order Number:			[] Dedicated
Lot Number:			[] Reusable
Expiration Date:			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles	Cool 4°C & HCl	2 40mL glass vials	(YES) / NO
Semivolatiles	Cool 4°C		YES / NO
Pesticide / PCB	Cool 4°C		YES / NO
Metals	Cool 4°C & HNO_3		YES / NO
Cyanide	Cool 4°C & NaOH		YES / NO

OBSERVATIONS / NOTES:

Signature(s):



Tetra Tech

QA SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project Number: 112G04095
Sample Location: Gravel lot @ Site 19
QA Sample Type:

Sample ID Number: DSY-MW-RB01-061314
Sampled By: J Birkett
C.O.C. Number:

[] Trip Blank
[X] Rinsate Blank
[] Source Water Blank
[] Other Blank

SAMPLING DATA:

Date: 6-13-14
Time: 1330
Method: Run through tubing & per. pump into bottle

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Nice! Distilled Water
Supplier: Walgreens
Manufacturer: Asopure Water Company
Order Number:
Lot Number:
Expiration Date: 6-28-16

RINSATE INFORMATION (If Applicable):

Media Type: Tubing (PE and Silicone)
Equipment Used: Aqueous
Equipment Type:
[X] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SPLP Lead	Cool 4°C & HCl	250-mL plastic bottle	—
Naphthalene	Cool 4°C	1-L amber glass bottle	—
TCL VOC	Cool 4°C & HCl	2 40-mL glass vials	yes
PAHs	Cool 4°C	2 1-L amber glass bottle	yes
Total TAL Metals	Cool 4°C & HNO_3	1 250-mL plastic bottle	yes
Dissolved TAL Metals	Cool 4°C & HNO_3	1 250-mL plastic bottle	yes

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech

QA SAMPLE LOG SHEET

Project Site Name: NAVSTA Newport Site 19
Project Number: 112G04095
Sample Location: Site 19
QA Sample Type:

Sample ID Number: DSY-SB-RB01-061714
Sampled By: J. Birkett
C.O.C. Number:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 6-17-14
Time: 1530
Method: Direct pour over trowel into bottle

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Nice! Distilled Water
Supplier: Walgreens
Manufacturer: Asopure Water Company
Order Number:
Lot Number:
Expiration Date: 6-28-16

RINSATE INFORMATION (If Applicable):

Media Type: Aqueous
Equipment Used: Trowel
Equipment Type:
[X] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
SPLP Lead	Cool 4°C & HCl	1 250-mL plastic bottle	Yes
Naphthalene	Cool 4°C	2 1-L amber glass bottle	Yes
TCL VOC	Cool 4°C & HCl	40-mL glass vials	—
PAHs	Cool 4°C	1-L amber glass bottle	—
Total TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	—
Dissolved TAL Metals	Cool 4°C & HNO_3	250-mL plastic bottle	—

OBSERVATIONS / NOTES:

Signature(s):

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Attachment B

Data Validation Memoranda

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TETRA TECH **INTERNAL CORRESPONDENCE**

TO: **E. CORACK** **DATE:** **JULY 8, 2014**

FROM: **A. COGNETTI** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –VOC / OVG/ PAH / SELCT SVOC**
NAVSTA NEWPORT, CTO 0165
SAMPLE DELIVERY GROUP (SDG) – N1023

SAMPLES: 19/Aqueous/VOC

DSY-MW-DUP01-061214	DSY-MW-DUP02-062014	DSY-MW-RB01-061314
DSY-MW02A-0614	DSY-MW03-0614	DSY-MW08-0614
DSY-MW104A-0614	DSY-MW11B-0614	DSY-MW12-0614
DSY-MW204-0614	DSY-MW218-0614	DSY-MW219-0614
DSY-MW220-0614	DSY-MW221-0614	DSY-MW222-0614
DSY-TB01-061214	DSY-TB02-061214	DSY-TB03-061614
DSY-TB04-062014		

13/Aqueous/OVG

DSY-MW-DUP01-061214	DSY-MW-DUP02-062014	DSY-MW02A-0614
DSY-MW03-0614	DSY-MW08-0614	DSY-MW11B-0614
DSY-MW12-0614	DSY-MW204-0614	DSY-MW218-0614
DSY-MW219-0614	DSY-MW220-0614	DSY-MW221-0614
DSY-MW222-0614		

7/Aqueous/PAH

DSY-MW-DUP01-061214	DSY-MW-RB01-061314	DSY-MW08-0614
DSY-MW204-0614	DSY-MW218-0614	DSY-MW219-0614
DSY-SB-RB01-061714		

3/Aqueous/Select SVOC

DSY-SB-DUP01-061614	DSY-SB304-0001	DSY-SB305-0305

OVERVIEW

The sample set for Naval Station Newport, CTO 0165, SDG N1023 consisted of fourteen (14) aqueous samples, one (1) rinsate blank, and four (4) trip blanks analyzed for volatile organic compounds (VOCs). Thirteen (13) aqueous samples were analyzed for organic volatile gases (OVG). Five (5) aqueous samples and two (2) rinsate blanks were analyzed for polynuclear aromatic hydrocarbons (PAHs). Three (3) soil samples were analyzed for the select semivolatile organic compound (SVOC); naphthalene. There are three (3) field duplicate pairs included in this SDG: DSY-MW-DUP01-061214/ DSY-MW219-0614, DSY-MW-DUP02-062014/ DSY-MW11B-0614 and DSY-SB-DUP01-061614/ DSY-SB304-0001.

The samples were collected by Tetra Tech on June 12, 13, 16, 17, 19 and 20, 2014 and analyzed by Spectrum Analytical Services, Inc. All analyses were conducted in accordance with EPA SW-846 Methods 8260C for VOCs, 8270D for SVOC, 8270D Selective Ion-Monitoring (SIM) for PAHs, EPA Method RSK 175 analytical and reporting protocols.

The data was evaluated based on the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	GC/MS Instrument Tuning and System Performance
	•	Initial and Continuing Calibration
*	•	Blank Results
*	•	Blank Spike/Blank Spike Duplicate Results
	•	Matrix Spike/Matrix Spike Duplicate Recoveries
*	•	Surrogate Spike Recoveries
*	•	Internal Standard Recoveries
	•	Field Duplicate Precision
*	•	Compound Identification and Quantification
*	•	Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report. The text of this report has been formulated to address only those problem areas affecting data quality.

BLANKS

The rinsate blank, DSY-MW-RB01-061314, contained acetone at a concentration of 3.9 ug/L. No action was taken on the environmental samples.

CALIBRATIONS – INITIAL AND CONTINUING

The VOC initial calibration percent relative standard deviation (%RSD) for trans-1,3-dichloropropene, styrene and bromoform were greater than the 20% quality control limit on instrument V10 on June 16, 2014. The nondetected trans-1,3-dichloropropene, styrene and bromoform results were qualified as estimated (UJ) in the affected samples.

The continuing calibration percent difference (%D) for 1,2,4-trichlorobenzene was greater than the 20% quality control limit on June 17, 2014 @ 8:02 on instrument V10. The nondetected 1,2,4-trichlorobenzene results in samples DSY-MW222-0614 and DSY-MW-RB01-061314 were qualified as estimated (UJ).

The continuing calibration %D for trans-1,3-dichloropropene was greater than the 20% quality control limit on June 18, 2014 @ 8:28 on instrument V10. The nondetected trans-1,3-dichloropropene results in samples DSY-TB03-061614 and DSY-MW12-014 were qualified as estimated (UJ).

The VOC initial calibration %RSD for 1,2-dibromo-3-chloropropane was greater than the 20% quality control limit on June 26, 2014 on instrument V1. The nondetected 1,2-dibromo-3-chloroproane results were qualified as estimated (UJ) in the affected samples DSY-TB04-062014, DSY-MW104A-0614, DSY-MW11B-0614 and DSY-MW-DUP02-062014.

The PAH continuing calibration %D for anthracene was greater than the 20% quality control limit on June 25, 2014 @ 7:53 on instrument S6. The nondetected anthracene result in sample DSY-SB-RB01-061714 was qualified as estimated (UJ).

LABORATORY CONTROL SPIKE/LABORATORY CONTROL SPIKE DUPLICATE (LCS/LCSD)

The VOC LCS percent recovery (%R) of bromodichloromethane was greater than the upper quality control limit in batch 77630. No action was taken on the nondetected bromodichloromethane results.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD)

Several PAH analytes had MS/MSD %Rs outside quality control limits in spiked sample DSY-MW204-0614.

Analyte	MS %R	MSD %R	%RPD	Validation Action
Chrysene	<LL	Ok	Ok	UJ
Benzo(b)fluoranthene	<LL	Ok	Ok	UJ
Benzo(k)fluoranthene	<LL	<LL	OK	UJ
Benzo(a)pyrene	<LL	<LL	Ok	UJ
Indeno(1,2,3-cd)pyrene	<LL	<LL	OK	UJ
Benzo(g,h,i)perylene	<LL	<LL	Ok	UJ

FIELD DUPLICATE PRECISION

Field duplicate imprecision was noted in the field duplicate pair DSY-MW-DUP01-061214 and DSY-MW219-0614 for methane. The relative percent difference (RPD) was greater than the 30% quality control limit. The detected methane results were qualified as estimated (J).

ADDITIONAL COMMENTS

The data validator found that methyl acetate was missing from the target analyte VOC list according to Table 4-2 of the Work Plan Addendum 2, Additional Groundwater and Soil Sampling, Site 19 On-Shore Derecktor Shipyard, Naval Station Newport, June 2014. The laboratory was contacted. The missing data was received. There were no detections of methyl acetate reported.

Naphthalene was analyzed and reported in SW-846 8270D and 8270D SIM methods.

According to Table 4-2 of the Work Plan Addendum 2, Additional Groundwater and Soil Sampling, Site 19 On-Shore Derecktor Shipyard, Naval Station Newport, June 2014, 1,2-dibromoethane and 1,2-dibromo-3-chloropropane nondetected results exceeded the project action levels.

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

Sample results were reported to the Limit of Detection (LOD).

EXECUTIVE SUMMARY

Laboratory Performance: VOC results were qualified for initial calibration RSD non-compliances. VOC and PAH sample results were qualified for CCV %D quality control limit non-compliances. Sample PAH results were qualified for MS/MSD %R non-compliances.

Other Factors Affecting Data Quality: Positive results reported below the limit of quantitation (LOQ) but above the method detection limit were qualified as estimated, (J). Field duplicate imprecision was noted in DSY-MW-DUP01-061214 and DSY-MW219-0614.

The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements and Superfund Guidance/Procedures Attachment 2-3b: Example Organic Data Review Worksheets (1/13), and the (DOD) QSM document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013).

Tetra Tech
Ann Cognetti
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 04095	NSAMPLE	DSY-MW02A-0614			DSY-MW03-0614			DSY-MW08-0614			DSY-MW104A-0614		
SDG: N1023	LAB_ID	N1023-12A			N1023-09A			N1023-02A			N1023-21A		
FRACTION: OV	SAMP_DATE	6/13/2014			6/12/2014			6/12/2014			6/20/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2,2-TETRACHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1-DICHLOROETHENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2,4-TRICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMO-3-CHLOROPROPANE		1	U		1	U		1	U		1	UJ	C
1,2-DIBROMOETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,4-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
2-BUTANONE		2.5	U		2.5	U		2.5	U		35		
2-HEXANONE		2.5	U		2.5	U		2.5	U		2.5	U	
4-METHYL-2-PENTANONE		1	U		1	U		1	U		1	U	
ACETONE		2.5	U		2.5	U		2.5	U		20		
BENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
BROMODICHLOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
BROMOFORM		1	UJ	C	1	UJ	C	1	UJ	C	1	U	
BROMOMETHANE		1	U		1	U		1	U		1	U	
CARBON DISULFIDE		0.5	U		0.5	U		0.5	U		0.5	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROFORM		0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
CIS-1,2-DICHLOROETHENE		0.5	U		0.5	U		7			0.5	U	
CIS-1,3-DICHLOROPROPENE		0.5	U		0.5	U		0.5	U		0.5	U	
CYCLOHEXANE		1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	U	
ETHYLBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
ISOPROPYLBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
M+P-XYLENES		1	U		1	U		1	U		1	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW11B-0614			DSY-MW12-0614			DSY-MW204-0614			DSY-MW218-0614		
SDG: N1023	LAB_ID	N1023-22A			N1023-19A			N1023-11A			N1023-07A		
FRACTION: OV	SAMP_DATE	6/20/2014			6/16/2014			6/13/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2,2-TETRACHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1-DICHLOROETHENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2,4-TRICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DIBROMO-3-CHLOROPROPANE		1	UJ	C	1	U		1	U		1	U	
1,2-DIBROMOETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,4-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
2-BUTANONE		2.5	U		2.5	U		2.5	U		2.5	U	
2-HEXANONE		2.5	U		2.5	U		2.5	U		2.5	U	
4-METHYL-2-PENTANONE		1	U		1	U		1	U		1	U	
ACETONE		2.5	U		2.5	U		2.5	U		2.5	U	
BENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
BROMODICHLOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
BROMOFORM		1	U		1	UJ	C	1	UJ	C	1	UJ	C
BROMOMETHANE		1	U		1	U		1	U		1	U	
CARBON DISULFIDE		0.5	U		0.5	U		0.5	U		0.5	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROFORM		0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
CIS-1,2-DICHLOROETHENE		8.3			1.9			0.5	U		0.5	U	
CIS-1,3-DICHLOROPROPENE		0.5	U		0.5	U		0.5	U		0.5	U	
CYCLOHEXANE		1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	U	
ETHYLBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
ISOPROPYLBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
M+P-XYLENES		1	U		1	U		1	U		1	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW219-0614			DSY-MW220-0614			DSY-MW221-0614			DSY-MW222-0614		
SDG: N1023	LAB_ID	N1023-04A			N1023-06A			N1023-10A			N1023-03A		
FRACTION: OV	SAMP_DATE	6/12/2014			6/12/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2,2-TETRACHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,1-DICHLOROETHENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2,4-TRICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	UJ	C
1,2-DIBROMO-3-CHLOROPROPANE		1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROPROPANE		1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
1,4-DICHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
2-BUTANONE		2.5	U		2.5	U		2.5	U		2.5	U	
2-HEXANONE		2.5	U		2.5	U		2.5	U		2.5	U	
4-METHYL-2-PENTANONE		1	U		1	U		1	U		1	U	
ACETONE		2.5	U		2.5	U		2.5	U		2.5	U	
BENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
BROMODICHLOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
BROMOFORM		1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
BROMOMETHANE		1	U		1	U		1	U		1	U	
CARBON DISULFIDE		0.5	U		0.5	U		0.5	U		0.5	U	
CARBON TETRACHLORIDE		1	U		1	U		1	U		1	U	
CHLOROBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
CHLORODIBROMOMETHANE		1	U		1	U		1	U		1	U	
CHLOROETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROFORM		0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROMETHANE		0.5	U		0.5	U		0.5	U		0.5	U	
CIS-1,2-DICHLOROETHENE		0.5	U		1.9			1.1			0.5	U	
CIS-1,3-DICHLOROPROPENE		0.5	U		0.5	U		0.5	U		0.5	U	
CYCLOHEXANE		1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE		1	U		1	U		1	U		1	U	
ETHYLBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
ISOPROPYLBENZENE		0.5	U		0.5	U		0.5	U		0.5	U	
M+P-XYLENES		1	U		1	U		1	U		1	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW-DUP01-061214						DSY-MW-DUP02-062014					
SDG: N1023	LAB_ID	N1023-05A						N1023-23A					
FRACTION: OV	SAMP_DATE	6/12/2014						6/20/2014					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	UG/L						UG/L					
	PCT_SOLIDS	0.0						0.0					
	DUP_OF				DSY-MW219-0614						DSY-MW11B-0614		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					0.5	U					0.5	U	
1,1,2,2-TETRACHLOROETHANE					0.5	U					0.5	U	
1,1,2-TRICHLOROETHANE					1	U					1	U	
1,1-DICHLOROETHANE					0.5	U					0.5	U	
1,1-DICHLOROETHENE					0.5	U					0.5	U	
1,2,4-TRICHLOROBENZENE					0.5	U					0.5	U	
1,2-DIBROMO-3-CHLOROPROPANE					1	U					1	UJ	C
1,2-DIBROMOETHANE					0.5	U					0.5	U	
1,2-DICHLOROBENZENE					0.5	U					0.5	U	
1,2-DICHLOROETHANE					0.5	U					0.5	U	
1,2-DICHLOROPROPANE					1	U					1	U	
1,3-DICHLOROBENZENE					0.5	U					0.5	U	
1,4-DICHLOROBENZENE					0.5	U					0.5	U	
2-BUTANONE					2.5	U					2.5	U	
2-HEXANONE					2.5	U					2.5	U	
4-METHYL-2-PENTANONE					1	U					1	U	
ACETONE					2.5	U					2.5	U	
BENZENE					0.5	U					0.5	U	
BROMODICHLOROMETHANE					0.5	U					0.5	U	
BROMOFORM					1	UJ	C				1	U	
BROMOMETHANE					1	U					1	U	
CARBON DISULFIDE					0.5	U					0.5	U	
CARBON TETRACHLORIDE					1	U					1	U	
CHLOROBENZENE					0.5	U					0.5	U	
CHLORODIBROMOMETHANE					1	U					1	U	
CHLOROETHANE					0.5	U					0.5	U	
CHLOROFORM					0.5	U					0.5	U	
CHLOROMETHANE					0.5	U					0.5	U	
CIS-1,2-DICHLOROETHENE					0.5	U					8.1		
CIS-1,3-DICHLOROPROPENE					0.5	U					0.5	U	
CYCLOHEXANE					1	U					1	U	
DICHLORODIFLUOROMETHANE					1	U					1	U	
ETHYLBENZENE					0.5	U					0.5	U	
ISOPROPYLBENZENE					0.5	U					0.5	U	
M+P-XYLENES					1	U					1	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW-RB01-061314			DSY-TB01-061214			DSY-TB02-061214			DSY-TB03-061614		
SDG: N1023	LAB_ID	N1023-13A			N1023-01A			N1023-08A			N1023-15A		
FRACTION: OV	SAMP_DATE	6/13/2014			6/12/2014			6/12/2014			6/16/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2,2-TETRACHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,1-DICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2,4-TRICHLOROBENZENE	0.5	UJ	C	0.5	U		0.5	U		0.5	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROBENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
1,4-DICHLOROBENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
2-BUTANONE	2.5	U		2.5	U		2.5	U		2.5	U	
2-HEXANONE	2.5	U		2.5	U		2.5	U		2.5	U	
4-METHYL-2-PENTANONE	1	U		1	U		1	U		1	U	
ACETONE	3.9	J	P	2.5	U		2.5	U		2.5	U	
BENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
BROMODICHLOROMETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
BROMOFORM	1	UJ	C	1	UJ	C	1	UJ	C	1	UJ	C
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	0.5	U		0.5	U		0.5	U		0.5	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
CHLORODIBROMOMETHANE	1	U		1	U		1	U		1	U	
CHLOROETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROFORM	0.5	U		0.5	U		0.5	U		0.5	U	
CHLOROMETHANE	0.5	U		0.5	U		0.5	U		0.5	U	
CIS-1,2-DICHLOROETHENE	0.5	U		0.5	U		0.5	U		0.5	U	
CIS-1,3-DICHLOROPROPENE	0.5	U		0.5	U		0.5	U		0.5	U	
CYCLOHEXANE	1	U		1	U		1	U		1	U	
DICHLORODIFLUOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
ISOPROPYLBENZENE	0.5	U		0.5	U		0.5	U		0.5	U	
M+P-XYLENES	1	U		1	U		1	U		1	U	

PROJ_NO: 04095	NSAMPLE	DSY-TB04-062014
SDG: N1023	LAB_ID	N1023-20A
FRACTION: OV	SAMP_DATE	6/20/2014
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	0.5	U	
1,1,2,2-TETRACHLOROETHANE	0.5	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	0.5	U	
1,1-DICHLOROETHENE	0.5	U	
1,2,4-TRICHLOROBENZENE	0.5	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	UJ	C
1,2-DIBROMOETHANE	0.5	U	
1,2-DICHLOROBENZENE	0.5	U	
1,2-DICHLOROETHANE	0.5	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	0.5	U	
1,4-DICHLOROBENZENE	0.5	U	
2-BUTANONE	2.5	U	
2-HEXANONE	2.5	U	
4-METHYL-2-PENTANONE	1	U	
ACETONE	2.5	U	
BENZENE	0.5	U	
BROMODICHLOROMETHANE	0.5	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	0.5	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	0.5	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	0.5	U	
CHLOROFORM	0.5	U	
CHLOROMETHANE	0.5	U	
CIS-1,2-DICHLOROETHENE	0.5	U	
CIS-1,3-DICHLOROPROPENE	0.5	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	0.5	U	
ISOPROPYLBENZENE	0.5	U	
M+P-XYLENES	1	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW02A-0614			DSY-MW03-0614			DSY-MW08-0614			DSY-MW104A-0614		
SDG: N1023	LAB_ID	N1023-12A			N1023-09A			N1023-02A			N1023-21A		
FRACTION: OV	SAMP_DATE	6/13/2014			6/12/2014			6/12/2014			6/20/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		0.5	U		0.5	U		0.5	U		2.6		
METHYLENE CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	
O-XYLENE		0.5	U		0.5	U		0.5	U		0.5	U	
STYRENE		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	U	
TETRACHLOROETHENE		1	U		1	U		1	U		1	U	
TOLUENE		0.5	U		0.5	U		0.5	U		0.5	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	U	
TRICHLOROETHENE		0.5	U		3.1			3.3			0.99	J	P
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW11B-0614			DSY-MW12-0614			DSY-MW204-0614			DSY-MW218-0614		
SDG: N1023	LAB_ID	N1023-22A			N1023-19A			N1023-11A			N1023-07A		
FRACTION: OV	SAMP_DATE	6/20/2014			6/16/2014			6/13/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		0.5	U		0.5	U		0.5	U		0.5	U	
METHYLENE CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	
O-XYLENE		0.5	U		0.5	U		0.5	U		0.5	U	
STYRENE		0.5	U		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TETRACHLOROETHENE		1	U		1	U		0.92	J	P	1	U	
TOLUENE		0.5	U		0.5	U		0.5	U		0.5	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1.2			1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		0.5	U		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TRICHLOROETHENE		0.5	U		0.64	J	P	2.6			0.5	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW219-0614			DSY-MW220-0614			DSY-MW221-0614			DSY-MW222-0614		
SDG: N1023	LAB_ID	N1023-04A			N1023-06A			N1023-10A			N1023-03A		
FRACTION: OV	SAMP_DATE	6/12/2014			6/12/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		0.5	U		0.5	U		0.5	U		0.5	U	
METHYLENE CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	
O-XYLENE		0.5	U		0.5	U		0.5	U		0.5	U	
STYRENE		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TETRACHLOROETHENE		1	U		1	U		1	U		1	U	
TOLUENE		0.5	U		0.5	U		0.5	U		0.5	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TRICHLOROETHENE		0.5	U		0.5	U		9.1			6.5		
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW-DUP01-061214						DSY-MW-DUP02-062014					
SDG: N1023	LAB_ID	N1023-05A						N1023-23A					
FRACTION: OV	SAMP_DATE	6/12/2014						6/20/2014					
MEDIA: WATER	QC_TYPE	NM						NM					
	UNITS	UG/L						UG/L					
	PCT_SOLIDS	0.0						0.0					
	DUP_OF				DSY-MW219-0614						DSY-MW11B-0614		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		1	U					1	U				
METHYL CYCLOHEXANE					1	U					1	U	
METHYL TERT-BUTYL ETHER					0.5	U					0.5	U	
METHYLENE CHLORIDE					0.5	U					0.5	U	
O-XYLENE					0.5	U					0.5	U	
STYRENE					0.5	UJ	C				0.5	U	
TETRACHLOROETHENE					1	U					1	U	
TOLUENE					0.5	U					0.5	U	
TOTAL XYLENES					1	U					1	U	
TRANS-1,2-DICHLOROETHENE					1	U					1		
TRANS-1,3-DICHLOROPROPENE					0.5	UJ	C				0.5	U	
TRICHLOROETHENE					0.5	U					0.5	U	
TRICHLOROFLUOROMETHANE					1	U					1	U	
VINYL CHLORIDE					0.5	U					0.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW-RB01-061314			DSY-TB01-061214			DSY-TB02-061214			DSY-TB03-061614		
SDG: N1023	LAB_ID	N1023-13A			N1023-01A			N1023-08A			N1023-15A		
FRACTION: OV	SAMP_DATE	6/13/2014			6/12/2014			6/12/2014			6/16/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
METHYL ACETATE		1	U		1	U		1	U		1	U	
METHYL CYCLOHEXANE		1	U		1	U		1	U		1	U	
METHYL TERT-BUTYL ETHER		0.5	U		0.5	U		0.5	U		0.5	U	
METHYLENE CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	
O-XYLENE		0.5	U		0.5	U		0.5	U		0.5	U	
STYRENE		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TETRACHLOROETHENE		1	U		1	U		1	U		1	U	
TOLUENE		0.5	U		0.5	U		0.5	U		0.5	U	
TOTAL XYLENES		1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE		0.5	UJ	C	0.5	UJ	C	0.5	UJ	C	0.5	UJ	C
TRICHLOROETHENE		0.5	U		0.5	U		0.5	U		0.5	U	
TRICHLOROFLUOROMETHANE		1	U		1	U		1	U		1	U	
VINYL CHLORIDE		0.5	U		0.5	U		0.5	U		0.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-TB04-062014		
SDG: N1023	LAB_ID	N1023-20A		
FRACTION: OV	SAMP_DATE	6/20/2014		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			

PARAMETER	RESULT	VQL	QLCD
METHYL ACETATE	1	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	0.5	U	
METHYLENE CHLORIDE	0.5	U	
O-XYLENE	0.5	U	
STYRENE	0.5	U	
TETRACHLOROETHENE	1	U	
TOLUENE	0.5	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	0.5	U	
TRICHLOROETHENE	0.5	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	0.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW08-0614			DSY-MW204-0614			DSY-MW218-0614			DSY-MW219-0614		
SDG: N1023	LAB_ID	N1023-02C			N1023-11G			N1023-07C			N1023-04C		
FRACTION: PAH	SAMP_DATE	6/12/2014			6/13/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U		0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	UJ	D	0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U		0.1	U	
PHENANTHRENE		0.1	U		0.1	U		0.1	U		0.1	U	
PYRENE		0.1	U		0.1	U		0.1	U		0.1	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW-DUP01-061214			DSY-MW-RB01-061314			DSY-SB-RB01-061714		
SDG: N1023	LAB_ID	N1023-05C			N1023-13D			N1023-24A		
FRACTION: PAH	SAMP_DATE	6/12/2014			6/13/2014			6/17/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF	DSY-MW219-0614								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
2-METHYLNAPHTHALENE		0.1	U		0.1	U		0.1	U	
ACENAPHTHENE		0.1	U		0.1	U		0.1	U	
ACENAPHTHYLENE		0.1	U		0.1	U		0.1	U	
ANTHRACENE		0.1	U		0.1	U		0.1	UJ	C
BENZO(A)ANTHRACENE		0.1	U		0.1	U		0.1	U	
BENZO(A)PYRENE		0.1	U		0.1	U		0.1	U	
BENZO(B)FLUORANTHENE		0.1	U		0.1	U		0.1	U	
BENZO(G,H,I)PERYLENE		0.1	U		0.1	U		0.1	U	
BENZO(K)FLUORANTHENE		0.1	U		0.1	U		0.1	U	
CHRYSENE		0.1	U		0.1	U		0.1	U	
DIBENZO(A,H)ANTHRACENE		0.1	U		0.1	U		0.1	U	
FLUORANTHENE		0.1	U		0.1	U		0.1	U	
FLUORENE		0.1	U		0.1	U		0.1	U	
INDENO(1,2,3-CD)PYRENE		0.1	U		0.1	U		0.1	U	
NAPHTHALENE		0.1	U		0.1	U		0.1	U	
PHENANTHRENE		0.1	U		0.1	U		0.1	U	
PYRENE		0.1	U		0.1	U		0.1	U	

PROJ_NO: 04095	NSAMPLE	DSY-SB304-0001			DSY-SB305-0305			DSY-SB-DUP01-061614		
SDG: N1023	LAB_ID	N1023-17A			N1023-25A			N1023-18A		
FRACTION: OS	SAMP_DATE	6/16/2014			6/19/2014			6/16/2014		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	95.0			86.1			94.8		
	DUP_OF							DSY-SB304-0001		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
NAPHTHALENE		140	U		150	U		140	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW02A-0614			DSY-MW03-0614			DSY-MW08-0614			DSY-MW11B-0614		
SDG: N1023	LAB_ID	N1023-12A			N1023-09A			N1023-02A			N1023-22A		
FRACTION: OVG	SAMP_DATE	6/13/2014			6/12/2014			6/12/2014			6/20/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		1.3	U		1.3	U		1.3	U		1.3	U	
ETHENE		1.6	U		1.6	U		1.6	U		1.6	U	
METHANE		10			0.72			12			14		

PROJ_NO: 04095	NSAMPLE	DSY-MW12-0614			DSY-MW204-0614			DSY-MW218-0614			DSY-MW219-0614		
SDG: N1023	LAB_ID	N1023-19A			N1023-11A			N1023-07A			N1023-04A		
FRACTION: OVG	SAMP_DATE	6/16/2014			6/13/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		1.3	U		1.3	U		1.3	U		1.3	U	
ETHENE		1.6	U		1.6	U		1.6	U		1.6	U	
METHANE		4.4			0.61	U		570			34	J	G

PROJ_NO: 04095	NSAMPLE	DSY-MW220-0614			DSY-MW221-0614			DSY-MW222-0614			DSY-MW-DUP01-061214		
SDG: N1023	LAB_ID	N1023-06A			N1023-10A			N1023-03A			N1023-05A		
FRACTION: OVG	SAMP_DATE	6/12/2014			6/12/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										DSY-MW219-0614		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ETHANE		1.3	U		1.3	U		1.3	U		1.3	U	
ETHENE		1.6	U		1.6	U		1.6	U		1.6	U	
METHANE		35			0.92			0.61	U		48	J	G

PROJ_NO: 04095	NSAMPLE	DSY-MW-DUP02-062014		
SDG: N1023	LAB_ID	N1023-23A		
FRACTION: OVG	SAMP_DATE	6/20/2014		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF	DSY-MW11B-0614		
PARAMETER		RESULT	VQL	QLCD
ETHANE		1.3	U	
ETHENE		1.6	U	
METHANE		16		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW-DUP01-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5430.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW-DUP01-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-05A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5430.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW-DUP02-062014

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-23A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9902.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0		0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	8.1		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW-DUP02-062014

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-23A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9902.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW-RB01-0613 14

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-13A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5456.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	3.9	J	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW-RB01-0613 14

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-13A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5456.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW02A-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-12A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5436.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW02A-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-12A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5436.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW03-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-09A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5433.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	3.1		0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW03-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-09A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5433.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW08-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5427.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	7.0		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	3.3		0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW08-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5427.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW104A-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-21A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9900.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	20		2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	2.6		0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	35		2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.99	J	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW104A-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-21A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9900.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW11B-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-22A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9901.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	8.3		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW11B-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-22A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9901.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW12-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-19A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5503.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/17/2014

% Moisture: not dec. Date Analyzed: 06/18/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.2		0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	1.9		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.64	J	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW12-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-19A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5503.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/17/2014

% Moisture: not dec. Date Analyzed: 06/18/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW204-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-11A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5435.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	2.6		0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	0.92	J	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW204-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-11A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5435.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW218-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-07A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5432.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW218-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-07A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5432.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW219-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-04A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5429.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW219-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-04A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5429.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW220-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-06A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5431.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	1.9		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW220-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-06A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5431.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW221-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-10A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5434.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	1.1		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	9.1		0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW221-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-10A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5434.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW222-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-03A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5455.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	6.5		0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW222-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-03A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5455.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-TB01-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5422.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-TB01-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-01A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5422.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-TB02-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-08A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5421.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-TB02-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-08A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5421.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/13/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-TB03-061614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-15A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5500.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/17/2014

% Moisture: not dec. Date Analyzed: 06/18/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-TB03-061614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-15A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5500.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/17/2014

% Moisture: not dec. Date Analyzed: 06/18/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-TB04-062014

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-20A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9899.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-TB04-062014

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-20A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9899.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/20/2014

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	5.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	5.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	5.0

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW-DUP01-061214
Lab ID: N1023-05
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 13:00

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID							RSK175	
Methane	48		0.61 ^	0.61	µg/L	1	06/19/2014 7:34	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 7:34	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 7:34	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

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Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW-DUP02-062014
Lab ID: N1023-23
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/20/14 12:00

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	16		0.61 ^	0.61	µg/L	1	06/25/2014 11:25	77776
Ethane	ND		1.3 ^	1.3	µg/L	1	06/25/2014 11:25	77776
Ethene	ND		1.6 ^	1.6	µg/L	1	06/25/2014 11:25	77776

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW02A-0614
Lab ID: N1023-12

Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/13/14 0:00

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	10		0.61 ^	0.61	µg/L	1	06/19/2014 8:50	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 8:50	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 8:50	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW03-0614
Lab ID: N1023-09
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 16:47

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	0.72		0.61 ^	0.61	µg/L	1	06/19/2014 8:17	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 8:17	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 8:17	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW08-0614
Lab ID: N1023-02
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 10:02

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID							RSK175	
Methane	12		0.61 ^	0.61	µg/L	1	06/19/2014 7:08	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 7:08	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 7:08	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW11B-0614
Lab ID: N1023-22
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/20/14 8:57

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	14		0.61 ^	0.61	µg/L	1	06/25/2014 11:17	77776
Ethane	ND		1.3 ^	1.3	µg/L	1	06/25/2014 11:17	77776
Ethene	ND		1.6 ^	1.6	µg/L	1	06/25/2014 11:17	77776

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW12-0614
Lab ID: N1023-19
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/16/14 17:17

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						**RSK175**		
Methane	4.4		0.61 ^	0.61	µg/L	1	06/19/2014 9:30	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 9:30	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 9:30	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW204-0614
Lab ID: N1023-11
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/13/14 10:00

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	ND		0.61 ^	0.61	µg/L	1	06/19/2014 8:43	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 8:43	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 8:43	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW218-0614
Lab ID: N1023-07

Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 14:07

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	570		0.61 ^	0.61	µg/L	1	06/19/2014 8:07	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 8:07	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 8:07	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW219-0614
Lab ID: N1023-04
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 12:27

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	34		0.61 ^	0.61	µg/L	1	06/19/2014 7:25	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 7:25	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 7:25	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW220-0614
Lab ID: N1023-06
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 14:10

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	35		0.61 ^	0.61	µg/L	1	06/19/2014 7:55	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 7:55	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 7:55	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW221-0614
Lab ID: N1023-10
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 0:00

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	0.92		0.61 ^	0.61	µg/L	1	06/19/2014 8:33	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 8:33	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 8:33	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW222-0614
Lab ID: N1023-03
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 10:20

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	ND		0.61 ^	0.61	µg/L	1	06/19/2014 7:18	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 7:18	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 7:18	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW-DUP01-061214

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-05C

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8161.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/12/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW-RB01-0613 14

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-13D

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8166.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/13/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW08-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-02C

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8159.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/12/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW204-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-11G

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8163.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/13/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW218-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-07C

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8162.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/12/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW219-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-04C

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8160.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/12/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-SB-RB01-0617 14

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-24A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8234.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/20/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/23/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/25/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-SB-DUP01-061614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1023-18A

Sample wt/vol: 15.2 (g/mL) G Lab File ID: S3J1314.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 5.2 Decanted: (Y/N) N Date Received: 06/17/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/19/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	DL	LOD	LOQ
91-20-3	Naphthalene	140	U	43	140	340

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-SB304-0001

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1023-17A

Sample wt/vol: 15.1 (g/mL) G Lab File ID: S3J1311.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 5.0 Decanted: (Y/N) N Date Received: 06/17/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/19/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	DL	LOD	LOQ
91-20-3	Naphthalene	140	U	43	140	350

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-SB305-0305

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: N1023-25A

Sample wt/vol: 15.1 (g/mL) G Lab File ID: S3J1371.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: 14 Decanted: (Y/N) N Date Received: 06/20/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/24/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/25/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	DL	LOD	LOQ
91-20-3	Naphthalene	150	U	47	150	380

APPENDIX C

REGIONAL WORKSHEETS

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB

COMPLETE SDG FILE (CSF) AUDIT

Organic Fractions: VOC, SVOC, PAH, OVG

Missing Information	Date Lab Contacted	Date Received
Methyl acetate	7/7/14	7/10/14

Validator: John Coquette Date: 7/7/14

EPA-NE - Data Validation
VOA/SV/Pest/PCB-I

Case: Newport SDG: N1023

Sampler: Jacob Birkett Company: Tetra Tech Contacted: Yes (No) Date: 7/8/14 AC

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No. (TR No.)	Matrix	Pres. Code	Date Sampled	VOA			BNA					PEST/PCB				
				Date Analyzed	# of Days from Sampling to Analysis	Action	Date Extracted	# of Days from Sampling to Extr./(*)	Date Analyzed	# of Days from Sampling to Anal.	Action	Date Extracted	# of Days from Sampling to Extr./(*)	Date Analyzed	# of Days from Sampling to Anal.	Action
			See Data Validation Report													

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-II-A

II A. GC/MS INSTRUMENT PERFORMANCE CHECK – (TUNING) **Note: NOT for Selected Ion Monitoring (SIM) Analysis**

List all Instrument Performance Checks that are outside method QC tuning acceptance criteria.

VOA Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ions Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments: See data validation report

SV Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ions Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments:

If tuning compounds and criteria are different from those specified in CLP SOW SOM01.2, the validator should include a copy of the method-specific tuning criteria with this worksheet.

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-II-B

II B. GC/MS INSTRUMENT PERFORMANCE CHECK – 12-hour clock

List all Instrument Performance Checks and/or calibration standards that were analyzed beyond the 12-hour requirement.

Fraction (VOA or SV)	Tune Standard or CCV ID	Injection Date and Time	Time Elapsed (hours)	Samples Affected	Action
		See Data Validation Report			

Validator: Ann Cognetti Date: 7/7/14

1/13

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-II-A

II A. GC/ECD INSTRUMENT PERFORMANCE CHECK - Resolution - List all analytes that are outside resolution criteria.

RCM (Section II)	Date/Time	Instr.	Column	Compound	% Resolution	Samples Affected	Action
PEM (Section II and IV)							
INDA & B (Section III)							
INDA & B (Section IV)							

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-II-B

II B. GC/ECD INSTRUMENT PERFORMANCE CHECK - Retention Times - List all analytes that exceed retention time criteria.

PEM (Section II and IV)	Date/Time	Instr.	Column	Compound	RT Window	RT	Samples Affected	Action
INDA & B (Section IV)								

Validator: Lynn Coquette Date: 7/7/14

EPA NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-II-C

II C. GC/ECD INSTRUMENT PERFORMANCE CHECK - Accuracy Check of Initial Calibration

List all analytes that are outside the %D criteria.

PEM Sample ID	Date/Time	Instr.	Column	Compound	%D	Samples Affected	Action
	See Data Validation Report						

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newpat SDG: N1023

Pest/PCB-II-D

II D. GC/ECD INSTRUMENT PERFORMANCE CHECK - Pesticide Degradation - List all analytes that exceed degradation criteria.

PEM (Section II)	Date/Time	Instr.	Column	DDT, Endrin, or Combined	% Breakdown	DDD, DDE, Endrin ketone, Endrin aldehyde Present	Samples Affected	Action
PEM (Section IV)								

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-III

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

INDA/INDB, INDC, or Multicomponent	Date	Instrument	Column	Analytes	Recalculated RT Window	%RSD	Samples Affected	Action
A. % RSD Linearity								
	See data validation report							
B. Retention Time Windows								

Did the laboratory follow the correct analytical sequence? Y N

Did the laboratory analyze the initial calibration at the appropriate concentration levels? Y N

Validator: Ann Cognetta Date: 7/7/17

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-III

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Instrument	Fraction	Matrix	Compound	%RSD	RRF*	Samples Affected	Action (Detect/ND)

Comments: See data validation report

* RRF and average RRF

Did the laboratory follow the correct 12-hour clock analytical sequence? If no, fill out Worksheet VOA/SV-II B. Y N

Did the laboratory analyze the initial calibration at the appropriate levels? Y N

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-IV-A

IV A. CALIBRATION VERIFICATION - Accuracy Check (%D) - List all analytes that are outside calibration criteria.

Standard ID	Date	Time	Instrument	Column	Analyte	%D	Samples Affected	Action (Detect/ND)
			See data validation report					

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-IV-B

IV B. CALIBRATION VERIFICATION – Time Elapsed - List all non-compliant standards.

Fraction (PEST or PCB)	Instrument and Column ID	Instrument Blank or Sample ID	Injection Date and Time	Time Elapsed (hours)	Samples Affected	Action (Detect/ND)

Validator: Ann Cognetti Date: 7/7/14

1/13

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-IV

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

Fraction (VOA/SV)	Instrument	Date of ICAL	Date & Time of CCAL	Matrix	Compound	%D	RRF	Samples Affected	Action (Detect/ND)

Comments:

See Data Validation Report

Did the laboratory follow the correct 12-hour clock analytical sequence? If no, fill out Worksheet VOA/SV-II B. Y N

Validator: Lynn Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB-V-A
V. A. BLANK ANALYSIS

List the blank contamination below. Concentration Level:____

Sampler: Jacob Bickett Company: Ptra Tech Contacted: Yes (No) Date:____

1. Laboratory: Method, Storage and Instrument Blanks

Fraction/ Matrix	Sample ID (Blank Type)	Date Extracted	Date Analyzed	Instrument/ Column	Compound	Conc. (units)

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Fraction/ Matrix	Sample ID (Blank Type)	Date Extracted	Date Analyzed	Instrument/ Column	Compound	Conc. (units)

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB-V-B

V. B. BLANK ACTIONS - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled, Originated, or Analyzed	Max. Conc. (unit)	Blank CRQL (unit)	Blank 2xCRQL[1] (unit)	Blank 5xCRQL[2] (unit)	Samples Affected	Action
See data validation report								

[1] For methylene chloride, 2-butanone, and acetone only.
[2] For bis(2-ethylhexyl)phthalate only.

Comments: _____

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

SV-VI-A

VI A. DEUTERATED MONITORING COMPOUNDs (DMCs) – List all DMC recoveries that are outside the control limits.

Method		Semi-Volatile Method QC Acceptance Criteria															
SOM01.2		Phenol-d_5		BCE		2CP		4MP		NBZ		2NP		DCP		4CA	
		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
		39-106	17-103	40-105	12-98	41-106	13-101	25-111	8-100	43-108	16-103	40-108	16-104	37-105	23-104	1-145	1-145
Other:																	
Sample ID	Matrix	% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery	
		See data validation report															

BCE= Bis(2-chloroethyl)ether-d_8 2CP= 2-Chlorophenol-d_4 4MP= 4-Methylphenol-d_8

NBZ= Nitrobenzene-d_5 2NP= 2-Nitrophenol-d_4 DCP= 2,4-Dichlorophenol-d_3

4CA= 4-Chloroaniline-d_4

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

SV-VI-A (Cont'd)

VI A. DEUTERATED MONITORING COMPOUNDS (DMCs) – List all DMC recoveries that are outside the control limits.

Method		Semi-Volatile Method QC Acceptance Criteria													
		DMP		ACY		4NP		FLR		NMP		ANC		PYR		BAP	
SOM01.2		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
		47-114	43-111	41-107	20-97	33-116	16-166	42-111	40-108	22-104	1-121	44-110	22-98	52-119	51-120	32-121	43-111
Other:																	
Sample ID	Matrix	% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery	
		See data validation report															

DMP=Dimethylphthalate-d_6 ACY=Acenaphthylene-d_8 4NP=4-Nitrophenol-d_4

FLR=Fluorene-d_{10} NMP=4,6-Dinitro-2-methylphenol-d_2 ANC=Anthracene-d_{10}

PYR=Pyrene-d_{10} BAP=Benzo(a)pyene-d_{12}

Note: Refer to NEG for guidance on actions required for failures in DMC recoveries.

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

SV-VI-B

VI B. DEUTERATED MONITORING COMPOUNDs (DMCs) for SIM – List all DMC recoveries that are outside the control limits.

Method: SOM01.2		Semi-Volatile Organics by Selected Ion Monitoring Analysis Acceptable QC Criteria						
		Fluoranthene-d_{10} Water 50-150 Soil 50-150	Affected Analytes	Action (Detection/ND)	2-Methylnaphthalene-d_{10} Water 50-150 Soil 50-150	Affected Analytes	Action (Detection/ND)
Sample ID	Matrix	% Recovery			% Recovery		
			Fluoranthene			Naphthalene	
			Pyrene			2-Methylnaphthalene	
			Benzo(a)anthracene			Acenaphthylene	
			Chrysene			Acenaphthene	
			Benzo(b)fluoranthene			Fluorene	
			Benzo(k)fluoranthene			Pentachlorophenol	
			Benzo(a)pyrene			Phenanthrene	
			Indeno(1,2,3-cd)pyrene			Anthracene	
			Dibenzo(a,h)anthracene				
			Benzo(g,h,i)perylene				

Note: Refer to NFG for guidance on actions required for failures in DMC recoveries.

Validator: Adam Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA-VI

VI. DEUTERATED MONITORING COMPOUNDs (DMCs) – List all DMC recoveries that are outside the control limits.

NOTE: The same control limits are applied to the selected ion monitoring (SIM) analysis.

Method		Volatile Method QC Acceptance Criteria													
SOM01.2		Vinyl chloride-d_3		Chloroethane-d_5		DCE		2-Butanone-d_5		Chloroform-d		DCA		Benzene-d_6	
		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
		65-131	68-122	71-131	61-130	55-104	45-132	49-155	20-182	78-121	72-123	78-129	79-122	77-124	80-121
Other:															
Sample ID	Matrix	% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery	

See data validation report

DCE= 1,1-Dichloroethene –d_2 DCA= 1,2-Dichloroethane-d_4

Validator: Ann Cognetta Date: 1/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA-VI (Cont'd)

VI. DEUTERATED MONITORING COMPOUNDS (DMCs) – List all DMC recoveries that are outside the control limits.

NOTE: The same control limits are applied to the selected ion monitoring (SIM) analysis.

Method		Volatile Method QC Acceptance Criteria													
		DPA		Toluene-d_8		TDP		2-Hexanone-d_5		1,4-Dioxane-d_8		TCA		DCZ	
SOM01.2		Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil
		79-124	74-124	77-121	78-121	73-121	72-130	28-135	17-184	50-150	50-150	73-125	56-161	80-131	70-131
Other:															
Sample ID	Matrix	% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery		% Recovery	

See data validation report

DPA= 1,2-Dichloropropane –d_6 TDP= trans-1,3-Dichloropropene-d_4

TCA= 1,1,2,2-Tetracholoroethane-d_2 DCZ= 1,2-Dichlorobenzene-d_4

Note: Refer to NFG for guidance on actions required for failures in DMC recoveries.

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-VI

VI. SURROGATE COMPOUNDS: Spike Recoveries and Retention Time Shift

List all surrogate analytes that are outside the percent recovery and retention time criteria.

Method		% Recovery QC Limits				Retention Time Windows				
		Column 1		Column 2		Column 1		Column 2		
		TCX	DCB	TCX	DCB	TCX	DCB	TCX	DCB	
SOM01.2		30-150	30-150	30-150	30-150					
Other:										
Sample Number/Matrix	**Date/Time**	**% Recovery**				**Retention Time Shift**				**Action**

Note: Refer to NFG for guidance on actions required for failures in surrogate recoveries.

Validator: Ann Cognetta Date: 4/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-VII-C

VII C. PESTICIDE/PCB CLEANUP - Sulfur Cleanup

Sample chromatograms were reviewed and found to be free from interfering sulfur peaks. **Y N**

If no, list the compounds and samples affected by the unacceptable sulfur cleanup.

Samples Affected	Sulfur Interference (Major/Minor/Limited)	Action

Were all target compounds less than QL for the Sulfur blank? **Y N**

Action: Refer to EPA New England Data Review Program Supplement guidance (Section 2.11) for actions to be taken for deficient sulfur cleanup. Comment on any action taken below.

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-VII-A

VII A. PESTICIDE/PCB CLEANUP - GPC Calibration and Verification

The GPC Calibration data and GPC Calibration Verification Solution recovery data were reviewed and found to meet criteria. Y N NA

If no, list the compounds and samples affected by the unacceptable GPC performance.

Date/Time of GPC Calibration or Calib. Verification	GC Analysis Date	Analyte	GPC % Resolution or RT Shift	% Rec	QC Limits	Samples Affected	Action

Were all target compounds less than QL for the GPC blank? Y N

Were acceptable GPC Calibration Verifications performed at the correct frequency? Y N

Were Aroclor patterns similar to those corresponding Aroclor standards of the Initial Calibration sequence? Y N

Action: Refer to National Functional Guidelines for the appropriate action to be taken. Comment on any action taken below:

Validator: Ann Coquette Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-VII

VII. SEMIVOLATILE CLEANUP - GPC Calibration and Verification– List all analytes that are outside method cleanup QC criteria.

Type of Cleanup	Instrument # or Lot #	Date/Time GPC Calibrated or Check Solution Analyzed	Compound	% Rec	QC Limits	Samples Affected	Action

Did the GPC column meet: resolution requirements? Y N

Peak shape requirements? Y N

Retention time shift requirements? Y N

Was the GPC calibration, Silica Gel cleanup checked at the method required frequency with correct compounds and concentrations? Y N

Were all compounds less than QL for the GPC/Silica Gel/Acid-Partition blank? Y N

Did the blank surrogate recoveries and IS area counts and RTs (if added) meet method QC acceptance criteria? Y N

Comments:

Validator: Ann Cognetti Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-VII-B

VII B. PESTICIDE/PCB CLEANUP - Florisil Cartridge Performance Check

The Florisil Cartridge Performance Check recovery data were reviewed and found to meet criteria. Y N

If no, list the analytes and samples affected by the unacceptable Florisil Cartridge Check.

Florisil Cartridge Lot #	Date of Florisil Cartridge Check	GC Analysis Date	Analyte	% Rec.	QC Limits	Samples Affected	Action

Were acceptable Florisil Cartridge Performance Checks performed at the correct frequency? Y N

Action: Refer to Functional Guidelines for the appropriate action to be taken. Comment on any action taken below:

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria. Use a separate worksheet for each MS/MSD pair.

Sample # _____ Matrix _____ Concentration Level _____

Fraction	Compound	Column 1			Column 2*			Method QC Limits		Action
		MS % Rec.	MSD % Rec.	RPD	MS % Rec.	MSD % Rec.	RPD	% Recovery	RPD	
	See data validation report									

* For Pest/PCB only.

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB-IX

IX. FIELD DUPLICATE PRECISION - List all field duplicate analytes that are outside criteria. Use a separate worksheet for each field duplicate pair.

Sample Number _____ Duplicate Sample Number _____ Matrix _____

Fraction	Compound	Sample Conc.	Sample QL		Duplicate Conc.	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			
	See data validation report									

*For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? Y N

Refer to EPA New England Data Review Program Supplemental guidance for field duplicate actions (Section 2.8).
Comments: _____

_____

Sampler Name: _____ Contractor Name: _____ Date Contacted: _____

Reason for Contact and resolution obtained: _____

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB-X-A

X A. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

Are more than one-half of the PES analytes within criteria for each parameter? Y N

PE Sample Number	Ampule Number	Fraction	Type of PES	Matrix	Analyte	Conc.	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Refer to EPA New England Data Review Program Supplemental guidance for EPA PES and actions (Section 2.7).

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV/Pest/PCB-X-B

X B. ACCURACY CHECK (Laboratory Control Sample [LCS] Results) - List all analytes that are outside criteria.

LCS ID	Matrix	Method	Fraction	Compound	Acceptable %R Range	Column 1 LCS %R	Column 2 LCS %R	Samples Affected	Action
				See data validation report					

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-XI

XI. INTERNAL STANDARD PERFORMANCE

List the internal standards that are outside the area count and retention time method QC acceptance criteria.

IS Area Count Method QC acceptance criteria: _____

IS Retention Time Method QC acceptance criteria: _____

Sample Number (TRs)	Date and Time Analyzed	Instrument	Fraction	Non-Compliant Internal Standard	Internal Standard Area	RT Shift	Acceptable Range (IS area or RT shift)	Action
		See data validation report.						

Validator: Ann Cognetta Date: 7/7/14

EPA NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-XII

XII. ANALYTE IDENTIFICATION

List samples below that contained false positive and/or negative reported results, and samples that contained detected compounds which have a percent difference greater than ±25% between the two columns.

Sample ID	Analyte	Column 1 ID:			Column 2 ID:			%D	Action
		RT	RT Window	Conc.	RT	RT Window	Conc.		

Was GC/MS Confirmation performed for the appropriate samples? Y N

Were corresponding Aroclor standards analyzed within 72 hours of the sample(s) with Aroclors detected? Y N

Validator: Ann Cognetti Date: 7/7/17

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SVI-XII

XII. TARGET COMPOUND IDENTIFICATION – List the analytes that are outside the acceptance criteria.

Sample Number	Compound	MS Ions	RRT	Action

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-XIII

XIII. SAMPLE QUANTITATION AND % SOLIDS

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although NFG requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? Y N

If no, list sample numbers

Refer to EPA New England Data Review Supplemental Program guidance for actions related to %solids (Section 2.10).

Fraction		Calculation
VOA		See data validation report
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		
BNA		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		

Validator: Ann Cognetta Date: 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

Pest/PCB-XIII

XIII. SAMPLE QUANTITATION AND %SOLIDS

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although NFG requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? Y N

If no, list sample numbers_____

Refer to EPA New England Data Review Supplemental Program guidance for actions related to %solids (Section 2.10).

Fraction		Calculation
Pesticides		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		
PCB		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		

Validator: Ann Cognetta Date: ~~N1023~~ AC 7/7/14

EPA-NE - Data Validation Worksheet

Case: Newport SDG: N1023

VOA/SV-XIV

XIV. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

List the 5 TICs having the highest concentration for each sample parameter.

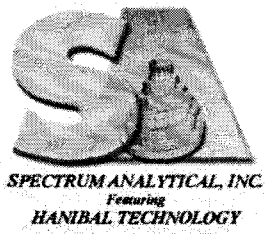
Sample Number	Fraction	Compound	RRT	Est. Conc.	Action

Validator: Ann Cognetti Date: 7/7/14

APPENDIX D

SUPPORT DOCUMENTATION

Report Date:
27-Jun-14 16:52



☑ Final Report
☐ Re-Issued Report
☐ Revised Report

Laboratory Report

Tetra Tech, Inc.
661 Andersen Drive, Foster Plaza #7
Pittsburgh, PA 15220

Work Order: N1023
Project : CTO-165, NAVSTA-NEWPORT
Project #: 112G04095, N62472-03-D-0057

Attn: Vanessa Good

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
N1023-01	DSY-TB01-061214	Aqueous	12-Jun-14 09:10	12-Jun-14 15:00
N1023-02	DSY-MW08-0614	Aqueous	12-Jun-14 10:02	12-Jun-14 15:00
N1023-03	DSY-MW222-0614	Aqueous	12-Jun-14 10:20	12-Jun-14 15:00
N1023-03	DSY-MW222-0614	Aqueous	13-Jun-14 11:25	13-Jun-14 15:00
N1023-04	DSY-MW219-0614	Aqueous	12-Jun-14 12:27	12-Jun-14 15:00
N1023-05	DSY-MW-DUP01-061214	Aqueous	12-Jun-14 13:00	12-Jun-14 15:00
N1023-06	DSY-MW220-0614	Aqueous	12-Jun-14 14:10	12-Jun-14 15:00
N1023-06	DSY-MW220-0614	Aqueous	13-Jun-14 11:50	13-Jun-14 15:00
N1023-07	DSY-MW218-0614	Aqueous	12-Jun-14 14:07	12-Jun-14 15:00
N1023-08	DSY-TB02-061214	Aqueous	12-Jun-14 15:20	13-Jun-14 15:00
N1023-09	DSY-MW03-0614	Aqueous	12-Jun-14 16:47	13-Jun-14 15:00
N1023-10	DSY-MW221-0614	Aqueous	12-Jun-14 00:00	13-Jun-14 15:00
N1023-10	DSY-MW221-0614	Aqueous	17-Jun-14 16:10	20-Jun-14 13:00
N1023-11	DSY-MW204-0614	Aqueous	13-Jun-14 10:00	13-Jun-14 15:00
N1023-12	DSY-MW02A-0614	Aqueous	13-Jun-14 00:00	13-Jun-14 15:00
N1023-13	DSY-MW-RB01-061314	Aqueous	13-Jun-14 13:30	13-Jun-14 15:00
N1023-14	DSY-SB301-0001	Soil	16-Jun-14 13:50	17-Jun-14 15:00
N1023-15	DSY-TB03-061614	Aqueous	16-Jun-14 14:00	17-Jun-14 15:00
N1023-16	DSY-SB302-0001	Soil	16-Jun-14 14:20	17-Jun-14 15:00
N1023-17	DSY-SB304-0001	Soil	16-Jun-14 15:25	17-Jun-14 15:00
N1023-18	DSY-SB-DUP01-061614	Soil	16-Jun-14 12:00	17-Jun-14 15:00
N1023-19	DSY-MW12-0614	Aqueous	16-Jun-14 17:17	17-Jun-14 15:00
N1023-20	DSY-TB04-062014	Aqueous	20-Jun-14 07:00	20-Jun-14 13:00
N1023-21	DSY-MW104A-0614	Aqueous	20-Jun-14 07:25	20-Jun-14 13:00
N1023-22	DSY-MW11B-0614	Aqueous	20-Jun-14 08:57	20-Jun-14 13:00
N1023-23	DSY-MW-DUP02-062014	Aqueous	20-Jun-14 12:00	20-Jun-14 13:00
N1023-24	DSY-SB-RB01-061714	Aqueous	17-Jun-14 15:30	20-Jun-14 13:00
N1023-25	DSY-SB305-0305	Soil	19-Jun-14 09:40	20-Jun-14 13:00
N1023-26	DSY-SB307-0.51.5	Soil	19-Jun-14 13:55	20-Jun-14 13:00
N1023-27	DSY-SB303-1213	Soil	19-Jun-14 13:55	20-Jun-14 13:00
N1023-28	DSY-SB306-0001	Soil	19-Jun-14 18:20	20-Jun-14 13:00

N1023

SPECTRUM ANALYTICAL, INC.
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HANIBAL TECHNOLOGY

Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 Almgren Drive, Agawam, MA 01001, (413) 789-9018
☐ 8405 Benjamin Road, Ste A, Tampa, FL 33634, (813) 888-9507
☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Indicate Date Needed: 7day
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502

Telephone #: 757-466-4904
Project Mgr. Ed Corack

Invoice To: See Contract

P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO 165
Site Name: NAVSTA Newport Site 19
Location: Site 19 Newport State: RI
Sampler(s): Jacob Birkett Peter Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= H_3PO_4 12= Zn NaOH

List preservative code below: 2 | 4 | 4 | – | – | 12 | 11 | 2

QA/QC Reporting Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analyses: TCL VOCs	Total Metals (Field Filtered)	Dissolved Metals	PAHs	Alkalinity / Ion Chromat.	Total Sulfides	Total Organic Carbon	Dissolved Gases (Methane, Ethane, Ethene)	QA/QC Reporting Level
V1023 - 01	DSY-TB01-061214	6-12-14	0910	–	QA	2	1	–	–	2	–	–	–	–	–	–	1	Trip Blank
- 02	DSY-MW08-0614	6-12-14	1002	G	GW	5	2	~~1~~ 2	4	2	1	1	2	1	1	1	2	
- 03	DSY-MW222-0614	6-12-14	1020	G	GW	5	–	–	2	2	–	–	–	1	1	1	2	
- 04	DSY-MW219-0614	6-12-14	1227	G	GW	5	2	–	4	2	1	1	2	1	1	1	2	
- 05	DSY-MW-Dup01-061214	6-12-14	1300	G	GW	5	2	–	4	2	1	1	2	1	1	1	2	Duplicate
- 06	DSY-MW220-0614	6-12-14	1410	G	GW	5	–	–	2	2	–	–	–	1	1	1	2	
- 07	DSY-MW218-0614	6-12-14	1407	G	GW	5	2	–	4	2	1	1	2	1	1	1	2	

6-12-14

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____

State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett	Ed Corack	6-12-14	1500	24°C, 52°

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☑ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Page 9 of 1482

N1023

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Page 1 of 1

CHAIN OF CUSTODY RECORD

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☐ 8405 Benjamin Road, Ste A, Tampa, FL 33634, (813) 888-9507
☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Ind icate Date Needed: 7 day
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502
Telephone #: 757-466-4904
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO 165
Site Name: NAVSTA Newport Site 19
Location: Site 19 Newport State: RI
Sampler(s): Jacob Birkett

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= H_3PO_4 12= Zn NaOH

List preservative code below:

TCL VOCs	Total Metals	Field Filtered Dissolved Metals	PAHs	Alkalinity/Anions	Total Sulfides	Total Organic Carbon	Dissolved Gases
2	4	4	–	–	12	11	2

QA/QC Reporting Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	—	Analyses: TCL VOCs	Total Metals	Field Filtered Dissolved Metals	PAHs	Alkalinity/Anions	Total Sulfides	Total Organic Carbon	Dissolved Gases	QA/QC Reporting Level
08	DSY-TB02-061214	6-12-14	1520	–	QA	2	–	–	–	–	2	–	–	–	–	–	–	–	Trip Blank
09	DSY-MW03-0614	6-12-14	1647	G	GW	4	–	–	2	–	2	–	–	–	1	1	1D	2	No TOC will ship later
10	DSY-MW221-0614	6-12-14		G	GW	5	–	–	2	–	2	–	–	–	1	1	0	2	
11	DSY-MW204-0614	6-13-14	1000	G	GW	15	4	–	8	–	6	2	2	4	2	2	3	6	Run MS MSD
	~~DSY-MW223-0614~~	~~6-13-14~~		~~G~~	~~GW~~	~~5~~	~~–~~	~~–~~	~~2~~	~~–~~	~~2~~	~~–~~			~~1~~	~~1~~	~~1~~	~~2~~	Did not sample
12	DSY-MW02A-0614	6-13-14		G	GW	5	–	–	2	–	2	–	–	–	1	1	1	2	
13	DSY-MW-RB01-061314	6-13-14	1330	G	GW	2	2	–	2	–	2	1	1	2	–	–	–	–	Rinsate Blank
06 14	DSY-MW220-0614	6-13-14	1150	G	GW	1	–	–	–	–	–	–	–	–	–	–	1	–	Replace earlier
03 15	DSY-MW222-0614	6-13-14	1125	G	GW	1	–	–	–	–	–	–	–	–	–	–	1	–	TOC sample from 6-12-14
	WWC 06/19/14																		

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-13-14	1500	1.1°C
				1.6°C

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

N1023

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☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Ind icate Date Needed: 7 TAT
· All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
· Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502
Telephone #: 757-466-4908
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO-165
Site Name: NAVSTA Newport Site 19
Location: Newport State: RI
Sampler(s): Jacob Birkett

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11=H_3PO_4 12=Zn Acetate NaOH

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		List preservative code below:		2	2	11		12	Analyses: SPLP Lead	Naphthalene	VOCs	Dissolved Gases MEE	TOC	Alkalinity and Anions	Total Sulfides	QA/QC Reporting Notes:
14	DSY-SB301-0001	6-16-14	1350	G	SO	1	—	1	—	—								1	1	—	—	—	1	—	
15	DSY-TB03-061614	6-16-14	1400	—	QA	2	—	—	—	—								—	—	2	—	—	—	—	Trip Blank
16	DSY-SB302-0001	6-16-14	1420	G	SO	—	—	1	—	—								1	—	—	—	—	—	—	
17	DSY-SB304-0001	6-16-14	1525	G	SO	—	—	4	—	—								2	2	—	—	—	—	—	Run MSMSD
18	DSY-SB-Dup01-061614	6-16-14	1200	G	SO	—	—	2	—	—								1	1	—	—	—	—	—	
19	DSY-MW12-0614	6-16-14	1717	G	GW	5	—	—	2	—								—	—	2	2	1	1	1	

6-17-14

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-17-14	1500	3.2°C

☐ EDD Format _____
☐ E-mail to _____

DROP off

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☑ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____
State-specific reporting standards: _____

Page 11 of 1482

Revised Feb 2013

N1023

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☐ 8405 Benjamin Road, Ste A, Tampa, FL 33634, (813) 888-9507
~~☐~~ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Indicate Date Needed: 7 TAT
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502
Telephone #: 757-466-4908
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO-165
Site Name: NAVSTA Newport Site 19
Location: Newport State: RI
Sampler(s): Jacob Birkett

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11=Zn Acetate 12=_____

List preservative code below: 2 | 2 | 10 | — | 11 | — | 4 | 4

QA/QC Reporting Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1=_____ X2=_____ X3=_____

G=Grab C=Composite

N1023

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analyses: VOCs	Dissolved Gases MEE	TOC	Alkalinity and Anions	Total Sulfides	PAHs	Total Metals	Dissolved Metals
20	DSY-TB04-062014	6-20-14	0700	—	QA	2	~~2~~	—	—	—	2	—	—	1	—	—	—	—
21	DSY-MW104A0614	6-20-14	0725	G	GW	~~2~~	~~2~~	4	~~2~~	—	2	2	1	1	1	2	1	1
22	DSY-MW11B-0614	6-20-14	0857	G	GW	5	—	—	2	—	2	2	1	1	1	—	—	—
23	DSY-MW-Dup02-062014	6-20-14	1200	G	GW	5	—	—	2	—	2	2	1	1	1	—	—	—
	~~DSY-AGIDW-062014~~	~~6-20-14~~		C	GW													

6-20-14

Trip Blank
Well did not produce, only sampled VOCs and Metals

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____
State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-20-14	13:00	3.4°C

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Page 12 of 1482

N1023

SPECTRUM ANALYTICAL, INC.
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Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 Almgren Drive, Agawam, MA 01001, (413) 789-9018
☐ 8405 Benjamin Road, Ste A, Tampa, FL 33634, (813) 888-9507
☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Ind icate Date Needed: 7 TAT
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502
Telephone #: 757-466-4908
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO-165
Site Name: NAVSTA Newport Site 19
Location: Newport State: RI
Sampler(s): Jacob Birkett

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= Zn Acetate NaOH 2= _____

List preservative code below:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analyses: SPLP Lead	NAPHTHALENE	VOCs	Dissolved Gases MEE	TOC	Alkalinity and Anions	Total Sulfides	PAHs	Total Metals	Dissolved Metals	
N1023																					
24	DSY-SB-RB01-061714	6-17-14	1530	~~GB~~ QAG	QA	—	2	—	1	—	—	—	—	—	—	—	—	2	1	—	Rinsate Blank Lead and Naphthalene only
10-25	DSY-MW221-0614	6-17-14	1610	G	GW	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	TOC only
25 26	DSY-SB305-0305	6-19-14	0940	G	SO	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	
26 27	DSY-SB307-0.5-1.5	6-19-14	1030	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	
27 28	DSY-SB303-1213	6-19-14	1355	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	
28 29	DSY-SB306-0001	6-19-14	1820	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	
WSL 06/26/14																					

6-19-14

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-19-14	1630	3.4°C
		6-20-14	13:00	

QA/QC Reporting Notes:

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____

State-specific reporting standards: _____

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

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Revised Feb 2013

Page 13 of 1482

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: RB	Page 01 of 00
Reviewed By: KP	Log-in Date 06/12/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s)	Present / Absent
	Intact / Broken
2. Custody Seal Nos.	N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent
4. Airbill	AirBill / Sticker
	Present / Absent
5. Airbill No.	Courier 5.2
6. Sample Tags	Present / Absent
Sample Tag Numbers	Listed / Not Listed on Chain-of-Custody
7. Sample Condition	Intact / Broken/ Leaking
8. Cooler Temperature Indicator Bottle	Present / Absent
9. Cooler Temperature	2.4 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/12/2014
12. Time Received	15:00

Sample Transfer	
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-01						H	
N1023-02	<2			>12	<2	H	
N1023-03				>12	<2	H	
N1023-04	<2			>12	<2	H	
N1023-05	<2			>12	<2	H	
N1023-06				>12	<2	H	
N1023-07	<2			>12	<2	H	

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: WJL	Page 01 of 00
Reviewed By: VEB	Log-in Date 06/13/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s) — Present / Absent
   Intact / Broken
2. Custody Seal Nos. — N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists — Present / Absent
4. Airbill — AirBill / Sticker
   Present / Absent
5. Airbill No. — Drop Off N/A
6. Sample Tags — Present / Absent
   Sample Tag Numbers — Listed / Not Listed on Chain-of-Custody
7. Sample Condition — Intact / Broken/ Leaking
8. Cooler Temperature Indicator Bottle — Present / Absent

9. Cooler Temperature	1.6 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/13/2014
12. Time Received	15:00

Sample Transfer	
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-03					<2		
N1023-06					<2		
N1023-08				>12	<2		
N1023-09				>12			
N1023-10				>12	<2		
N1023-11	<2			>12	<2		
N1023-12				>12	<2		
N1023-13	<2						

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: WJS	Page 01 of 00
Reviewed By: VJB	Log-in Date 06/17/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s) — Present / Absent
   Intact / Broken
2. Custody Seal Nos. N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists — Present / Absent
4. Airbill — AirBill / Sticker
   Present / Absent
5. Airbill No. Drop Off N/A
6. Sample Tags — Present / Absent
   Sample Tag Numbers — Listed / Not Listed on Chain-of-Custody
7. Sample Condition — Intact / Broken / Leaking
8. Cooler Temperature Indicator Bottle — Present / Absent

9. Cooler Temperature	3.2 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/17/2014
12. Time Received	15:00

Sample Transfer

Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-14							
N1023-15						H	
N1023-16							
N1023-17							
N1023-18							
N1023-19				>12	<2	H	

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: WJV	Page 01 of 00
Reviewed By: VRB	Log-in Date 06/20/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s)	Present / Absent
	Intact / Broken
2. Custody Seal Nos.	N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent
4. Airbill	AirBill / Sticker
	Present / Absent
5. Airbill No.	Drop Off N/A
6. Sample Tags	Present / Absent
Sample Tag Numbers	Listed / Not Listed on Chain-of-Custody
7. Sample Condition	Intact / Broken/ Leaking
8. Cooler Temperature Indicator Bottle	Present / Absent
9. Cooler Temperature	3.4 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/20/2014
12. Time Received	13:00

Sample Transfer	
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-10					<2		
N1023-20						H	
N1023-21	<2					H	
N1023-22					<2	H	
N1023-23					<2	H	
N1023-24	<2						
N1023-25							
N1023-26							
N1023-27							
N1023-28							

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

HOLDTIME

SDG N1023

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
HG	UG/L	DSY-MW-DUP01-061214	N1023-05F	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-SB-RB01-061714	N1023-24B	NM	06/17/2014	06/24/2014	06/25/2014	7	1	8
HG	UG/L	DSY-MW-RB01-061314	N1023-13C	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
HG	UG/L	DSY-MW-DUP01-061214	N1023-05G	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW219-0614	N1023-04G	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW219-0614	N1023-04F	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW218-0614	N1023-07G	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW08-0614	N1023-02F	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW204-0614	N1023-11F	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
HG	UG/L	DSY-MW204-0614	N1023-11E	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
HG	UG/L	DSY-MW104A-0614	N1023-21C	NM	06/20/2014	06/24/2014	06/25/2014	4	1	5
HG	UG/L	DSY-MW104A-0614	N1023-21B	NM	06/20/2014	06/24/2014	06/25/2014	4	1	5
HG	UG/L	DSY-MW08-0614	N1023-02G	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW218-0614	N1023-07F	NM	06/12/2014	06/16/2014	06/17/2014	4	1	5
HG	UG/L	DSY-MW-RB01-061314	N1023-13B	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
M	UG/L	DSY-MW-RB01-061314	N1023-13C	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
M	UG/L	DSY-SB301-0001	N1023-14A	NM	06/16/2014	06/23/2014	06/24/2014	7	1	8
M	UG/L	DSY-SB302-0001	N1023-16A	NM	06/16/2014	06/23/2014	06/24/2014	7	1	8
M	UG/L	DSY-SB303-1213	N1023-27A	NM	06/19/2014	06/26/2014	06/27/2014	7	1	8
M	UG/L	DSY-SB304-0001	N1023-17A	NM	06/16/2014	06/23/2014	06/24/2014	7	1	8
M	UG/L	DSY-SB306-0001	N1023-28A	NM	06/19/2014	06/26/2014	06/27/2014	7	1	8
M	UG/L	DSY-SB-DUP01-061614	N1023-18A	NM	06/16/2014	06/23/2014	06/24/2014	7	1	8
M	UG/L	DSY-MW-RB01-061314	N1023-13B	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
M	UG/L	DSY-MW104A-0614	N1023-21C	NM	06/20/2014	06/24/2014	06/25/2014	4	1	5
M	UG/L	DSY-SB307-0.51.5	N1023-26A	NM	06/19/2014	06/26/2014	06/27/2014	7	1	8
M	UG/L	DSY-MW-DUP01-061214	N1023-05G	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-MW-DUP01-061214	N1023-05F	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-MW219-0614	N1023-04G	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-MW219-0614	N1023-04F	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-MW218-0614	N1023-07G	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-MW218-0614	N1023-07F	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-SB-RB01-061714	N1023-24B	NM	06/17/2014	06/24/2014	06/25/2014	7	1	8
M	UG/L	DSY-MW204-0614	N1023-11E	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
M	UG/L	DSY-MW104A-0614	N1023-21B	NM	06/20/2014	06/24/2014	06/25/2014	4	1	5
M	UG/L	DSY-MW08-0614	N1023-02G	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
M	UG/L	DSY-MW204-0614	N1023-11F	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
M	UG/L	DSY-MW08-0614	N1023-02F	NM	06/12/2014	06/13/2014	06/16/2014	1	3	4
	MG/L	DSY-MW220-0614	N1023-06D	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW02A-0614	N1023-12C	NM	06/13/2014	06/13/2014	06/13/2014	0	0	0
	MG/L	DSY-MW-DUP02-062014	N1023-23D	NM	06/20/2014	06/26/2014	06/26/2014	6	0	6
	MG/L	DSY-MW-DUP02-062014	N1023-23C	NM	06/20/2014	06/21/2014	06/21/2014	1	0	1
	MG/L	DSY-MW-DUP01-061214	N1023-05E	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW-DUP01-061214	N1023-05D	NM	06/12/2014	06/12/2014	06/13/2014	0	1	1
	MG/L	DSY-MW222-0614	N1023-03D	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW222-0614	N1023-03C	NM	06/12/2014	06/12/2014	06/13/2014	0	1	1
	MG/L	DSY-MW221-0614	N1023-10D	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW221-0614	N1023-10C	NM	06/12/2014	06/13/2014	06/13/2014	1	0	1
	MG/L	DSY-MW220-0614	N1023-06C	NM	06/12/2014	06/12/2014	06/13/2014	0	1	1
	MG/L	DSY-MW219-0614	N1023-04E	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW219-0614	N1023-04D	NM	06/12/2014	06/12/2014	06/13/2014	0	1	1
	MG/L	DSY-MW218-0614	N1023-07E	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
	MG/L	DSY-MW03-0614	N1023-09C	NM	06/12/2014	06/13/2014	06/18/2014	1	5	6
	MG/L	DSY-MW02A-0614	N1023-12C	NM	06/13/2014	06/13/2014	06/18/2014	0	5	5
	MG/L	DSY-MW02A-0614	N1023-12D	NM	06/13/2014	06/16/2014	06/16/2014	3	0	3
	MG/L	DSY-MW221-0614	N1023-10C	NM	06/12/2014	06/13/2014	06/18/2014	1	5	6
	MG/L	DSY-MW03-0614	N1023-09C	NM	06/12/2014	06/13/2014	06/13/2014	1	0	1
	MG/L	DSY-MW218-0614	N1023-07D	NM	06/12/2014	06/12/2014	06/13/2014	0	1	1
	MG/L	DSY-MW03-0614	N1023-09D	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW08-0614	N1023-02D	NM	06/12/2014	06/12/2014	06/13/2014	0	1	1
	MG/L	DSY-MW08-0614	N1023-02E	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
	MG/L	DSY-MW11B-0614	N1023-22D	NM	06/20/2014	06/26/2014	06/26/2014	6	0	6
	MG/L	DSY-MW12-0614	N1023-19C	NM	06/16/2014	06/17/2014	06/17/2014	1	0	1
	MG/L	DSY-MW204-0614	N1023-11D	NM	06/13/2014	06/16/2014	06/16/2014	3	0	3
	MG/L	DSY-MW12-0614	N1023-19D	NM	06/16/2014	06/19/2014	06/19/2014	3	0	3
	MG/L	DSY-MW204-0614	N1023-11C	NM	06/13/2014	06/13/2014	06/13/2014	0	0	0
	MG/L	DSY-MW11B-0614	N1023-22C	NM	06/20/2014	06/21/2014	06/21/2014	1	0	1
	MG/L	DSY-MW204-0614	N1023-11C	NM	06/13/2014	06/13/2014	06/18/2014	0	5	5
ALK	MG/L C AC	DSY-MW08-0614	N1023-02D	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
ALK	MG/L C AC	DSY-MW222-0614	N1023-03C	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
ALK	MG/L CACO	DSY-MW220-0614	N1023-06C	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
ALK	MG/L CACO	DSY-MW219-0614	N1023-04D	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
ALK	MG/L CACO	DSY-MW218-0614	N1023-07D	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
ALK	MG/L CACO	DSY-MW204-0614	N1023-11C	NM	06/13/2014	06/19/2014	06/19/2014	6	0	6
ALK	MG/L CACO	DSY-MW02A-0614	N1023-12C	NM	06/13/2014	06/19/2014	06/19/2014	6	0	6
ALK	MG/L CACO	DSY-MW11B-0614	N1023-22C	NM	06/20/2014	06/23/2014	06/23/2014	3	0	3
ALK	MG/L CACO	DSY-MW03-0614	N1023-09C	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
ALK	MG/L CACO	DSY-MW-DUP01-061214	N1023-05D	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
ALK	MG/L CACO	DSY-MW-DUP02-062014	N1023-23C	NM	06/20/2014	06/23/2014	06/23/2014	3	0	3
ALK	MG/L CACO	DSY-MW12-0614	N1023-19C	NM	06/16/2014	06/19/2014	06/19/2014	3	0	3
ALK	MG/L CACO	DSY-MW221-0614	N1023-10C	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
PMOIS	PCT	DSY-SB301-0001	N1023-14A	NM	06/16/2014	06/17/2014	06/17/2014	1	0	1
PMOIS	PCT	DSY-SB-DUP01-061614	N1023-18A	NM	06/16/2014	06/17/2014	06/17/2014	1	0	1
PMOIS	PCT	DSY-SB307-0.51.5	N1023-26A	NM	06/19/2014	06/20/2014	06/20/2014	1	0	1
PMOIS	PCT	DSY-SB306-0001	N1023-28A	NM	06/19/2014	06/20/2014	06/20/2014	1	0	1
PMOIS	PCT	DSY-SB305-0305	N1023-25A	NM	06/19/2014	06/20/2014	06/20/2014	1	0	1
PMOIS	PCT	DSY-SB304-0001	N1023-17A	NM	06/16/2014	06/17/2014	06/17/2014	1	0	1
PMOIS	PCT	DSY-SB303-1213	N1023-27A	NM	06/19/2014	06/20/2014	06/20/2014	1	0	1

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
PMOIS	PCT	DSY-SB302-0001	N1023-16A	NM	06/16/2014	06/17/2014	06/17/2014	1	0	1
TOC	MG/L	DSY-MW222-0614	N1023-03B	NM	06/13/2014	06/17/2014	06/17/2014	4	0	4
TOC	MG/L	DSY-MW12-0614	N1023-19B	NM	06/16/2014	06/17/2014	06/17/2014	1	0	1
TOC	MG/L	DSY-MW204-0614	N1023-11B	NM	06/13/2014	06/17/2014	06/17/2014	4	0	4
TOC	MG/L	DSY-MW218-0614	N1023-07B	NM	06/12/2014	06/17/2014	06/17/2014	5	0	5
TOC	MG/L	DSY-MW219-0614	N1023-04B	NM	06/12/2014	06/17/2014	06/17/2014	5	0	5
TOC	MG/L	DSY-MW-DUP02-062014	N1023-23B	NM	06/20/2014	06/25/2014	06/25/2014	5	0	5
TOC	MG/L	DSY-MW221-0614	N1023-10B	NM	06/17/2014	06/25/2014	06/25/2014	8	0	8
TOC	MG/L	DSY-MW-DUP01-061214	N1023-05B	NM	06/12/2014	06/17/2014	06/17/2014	5	0	5
TOC	MG/L	DSY-MW11B-0614	N1023-22B	NM	06/20/2014	06/25/2014	06/25/2014	5	0	5
TOC	MG/L	DSY-MW02A-0614	N1023-12B	NM	06/13/2014	06/17/2014	06/17/2014	4	0	4
TOC	MG/L	DSY-MW03-0614	N1023-09B	NM	06/12/2014	06/17/2014	06/17/2014	5	0	5
TOC	MG/L	DSY-MW08-0614	N1023-02B	NM	06/12/2014	06/17/2014	06/17/2014	5	0	5
TOC	MG/L	DSY-MW220-0614	N1023-06B	NM	06/13/2014	06/17/2014	06/17/2014	4	0	4
OS	UG/KG	DSY-SB-DUP01-061614	N1023-18A	NM	06/16/2014	06/19/2014	06/20/2014	3	1	4
OS	UG/KG	DSY-SB305-0305	N1023-25A	NM	06/19/2014	06/24/2014	06/25/2014	5	1	6
OS	UG/KG	DSY-SB304-0001	N1023-17A	NM	06/16/2014	06/19/2014	06/20/2014	3	1	4
OV	UG/L	DSY-MW-RB01-061314	N1023-13A	NM	06/13/2014	06/17/2014	06/17/2014	4	0	4

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
OV	UG/L	DSY-TB03-061614	N1023-15A	NM	06/16/2014	06/18/2014	06/18/2014	2	0	2
OV	UG/L	DSY-MW08-0614	N1023-02A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-TB04-062014	N1023-20A	NM	06/20/2014	06/26/2014	06/26/2014	6	0	6
OV	UG/L	DSY-TB01-061214	N1023-01A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW-DUP02-062014	N1023-23A	NM	06/20/2014	06/26/2014	06/26/2014	6	0	6
OV	UG/L	DSY-MW-DUP01-061214	N1023-05A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW222-0614	N1023-03A	NM	06/12/2014	06/17/2014	06/17/2014	5	0	5
OV	UG/L	DSY-TB02-061214	N1023-08A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW03-0614	N1023-09A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW104A-0614	N1023-21A	NM	06/20/2014	06/26/2014	06/26/2014	6	0	6
OV	UG/L	DSY-MW11B-0614	N1023-22A	NM	06/20/2014	06/26/2014	06/26/2014	6	0	6
OV	UG/L	DSY-MW12-0614	N1023-19A	NM	06/16/2014	06/18/2014	06/18/2014	2	0	2
OV	UG/L	DSY-MW204-0614	N1023-11A	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4
OV	UG/L	DSY-MW218-0614	N1023-07A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW219-0614	N1023-04A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW220-0614	N1023-06A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW221-0614	N1023-10A	NM	06/12/2014	06/16/2014	06/16/2014	4	0	4
OV	UG/L	DSY-MW02A-0614	N1023-12A	NM	06/13/2014	06/16/2014	06/17/2014	3	1	4

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
	UG/L	DSY-MW08-0614	N1023-02A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW222-0614	N1023-03A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW02A-0614	N1023-12A	NM	06/13/2014	06/19/2014	06/19/2014	6	0	6
	UG/L	DSY-MW-DUP01-061214	N1023-05A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW03-0614	N1023-09A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW221-0614	N1023-10A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW220-0614	N1023-06A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW219-0614	N1023-04A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW218-0614	N1023-07A	NM	06/12/2014	06/19/2014	06/19/2014	7	0	7
	UG/L	DSY-MW204-0614	N1023-11A	NM	06/13/2014	06/19/2014	06/19/2014	6	0	6
	UG/L	DSY-MW12-0614	N1023-19A	NM	06/16/2014	06/19/2014	06/19/2014	3	0	3
	UG/L	DSY-MW11B-0614	N1023-22A	NM	06/20/2014	06/25/2014	06/25/2014	5	0	5
	UG/L	DSY-MW-DUP02-062014	N1023-23A	NM	06/20/2014	06/25/2014	06/25/2014	5	0	5
SIM	UG/L	DSY-MW08-0614	N1023-02C	NM	06/12/2014	06/13/2014	06/20/2014	1	7	8
SIM	UG/L	DSY-MW204-0614	N1023-11G	NM	06/13/2014	06/13/2014	06/20/2014	0	7	7
SIM	UG/L	DSY-MW218-0614	N1023-07C	NM	06/12/2014	06/13/2014	06/20/2014	1	7	8
SIM	UG/L	DSY-MW219-0614	N1023-04C	NM	06/12/2014	06/13/2014	06/20/2014	1	7	8
SIM	UG/L	DSY-MW-DUP01-061214	N1023-05C	NM	06/12/2014	06/13/2014	06/20/2014	1	7	8

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
SIM	UG/L	DSY-MW-RB01-061314	N1023-13D	NM	06/13/2014	06/13/2014	06/20/2014	0	7	7
SIM	UG/L	DSY-SB-RB01-061714	N1023-24A	NM	06/17/2014	06/23/2014	06/25/2014	6	2	8

Field Duplicate Precision				
ANALYTE	DSY-MW-DUP02-062014	DSY-MW11B-0614	RPD	DIFFERENCE
CIS-1,2-DICHLOROETHENE	8.1	8.3	2.44	0.2
TRANS-1,2-DICHLOROETHENE	1	ND	200.00	0

Field Duplicate Precision				
ANALYTE	DSY-MW-DUP01-061214	DSY-MW219-0614	RPD	DIFFERENCE
METHANE	48	34	34.15	14

Field Duplicate Precision				
ANALYTE	DSY-MW-DUP02-062014	DSY-MW11B-0614	RPD	DIFFERENCE
METHANE	16	14	13.33	2

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

SW846 8260C, VOC by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8260C

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW5030B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: V1
Instrument Type: GCMS-VOA

Description: HP5890 II / HP5972
Manufacturer: Hewlett-Packard
Model: 5890 / 5972
GC Column used: 30 m X 0.25 mm ID [1.40 um thickness] DB-624 capillary column.

Instrument Code: V10
Instrument Type: GCMS-VOA
Description: HP7890A
Manufacturer: Agilent
Model: 7890A / 5975C
GC Column used: 30 m X 0.25 mm ID [1.40 um thickness] DB-624 capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits with the following exceptions. Please note that most test procedures allow for several compounds outside of the QC limits for the LCS, although this may indicate a bias for this specific compound.

LCS-77630 in batch 77630, recovery is above criteria for Bromodichloromethane at 121% with criteria of (75-120).

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Matrix spikes were performed on samples: DSY-MW204-0614 (N1023-11AMS) and DSY-MW204-0614 (N1023-11AMSD).

Percent recoveries were within the QC limits.

Replicate RPDs were within the advisory QC limits.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

- M1 peak tailing or fronting
- M2 peak co-elution
- M3 rising or falling baseline
- M4 retention time shift
- M5 miscellaneous - under this category, the justification is explained
- M6 software did not integrate peak
- M7 partial peak integration

Manual integration was performed on the following:

VSTD0051K Acetone due to M6

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

5A - FORM V VOA
VOLATILE ORGANIC INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

CLIENT SAMPLE NO.
BFB10N

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5404.D BFB Injection Date: 06/16/2014

Instrument ID: V10 BFB Injection Time: 9:36

GC Column: DB-624 ID: 0.25 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	38.2
75	30.0 - 80.0% of mass 95	63.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.3 (0.5)1
174	50.0 -120% of mass 95	77.5
175	5.0 - 9.0% of mass 174	5.9 (7.6)1
176	95.0 - 101% of mass 174	76.5 (98.7)1
177	5.0 - 9.0% of mass 176	4.7 (6.2)2

1 - Value is % mass 174 2 - Value is % mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD05010N	VSTD05010N	V8D5405.D	06/16/2014	10:17
02	VSTD02010N	VSTD02010N	V8D5406.D	06/16/2014	10:45
03	VSTD00510N	VSTD00510N	V8D5407.D	06/16/2014	11:13
04	VSTD00110N	VSTD00110N	V8D5408.D	06/16/2014	11:41
05	VSTD20010N	VSTD20010N	V8D5410.D	06/16/2014	12:36
06	VSTD10010N	VSTD10010N	V8D5411.D	06/16/2014	13:04
07	VICV05010N	VICV05010N	V8D5412.D	06/16/2014	13:31

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date(s): 06/16/2014 06/16/2014

Heated Purge: (Y/N) N Calibration Times: 10:17 13:04

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V8D5407.D RRF020 = V8D5406.D RRF050 = V8D5405.D RRF100 = V8D5411.D RRF200 = V8D5410.D
RRF001 = V8D5408.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					RRF	% RSD
Dichlorodifluoromethane	0.656	0.759	0.665	0.613	0.620	0.678					0.665	7.9
Chloromethane	0.985	1.095	1.043	1.061	1.037	1.367					1.098	12.4
Vinyl chloride	0.661	0.792	0.709	0.720	0.684	0.760					0.721	6.7
Bromomethane	0.218	0.286	0.277	0.272	0.249	0.335					0.273	14.3
Chloroethane	0.350	0.405	0.355	0.361	0.346	0.302					0.353	9.3
Trichlorofluoromethane	0.981	1.122	0.999	0.969	0.986	1.016					1.012	5.6
1,1-Dichloroethene	0.412	0.465	0.415	0.410	0.402	0.492					0.433	8.5
Acetone	0.075	0.082	0.075	0.057	0.056						0.069	16.9
Carbon disulfide	1.162	1.365	1.314	1.231	1.259	1.739					1.345	15.2
Methylene chloride	0.405	0.459	0.437	0.427	0.424	0.462					0.436	5.0
trans-1,2-Dichloroethene	0.380	0.456	0.408	0.401	0.409	0.441					0.416	6.7
Methyl tert-butyl ether	1.237	1.544	1.490	1.431	1.485	1.418					1.434	7.5
1,1-Dichloroethane	1.047	1.212	1.139	1.088	1.112	1.070					1.112	5.3
2-Butanone	0.040	0.057	0.052	0.047	0.048						0.049	12.7
cis-1,2-Dichloroethene	0.403	0.467	0.441	0.432	0.437	0.452					0.439	4.9
Chloroform	0.966	1.095	1.011	0.992	1.025	0.946					1.006	5.2
1,1,1-Trichloroethane	0.947	1.115	1.019	0.981	1.026	0.967					1.009	6.0
Carbon tetrachloride	0.847	0.953	0.903	0.878	0.912	0.857					0.892	4.4
1,2-Dichloroethane	1.010	1.256	1.208	1.175	1.244	1.190					1.181	7.6
Benzene	1.368	1.675	1.523	1.516	1.568	1.407					1.510	7.3
Trichloroethene	0.396	0.450	0.426	0.416	0.430	0.358					0.413	7.7
1,2-Dichloropropane	0.462	0.562	0.543	0.530	0.555	0.533					0.531	6.8
Bromodichloromethane	0.647	0.799	0.802	0.782	0.832	0.687					0.758	9.7
cis-1,3-Dichloropropene	0.518	0.680	0.716	0.710	0.759	0.517					0.650	16.2
4-Methyl-2-pentanone	0.644	0.908	0.816	0.780	0.828						0.795	12.2
Toluene	1.534	1.747	1.618	1.614	1.686	1.647					1.641	4.4
trans-1,3-Dichloropropene	0.487	0.630	0.711	0.703	0.779	0.455					0.627	20.8

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date(s): 06/16/2014 06/16/2014

Heated Purge: (Y/N) N Calibration Times: 10:17 13:04

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V8D5407.D RRF020 = V8D5406.D RRF050 = V8D5405.D RRF100 = V8D5411.D RRF200 = V8D5410.D
RRF001 = V8D5408.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					$\overline{RRF}$	% RSD
1,1,2-Trichloroethane	0.329	0.388	0.379	0.369	0.375	0.355					0.366	5.8
Tetrachloroethene	0.377	0.419	0.359	0.360	0.361	0.434					0.385	8.6
2-Hexanone	0.454	0.608	0.533	0.487	0.505						0.517	11.2
Dibromochloromethane	0.395	0.501	0.500	0.508	0.534	0.360					0.466	15.2
1,2-Dibromoethane	0.334	0.414	0.389	0.392	0.403	0.327					0.377	9.8
Chlorobenzene	0.950	1.110	0.995	0.985	1.016	0.980					1.006	5.5
Ethylbenzene	0.467	0.574	0.515	0.523	0.536	0.431					0.508	10.0
m,p-Xylene	0.576	0.696	0.635	0.633	0.654	0.550					0.624	8.5
o-Xylene	0.520	0.651	0.620	0.613	0.631	0.488					0.587	11.4
Xylene (Total)	0.557	0.681	0.630	0.627	0.647	0.529					0.612	9.4
Styrene	0.761	1.004	0.989	1.001	1.052	0.585					0.899	20.5
Bromoform	0.230	0.305	0.304	0.309	0.328	0.134					0.268	27.5
Isopropylbenzene	1.481	1.901	1.734	1.755	1.780	1.320					1.662	13.0
1,1,2,2-Tetrachloroethane	0.966	1.095	0.889	0.852	0.854	0.973					0.938	10.0
1,3-Dichlorobenzene	1.328	1.518	1.344	1.345	1.355	1.495					1.398	6.1
1,4-Dichlorobenzene	1.451	1.529	1.360	1.357	1.376	1.707					1.463	9.3
1,2-Dichlorobenzene	1.284	1.460	1.312	1.292	1.304	1.472					1.354	6.4
1,2-Dibromo-3-chloropropane	0.177	0.219	0.191	0.187	0.200	0.171					0.191	9.1
1,2,4-Trichlorobenzene	0.669	0.810	0.781	0.807	0.837	0.854					0.793	8.3
Cyclohexane	1.078	1.214	1.134	1.082	1.096	1.000					1.101	6.4
Methyl acetate	0.895	1.024	0.895	0.820	0.815	1.008					0.909	9.8
Methylcyclohexane	0.540	0.648	0.640	0.577	0.593	0.568					0.594	7.1

1574

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date(s): 06/16/2014 06/16/2014

Heated Purge: (Y/N) N Calibration Times: 10:17 13:04

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V8D5407.D RRF020 = V8D5406.D RRF050 = V8D5405.D RRF100 = V8D5411.D RRF200 = V8D5410.D

RRF001 = V8D5408.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					$\overline{RRF}$	% RSD
Dibromofluoromethane	0.364	0.366	0.386	0.373	0.372						0.372	2.3
1,2-Dichloroethane-d4	0.058	0.063	0.065	0.062	0.066						0.063	4.6
Toluene-d8	1.194	1.146	1.119	1.141	1.121						1.144	2.6
Bromofluorobenzene	0.584	0.604	0.625	0.618	0.640						0.614	3.5

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

7A - FORM VII VOA-1

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/16/2014 Time: 13:31

Lab File ID: V8D5412.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VICV05010N Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.665	0.534	0.100	-19.8	20.0
Chloromethane	1.098	0.898	0.100	-18.2	20.0
Vinyl chloride	0.721	0.633	0.100	-12.2	20.0
Bromomethane	0.273	0.242	0.100	-11.4	20.0
Chloroethane	0.353	0.317	0.100	-10.1	20.0
Trichlorofluoromethane	1.012	0.836	0.100	-17.4	20.0
1,1-Dichloroethene	0.433	0.370	0.100	-14.5	20.0
Acetone	0.069	0.057	0.100	-17.7	20.0
Carbon disulfide	1.345	1.089	0.100	-19.0	20.0
Methylene chloride	0.436	0.378	0.100	-13.3	20.0
trans-1,2-Dichloroethene	0.416	0.364	0.100	-12.4	20.0
Methyl tert-butyl ether	1.434	1.279	0.100	-10.8	20.0
1,1-Dichloroethane	1.112	0.973	0.200	-12.5	20.0
2-Butanone	0.049	0.048	0.100	-1.3	20.0
cis-1,2-Dichloroethene	0.439	0.377	0.100	-14.0	20.0
Chloroform	1.006	0.870	0.200	-13.5	20.0
1,1,1-Trichloroethane	1.009	0.886	0.100	-12.2	20.0
Carbon tetrachloride	0.892	0.774	0.100	-13.2	20.0
1,2-Dichloroethane	1.181	1.008	0.100	-14.6	20.0
Benzene	1.510	1.362	0.500	-9.8	20.0
Trichloroethene	0.413	0.367	0.200	-11.0	20.0
1,2-Dichloropropane	0.531	0.461	0.100	-13.1	20.0
Bromodichloromethane	0.758	0.655	0.200	-13.6	20.0
cis-1,3-Dichloropropene	0.650	0.578	0.200	-11.0	20.0
4-Methyl-2-pentanone	0.795	0.753	0.100	-5.3	20.0
Toluene	1.641	1.408	0.400	-14.2	20.0
trans-1,3-Dichloropropene	0.627	0.585	0.100	-6.7	20.0
1,1,2-Trichloroethane	0.366	0.319	0.100	-12.9	20.0
Tetrachloroethene	0.385	0.331	0.200	-14.0	20.0
2-Hexanone	0.517	0.478	0.100	-7.6	20.0
Dibromochloromethane	0.466	0.438	0.100	-6.0	20.0
1,2-Dibromoethane	0.377	0.347	0.100	-7.8	20.0
Chlorobenzene	1.006	0.885	0.500	-12.1	20.0
Ethylbenzene	0.508	0.463	0.100	-8.7	20.0
m,p-Xylene	0.624	0.569	0.100	-8.8	20.0
o-Xylene	0.587	0.554	0.300	-5.6	20.0
Xylene (Total)	0.612	0.564	0.100	-7.8	20.0
Styrene	0.899	0.862	0.300	-4.1	20.0
Bromoform	0.268	0.264	0.100	-1.5	20.0
Isopropylbenzene	1.662	1.581	0.100	-4.8	20.0

7B - FORM VII VOA-2

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/16/2014 Time: 13:31

Lab File ID: V8D5412.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VICV05010N Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
1,1,2,2-Tetrachloroethane	0.938	0.849	0.300	-9.5	20.0
1,3-Dichlorobenzene	1.398	1.267	0.600	-9.3	20.0
1,4-Dichlorobenzene	1.463	1.270	0.500	-13.2	20.0
1,2-Dichlorobenzene	1.354	1.200	0.400	-11.4	20.0
1,2-Dibromo-3-chloropropane	0.191	0.184	0.050	-3.5	20.0
1,2,4-Trichlorobenzene	0.793	0.688	0.200	-13.3	20.0
Cyclohexane	1.101	0.940	0.100	-14.6	20.0
Methyl acetate	0.909	0.815	0.100	-10.4	20.0
Methylcyclohexane	0.594	0.506	0.100	-14.9	20.0

7C - FORM VII VOA-3

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/16/2014 Time: 13:31

Lab File ID: V8D5412.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VICV05010N Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX %D
Dibromofluoromethane	0.372	0.366	0.100	-1.5	20.0
1,2-Dichloroethane-d4	0.063	0.062	0.100	-0.9	20.0
Toluene-d8	1.144	1.151	0.100	0.6	20.0
Bromofluorobenzene	0.614	0.605	0.100	-1.5	20.0

5A - FORM V VOA

VOLATILE ORGANIC INSTRUMENT

PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

CLIENT SAMPLE NO.

BFB10O

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5414.D BFB Injection Date: 06/16/2014

Instrument ID: V10 BFB Injection Time: 14:26

GC Column: DB-624 ID: 0.25 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	37.8
75	30.0 - 80.0% of mass 95	59.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	1.1 (1.3)1
174	50.0 -120% of mass 95	81.2
175	5.0 - 9.0% of mass 174	6.3 (7.7)1
176	95.0 - 101% of mass 174	80.7 (99.3)1
177	5.0 - 9.0% of mass 176	5.9 (7.3)2

1 - Value is % mass 174 2 - Value is % mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050100	VSTD050100	V8D5415.D	06/16/2014	14:54
02	LCS-77583	LCS-77583	V8D5416.D	06/16/2014	15:21
03	LCSD-77583	LCSD-77583	V8D5417.D	06/16/2014	15:49
04	MB-77583	MB-77583	V8D5419.D	06/16/2014	16:44
05	DSY-TB02-061214	N1023-08A	V8D5421.D	06/16/2014	17:39
06	DSY-TB01-061214	N1023-01A	V8D5422.D	06/16/2014	18:06
07	DSY-MW08-0614	N1023-02A	V8D5427.D	06/16/2014	20:25
08	DSY-MW219-0614	N1023-04A	V8D5429.D	06/16/2014	21:21
09	DSY-MW-DUP01-061214	N1023-05A	V8D5430.D	06/16/2014	21:48
10	DSY-MW220-0614	N1023-06A	V8D5431.D	06/16/2014	22:16
11	DSY-MW218-0614	N1023-07A	V8D5432.D	06/16/2014	22:44
12	DSY-MW03-0614	N1023-09A	V8D5433.D	06/16/2014	23:11
13	DSY-MW221-0614	N1023-10A	V8D5434.D	06/16/2014	23:39
14	DSY-MW204-0614	N1023-11A	V8D5435.D	06/17/2014	0:06
15	DSY-MW02A-0614	N1023-12A	V8D5436.D	06/17/2014	0:33

5A - FORM V VOA
VOLATILE ORGANIC INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

CLIENT SAMPLE NO.
BFB10O

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5414.D BFB Injection Date: 06/16/2014

Instrument ID: V10 BFB Injection Time: 14:26

GC Column: DB-624 ID: 0.25 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	37.8
75	30.0 - 80.0% of mass 95	59.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	1.1 (1.3)1
174	50.0 -120% of mass 95	81.2
175	5.0 - 9.0% of mass 174	6.3 (7.7)1
176	95.0 - 101% of mass 174	80.7 (99.3)1
177	5.0 - 9.0% of mass 176	5.9 (7.3)2

1 - Value is % mass 174 2 - Value is % mass 176

16	DSY-MW204-06 14MS	N1023-11AMS	V8D5438.D	06/17/2014	1:28
17	DSY-MW204-06 14MSD	N1023-11AMSD	V8D5439.D	06/17/2014	1:55

7A - FORM VII VOA-1

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/16/2014 Time: 14:54

Lab File ID: V8D5415.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD050100 Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.665	0.573	0.100	-13.9	20.0
Chloromethane	1.098	1.038	0.100	-5.5	20.0
Vinyl chloride	0.721	0.690	0.100	-4.3	20.0
Bromomethane	0.273	0.247	0.100	-9.7	20.0
Chloroethane	0.353	0.347	0.100	-1.8	20.0
Trichlorofluoromethane	1.012	0.942	0.100	-6.9	20.0
1,1-Dichloroethene	0.433	0.402	0.100	-7.0	20.0
Acetone	0.069	0.062	0.100	-9.8	20.0
Carbon disulfide	1.345	1.196	0.100	-11.1	20.0
Methylene chloride	0.436	0.438	0.100	0.4	20.0
trans-1,2-Dichloroethene	0.416	0.405	0.100	-2.5	20.0
Methyl tert-butyl ether	1.434	1.465	0.100	2.1	20.0
1,1-Dichloroethane	1.112	1.121	0.200	0.8	20.0
2-Butanone	0.049	0.049	0.100	0.2	20.0
cis-1,2-Dichloroethene	0.439	0.432	0.100	-1.6	20.0
Chloroform	1.006	1.009	0.200	0.3	20.0
1,1,1-Trichloroethane	1.009	0.988	0.100	-2.1	20.0
Carbon tetrachloride	0.892	0.879	0.100	-1.4	20.0
1,2-Dichloroethane	1.181	1.208	0.100	2.3	20.0
Benzene	1.510	1.529	0.500	1.3	20.0
Trichloroethene	0.413	0.413	0.200	0.1	20.0
1,2-Dichloropropane	0.531	0.530	0.100	-0.2	20.0
Bromodichloromethane	0.758	0.781	0.200	3.0	20.0
cis-1,3-Dichloropropene	0.650	0.686	0.200	5.5	20.0
4-Methyl-2-pentanone	0.795	0.805	0.100	1.2	20.0
Toluene	1.641	1.608	0.400	-2.0	20.0
trans-1,3-Dichloropropene	0.627	0.696	0.100	10.9	20.0
1,1,2-Trichloroethane	0.366	0.377	0.100	3.1	20.0
Tetrachloroethene	0.385	0.355	0.200	-7.9	20.0
2-Hexanone	0.517	0.480	0.100	-7.2	20.0
Dibromochloromethane	0.466	0.496	0.100	6.3	20.0
1,2-Dibromoethane	0.377	0.395	0.100	4.9	20.0
Chlorobenzene	1.006	0.994	0.500	-1.2	20.0
Ethylbenzene	0.508	0.512	0.100	0.8	20.0
m,p-Xylene	0.624	0.628	0.100	0.6	20.0
o-Xylene	0.587	0.601	0.300	2.3	20.0
Xylene (Total)	0.612	0.619	0.100	1.1	20.0
Styrene	0.899	0.967	0.300	7.6	20.0
Bromoform	0.268	0.301	0.100	12.2	20.0
Isopropylbenzene	1.662	1.695	0.100	2.0	20.0

7B - FORM VII VOA-2

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/16/2014 Time: 14:54

Lab File ID: V8D5415.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD050100 Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
1,1,2,2-Tetrachloroethane	0.938	0.898	0.300	-4.2	20.0
1,3-Dichlorobenzene	1.398	1.316	0.600	-5.8	20.0
1,4-Dichlorobenzene	1.463	1.339	0.500	-8.5	20.0
1,2-Dichlorobenzene	1.354	1.293	0.400	-4.5	20.0
1,2-Dibromo-3-chloropropane	0.191	0.176	0.050	-7.7	20.0
1,2,4-Trichlorobenzene	0.793	0.699	0.200	-11.9	20.0
Cyclohexane	1.101	1.024	0.100	-7.0	20.0
Methyl acetate	0.909	0.877	0.100	-3.5	20.0
Methylcyclohexane	0.594	0.542	0.100	-8.8	20.0

7C - FORM VII VOA-3

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/16/2014 Time: 14:54

Lab File ID: V8D5415.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD050100 Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
Dibromofluoromethane	0.372	0.385	0.100	3.4	20.0
1,2-Dichloroethane-d4	0.063	0.067	0.100	7.0	20.0
Toluene-d8	1.144	1.134	0.100	-0.9	20.0
Bromofluorobenzene	0.614	0.620	0.100	1.0	20.0

4A - FORM IV VOA

VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5419.D Lab Sample ID: MB-77583

Instrument ID: V10

Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 06/16/2014

Level: (TRACE or LOW/MED) LOW Time Analyzed: 16:44

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-77583	LCS-77583	V8D5416.D	15:21
02	LCSD-77583	LCSD-77583	V8D5417.D	15:49
03	DSY-TB02-061214	N1023-08A	V8D5421.D	17:39
04	DSY-TB01-061214	N1023-01A	V8D5422.D	18:06
05	DSY-MW08-0614	N1023-02A	V8D5427.D	20:25
06	DSY-MW219-0614	N1023-04A	V8D5429.D	21:21
07	DSY-MW-DUP01-061214	N1023-05A	V8D5430.D	21:48
08	DSY-MW220-0614	N1023-06A	V8D5431.D	22:16
09	DSY-MW218-0614	N1023-07A	V8D5432.D	22:44
10	DSY-MW03-0614	N1023-09A	V8D5433.D	23:11
11	DSY-MW221-0614	N1023-10A	V8D5434.D	23:39
12	DSY-MW204-0614	N1023-11A	V8D5435.D	0:06
13	DSY-MW02A-0614	N1023-12A	V8D5436.D	0:33
14	DSY-MW204-0614MS	N1023-11AMS	V8D5438.D	1:28
15	DSY-MW204-0614MSD	N1023-11AMSD	V8D5439.D	1:55

COMMENTS:

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77583

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5419.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77583

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5419.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	1.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	1.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	1.0

5A - FORM V VOA
VOLATILE ORGANIC INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

CLIENT SAMPLE NO.
BFB10P

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5450.D BFB Injection Date: 06/17/2014

Instrument ID: V10 BFB Injection Time: 7:44

GC Column: DB-624 ID: 0.25 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	36.9
75	30.0 - 80.0% of mass 95	61.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	1.0 (1.3)1
174	50.0 -120% of mass 95	80.8
175	5.0 - 9.0% of mass 174	6.4 (7.9)1
176	95.0 - 101% of mass 174	81.2 (100.4)1
177	5.0 - 9.0% of mass 176	5.2 (6.4)2

1 - Value is % mass 174 2 - Value is % mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD05010P	VSTD05010P	V8D5451.D	06/17/2014	8:02
02	LCS-77605	LCS-77605	V8D5452.D	06/17/2014	9:11
03	MB-77605	MB-77605	V8D5454.D	06/17/2014	10:26
04	DSY-MW222-06 14	N1023-03A	V8D5455.D	06/17/2014	10:54
05	DSY-MW-RB01-061314	N1023-13A	V8D5456.D	06/17/2014	11:22

7A - FORM VII VOA-1

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/17/2014 Time: 8:02

Lab File ID: V8D5451.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD05010P Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.665	0.718	0.100	8.0	20.0
Chloromethane	1.098	1.057	0.100	-3.8	20.0
Vinyl chloride	0.721	0.747	0.100	3.6	20.0
Bromomethane	0.273	0.290	0.100	6.3	20.0
Chloroethane	0.353	0.393	0.100	11.3	20.0
Trichlorofluoromethane	1.012	1.208	0.100	19.4	20.0
1,1-Dichloroethene	0.433	0.459	0.100	6.1	20.0
Acetone	0.069	0.059	0.100	-15.2	20.0
Carbon disulfide	1.345	1.422	0.100	5.7	20.0
Methylene chloride	0.436	0.423	0.100	-2.9	20.0
trans-1,2-Dichloroethene	0.416	0.437	0.100	5.0	20.0
Methyl tert-butyl ether	1.434	1.372	0.100	-4.4	20.0
1,1-Dichloroethane	1.112	1.186	0.200	6.7	20.0
2-Butanone	0.049	0.049	0.100	0.1	20.0
cis-1,2-Dichloroethene	0.439	0.434	0.100	-1.1	20.0
Chloroform	1.006	1.077	0.200	7.1	20.0
1,1,1-Trichloroethane	1.009	1.138	0.100	12.8	20.0
Carbon tetrachloride	0.892	1.010	0.100	13.3	20.0
1,2-Dichloroethane	1.181	1.271	0.100	7.7	20.0
Benzene	1.510	1.562	0.500	3.5	20.0
Trichloroethene	0.413	0.429	0.200	3.9	20.0
1,2-Dichloropropane	0.531	0.527	0.100	-0.7	20.0
Bromodichloromethane	0.758	0.804	0.200	6.1	20.0
cis-1,3-Dichloropropene	0.650	0.669	0.200	2.9	20.0
4-Methyl-2-pentanone	0.795	0.765	0.100	-3.8	20.0
Toluene	1.641	1.667	0.400	1.6	20.0
trans-1,3-Dichloropropene	0.627	0.663	0.100	5.7	20.0
1,1,2-Trichloroethane	0.366	0.353	0.100	-3.5	20.0
Tetrachloroethene	0.385	0.366	0.200	-5.0	20.0
2-Hexanone	0.517	0.436	0.100	-15.7	20.0
Dibromochloromethane	0.466	0.470	0.100	0.7	20.0
1,2-Dibromoethane	0.377	0.362	0.100	-3.9	20.0
Chlorobenzene	1.006	0.964	0.500	-4.2	20.0
Ethylbenzene	0.508	0.512	0.100	0.8	20.0
m,p-Xylene	0.624	0.624	0.100	-0.1	20.0
o-Xylene	0.587	0.590	0.300	0.5	20.0
Xylene (Total)	0.612	0.613	0.100	0.1	20.0
Styrene	0.899	0.926	0.300	3.0	20.0
Bromoform	0.268	0.280	0.100	4.3	20.0
Isopropylbenzene	1.662	1.697	0.100	2.1	20.0

7B - FORM VII VOA-2

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/17/2014 Time: 8:02

Lab File ID: V8D5451.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD05010P Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX %D
1,1,2,2-Tetrachloroethane	0.938	0.811	0.300	-13.5	20.0
1,3-Dichlorobenzene	1.398	1.253	0.600	-10.4	20.0
1,4-Dichlorobenzene	1.463	1.281	0.500	-12.4	20.0
1,2-Dichlorobenzene	1.354	1.208	0.400	-10.8	20.0
1,2-Dibromo-3-chloropropane	0.191	0.177	0.050	-7.2	20.0
1,2,4-Trichlorobenzene	0.793	0.617	0.200	-22.2	20.0
Cyclohexane	1.101	1.156	0.100	5.0	20.0
Methyl acetate	0.909	0.891	0.100	-2.0	20.0
Methylcyclohexane	0.594	0.607	0.100	2.2	20.0

7C - FORM VII VOA-3

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/17/2014 Time: 8:02

Lab File ID: V8D5451.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD05010P Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX %D
Dibromofluoromethane	0.372	0.390	0.100	4.9	20.0
1,2-Dichloroethane-d4	0.063	0.061	0.100	-3.4	20.0
Toluene-d8	1.144	1.127	0.100	-1.5	20.0
Bromofluorobenzene	0.614	0.621	0.100	1.1	20.0

4A - FORM IV VOA

VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-77605

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5454.D Lab Sample ID: MB-77605

Instrument ID: V10

Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 06/17/2014

Level: (TRACE or LOW/MED) LOW Time Analyzed: 10:26

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-77605	LCS-77605	V8D5452.D	9:11
02	DSY-MW222-0614	N1023-03A	V8D5455.D	10:54
03	DSY-MW-RB01-061314	N1023-13A	V8D5456.D	11:22

COMMENTS:

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-77605

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77605

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5454.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-77605

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77605

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5454.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/17/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	1.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	1.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	1.0

5A - FORM V VOA
VOLATILE ORGANIC INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

CLIENT SAMPLE NO.
BFB10Q

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5482.D BFB Injection Date: 06/18/2014

Instrument ID: V10 BFB Injection Time: 8:00

GC Column: DB-624 ID: 0.25 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	36.7
75	30.0 - 80.0% of mass 95	62.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.2 (0.3)1
174	50.0 -120% of mass 95	76.3
175	5.0 - 9.0% of mass 174	6.4 (8.4)1
176	95.0 - 101% of mass 174	76.7 (100.5)1
177	5.0 - 9.0% of mass 176	5.1 (6.6)2

1 - Value is % mass 174 2 - Value is % mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD05010Q	VSTD05010Q	V8D5483.D	06/18/2014	8:28
02	MB-77630	MB-77630	V8D5485.D	06/18/2014	9:33
03	LCS-77630	LCS-77630	V8D5487.D	06/18/2014	10:28
04	DSY-TB03-061614	N1023-15A	V8D5500.D	06/18/2014	16:39
05	DSY-MW12-0614	N1023-19A	V8D5503.D	06/18/2014	18:05

7A - FORM VII VOA-1

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/18/2014 Time: 8:28

Lab File ID: V8D5483.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD05010Q Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.665	0.689	0.100	3.6	20.0
Chloromethane	1.098	1.102	0.100	0.4	20.0
Vinyl chloride	0.721	0.771	0.100	7.0	20.0
Bromomethane	0.273	0.298	0.100	9.3	20.0
Chloroethane	0.353	0.401	0.100	13.4	20.0
Trichlorofluoromethane	1.012	1.188	0.100	17.4	20.0
1,1-Dichloroethene	0.433	0.480	0.100	10.8	20.0
Acetone	0.069	0.078	0.100	12.4	20.0
Carbon disulfide	1.345	1.417	0.100	5.3	20.0
Methylene chloride	0.436	0.440	0.100	1.0	20.0
trans-1,2-Dichloroethene	0.416	0.433	0.100	4.1	20.0
Methyl tert-butyl ether	1.434	1.630	0.100	13.6	20.0
1,1-Dichloroethane	1.112	1.187	0.200	6.8	20.0
2-Butanone	0.049	0.056	0.100	14.3	20.0
cis-1,2-Dichloroethene	0.439	0.444	0.100	1.3	20.0
Chloroform	1.006	1.118	0.200	11.1	20.0
1,1,1-Trichloroethane	1.009	1.131	0.100	12.0	20.0
Carbon tetrachloride	0.892	1.022	0.100	14.6	20.0
1,2-Dichloroethane	1.181	1.409	0.100	19.4	20.0
Benzene	1.510	1.549	0.500	2.6	20.0
Trichloroethene	0.413	0.433	0.200	5.0	20.0
1,2-Dichloropropane	0.531	0.563	0.100	6.2	20.0
Bromodichloromethane	0.758	0.874	0.200	15.2	20.0
cis-1,3-Dichloropropene	0.650	0.738	0.200	13.6	20.0
4-Methyl-2-pentanone	0.795	0.917	0.100	15.3	20.0
Toluene	1.641	1.632	0.400	-0.6	20.0
trans-1,3-Dichloropropene	0.627	0.790	0.100	25.9	20.0
1,1,2-Trichloroethane	0.366	0.396	0.100	8.1	20.0
Tetrachloroethene	0.385	0.347	0.200	-9.8	20.0
2-Hexanone	0.517	0.534	0.100	3.3	20.0
Dibromochloromethane	0.466	0.508	0.100	8.9	20.0
1,2-Dibromoethane	0.377	0.386	0.100	2.6	20.0
Chlorobenzene	1.006	0.934	0.500	-7.2	20.0
Ethylbenzene	0.508	0.482	0.100	-5.1	20.0
m,p-Xylene	0.624	0.592	0.100	-5.2	20.0
o-Xylene	0.587	0.576	0.300	-1.9	20.0
Xylene (Total)	0.612	0.586	0.100	-4.2	20.0
Styrene	0.899	0.938	0.300	4.4	20.0
Bromoform	0.268	0.315	0.100	17.3	20.0
Isopropylbenzene	1.662	1.644	0.100	-1.1	20.0

7B - FORM VII VOA-2

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/18/2014 Time: 8:28

Lab File ID: V8D5483.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD05010Q Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
1,1,2,2-Tetrachloroethane	0.938	0.869	0.300	-7.4	20.0
1,3-Dichlorobenzene	1.398	1.255	0.600	-10.2	20.0
1,4-Dichlorobenzene	1.463	1.293	0.500	-11.7	20.0
1,2-Dichlorobenzene	1.354	1.259	0.400	-7.0	20.0
1,2-Dibromo-3-chloropropane	0.191	0.194	0.050	1.6	20.0
1,2,4-Trichlorobenzene	0.793	0.747	0.200	-5.7	20.0
Cyclohexane	1.101	1.097	0.100	-0.3	20.0
Methyl acetate	0.909	1.007	0.100	10.8	20.0
Methylcyclohexane	0.594	0.581	0.100	-2.2	20.0

7C - FORM VII VOA-3

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date: 06/18/2014 Time: 8:28

Lab File ID: V8D5483.D Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####) VSTD05010Q Init. Calib. Time(s): 10:17 13:04

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
Dibromofluoromethane	0.372	0.414	0.100	11.3	20.0
1,2-Dichloroethane-d4	0.063	0.066	0.100	4.6	20.0
Toluene-d8	1.144	1.091	0.100	-4.6	20.0
Bromofluorobenzene	0.614	0.655	0.100	6.6	20.0

4A - FORM IV VOA

VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-77630

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V8D5485.D Lab Sample ID: MB-77630

Instrument ID: V10

Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 06/18/2014

Level: (TRACE or LOW/MED) LOW Time Analyzed: 9:33

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-77630	LCS-77630	V8D5487.D	10:28
02	DSY-TB03-061614	N1023-15A	V8D5500.D	16:39
03	DSY-MW12-0614	N1023-19A	V8D5503.D	18:05

COMMENTS:

som14.06.20.1307

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-77630

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77630

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5485.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/18/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-77630

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77630

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5485.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/18/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	1.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	1.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	1.0

5A - FORM V VOA

VOLATILE ORGANIC INSTRUMENT

PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

CLIENT SAMPLE NO.

BFB1K

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V1M9880.D BFB Injection Date: 06/26/2014

Instrument ID: V1 BFB Injection Time: 7:10

GC Column: DB-624 ID: 0.25 (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.7
75	30.0 - 80.0% of mass 95	48.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 -120% of mass 95	61.4
175	5.0 - 9.0% of mass 174	4.4 (7.1)1
176	95.0 - 101% of mass 174	59.5 (96.8)1
177	5.0 - 9.0% of mass 176	3.8 (6.5)2

1 - Value is % mass 174 2 - Value is % mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0201K	VSTD0201K	V1M9883.D	06/26/2014	8:16
02	VSTD0051K	VSTD0051K	V1M9884.D	06/26/2014	8:41
03	VSTD0011K	VSTD0011K	V1M9886.D	06/26/2014	9:31
04	VSTD0501K	VSTD0501K	V1M9887.D	06/26/2014	9:56
05	VSTD2001K	VSTD2001K	V1M9888.D	06/26/2014	10:21
06	VSTD1001K	VSTD1001K	V1M9889.D	06/26/2014	10:46
07	VICV0501K	VICV0501K	V1M9890.D	06/26/2014	11:18
08	LCS-77805	LCS-77805	V1M9891.D	06/26/2014	11:51
09	LCSD-77805	LCSD-77805	V1M9892.D	06/26/2014	12:16
10	MB-77805	MB-77805	V1M9894.D	06/26/2014	13:06
11	DSY-TB04-062014	N1023-20A	V1M9899.D	06/26/2014	15:11
12	DSY-MW104A-0614	N1023-21A	V1M9900.D	06/26/2014	15:36
13	DSY-MW11B-0614	N1023-22A	V1M9901.D	06/26/2014	16:01
14	DSY-MW-DUP02-062014	N1023-23A	V1M9902.D	06/26/2014	16:26

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V1 Calibration Date(s): 06/26/2014 06/26/2014

Heated Purge: (Y/N) N Calibration Times: 8:16 10:46

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V1M9884.D RRF020 = V1M9883.D RRF050 = V1M9887.D RRF100 = V1M9889.D RRF200 = V1M9888.D
RRF001 = V1M9886.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					RRF	% RSD
Dichlorodifluoromethane	0.142	0.157	0.135	0.147	0.147	0.168					0.149	7.9
Chloromethane	0.269	0.329	0.282	0.320	0.305	0.322					0.305	8.0
Vinyl chloride	0.232	0.279	0.257	0.278	0.261	0.211					0.253	10.6
Bromomethane	0.162	0.184	0.181	0.176	0.175	0.183					0.177	4.6
Chloroethane	0.159	0.195	0.175	0.180	0.178	0.171					0.177	6.6
Trichlorofluoromethane	0.442	0.491	0.443	0.433	0.440	0.412					0.443	5.8
1,1-Dichloroethene	0.234	0.278	0.250	0.253	0.258	0.283					0.259	7.0
Acetone	0.015	0.023	0.022	0.024	0.025						0.022	17.9
Carbon disulfide	0.648	0.761	0.650	0.687	0.673	0.708					0.688	6.1
Methylene chloride	0.244	0.290	0.270	0.262	0.268	0.160					0.249	18.4
trans-1,2-Dichloroethene	0.258	0.307	0.283	0.262	0.265	0.248					0.270	7.9
Methyl tert-butyl ether	0.586	0.690	0.675	0.673	0.690	0.620					0.656	6.5
1,1-Dichloroethane	0.424	0.529	0.500	0.478	0.496	0.464					0.482	7.4
2-Butanone	0.017	0.024	0.023	0.024	0.024						0.022	12.9
cis-1,2-Dichloroethene	0.262	0.306	0.287	0.277	0.282	0.263					0.279	5.8
Chloroform	0.471	0.547	0.506	0.491	0.492	0.471					0.496	5.7
1,1,1-Trichloroethane	0.381	0.459	0.426	0.404	0.417	0.435					0.420	6.3
Carbon tetrachloride	0.411	0.480	0.444	0.442	0.449	0.454					0.447	5.0
1,2-Dichloroethane	0.367	0.444	0.406	0.391	0.397	0.419					0.404	6.5
Benzene	0.859	0.996	0.931	0.900	0.909	1.003					0.933	6.1
Trichloroethene	0.234	0.264	0.249	0.231	0.240	0.273					0.249	6.8
1,2-Dichloropropane	0.216	0.274	0.260	0.250	0.258	0.218					0.246	9.6
Bromodichloromethane	0.353	0.421	0.398	0.385	0.395	0.367					0.387	6.3
cis-1,3-Dichloropropene	0.360	0.437	0.422	0.412	0.424	0.391					0.408	6.9
4-Methyl-2-pentanone	0.225	0.247	0.236	0.236	0.242						0.237	3.6
Toluene	0.927	1.074	0.979	0.927	0.917	1.019					0.974	6.5
trans-1,3-Dichloropropene	0.312	0.403	0.385	0.375	0.386	0.339					0.367	9.3

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V1 Calibration Date(s): 06/26/2014 06/26/2014

Heated Purge: (Y/N) N Calibration Times: 8:16 10:46

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V1M9884.D RRF020 = V1M9883.D RRF050 = V1M9887.D RRF100 = V1M9889.D RRF200 = V1M9888.D

RRF001 = V1M9886.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					$\overline{RRF}$	% RSD
1,1,2-Trichloroethane	0.178	0.205	0.199	0.194	0.195	0.208					0.196	5.5
Tetrachloroethene	0.231	0.262	0.240	0.230	0.238	0.270					0.245	6.9
2-Hexanone	0.191	0.242	0.231	0.249	0.248						0.232	10.4
Dibromochloromethane	0.316	0.393	0.392	0.384	0.387	0.265					0.356	15.0
1,2-Dibromoethane	0.293	0.326	0.315	0.311	0.311	0.320					0.313	3.6
Chlorobenzene	0.802	0.973	0.867	0.842	0.846	0.921					0.875	7.0
Ethylbenzene	0.443	0.516	0.472	0.456	0.452	0.498					0.473	6.1
m,p-Xylene	0.568	0.646	0.580	0.558	0.556	0.595					0.584	5.8
o-Xylene	0.559	0.638	0.566	0.550	0.552	0.562					0.571	5.8
Xylene (Total)	0.565	0.643	0.575	0.555	0.555	0.584					0.580	5.7
Styrene	0.881	1.064	0.968	0.944	0.939	0.992					0.965	6.3
Bromoform	0.152	0.210	0.198	0.203	0.204	0.147					0.186	15.2
Isopropylbenzene	1.388	1.649	1.410	1.436	1.418	1.531					1.472	6.8
1,1,2,2-Tetrachloroethane	0.781	0.804	0.780	0.772	0.728	0.882					0.791	6.5
1,3-Dichlorobenzene	1.412	1.484	1.367	1.323	1.259	1.446					1.382	6.0
1,4-Dichlorobenzene	1.331	1.487	1.343	1.318	1.267	1.612					1.393	9.4
1,2-Dichlorobenzene	1.371	1.354	1.246	1.224	1.148	1.407					1.292	7.8
1,2-Dibromo-3-chloropropane	0.142	0.113	0.102	0.132	0.109	0.177					0.129	21.6
1,2,4-Trichlorobenzene	0.602	0.579	0.519	0.586	0.516	0.539					0.557	6.6
Cyclohexane	0.416	0.499	0.466	0.451	0.469	0.456					0.459	5.9
Methyl acetate	0.237	0.198	0.229	0.208	0.217	0.285					0.229	13.4
Methylcyclohexane	0.374	0.427	0.403	0.396	0.400	0.381					0.397	4.6

1547

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V1 Calibration Date(s): 06/26/2014 06/26/2014

Heated Purge: (Y/N) N Calibration Times: 8:16 10:46

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V1M9884.D RRF020 = V1M9883.D RRF050 = V1M9887.D RRF100 = V1M9889.D RRF200 = V1M9888.D
RRF001 = V1M9886.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					RRF	% RSD
Dibromofluoromethane	0.334	0.329	0.337	0.329	0.331						0.332	1.0
1,2-Dichloroethane-d4	0.064	0.071	0.069	0.065	0.066						0.067	4.5
Toluene-d8	1.342	1.360	1.341	1.325	1.317						1.337	1.3
Bromofluorobenzene	0.572	0.604	0.600	0.610	0.607						0.599	2.6

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

7A - FORM VII VOA-1

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V1 Calibration Date: 06/26/2014 Time: 11:18

Lab File ID: V1M9890.D Init. Calib. Date(s): 06/26/2014 06/26/2014

EPA Sample No.(VSTD#####) VICV0501K Init. Calib. Time(s): 8:16 10:46

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX %D
Dichlorodifluoromethane	0.149	0.139	0.100	-6.9	20.0
Chloromethane	0.305	0.326	0.100	7.1	20.0
Vinyl chloride	0.253	0.258	0.100	2.2	20.0
Bromomethane	0.177	0.177	0.100	0.4	20.0
Chloroethane	0.177	0.178	0.100	0.7	20.0
Trichlorofluoromethane	0.443	0.420	0.100	-5.4	20.0
1,1-Dichloroethene	0.259	0.258	0.100	-0.5	20.0
Acetone	0.022	0.028	0.100	26.7	20.0
Carbon disulfide	0.688	0.689	0.100	0.1	20.0
Methylene chloride	0.249	0.279	0.100	12.1	20.0
trans-1,2-Dichloroethene	0.270	0.274	0.100	1.2	20.0
Methyl tert-butyl ether	0.656	0.716	0.100	9.3	20.0
1,1-Dichloroethane	0.482	0.501	0.200	4.0	20.0
2-Butanone	0.022	0.025	0.100	11.8	20.0
cis-1,2-Dichloroethene	0.279	0.294	0.100	5.2	20.0
Chloroform	0.496	0.519	0.200	4.6	20.0
1,1,1-Trichloroethane	0.420	0.411	0.100	-2.2	20.0
Carbon tetrachloride	0.447	0.428	0.100	-4.3	20.0
1,2-Dichloroethane	0.404	0.421	0.100	4.2	20.0
Benzene	0.933	0.949	0.500	1.7	20.0
Trichloroethene	0.249	0.243	0.200	-2.4	20.0
1,2-Dichloropropane	0.246	0.259	0.100	5.2	20.0
Bromodichloromethane	0.387	0.405	0.200	4.6	20.0
cis-1,3-Dichloropropene	0.408	0.435	0.200	6.6	20.0
4-Methyl-2-pentanone	0.237	0.255	0.100	7.5	20.0
Toluene	0.974	0.970	0.400	-0.4	20.0
trans-1,3-Dichloropropene	0.367	0.395	0.100	7.7	20.0
1,1,2-Trichloroethane	0.196	0.198	0.100	0.6	20.0
Tetrachloroethene	0.245	0.224	0.200	-8.7	20.0
2-Hexanone	0.232	0.274	0.100	18.0	20.0
Dibromochloromethane	0.356	0.402	0.100	12.9	20.0
1,2-Dibromoethane	0.313	0.324	0.100	3.6	20.0
Chlorobenzene	0.875	0.884	0.500	1.1	20.0
Ethylbenzene	0.473	0.451	0.100	-4.7	20.0
m,p-Xylene	0.584	0.550	0.100	-5.7	20.0
o-Xylene	0.571	0.551	0.300	-3.5	20.0
Xylene (Total)	0.580	0.550	0.100	-5.0	20.0
Styrene	0.965	0.955	0.300	-1.0	20.0
Bromoform	0.186	0.206	0.100	11.1	20.0
Isopropylbenzene	1.472	1.375	0.100	-6.6	20.0

7B - FORM VII VOA-2

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V1 Calibration Date: 06/26/2014 Time: 11:18

Lab File ID: V1M9890.D Init. Calib. Date(s): 06/26/2014 06/26/2014

EPA Sample No.(VSTD#####) VICV0501K Init. Calib. Time(s): 8:16 10:46

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	RRF	RRF050	MIN RRF	%D	MAX %D
1,1,2,2-Tetrachloroethane	0.791	0.829	0.300	4.7	20.0
1,3-Dichlorobenzene	1.382	1.350	0.600	-2.3	20.0
1,4-Dichlorobenzene	1.393	1.354	0.500	-2.8	20.0
1,2-Dichlorobenzene	1.292	1.241	0.400	-3.9	20.0
1,2-Dibromo-3-chloropropane	0.129	0.132	0.050	2.4	20.0
1,2,4-Trichlorobenzene	0.557	0.628	0.200	12.8	20.0
Cyclohexane	0.459	0.423	0.100	-7.9	20.0
Methyl acetate	0.229	0.226	0.100	-1.4	20.0
Methylcyclohexane	0.397	0.372	0.100	-6.1	20.0

7C - FORM VII VOA-3

VOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: V1 Calibration Date: 06/26/2014 Time: 11:18

Lab File ID: V1M9890.D Init. Calib. Date(s): 06/26/2014 06/26/2014

EPA Sample No.(VSTD#####) VICV0501K Init. Calib. Time(s): 8:16 10:46

Heated Purge: (Y/N) N GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Purge Volume: 5.0 (mL)

COMPOUND	$\overline{RRF}$	RRF050	MIN RRF	%D	MAX %D
Dibromofluoromethane	0.332	0.338	0.100	1.8	20.0
1,2-Dichloroethane-d4	0.067	0.074	0.100	10.2	20.0
Toluene-d8	1.337	1.339	0.100	0.1	20.0
Bromofluorobenzene	0.599	0.594	0.100	-0.8	20.0

4A - FORM IV VOA

VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: V1M9894.D Lab Sample ID: MB-77805

Instrument ID: V1

Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 06/26/2014

Level: (TRACE or LOW/MED) LOW Time Analyzed: 13:06

GC Column: DB-624 ID: 0.25 (mm) Heated Purge: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS-77805	LCS-77805	V1M9891.D	11:51
02	LCSD-77805	LCSD-77805	V1M9892.D	12:16
03	DSY-TB04-062014	N1023-20A	V1M9899.D	15:11
04	DSY-MW104A-0614	N1023-21A	V1M9900.D	15:36
05	DSY-MW11B-0614	N1023-22A	V1M9901.D	16:01
06	DSY-MW-DUP02-062014	N1023-23A	V1M9902.D	16:26

COMMENTS:

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77805

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9894.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	5.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	5.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	5.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	5.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	5.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	5.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	5.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	5.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	5.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	5.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	5.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	5.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	0.50	U	0.48	0.50	5.0
67-66-3	Chloroform	0.50	U	0.33	0.50	5.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	5.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	5.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	5.0
71-43-2	Benzene	0.50	U	0.33	0.50	5.0
79-01-6	Trichloroethene	0.50	U	0.36	0.50	5.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	5.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	5.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	5.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	5.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	5.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	5.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	5.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	5.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	5.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	5.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	5.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	5.0

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77805

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V1M9894.D

Level: (TRACE/LOW/MED) LOW Date Received:

% Moisture: not dec. Date Analyzed: 06/26/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
95-47-6	o-Xylene	0.50	U	0.36	0.50	1.0
1330-20-7	Xylene (Total)	1.0	U	0.36	1.0	1.0
100-42-5	Styrene	0.50	U	0.50	0.50	1.0
75-25-2	Bromoform	1.0	U	0.77	1.0	1.0
98-82-8	Isopropylbenzene	0.50	U	0.38	0.50	1.0
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	0.42	0.50	1.0
541-73-1	1,3-Dichlorobenzene	0.50	U	0.29	0.50	1.0
106-46-7	1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0
95-50-1	1,2-Dichlorobenzene	0.50	U	0.33	0.50	1.0
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U	0.75	1.0	1.0
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.26	0.50	1.0
110-82-7	Cyclohexane	1.0	U	0.71	1.0	1.0
79-20-9	Methyl acetate	1.0	U	0.29	1.0	1.0
108-87-2	Methylcyclohexane	1.0	U	0.76	1.0	1.0

2B - FORM II VOA-2

WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Level: (TRACE or LOW) LOW

	CLIENT SAMPLE NO.	VDMC1 (DBFM) #	VDMC2 (DCE) #	VDMC3 (TOL) #	VDMC4 (BFB) #				TOT OUT
01	LCS-77583	102	102	100	104				0
02	LCSD-77583	103	116	100	103				0
03	MB-77583	101	105	101	91				0
04	DSY-TB02-061214	104	105	98	92				0
05	DSY-TB01-061214	104	106	102	93				0
06	DSY-MW08-0614	104	101	99	91				0
07	DSY-MW219-0614	105	103	99	90				0
08	DSY-MW-DUP01-061214	106	108	99	90				0
09	DSY-MW220-0614	109	110	100	92				0
10	DSY-MW218-0614	109	109	98	93				0
11	DSY-MW03-0614	112	111	97	93				0
12	DSY-MW221-0614	110	108	100	91				0
13	DSY-MW204-0614	108	99	103	89				0
14	DSY-MW02A-0614	112	103	100	93				0
15	DSY-MW204-0614MS	107	103	97	104				0
16	DSY-MW204-0614MSD	110	103	98	106				0
17	LCS-77605	105	105	95	105				0
18	MB-77605	107	102	100	92				0
19	DSY-MW222-0614	104	100	102	90				0

		QC LIMITS
VDMC1	(DBFM) Dibromofluoromethane	(85-115)
VDMC2	(DCE) = 1,2-Dichloroethane-d4	(70-120)
VDMC3	(TOL) = Toluene-d8	(85-120)
VDMC4	(BFB) = Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

som14.06.20.1307

SW846

2B - FORM II VOA-2

WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Level: (TRACE or LOW) LOW

	CLIENT SAMPLE NO.	VDMC1 (DBFM) #	VDMC2 (DCE) #	VDMC3 (TOL) #	VDMC4 (BFB) #				TOT OUT
20	DSY-MW-RB01-061314	106	98	99	93				0
21	MB-77630	110	104	98	95				0
22	LCS-77630	113	100	95	106				0
23	DSY-TB03-061614	105	101	98	96				0
24	DSY-MW12-0614	114	109	95	99				0
25	LCS-77805	100	102	101	98				0
26	LCSD-77805	99	104	100	100				0
27	MB-77805	101	103	100	96				0
28	DSY-TB04-062014	103	103	100	95				0
29	DSY-MW104A-0614	103	104	100	95				0
30	DSY-MW11B-0614	102	96	102	95				0
31	DSY-MW-DUP02-062014	101	102	99	92				0

		QC LIMITS
VDMC1	(DBFM) Dibromofluoromethane	(85-115)
VDMC2	(DCE) =1,2-Dichloroethane-d4	(70-120)
VDMC3	(TOL) =Toluene-d8	(85-120)
VDMC4	(BFB) =Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

som14.06.20.1307

SW846

3A - FORM III VOA-1

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix Spike - EPA Sample No.: DSY-MW204-0614 Level: (TRACE or LOW) LOW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	42.9914	86		30-155
Chloromethane	50.0000	0.0000	41.9756	84		40-125
Vinyl chloride	50.0000	0.0000	46.6481	93		50-145
Bromomethane	50.0000	0.0000	41.3073	83		30-145
Chloroethane	50.0000	0.0000	52.4778	105		60-135
Trichlorofluoromethane	50.0000	0.0000	53.6258	107		60-145
1,1-Dichloroethene	50.0000	0.0000	48.9383	98		70-130
Acetone	50.0000	0.0000	48.4587	97		40-140
Carbon disulfide	50.0000	0.0000	48.3612	97		35-160
Methylene chloride	50.0000	0.0000	48.3889	97		55-140
trans-1,2-Dichloroethen	50.0000	0.0000	47.0808	94		60-140
Methyl tert-butyl ether	50.0000	0.0000	49.6388	99		65-125
1,1-Dichloroethane	50.0000	0.0000	51.1692	102		70-135
2-Butanone	50.0000	0.0000	47.4081	95		30-150
cis-1,2-Dichloroethene	50.0000	0.0000	48.5224	97		70-125
Chloroform	50.0000	0.0000	53.0476	106		65-135
1,1,1-Trichloroethane	50.0000	0.0000	52.3061	105		65-130
Carbon tetrachloride	50.0000	0.0000	52.6189	105		65-140
1,2-Dichloroethane	50.0000	0.0000	57.0151	114		70-130
Benzene	50.0000	0.0000	48.9651	98		80-120
Trichloroethene	50.0000	2.5946	51.2112	97		70-125
1,2-Dichloropropane	50.0000	0.0000	49.3628	99		75-125
Bromodichloromethane	50.0000	0.0000	54.3984	109		75-120
cis-1,3-Dichloropropene	50.0000	0.0000	42.7961	86		70-130
4-Methyl-2-pentanone	50.0000	0.0000	47.9035	96		60-135
Toluene	50.0000	0.0000	47.2337	94		75-120
trans-1,3-Dichloroprope	50.0000	0.0000	44.6142	89		55-140
1,1,2-Trichloroethane	50.0000	0.0000	50.6583	101		75-125
Tetrachloroethene	50.0000	0.9168	43.7631	86		45-150
2-Hexanone	50.0000	0.0000	40.1198	80		55-130
Dibromochloromethane	50.0000	0.0000	46.7984	94		60-135
1,2-Dibromoethane	50.0000	0.0000	48.5148	97		80-120
Chlorobenzene	50.0000	0.0000	45.0939	90		80-120
Ethylbenzene	50.0000	0.0000	45.1829	90		75-125
m,p-Xylene	100.0000	0.0000	90.6580	91		75-130
o-Xylene	50.0000	0.0000	47.3375	95		80-120
Xylene (Total)	150.0000	0.0000	137.9955	92		81-121
Styrene	50.0000	0.0000	44.6251	89		65-135
Bromoform	50.0000	0.0000	44.7654	90		70-130
Isopropylbenzene	50.0000	0.0000	47.4570	95		75-125
1,1,2,2-Tetrachloroetha	50.0000	0.0000	42.5824	85		65-130
1,3-Dichlorobenzene	50.0000	0.0000	43.3637	87		75-125
1,4-Dichlorobenzene	50.0000	0.0000	41.1953	82		75-125
1,2-Dichlorobenzene	50.0000	0.0000	45.0399	90		70-120

3A - FORM III VOA-1

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix Spike - EPA Sample No.: DSY-MW204-0614 Level: (TRACE or LOW) LOW

1,2-Dibromo-3-chloropro	50.0000	0.0000	42.0210	84		50-130
1,2,4-Trichlorobenzene	50.0000	0.0000	35.4966	71		65-135
Cyclohexane	50.0000	0.0000	45.2925	91		70-130
Methyl acetate	50.0000	0.0000	36.4056	73		70-130
Methylcyclohexane	50.0000	0.0000	39.9561	80		70-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	50.0000	45.3969	91		5		0-40	30-155
Chloromethane	50.0000	46.7670	94		11		0-40	40-125
Vinyl chloride	50.0000	51.4481	103		10		0-40	50-145
Bromomethane	50.0000	50.2755	101		20		0-40	30-145
Chloroethane	50.0000	53.1486	106		1		0-40	60-135
Trichlorofluoromethane	50.0000	55.0053	110		3		0-40	60-145
1,1-Dichloroethene	50.0000	50.9606	102		4		0-40	70-130
Acetone	50.0000	44.8678	90		8		0-40	40-140
Carbon disulfide	50.0000	50.6229	101		5		0-40	35-160
Methylene chloride	50.0000	51.6676	103		7		0-40	55-140
trans-1,2-Dichloroethen	50.0000	50.3014	101		7		0-40	60-140
Methyl tert-butyl ether	50.0000	50.6400	101		2		0-40	65-125
1,1-Dichloroethane	50.0000	51.9098	104		1		0-40	70-135
2-Butanone	50.0000	46.7923	94		1		0-40	30-150
cis-1,2-Dichloroethene	50.0000	49.7002	99		2		0-40	70-125
Chloroform	50.0000	54.7849	110		3		0-40	65-135
1,1,1-Trichloroethane	50.0000	53.8982	108		3		0-40	65-130
Carbon tetrachloride	50.0000	55.1459	110		5		0-40	65-140
1,2-Dichloroethane	50.0000	56.7876	114		0		0-40	70-130
Benzene	50.0000	51.0917	102		4		0-40	80-120
Trichloroethene	50.0000	53.5513	102		5		0-40	70-125
1,2-Dichloropropane	50.0000	51.7434	103		5		0-40	75-125
Bromodichloromethane	50.0000	54.6285	109		0		0-40	75-120
cis-1,3-Dichloropropene	50.0000	45.1348	90		5		0-40	70-130
4-Methyl-2-pentanone	50.0000	47.3943	95		1		0-40	60-135
Toluene	50.0000	49.3725	99		4		0-40	75-120
trans-1,3-Dichloroprope	50.0000	45.1629	90		1		0-40	55-140
1,1,2-Trichloroethane	50.0000	51.3029	103		1		0-40	75-125
Tetrachloroethene	50.0000	45.9062	90		5		0-40	45-150
2-Hexanone	50.0000	41.9913	84		5		0-40	55-130
Dibromochloromethane	50.0000	48.1969	96		3		0-40	60-135
1,2-Dibromoethane	50.0000	51.5146	103		6		0-40	80-120
Chlorobenzene	50.0000	47.8236	96		6		0-40	80-120
Ethylbenzene	50.0000	49.4017	99		9		0-40	75-125
m,p-Xylene	100.0000	97.6570	98		7		0-40	75-130
o-Xylene	50.0000	50.6773	101		7		0-40	80-120
Xylene (Total)	150.0000	148.3344	99		7		0-40	81-121
Styrene	50.0000	47.7837	96		7		0-40	65-135

3A - FORM III VOA-1

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix Spike - EPA Sample No.: DSY-MW204-0614 Level: (TRACE or LOW) LOW

Bromoform	50.0000	46.5806	93		4		0-40	70-130
Isopropylbenzene	50.0000	50.2393	100		6		0-40	75-125
1,1,2,2-Tetrachloroetha	50.0000	43.3849	87		2		0-40	65-130
1,3-Dichlorobenzene	50.0000	45.4315	91		5		0-40	75-125
1,4-Dichlorobenzene	50.0000	43.9852	88		7		0-40	75-125
1,2-Dichlorobenzene	50.0000	46.3919	93		3		0-40	70-120
1,2-Dibromo-3-chloropro	50.0000	42.6814	85		2		0-40	50-130
1,2,4-Trichlorobenzene	50.0000	41.1890	82		15		0-40	65-135
Cyclohexane	50.0000	46.6457	93		3		0-40	70-130
Methyl acetate	50.0000	35.3281	71		3		0-40	70-130
Methylcyclohexane	50.0000	42.0365	84		5		0-40	70-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 49 outside limits

Spike Recovery: 0 out of 98 outside limits

COMMENTS:

3 - FORM III

WATER LABORATORY CONTROL

SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77583 LCS Lot No.:

Date Extracted: 06/16/2014 Date Analyzed (1): 06/16/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	42.8161	86		30 - 155
Chloromethane	50.0000	0.0000	45.4925	91		40 - 125
Vinyl chloride	50.0000	0.0000	46.6415	93		50 - 145
Bromomethane	50.0000	0.0000	42.9845	86		30 - 145
Chloroethane	50.0000	0.0000	47.8465	96		60 - 135
Trichlorofluoromethane	50.0000	0.0000	45.9887	92		60 - 145
1,1-Dichloroethene	50.0000	0.0000	45.0980	90		70 - 130
Acetone	50.0000	0.0000	38.9997	78		40 - 140
Carbon disulfide	50.0000	0.0000	45.3075	91		35 - 160
Methylene chloride	50.0000	0.0000	47.2662	95		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	46.6789	93		60 - 140
Methyl tert-butyl ether	50.0000	0.0000	48.7619	98		65 - 125
1,1-Dichloroethane	50.0000	0.0000	47.9267	96		70 - 135
2-Butanone	50.0000	0.0000	48.1979	96		30 - 150
cis-1,2-Dichloroethene	50.0000	0.0000	47.7882	96		70 - 125
Chloroform	50.0000	0.0000	48.7358	97		65 - 135
1,1,1-Trichloroethane	50.0000	0.0000	46.9057	94		65 - 130
Carbon tetrachloride	50.0000	0.0000	47.7290	95		65 - 140
1,2-Dichloroethane	50.0000	0.0000	48.7899	98		70 - 130
Benzene	50.0000	0.0000	48.8564	98		80 - 120
Trichloroethene	50.0000	0.0000	47.7206	95		70 - 125
1,2-Dichloropropane	50.0000	0.0000	48.8227	98		75 - 125
Bromodichloromethane	50.0000	0.0000	49.8069	100		75 - 120
cis-1,3-Dichloropropene	50.0000	0.0000	45.2417	90		70 - 130
4-Methyl-2-pentanone	50.0000	0.0000	48.2328	96		60 - 135
Toluene	50.0000	0.0000	47.5829	95		75 - 120
trans-1,3-Dichloropropene	50.0000	0.0000	45.0517	90		55 - 140
1,1,2-Trichloroethane	50.0000	0.0000	49.4724	99		75 - 125
Tetrachloroethene	50.0000	0.0000	44.6481	89		45 - 150
2-Hexanone	50.0000	0.0000	44.7673	90		55 - 130
Dibromochloromethane	50.0000	0.0000	46.1963	92		60 - 135
1,2-Dibromoethane	50.0000	0.0000	49.3330	99		80 - 120
Chlorobenzene	50.0000	0.0000	47.2543	95		80 - 120
Ethylbenzene	50.0000	0.0000	49.3317	99		75 - 125
m,p-Xylene	100.0000	0.0000	96.4742	96		75 - 130
o-Xylene	50.0000	0.0000	49.6353	99		80 - 120
Xylene (Total)	150.0000	0.0000	146.1095	97		81 - 121
Styrene	50.0000	0.0000	49.7952	100		65 - 135
Bromoform	50.0000	0.0000	46.0573	92		70 - 130
Isopropylbenzene	50.0000	0.0000	50.0258	100		75 - 125
1,1,2,2-Tetrachloroethane	50.0000	0.0000	45.0579	90		65 - 130
1,3-Dichlorobenzene	50.0000	0.0000	46.2871	93		75 - 125
1,4-Dichlorobenzene	50.0000	0.0000	45.1822	90		75 - 125
1,2-Dichlorobenzene	50.0000	0.0000	46.8632	94		70 - 120

3 - FORM III

WATER LABORATORY CONTROL

SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77583 LCS Lot No.:

Date Extracted: 06/16/2014 Date Analyzed (1): 06/16/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
1,2-Dibromo-3-chloropropan	50.0000	0.0000	44.7518	90		50 - 130
1,2,4-Trichlorobenzene	50.0000	0.0000	43.6947	87		65 - 135
Cyclohexane	50.0000	0.0000	46.6310	93		70 - 130
Methyl acetate	50.0000	0.0000	45.8407	92		70 - 130
Methylcyclohexane	50.0000	0.0000	45.2984	91		70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 49 outside limits

COMMENTS:

3 - FORM III

WATER LABORATORY CONTROL

SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCSD-77583 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	50.0000	40.7944	82		5		40	30 - 155
Chloromethane	50.0000	47.0054	94		3		40	40 - 125
Vinyl chloride	50.0000	45.8748	92		1		40	50 - 145
Bromomethane	50.0000	41.8372	84		2		40	30 - 145
Chloroethane	50.0000	47.7068	95		1		40	60 - 135
Trichlorofluoromethane	50.0000	43.3075	87		6		40	60 - 145
1,1-Dichloroethene	50.0000	44.8386	90		0		40	70 - 130
Acetone	50.0000	45.1185	90		14		40	40 - 140
Carbon disulfide	50.0000	45.4949	91		0		40	35 - 160
Methylene chloride	50.0000	49.8827	100		5		40	55 - 140
trans-1,2-Dichloroethene	50.0000	47.7104	95		2		40	60 - 140
Methyl tert-butyl ether	50.0000	50.9763	102		4		40	65 - 125
1,1-Dichloroethane	50.0000	49.4367	99		3		40	70 - 135
2-Butanone	50.0000	51.8689	104		8		40	30 - 150
cis-1,2-Dichloroethene	50.0000	48.7611	98		2		40	70 - 125
Chloroform	50.0000	49.7180	99		2		40	65 - 135
1,1,1-Trichloroethane	50.0000	47.6827	95		1		40	65 - 130
Carbon tetrachloride	50.0000	46.7370	93		2		40	65 - 140
1,2-Dichloroethane	50.0000	49.8580	100		2		40	70 - 130
Benzene	50.0000	50.0166	100		2		40	80 - 120
Trichloroethene	50.0000	48.4419	97		2		40	70 - 125
1,2-Dichloropropane	50.0000	49.4392	99		1		40	75 - 125
Bromodichloromethane	50.0000	51.2576	103		3		40	75 - 120
cis-1,3-Dichloropropene	50.0000	46.4863	93		3		40	70 - 130
4-Methyl-2-pentanone	50.0000	51.5455	103		7		40	60 - 135
Toluene	50.0000	48.5582	97		2		40	75 - 120
trans-1,3-Dichloropropene	50.0000	48.3077	97		7		40	55 - 140
1,1,2-Trichloroethane	50.0000	51.5260	103		4		40	75 - 125
Tetrachloroethene	50.0000	45.1576	90		1		40	45 - 150
2-Hexanone	50.0000	48.6842	97		7		40	55 - 130
Dibromochloromethane	50.0000	48.1827	96		4		40	60 - 135
1,2-Dibromoethane	50.0000	53.0910	106		7		40	80 - 120
Chlorobenzene	50.0000	48.4896	97		2		40	80 - 120
Ethylbenzene	50.0000	50.1388	100		1		40	75 - 125
m,p-Xylene	100.0000	97.8808	98		2		40	75 - 130
o-Xylene	50.0000	52.2318	104		5		40	80 - 120
Xylene (Total)	150.0000	150.1126	100		3		40	81 - 121
Styrene	50.0000	50.4891	101		1		40	65 - 135
Bromoform	50.0000	48.2270	96		4		40	70 - 130
Isopropylbenzene	50.0000	51.1183	102		2		40	75 - 125
1,1,2,2-Tetrachloroethane	50.0000	48.7819	98		9		40	65 - 130
1,3-Dichlorobenzene	50.0000	47.0671	94		1		40	75 - 125
1,4-Dichlorobenzene	50.0000	45.9064	92		2		40	75 - 125
1,2-Dichlorobenzene	50.0000	47.7205	95		1		40	70 - 120
1,2-Dibromo-3-chloropropan	50.0000	47.2612	95		5		40	50 - 130
1,2,4-Trichlorobenzene	50.0000	45.8648	92		6		40	65 - 135

3 - FORM III

WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-77583

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCSD-77583 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Cyclohexane	50.0000	44.4999	89		4		40	70 - 130
Methyl acetate	50.0000	49.5622	99		7		40	70 - 130
Methylcyclohexane	50.0000	42.9727	86		6		40	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 49 outside limits

Spike Recovery: 0 out of 49 outside limits

COMMENTS:

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.
LCS-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77805 LCS Lot No.:

Date Extracted: 06/26/2014 Date Analyzed (1): 06/26/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	48.6699	97		30 - 155
Chloromethane	50.0000	0.0000	52.5934	105		40 - 125
Vinyl chloride	50.0000	0.0000	51.5553	103		50 - 145
Bromomethane	50.0000	0.0000	52.0143	104		30 - 145
Chloroethane	50.0000	0.0000	52.2837	105		60 - 135
Trichlorofluoromethane	50.0000	0.0000	49.8250	100		60 - 145
1,1-Dichloroethene	50.0000	0.0000	49.7205	99		70 - 130
Acetone	50.0000	0.0000	60.4488	121		40 - 140
Carbon disulfide	50.0000	0.0000	46.9793	94		35 - 160
Methylene chloride	50.0000	0.0000	52.2227	104		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	53.7095	107		60 - 140
Methyl tert-butyl ether	50.0000	0.0000	55.4282	111		65 - 125
1,1-Dichloroethane	50.0000	0.0000	54.3811	109		70 - 135
2-Butanone	50.0000	0.0000	58.3786	117		30 - 150
cis-1,2-Dichloroethene	50.0000	0.0000	54.4616	109		70 - 125
Chloroform	50.0000	0.0000	52.1805	104		65 - 135
1,1,1-Trichloroethane	50.0000	0.0000	51.6328	103		65 - 130
Carbon tetrachloride	50.0000	0.0000	48.7904	98		65 - 140
1,2-Dichloroethane	50.0000	0.0000	52.2062	104		70 - 130
Benzene	50.0000	0.0000	52.1784	104		80 - 120
Trichloroethene	50.0000	0.0000	49.7178	99		70 - 125
1,2-Dichloropropane	50.0000	0.0000	52.9876	106		75 - 125
Bromodichloromethane	50.0000	0.0000	53.1166	106		75 - 120
cis-1,3-Dichloropropene	50.0000	0.0000	54.1410	108		70 - 130
4-Methyl-2-pentanone	50.0000	0.0000	53.9501	108		60 - 135
Toluene	50.0000	0.0000	50.2665	101		75 - 120
trans-1,3-Dichloropropene	50.0000	0.0000	52.8557	106		55 - 140
1,1,2-Trichloroethane	50.0000	0.0000	51.9860	104		75 - 125
Tetrachloroethene	50.0000	0.0000	47.0146	94		45 - 150
2-Hexanone	50.0000	0.0000	58.9435	118		55 - 130
Dibromochloromethane	50.0000	0.0000	56.4163	113		60 - 135
1,2-Dibromoethane	50.0000	0.0000	52.9743	106		80 - 120
Chlorobenzene	50.0000	0.0000	51.0472	102		80 - 120
Ethylbenzene	50.0000	0.0000	48.2025	96		75 - 125
m,p-Xylene	100.0000	0.0000	97.6683	98		75 - 130
o-Xylene	50.0000	0.0000	48.4957	97		80 - 120
Xylene (Total)	150.0000	0.0000	146.1640	97		81 - 121
Styrene	50.0000	0.0000	50.7042	101		65 - 135
Bromoform	50.0000	0.0000	50.6633	101		70 - 130
Isopropylbenzene	50.0000	0.0000	47.8009	96		75 - 125
1,1,2,2-Tetrachloroethane	50.0000	0.0000	52.6251	105		65 - 130
1,3-Dichlorobenzene	50.0000	0.0000	49.2877	99		75 - 125
1,4-Dichlorobenzene	50.0000	0.0000	48.4469	97		75 - 125
1,2-Dichlorobenzene	50.0000	0.0000	49.0379	98		70 - 120

3 - FORM III

WATER LABORATORY CONTROL

SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77805 LCS Lot No.:

Date Extracted: 06/26/2014 Date Analyzed (1): 06/26/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
1,2-Dibromo-3-chloropropan	50.0000	0.0000	48.5447	97		50 - 130
1,2,4-Trichlorobenzene	50.0000	0.0000	50.2743	101		65 - 135
Cyclohexane	50.0000	0.0000	46.3657	93		70 - 130
Methyl acetate	50.0000	0.0000	50.8488	102		70 - 130
Methylcyclohexane	50.0000	0.0000	46.2743	93		70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 49 outside limits

COMMENTS:

3 - FORM III

WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCSD-77805 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Dichlorodifluoromethane	50.0000	43.5877	87		11		40	30 - 155
Chloromethane	50.0000	48.3253	97		8		40	40 - 125
Vinyl chloride	50.0000	51.7265	103		0		40	50 - 145
Bromomethane	50.0000	49.7994	100		4		40	30 - 145
Chloroethane	50.0000	48.5419	97		8		40	60 - 135
Trichlorofluoromethane	50.0000	48.1290	96		4		40	60 - 145
1,1-Dichloroethene	50.0000	48.0822	96		3		40	70 - 130
Acetone	50.0000	47.9550	96		23		40	40 - 140
Carbon disulfide	50.0000	48.9083	98		4		40	35 - 160
Methylene chloride	50.0000	49.9739	100		4		40	55 - 140
trans-1,2-Dichloroethene	50.0000	49.7766	100		7		40	60 - 140
Methyl tert-butyl ether	50.0000	51.1108	102		8		40	65 - 125
1,1-Dichloroethane	50.0000	49.6031	99		10		40	70 - 135
2-Butanone	50.0000	46.7341	93		23		40	30 - 150
cis-1,2-Dichloroethene	50.0000	50.6679	101		8		40	70 - 125
Chloroform	50.0000	49.1634	98		6		40	65 - 135
1,1,1-Trichloroethane	50.0000	49.5241	99		4		40	65 - 130
Carbon tetrachloride	50.0000	47.4121	95		3		40	65 - 140
1,2-Dichloroethane	50.0000	49.5286	99		5		40	70 - 130
Benzene	50.0000	48.2752	97		7		40	80 - 120
Trichloroethene	50.0000	46.0808	92		7		40	70 - 125
1,2-Dichloropropane	50.0000	51.0285	102		4		40	75 - 125
Bromodichloromethane	50.0000	50.0144	100		6		40	75 - 120
cis-1,3-Dichloropropene	50.0000	50.3598	101		7		40	70 - 130
4-Methyl-2-pentanone	50.0000	50.4965	101		7		40	60 - 135
Toluene	50.0000	47.7557	96		5		40	75 - 120
trans-1,3-Dichloropropene	50.0000	50.4580	101		5		40	55 - 140
1,1,2-Trichloroethane	50.0000	48.9604	98		6		40	75 - 125
Tetrachloroethene	50.0000	45.9789	92		2		40	45 - 150
2-Hexanone	50.0000	52.2394	104		13		40	55 - 130
Dibromochloromethane	50.0000	52.7664	106		6		40	60 - 135
1,2-Dibromoethane	50.0000	50.2020	100		6		40	80 - 120
Chlorobenzene	50.0000	47.9691	96		6		40	80 - 120
Ethylbenzene	50.0000	45.9702	92		4		40	75 - 125
m,p-Xylene	100.0000	94.2657	94		4		40	75 - 130
o-Xylene	50.0000	46.3355	93		4		40	80 - 120
Xylene (Total)	150.0000	140.6012	94		3		40	81 - 121
Styrene	50.0000	48.1050	96		5		40	65 - 135
Bromoform	50.0000	48.0231	96		5		40	70 - 130
Isopropylbenzene	50.0000	47.0925	94		2		40	75 - 125
1,1,2,2-Tetrachloroethane	50.0000	50.8444	102		3		40	65 - 130
1,3-Dichlorobenzene	50.0000	47.4816	95		4		40	75 - 125
1,4-Dichlorobenzene	50.0000	46.8895	94		3		40	75 - 125
1,2-Dichlorobenzene	50.0000	47.0515	94		4		40	70 - 120
1,2-Dibromo-3-chloropropan	50.0000	46.6486	93		4		40	50 - 130
1,2,4-Trichlorobenzene	50.0000	48.7186	97		4		40	65 - 135

3 - FORM III

WATER LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.

LCSD-77805

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCSD-77805 LCS Lot No.:

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Cyclohexane	50.0000	47.2918	95		2		40	70 - 130
Methyl acetate	50.0000	45.1824	90		13		40	70 - 130
Methylcyclohexane	50.0000	46.5923	93		0		40	70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 49 outside limits

Spike Recovery: 0 out of 49 outside limits

COMMENTS:

3 - FORM III

WATER LABORATORY CONTROL SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-77630

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77630 LCS Lot No.:

Date Extracted: 06/18/2014 Date Analyzed (1): 06/18/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	53.0742	106		30 - 155
Chloromethane	50.0000	0.0000	50.9187	102		40 - 125
Vinyl chloride	50.0000	0.0000	55.4080	111		50 - 145
Bromomethane	50.0000	0.0000	52.8601	106		30 - 145
Chloroethane	50.0000	0.0000	61.1385	122		60 - 135
Trichlorofluoromethane	50.0000	0.0000	62.3001	125		60 - 145
1,1-Dichloroethene	50.0000	0.0000	58.6814	117		70 - 130
Acetone	50.0000	0.0000	59.3667	119		40 - 140
Carbon disulfide	50.0000	0.0000	58.4574	117		35 - 160
Methylene chloride	50.0000	0.0000	53.1360	106		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	52.5018	105		60 - 140
Methyl tert-butyl ether	50.0000	0.0000	57.0044	114		65 - 125
1,1-Dichloroethane	50.0000	0.0000	56.7669	114		70 - 135
2-Butanone	50.0000	0.0000	57.2517	115		30 - 150
cis-1,2-Dichloroethene	50.0000	0.0000	52.9322	106		70 - 125
Chloroform	50.0000	0.0000	58.4414	117		65 - 135
1,1,1-Trichloroethane	50.0000	0.0000	59.2515	119		65 - 130
Carbon tetrachloride	50.0000	0.0000	60.6995	121		65 - 140
1,2-Dichloroethane	50.0000	0.0000	62.6868	125		70 - 130
Benzene	50.0000	0.0000	54.4546	109		80 - 120
Trichloroethene	50.0000	0.0000	53.0965	106		70 - 125
1,2-Dichloropropane	50.0000	0.0000	53.2490	106		75 - 125
Bromodichloromethane	50.0000	0.0000	60.4394	121	*	75 - 120
cis-1,3-Dichloropropene	50.0000	0.0000	52.4387	105		70 - 130
4-Methyl-2-pentanone	50.0000	0.0000	56.9154	114		60 - 135
Toluene	50.0000	0.0000	51.4073	103		75 - 120
trans-1,3-Dichloropropene	50.0000	0.0000	54.0930	108		55 - 140
1,1,2-Trichloroethane	50.0000	0.0000	54.5615	109		75 - 125
Tetrachloroethene	50.0000	0.0000	46.4071	93		45 - 150
2-Hexanone	50.0000	0.0000	49.6053	99		55 - 130
Dibromochloromethane	50.0000	0.0000	49.8940	100		60 - 135
1,2-Dibromoethane	50.0000	0.0000	51.4495	103		80 - 120
Chlorobenzene	50.0000	0.0000	47.4691	95		80 - 120
Ethylbenzene	50.0000	0.0000	48.5706	97		75 - 125
m,p-Xylene	100.0000	0.0000	95.9015	96		75 - 130
o-Xylene	50.0000	0.0000	50.2210	100		80 - 120
Xylene (Total)	150.0000	0.0000	146.1225	97		81 - 121
Styrene	50.0000	0.0000	48.9470	98		65 - 135
Bromoform	50.0000	0.0000	49.9420	100		70 - 130
Isopropylbenzene	50.0000	0.0000	50.2072	100		75 - 125
1,1,2,2-Tetrachloroethane	50.0000	0.0000	46.1752	92		65 - 130
1,3-Dichlorobenzene	50.0000	0.0000	45.5469	91		75 - 125
1,4-Dichlorobenzene	50.0000	0.0000	43.8338	88		75 - 125
1,2-Dichlorobenzene	50.0000	0.0000	46.2034	92		70 - 120

3 - FORM III

WATER LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-77630

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77630 LCS Lot No.:

Date Extracted: 06/18/2014 Date Analyzed (1): 06/18/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
1,2-Dibromo-3-chloropropan	50.0000	0.0000	50.7990	102		50 - 130
1,2,4-Trichlorobenzene	50.0000	0.0000	41.7754	84		65 - 135
Cyclohexane	50.0000	0.0000	52.2336	104		70 - 130
Methyl acetate	50.0000	0.0000	55.7427	111		70 - 130
Methylcyclohexane	50.0000	0.0000	50.9404	102		70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 1 out of 49 outside limits

COMMENTS:

3 - FORM III

WATER LABORATORY CONTROL

SAMPLE RECOVERY

CLIENT SAMPLE NO.

LCS-77605

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77605 LCS Lot No.:

Date Extracted: 06/17/2014 Date Analyzed (1): 06/17/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Dichlorodifluoromethane	50.0000	0.0000	50.5065	101		30 - 155
Chloromethane	50.0000	0.0000	49.8696	100		40 - 125
Vinyl chloride	50.0000	0.0000	50.9952	102		50 - 145
Bromomethane	50.0000	0.0000	49.8809	100		30 - 145
Chloroethane	50.0000	0.0000	53.0333	106		60 - 135
Trichlorofluoromethane	50.0000	0.0000	53.4625	107		60 - 145
1,1-Dichloroethene	50.0000	0.0000	50.4097	101		70 - 130
Acetone	50.0000	0.0000	58.2367	116		40 - 140
Carbon disulfide	50.0000	0.0000	53.3139	107		35 - 160
Methylene chloride	50.0000	0.0000	49.8529	100		55 - 140
trans-1,2-Dichloroethene	50.0000	0.0000	49.2380	98		60 - 140
Methyl tert-butyl ether	50.0000	0.0000	52.0231	104		65 - 125
1,1-Dichloroethane	50.0000	0.0000	52.0159	104		70 - 135
2-Butanone	50.0000	0.0000	51.8503	104		30 - 150
cis-1,2-Dichloroethene	50.0000	0.0000	49.2871	99		70 - 125
Chloroform	50.0000	0.0000	52.4136	105		65 - 135
1,1,1-Trichloroethane	50.0000	0.0000	52.6816	105		65 - 130
Carbon tetrachloride	50.0000	0.0000	52.8162	106		65 - 140
1,2-Dichloroethane	50.0000	0.0000	56.1786	112		70 - 130
Benzene	50.0000	0.0000	50.3783	101		80 - 120
Trichloroethene	50.0000	0.0000	48.8177	98		70 - 125
1,2-Dichloropropane	50.0000	0.0000	51.2668	103		75 - 125
Bromodichloromethane	50.0000	0.0000	54.2212	108		75 - 120
cis-1,3-Dichloropropene	50.0000	0.0000	49.0492	98		70 - 130
4-Methyl-2-pentanone	50.0000	0.0000	52.4089	105		60 - 135
Toluene	50.0000	0.0000	47.9459	96		75 - 120
trans-1,3-Dichloropropene	50.0000	0.0000	51.3946	103		55 - 140
1,1,2-Trichloroethane	50.0000	0.0000	51.2220	102		75 - 125
Tetrachloroethene	50.0000	0.0000	43.2933	87		45 - 150
2-Hexanone	50.0000	0.0000	47.9039	96		55 - 130
Dibromochloromethane	50.0000	0.0000	48.4464	97		60 - 135
1,2-Dibromoethane	50.0000	0.0000	50.4993	101		80 - 120
Chlorobenzene	50.0000	0.0000	46.5384	93		80 - 120
Ethylbenzene	50.0000	0.0000	46.5689	93		75 - 125
m,p-Xylene	100.0000	0.0000	91.8120	92		75 - 130
o-Xylene	50.0000	0.0000	47.8578	96		80 - 120
Xylene (Total)	150.0000	0.0000	139.6698	93		81 - 121
Styrene	50.0000	0.0000	46.9191	94		65 - 135
Bromoform	50.0000	0.0000	47.8471	96		70 - 130
Isopropylbenzene	50.0000	0.0000	46.7112	93		75 - 125
1,1,2,2-Tetrachloroethane	50.0000	0.0000	44.5430	89		65 - 130
1,3-Dichlorobenzene	50.0000	0.0000	43.0516	86		75 - 125
1,4-Dichlorobenzene	50.0000	0.0000	41.9652	84		75 - 125
1,2-Dichlorobenzene	50.0000	0.0000	44.0702	88		70 - 120

3 - FORM III

WATER LABORATORY CONTROL SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-77605

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77605 LCS Lot No.:

Date Extracted: 06/17/2014 Date Analyzed (1): 06/17/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
1,2-Dibromo-3-chloropropan	50.0000	0.0000	44.9291	90		50 - 130
1,2,4-Trichlorobenzene	50.0000	0.0000	39.8857	80		65 - 135
Cyclohexane	50.0000	0.0000	47.1080	94		70 - 130
Methyl acetate	50.0000	0.0000	51.4278	103		70 - 130
Methylcyclohexane	50.0000	0.0000	46.8204	94		70 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 49 outside limits

COMMENTS:

8A - FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: DB-624 ID: 0.25 (mm) Init. Calib. Date(s): 06/26/2014 06/26/2014

EPA Sample No.(VSTD#####): VSTD0501K Date Analyzed: 06/26/2014

Lab File ID (Standard): V1M9887.D Time Analyzed: 9:56

Instrument ID: V1 Heated Purge: (Y/N) N

		IS1 (S1) AREA #	RT #	IS2 (S2) AREA #	RT #	IS3 (S3) AREA #	RT #
	12 HOUR STD	632137	4.403	446017	7.249	185375	9.819
	UPPER LIMIT	1264274	4.903	892034	7.749	370750	10.319
	LOWER LIMIT	316069	3.903	223009	6.749	92688	9.319
	SAMPLE NO.						
01	LCS-77805	611931	4.407	421673	7.252	171468	9.822
02	LCSD-77805	649461	4.394	455021	7.250	186301	9.820
03	MB-77805	595222	4.400	413257	7.245	156729	9.825
04	DSY-TB04-062014	594916	4.383	412777	7.248	156555	9.828
05	DSY-MW104A-0614	609934	4.388	427208	7.243	162993	9.823
06	DSY-MW11B-0614	606245	4.400	421389	7.245	155420	9.825
07	DSY-MW-DUP02-062014	608810	4.394	431067	7.250	157693	9.820

IS1 () = Fluorobenzene
IS2 () = Chlorobenzene-d5
IS3 () = 1,4-Dichlorobenzene-d4
AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area
AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area
RT UPPER LIMIT = +0.50 (Low-Medium Volatiles) and +0.33 (Trace Volatiles) minutes of internal standard RT
RT LOWER LIMIT = -0.50 (Low-Medium Volatiles) and -0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

som14.06.20.1307

8A - FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: DB-624 ID: 0.25 (mm) Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####): VSTD050100 Date Analyzed: 06/16/2014

Lab File ID (Standard): V8D5415.D Time Analyzed: 14:54

Instrument ID: V10 Heated Purge: (Y/N) N

		IS1 (S1) AREA	#	RT	#	IS2 (S2) AREA	#	RT	#	IS3 (S3) AREA	#	RT	#
	12 HOUR STD	350654		5.236		371064		8.223		206181		10.728	
	UPPER LIMIT	701308		5.736		742128		8.723		412362		11.228	
	LOWER LIMIT	175327		4.736		185532		7.723		103091		10.228	
	SAMPLE NO.												
01	LCS-77583	355559		5.236		374177		8.223		205689		10.725	
02	LCSD-77583	354594		5.239		374234		8.223		209520		10.728	
03	MB-77583	343396		5.239		352251		8.226		152133		10.728	
04	DSY-TB02-061214	325746		5.236		340320		8.223		150699		10.728	
05	DSY-TB01-061214	320339		5.236		329365		8.223		145864		10.728	
06	DSY-MW08-0614	318871		5.239		324601		8.223		142933		10.728	
07	DSY-MW219-0614	290478		5.236		304731		8.226		135032		10.728	
08	DSY-MW-DUP01-061214	291667		5.236		305775		8.223		133673		10.728	
09	DSY-MW220-0614	289365		5.236		300730		8.223		134260		10.728	
10	DSY-MW218-0614	281903		5.239		295671		8.226		131349		10.728	

IS1 () = Fluorobenzene

IS2 () = Chlorobenzene-d5

IS3 () = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area

AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area

RT UPPER LIMIT = +0.50 (Low-Medium Volatiles) and +0.33 (Trace Volatiles) minutes of internal standard RT

RT LOWER LIMIT = -0.50 (Low-Medium Volatiles) and -0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8A - FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: DB-624 ID: 0.25 (mm) Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####): VSTD050100 Date Analyzed: 06/16/2014

Lab File ID (Standard): V8D5415.D Time Analyzed: 14:54

Instrument ID: V10 Heated Purge: (Y/N) N

		IS1 (S1) AREA #	RT #	IS2 (S2) AREA #	RT #	IS3 (S3) AREA #	RT #
	12 HOUR STD	350654	5.236	371064	8.223	206181	10.728
	UPPER LIMIT	701308	5.736	742128	8.723	412362	11.228
	LOWER LIMIT	175327	4.736	185532	7.723	103091	10.228
	SAMPLE NO.						
11	DSY-MW03-0614	277472	5.239	292701	8.223	131441	10.728
12	DSY-MW221-0614	275350	5.239	288314	8.223	128107	10.728
13	DSY-MW204-0614	261566	5.236	270797	8.226	114935	10.728
14	DSY-MW02A-0614	260245	5.239	277356	8.227	122498	10.728
15	DSY-MW204-0614MS	276845	5.236	307355	8.223	174988	10.725
16	DSY-MW204-0614MSD	282437	5.236	308818	8.223	177316	10.725

IS1 () = Fluorobenzene
IS2 () = Chlorobenzene-d5
IS3 () = 1,4-Dichlorobenzene-d4
AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area
AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area
RT UPPER LIMIT = +0.50 (Low-Medium Volatiles) and +0.33 (Trace Volatiles) minutes of internal standard RT
RT LOWER LIMIT = -0.50 (Low-Medium Volatiles) and -0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8A - FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: DB-624 ID: 0.25 (mm) Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####): VSTD05010P Date Analyzed: 06/17/2014

Lab File ID (Standard): V8D5451.D Time Analyzed: 8:02

Instrument ID: V10 Heated Purge: (Y/N) N

		IS1 (S1) AREA #	RT #	IS2 (S2) AREA #	RT #	IS3 (S3) AREA #	RT #
	12 HOUR STD	282104	5.236	302725	8.223	170881	10.728
	UPPER LIMIT	564208	5.736	605450	8.723	341762	11.228
	LOWER LIMIT	141052	4.736	151363	7.723	85441	10.228
	SAMPLE NO.						
01	LCS-77605	305060	5.236	332264	8.223	189301	10.725
02	MB-77605	271332	5.236	284362	8.223	126898	10.728
03	DSY-MW222-06 14	252010	5.236	254532	8.223	112054	10.728
04	DSY-MW-RB01-061314	262482	5.236	276258	8.223	124424	10.731

IS1 () = Fluorobenzene
IS2 () = Chlorobenzene-d5
IS3 () = 1,4-Dichlorobenzene-d4
AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area
AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area
RT UPPER LIMIT = +0.50 (Low-Medium Volatiles) and +0.33 (Trace Volatiles) minutes of internal standard RT
RT LOWER LIMIT = -0.50 (Low-Medium Volatiles) and -0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8A - FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: DB-624 ID: 0.25 (mm) Init. Calib. Date(s): 06/16/2014 06/16/2014

EPA Sample No.(VSTD#####): VSTD05010Q Date Analyzed: 06/18/2014

Lab File ID (Standard): V8D5483.D Time Analyzed: 8:28

Instrument ID: V10 Heated Purge: (Y/N) N

		IS1 (S1) AREA	#	RT	#	IS2 (S2) AREA	#	RT	#	IS3 (S3) AREA	#	RT	#
	12 HOUR STD	265691		5.236		301974		8.223		169415		10.728	
	UPPER LIMIT	531382		5.736		603948		8.723		338830		11.228	
	LOWER LIMIT	132846		4.736		150987		7.723		84708		10.228	
	SAMPLE NO.												
01	MB-77630	256212		5.236		280130		8.227		126106		10.728	
02	LCS-77630	252136		5.236		291083		8.223		165162		10.728	
03	DSY-TB03-061614	271817		5.236		291708		8.226		143721		10.725	
04	DSY-MW12-0614	249515		5.239		280885		8.223		137889		10.728	

IS1 () = Fluorobenzene
IS2 () = Chlorobenzene-d5
IS3 () = 1,4-Dichlorobenzene-d4
AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area
AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area
RT UPPER LIMIT = +0.50 (Low-Medium Volatiles) and +0.33 (Trace Volatiles) minutes of internal standard RT
RT LOWER LIMIT = -0.50 (Low-Medium Volatiles) and -0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

RSK175, Dissolved Gases by GC-FID

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: RSK175

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW5030B

V. INSTRUMENTATION

The following instrumentation was used to perform

Instrument Code: V7
Instrument Type: GC-FID

Description: HP5890 II
Manufacturer: Hewlett-Packard
Model: 5890
GC Column used: 30 m X 0.53 mm ID [um thickness] CARBOXEM 1006 capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

N/A.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Matrix spikes were performed on samples: DSY-MW204-0614 (N1023-11AMS) and DSY-MW204-0614 (N1023-11AMSD).

Percent recoveries were within the QC limits.

Replicate RPDs were within the advisory QC limits.

E. Internal Standards:

NA.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required. Manual integrations are coded to provide the data reviewer justification for such action. The codes are labeled on the ion chromatogram signal (GC/MS signal) and chromatogram for GC based analysis as follows:

· M1 peak tailing or fronting
· M2 peak co-elution
· M3 rising or falling baseline
· M4 retention time shift
· M5 miscellaneous - under this category, the justification is explained
· M6 software did not integrate peak
· M7 partial peak integration

The following samples were manually integrated:

LCS-77657 Ethene due to M6

DSY-MW204-0614 (N1023-11AMS) Ethene due to M6

DSY-MW204-0614 (N1023-11AMSD) Ethene due to M6

VSTD005I7 Methane due to M7

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

METHOD: RSK-175 CAL ID: VP140220A ANALYST: [signature]

INITIAL CAL: 4-2/14 ~~IS/SS~~ ID: VP130211A DATE: 4-2-14

ICV

COMMENTS: Reviewed by: [signature] 4/22/14 DATE PRINTED:

DATE LOADED:

AS #	FILE	SPECTRUM ID	CLIENT ID	SAMPLE SIZE	DIL	COMMENTS	IS	SS	pH

Spectrum Analytical, Inc. RI Division V7 Injection Log
Volatiles Laboratory

BATCH: 140421.B

Start: 21-APR-14 11:00
End: 21-APR-14 15:13

V7B02940	11:00	VSTD10000I7	ok
V7B02941	11:11	VSTD4000I7	ok
V7B02942	11:19	VSTD2000I7	ok
V7B02943	12:09	VSTD100I7	ok
V7B02944	13:13	VSTD005I7	ok
V7B02945	13:26	VICV2000I7	ok
V7B02946	13:48	LCS-76722	ok
V7B02947	14:39	MB-76722	ok
V7B02948	14:52	N0514-21A	ok
V7B02949	14:59	N0499-01A	ok
V7B02950	15:13	VSTD2000J7	ok

4-22-14

METHOD: RSK-175 CAL ID: VPM0724A ANALYST: MMS

INITIAL CAL: 4/24/14 IS/SS ID: DATE: 6/19/14

COMMENTS: Reviewed by: 6-23-14 DATE PRINTED:

DATE LOADED:

AS #	FILE	SAMPLE	SS	pH

Spectrum Analytical, Inc. RI Division V7 Injection Log
Volatiles Laboratory

BATCH: 140619.B

Start: 19-JUN-14 06:13
End: 19-JUN-14 11:28

V7B03140	06:13	VSTD20007A	1 ok ccv
V7B03141	06:43	LCS-77657	1 ok
V7B03142	06:56	MB-77657	1 ok
V7B03143	07:08	N1023-02A	1 ok
V7B03144	07:18	N1023-03A	1 ok
V7B03145	07:25	N1023-04A	1 ok
V7B03146	07:34	N1023-05A	1 ok
V7B03147	07:55	N1023-06A	1 ok
V7B03148	08:07	N1023-07A	1 ok
V7B03149	08:17	N1023-09A	1 ok
V7B03150	08:33	N1023-10A	1 ok
V7B03151	08:43	N1023-11A	1 ok
V7B03152	08:50	N1023-12A	1 ok
V7B03153	09:22	VSTD20007B	1 ok ccv
V7B03154	09:30	N1023-19A	1 ok
V7B03155	09:54	N1023-~~10AMS~~ 11AMS	1 ok MS 6/23
V7B03156	10:57	N1023-~~10AMSD~~ 11AMSD	1 ok
V7B03157	11:28	VSTD20007C	1 ok ccv

MMS 6/20/14

Logbook ID 90.0220-02/14

METHOD: RSK-175 CAL ID: VP140225A ANALYST: MMS

INITIAL CAL: 4/24/14 IS/SS ID: DATE: 6/25/14

COMMENTS: Reviewed by: 6-25-14 DATE PRINTED:

DATE LOADED:

AS #	FILE	SPECTRUM ID	CLIENT ID	SAMPLE SIZE	DIL	COMMENTS	IS	SS	pH

Spectrum Analytical, Inc. RI Division V7 Injection Log
Volatiles Laboratory

BATCH: 140625.B Start: 25-JUN-14 09:58
End: 25-JUN-14 11:57

		V7B03197	09:58	VSTD20007G	1 OK CCV
		V7B03198	10:21	LCS-77776	1 OK
		V7B03199	10:55	LCSD-77776	1 OK
		V7B03200	11:06	MB-77776	1 OK
		V7B03201	11:17	N1023-22A	1 OK
		V7B03202	11:25	N1023-23A	1 OK
		V7B03203	11:57	VSTD20007H	1 OK CCV

MMS 6/25/14

Report Date : 26-Jun-2014 14:40

Spectrum Analytical, Inc. RI Division

INITIAL CALIBRATION DATA

Start Cal Date : 21-APR-2014 11:00
End Cal Date : 21-APR-2014 13:13
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\Avogadro\Organics\V7.i\140625.B\v7RSK.m
Last Edit : 25-Jun-2014 14:41 V7.i
Curve Type : Average

Calibration File Names:
Level 1: \\Avogadro\Organics\V7.i\140421.B\V7B02944.D
Level 2: \\Avogadro\Organics\V7.i\140421.B\V7B02943.D
Level 3: \\Avogadro\Organics\V7.i\140421.B\V7B02942.D
Level 4: \\Avogadro\Organics\V7.i\140421.B\V7B02941.D
Level 5: \\Avogadro\Organics\V7.i\140421.B\V7B02940.D

Compound	5.000 Level 1	100.000 Level 2	2000.000 Level 3	4000.000 Level 4	1.000e+04 Level 5	___ RRF	% RSD
1 Methane	3808	3834	3345	3119	2386	3298	18.021
2 Ethene	7132	8135	7221	6762	5212	6892	15.477
3 Ethane	7068	8166	7236	6737	5054	6852	16.584

Data File: \\Avogadro\Organics\V7.i\140421.B\V7B02945.D
Report Date: 13-May-2014 11:29

Spectrum Analytical, Inc. RI Division

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: V7.i
Lab File ID: V7B02945.D
Analysis Type: AIR
Lab Sample ID: VICV2000I7
Method: \\Avogadro\Organics\V7.i\140421.B\v7RSK.m

Injection Date: 21-APR-2014 13:26
Init. Cal. Date(s): 21-APR-2014 21-APR-2014
Init. Cal. Times: 11:00 13:13
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF2000	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
1 Methane	3298	3003	0.010	8.95620	20.00000	Averaged
2 Ethene	6892	6484	0.010	5.91830	20.00000	Averaged
3 Ethane	6852	6481	0.100	5.41931	20.00000	Averaged

Data File: \\Avogadro\Organics\V7.i\140619.B\V7B03140.D
Report Date: 23-Jun-2014 15:33

Spectrum Analytical, Inc. RI Division

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: V7.i
Lab File ID: V7B03140.D
Analysis Type: AIR
Lab Sample ID: VSTD20007A
Method: \\Avogadro\Organics\V7.i\140619.B\v7RSK.m

Injection Date: 19-JUN-2014 06:13
Init. Cal. Date(s): 21-APR-2014 21-APR-2014
Init. Cal. Times: 11:00 13:13
Quant Type: ESTD

			MIN		MAX	
COMPOUND	RRF / AMOUNT	RF2000	RRF	%D / %DRIFT	%D / %DRIFT	CURVE TYPE
1 Methane	3298	3681	0.010	-11.61337	20.00000	Averaged
2 Ethene	6892	7424	0.010	-7.70868	20.00000	Averaged
3 Ethane	6852	7011	0.100	-2.32258	20.00000	Averaged

Data File: \\Avogadro\Organics\V7.i\140619.B\V7B03153.D
Report Date: 23-Jun-2014 15:34

Spectrum Analytical, Inc. RI Division

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: V7.i Injection Date: 19-JUN-2014 09:22
Lab File ID: V7B03153.D Init. Cal. Date(s): 21-APR-2014 21-APR-2014
Analysis Type: AIR Init. Cal. Times: 11:00 13:13
Lab Sample ID: VSTD20007B Quant Type: ESTD
Method: \\Avogadro\Organics\V7.i\140619.B\v7RSK.m

COMPOUND	RRF / AMOUNT	RF2000	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
1 Methane	3298	3629	0.010	-10.02381	20.00000	Averaged
2 Ethene	6892	7297	0.010	-5.86611	20.00000	Averaged
3 Ethane	6852	7035	0.100	-2.66953	20.00000	Averaged

Data File: \\Avogadro\Organics\V7.i\140619.B\V7B03157.D
Report Date: 23-Jun-2014 15:34

Spectrum Analytical, Inc. RI Division

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: V7.i Injection Date: 19-JUN-2014 11:28
Lab File ID: V7B03157.D Init. Cal. Date(s): 21-APR-2014 21-APR-2014
Analysis Type: AIR Init. Cal. Times: 11:00 13:13
Lab Sample ID: VSTD20007C Quant Type: ESTD
Method: \\Avogadro\Organics\V7.i\140619.B\v7RSK.m

COMPOUND	RRF / AMOUNT	RF2000	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
1 Methane	3298	3431	0.010	-4.01603	20.00000	Averaged
2 Ethene	6892	6823	0.010	1.00989	20.00000	Averaged
3 Ethane	6852	6703	0.100	2.18230	20.00000	Averaged

Data File: \\Avogadro\Organics\V7.i\140625.B\V7B03197.D
Report Date: 25-Jun-2014 14:41

Spectrum Analytical, Inc. RI Division

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: V7.i
Lab File ID: V7B03197.D
Analysis Type: AIR
Lab Sample ID: VSTD20007G
Method: \\Avogadro\Organics\V7.i\140625.B\v7RSK.m

Injection Date: 25-JUN-2014 09:58
Init. Cal. Date(s): 21-APR-2014 21-APR-2014
Init. Cal. Times: 11:00 13:13
Quant Type: ESTD

COMPOUND	RRF / AMOUNT	RF2000	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
1 Methane	3298	3051	0.010	7.49195	20.00000	Averaged
2 Ethene	6892	6757	0.010	1.96428	20.00000	Averaged
3 Ethane	6852	6875	0.100	-0.32775	20.00000	Averaged

Data File: \\Avogadro\Organics\V7.i\140625.B\V7B03203.D
Report Date: 25-Jun-2014 14:41

Spectrum Analytical, Inc. RI Division

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: V7.i Injection Date: 25-JUN-2014 11:57
Lab File ID: V7B03203.D Init. Cal. Date(s): 21-APR-2014 21-APR-2014
Analysis Type: AIR Init. Cal. Times: 11:00 13:13
Lab Sample ID: VSTD20007H Quant Type: ESTD
Method: \\Avogadro\Organics\V7.i\140625.B\v7RSK.m

COMPOUND	RRF / AMOUNT	RF2000	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
1 Methane	3298	2898	0.010	12.12403	20.00000	Averaged
2 Ethene	6892	6433	0.010	6.66013	20.00000	Averaged
3 Ethane	6852	6538	0.100	4.58701	20.00000	Averaged

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

RSK175

RSK175 -- Dissolved Gases by GC-FID

Sample ID: MB-77657	SampType: MBLK	TestCode: RSK175	Prep Date: 06/19/14 6:10	Run ID: V7_140619A
Client ID: MB-77657	Batch ID: 77657	Units: µg/L	Analysis Date: 06/19/14 6:56	SeqNo: 2106637

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	ND	0.61 ^	0.61									
Ethane	ND	1.3 ^	1.3									
Ethene	ND	1.6 ^	1.6									

Sample ID: MB-77776	SampType: MBLK	TestCode: RSK175	Prep Date: 06/25/14 10:04	Run ID: V7_140625A
Client ID: MB-77776	Batch ID: 77776	Units: µg/L	Analysis Date: 06/25/14 11:06	SeqNo: 2108438

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	ND	0.60 ^	0.60									
Ethane	ND	1.2 ^	1.2									
Ethene	ND	1.5 ^	1.5									

Sample ID: LCS-77657	SampType: LCS	TestCode: RSK175	Prep Date: 06/19/14 6:10	Run ID: V7_140619A
Client ID: LCS-77657	Batch ID: 77657	Units: µg/L	Analysis Date: 06/19/14 6:43	SeqNo: 2106635

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	42.22	0.63 ^	0.63	48.86	0	86.4	75	125	0			
Ethane	73.12	1.3 ^	1.3	92.29	0	79.2	75	125	0			
Ethene	83.86	1.6 ^	1.6	85.77	0	97.8	75	125	0			

Sample ID: LCS-77776	SampType: LCS	TestCode: RSK175	Prep Date: 06/25/14 10:04	Run ID: V7_140625A
Client ID: LCS-77776	Batch ID: 77776	Units: µg/L	Analysis Date: 06/25/14 10:21	SeqNo: 2108436

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	35.49	0.58 ^	0.58	45.00	0	78.9	75	125	0			
Ethane	70.22	1.2 ^	1.2	85.00	0	82.6	75	125	0			
Ethene	84.99	1.5 ^	1.5	79.00	0	108	75	125	0			

Sample ID: LCSD-77776	SampType: LCSD	TestCode: RSK175	Prep Date: 06/25/14 10:04	Run ID: V7_140625A
Client ID: LCSD-77776	Batch ID: 77776	Units: µg/L	Analysis Date: 06/25/14 10:55	SeqNo: 2108437

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	39.54	0.61 ^	0.61	47.57	0	83.1	75	125	35.49	10.8	30	
Ethane	84.00	1.3 ^	1.3	89.86	0	93.5	75	125	70.22	17.9	30	
Ethene	95.03	1.6 ^	1.6	83.51	0	114	75	125	84.99	11.2	30	

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

m14.06.26.1533

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

RSK175

RSK175 -- Dissolved Gases by GC-FID

Sample ID: **N1023-11AMS** SampType: **MS** TestCode: **RSK175** Prep Date: **06/19/14 6:10** Run ID: **V7_140619A**
Client ID: **DSY-MW204-0614** Batch ID: **77657** Units: **µg/L** Analysis Date: **06/19/14 9:54** SeqNo: **2106652**

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	37.49	0.61 ^	0.61	47.57	0	78.8	75	125	0			
Ethane	72.72	1.3 ^	1.3	89.86	0	80.9	75	125	0			
Ethene	85.52	1.6 ^	1.6	83.51	0	102	75	125	0			

Sample ID: **N1023-11AMSD** SampType: **MSD** TestCode: **RSK175** Prep Date: **06/19/14 6:10** Run ID: **V7_140619A**
Client ID: **DSY-MW204-0614** Batch ID: **77657** Units: **µg/L** Analysis Date: **06/19/14 10:57** SeqNo: **2106653**

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	42.20	0.61 ^	0.61	47.57	0	88.7	75	125	37.49	11.8	30	
Ethane	80.39	1.3 ^	1.3	89.86	0	89.5	75	125	72.72	10	30	
Ethene	88.73	1.6 ^	1.6	83.51	0	106	75	125	85.52	3.68	30	

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

SW846 8270D, SVOA by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8270D

IV. PREPARATION

Soil Samples were prepared following procedures in laboratory test code: SW3550B

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: S3
Instrument Type: GCMS-SEMI

Description: HP6890 / HP5973
Manufacturer: Hewlett-Packard
Model: 6890 / 5973
GC Column used: 30 m X 0.25 mm ID [0.25 um thickness] Rxi-5sil MS capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Matrix spikes were performed on samples: DSY-SB304-0001 (N1023-17AMS) and DSY-SB304-0001 (N1023-17AMSD).

Percent recoveries were within the QC limits.

Replicate RPDs were within the advisory QC limits.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

5B - FORM V SV

SEMIVOLATILE ORGANIC INSTRUMENT

PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)

CLIENT SAMPLE NO.

DFTPP3P

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S3J1260.D DFTPP Injection Date: 06/19/2014

Instrument ID: S3 DFTPP Injection Time: 7:31

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	40.0
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	38.0
70	Less than 2.0% of mass 69	0.1 (0.3)1
127	10.0 - 80.0% of mass 198	46.0
197	Less than 2.0% of mass 198	0.5
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	26.0
365	Greater than 1.0% of mass 198	3.4
441	Present, but less than mass 443	13.6
442	50.0 - 100% of mass 198	98.0
443	15.0 - 24.0% of mass 442	19.4 (19.8)2

1 - Value is % mass 69 2 - Value is % mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD0253P	SSTD0253P	S3J1261.D	06/19/2014	7:46
02	SSTD0803P	SSTD0803P	S3J1262.D	06/19/2014	8:26
03	SSTD0053P	SSTD0053P	S3J1263.D	06/19/2014	8:53
04	SSTD0603P	SSTD0603P	S3J1264.D	06/19/2014	9:20
05	SSTD0103P	SSTD0103P	S3J1265.D	06/19/2014	9:47
06	SSTD0403P	SSTD0403P	S3J1266.D	06/19/2014	10:14
07	SICV0253P	SICV0253P	S3J1267.D	06/19/2014	10:53

6 - FORM VI SV-3

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date(s): 06/19/2014 06/19/2014

Calibration Times: 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = S3J1263.D RRF010 = S3J1265.D RRF025 = S3J1261.D RRF040 = S3J1266.D RRF060 = S3J1264.D
RRF080 = S3J1262.D

COMPOUND	RRF005	RRF010	RRF025	RRF040	RRF060	RRF080					RRF	% RSD
Naphthalene	1.048	1.144	1.047	1.100	1.039	1.023					1.067	4.3

 Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only SW846

6 - FORM VI SV-3

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date(s): 06/19/2014 06/19/2014

Calibration Times: 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = S3J1263.D RRF010 = S3J1265.D RRF025 = S3J1261.D RRF040 = S3J1266.D RRF060 = S3J1264.D
RRF080 = S3J1262.D

COMPOUND	RRF005	RRF010	RRF025	RRF040	RRF060	RRF080					$\overline{RRF}$	% RSD
Nitrobenzene-d5	0.325	0.404	0.371	0.388	0.388	0.396					0.379	7.5
2-Fluorobiphenyl	1.292	1.458	1.379	1.386	1.340	1.332					1.364	4.2
Terphenyl-d14	0.734	0.807	0.814	0.766	0.740	0.717					0.763	5.3

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

7E - FORM VII SV-1

SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date: 06/19/2014 Time: 10:53

Lab File ID: S3J1267.D Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SICV0253P Init. Calib. Time(s): 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF025	MIN RRF	%D	MAX %D
Naphthalene	1.067	1.047	0.700	-1.9	20.0

7F - FORM VII SV-2

SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date: 06/19/2014 Time: 10:53

Lab File ID: S3J1267.D Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SICV0253P Init. Calib. Time(s): 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF025	MIN RRF	%D	MAX %D
Nitrobenzene-d5	0.379	0.369	0.010	-2.6	20.0
2-Fluorobiphenyl	1.364	1.365	0.010	0.1	20.0
Terphenyl-d14	0.763	0.801	0.010	5.0	20.0

5B - FORM V SV

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)

CLIENT SAMPLE NO.

DFTPP3R

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S3J1294.D DFTPP Injection Date: 06/20/2014

Instrument ID: S3 DFTPP Injection Time: 10:29

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	45.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	42.0
70	Less than 2.0% of mass 69	0.1 (0.3)1
127	10.0 - 80.0% of mass 198	48.2
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 60.0% of mass 198	26.5
365	Greater than 1.0% of mass 198	3.3
441	Present, but less than mass 443	10.9
442	50.0 - 100% of mass 198	83.4
443	15.0 - 24.0% of mass 442	16.4 (19.6)2

1 - Value is % mass 69 2 - Value is % mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD0253R	SSTD0253R	S3J1295.D	06/20/2014	10:56
02	MB-77662	MB-77662	S3J1304.D	06/20/2014	16:09
03	LCS-77662	LCS-77662	S3J1305.D	06/20/2014	16:36
04	DSY-SB304-0001	N1023-17A	S3J1311.D	06/20/2014	19:16
05	DSY-SB304-0001MS	N1023-17AMS	S3J1312.D	06/20/2014	19:43
06	DSY-SB304-0001MSD	N1023-17AMSD	S3J1313.D	06/20/2014	20:09
07	DSY-SB-DUP01-061614	N1023-18A	S3J1314.D	06/20/2014	20:36

7E - FORM VII SV-1

SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date: 06/20/2014 Time: 10:56

Lab File ID: S3J1295.D Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SSTD0253R Init. Calib. Time(s): 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF025	MIN RRF	%D	MAX %D
Naphthalene	1.067	1.034	0.700	-3.1	20.0

7F - FORM VII SV-2

SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date: 06/20/2014 Time: 10:56

Lab File ID: S3J1295.D Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SSTD0253R Init. Calib. Time(s): 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF025	MIN RRF	%D	MAX %D
Nitrobenzene-d5	0.379	0.349	0.010	-7.9	20.0
2-Fluorobiphenyl	1.364	1.328	0.010	-2.7	20.0
Terphenyl-d14	0.763	0.745	0.010	-2.4	20.0

4C - FORM IV SV
SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
MB-77662

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S3J1304.D Lab Sample ID: MB-77662

Instrument ID: S3 Date Extracted: 06/19/2014

Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 06/20/2014

Level: (LOW/MED) LOW Time Analyzed: 16:09

Extraction: (Type) SONC GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-77662	LCS-77662	S3J1305.D	06/20/2014
02	DSY-SB304-0001	N1023-17A	S3J1311.D	06/20/2014
03	DSY-SB304-0001MS	N1023-17AMS	S3J1312.D	06/20/2014
04	DSY-SB304-0001MSD	N1023-17AMSD	S3J1313.D	06/20/2014
05	DSY-SB-DUP01-061614	N1023-18A	S3J1314.D	06/20/2014

COMMENTS:

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-77662

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-77662

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J1304.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/19/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	DL	LOD	LOQ
91-20-3	Naphthalene	130	U	41	130	330

5B - FORM V SV

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)

CLIENT SAMPLE NO.

DFTPP3U

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S3J1360.D DFTPP Injection Date: 06/25/2014

Instrument ID: S3 DFTPP Injection Time: 7:35

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	40.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	38.5
70	Less than 2.0% of mass 69	0.2 (0.6)1
127	10.0 - 80.0% of mass 198	45.5
197	Less than 2.0% of mass 198	0.2
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	27.1
365	Greater than 1.0% of mass 198	3.3
441	Present, but less than mass 443	13.9
442	50.0 - 100% of mass 198	98.6
443	15.0 - 24.0% of mass 442	18.6 (18.8)2

1 - Value is % mass 69 2 - Value is % mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD0253U	SSTD0253U	S3J1361.D	06/25/2014	7:53
02	MB-77724	MB-77724	S3J1367.D	06/25/2014	10:34
03	LCS-77724	LCS-77724	S3J1368.D	06/25/2014	11:01
04	LCSD-77724	LCSD-77724	S3J1369.D	06/25/2014	11:27
05	DSY-SB305-0305	N1023-25A	S3J1371.D	06/25/2014	12:20

7E - FORM VII SV-1

SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date: 06/25/2014 Time: 7:53

Lab File ID: S3J1361.D Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SSTD0253U Init. Calib. Time(s): 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF025	MIN RRF	%D	MAX %D
Naphthalene	1.067	1.033	0.700	-3.2	20.0

7F - FORM VII SV-2

SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S3 Calibration Date: 06/25/2014 Time: 7:53

Lab File ID: S3J1361.D Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SSTD0253U Init. Calib. Time(s): 7:46 10:14

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF025	MIN RRF	%D	MAX %D
Nitrobenzene-d5	0.379	0.361	0.010	-4.7	20.0
2-Fluorobiphenyl	1.364	1.341	0.010	-1.7	20.0
Terphenyl-d14	0.763	0.780	0.010	2.2	20.0

4C - FORM IV SV

SEMIVOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

MB-77724

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S3J1367.D Lab Sample ID: MB-77724

Instrument ID: S3 Date Extracted: 06/24/2014

Matrix: (SOIL/SED/WATER) SOIL Date Analyzed: 06/25/2014

Level: (LOW/MED) LOW Time Analyzed: 10:34

Extraction: (Type) SONC GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-77724	LCS-77724	S3J1368.D	06/25/2014
02	LCSD-77724	LCSD-77724	S3J1369.D	06/25/2014
03	DSY-SB305-0305	N1023-25A	S3J1371.D	06/25/2014

COMMENTS:

1D - FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

MB-77724

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: MB-77724

Sample wt/vol: 15.0 (g/mL) G Lab File ID: S3J1367.D

Level: (LOW/MED) LOW Extraction: (Type) SONC

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/24/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/25/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: UG/KG	Q	DL	LOD	LOQ
91-20-3	Naphthalene	130	U	41	130	330

2K - FORM II SV-4

SOIL SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Level: (LOW/MED) LOW

	CLIENT SAMPLE NO.	SDMC1 (NBZ) #	SDMC2 (FBP) #	SDMC3 (TPH) #	SDMC4 (PHL) #	SDMC5 (2FP) #	SDMC6 (TBP) #			TOT OUT
01	MB-77662	71	71	83						0
02	LCS-77662	70	71	79						0
03	DSY-SB304-0001	57	63	62						0
04	DSY-SB304-0001MS	62	63	68						0
05	DSY-SB304-0001MSD	59	61	61						0
06	DSY-SB-DUP01-061614	59	62	66						0
07	MB-77724	79	82	96	78	78	76			0
08	LCS-77724	84	87	98	83	82	83			0
09	LCSD-77724	80	80	91	79	78	79			0
10	DSY-SB305-0305	66	68	78						0

		QC LIMITS
SDMC1	(NBZ) = Nitrobenzene-d5	(35-100)
SDMC2	(FBP) = 2-Fluorobiphenyl	(45-105)
SDMC3	(TPH) = Terphenyl-d14	(30-125)
SDMC4	(PHL) = Phenol-d5	(40-100)
SDMC5	(2FP) = 2-Fluorophenol	(35-105)
SDMC6	(TBP) = 2,4,6-Tribromophenol	(35-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

som14.06.20.1307

3D - FORM III SV-2

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix Spike - EPA Sample No.: DSY-SB304-0001

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS %REC	#	QC. LIMITS REC.
Naphthalene	3440.1626	0.0000	2032.5068	59		40-105

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Naphthalene	3417.8239	1976.6314	58		2		0-40	40-105

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.
LCS-77662

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77662 LCS Lot No.: A0100278

Date Extracted: 06/19/2014 Date Analyzed (1): 06/20/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Naphthalene	3333.0000	0.0000	2158.9815	65		40 - 105

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits

COMMENTS:

8C - FORM VIII SV-1

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: Rxi-5sil MS ID: 0.25 (mm) Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SSTD0253R Date Analyzed: 06/20/2014

Lab File ID (Standard): S3J1295.D Time Analyzed: 10:56

Instrument ID: S3

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD	162707		4.684		666272		6.297		430285		8.039	
	UPPER LIMIT	325414		5.184		1332544		6.797		860570		8.539	
	LOWER LIMIT	81354		4.184		333136		5.797		215143		7.539	
	SAMPLE NO.												
01	MB-77662	213228		4.678		803168		6.297		495729		8.033	
02	LCS-77662	190146		4.684		742081		6.297		477735		8.038	
03	DSY-SB304-0001	184328		4.684		696694		6.297		429197		8.033	
04	DSY-SB304-0001MS	290859		4.684		1136434		6.303		691991		8.039	
05	DSY-SB304-0001MSD	192264		4.686		767180		6.299		475862		8.040	
06	DSY-SB-DUP01-061614	194661		4.683		748802		6.296		469472		8.038	

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = 200% of internal standard area

AREA LOWER LIMIT = 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8D - FORM VIII SV-2

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

EPA Sample No.(SSTD020##) SSTD0253R Date Analyzed: 06/20/2014

Lab File ID (Standard): S3J1295.D Time Analyzed: 10:56

Instrument ID: S3 GC Column: Rxi-5sil MS ID: 0.25 (mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	864745		9.316		1094797		11.666		1055134		13.824	
	UPPER LIMIT	1729490		9.816		2189594		12.166		2110268		14.324	
	LOWER LIMIT	432373		8.816		547399		11.166		527567		13.324	
	SAMPLE NO.												
01	MB-77662	973654		9.315		1085356		11.629		983653		13.776	
02	LCS-77662	928480		9.315		1032476		11.628		930401		13.776	
03	DSY-SB304-0001	843988		9.316		1066957		11.623		1064326		13.776	
04	DSY-SB304-0001MS	1290034		9.321		1444914		11.634		1412776		13.787	
05	DSY-SB304-0001MSD	906745		9.317		1098837		11.630		1098445		13.783	
06	DSY-SB-DUP01-061614	920963		9.314		1164352		11.627		1134574		13.780	

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8C - FORM VIII SV-1

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: Rxi-5sil MS ID: 0.25 (mm) Init. Calib. Date(s): 06/19/2014 06/19/2014

EPA Sample No.(SSTD020##) SSTD0253U Date Analyzed: 06/25/2014

Lab File ID (Standard): S3J1361.D Time Analyzed: 7:53

Instrument ID: S3

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD	168577		4.663		669250		6.281		414461		8.023	
	UPPER LIMIT	337154		5.163		1338500		6.781		828922		8.523	
	LOWER LIMIT	84289		4.163		334625		5.781		207231		7.523	
	SAMPLE NO.												
01	MB-77724	211037		4.663		804757		6.282		488464		8.023	
02	LCS-77724	217787		4.662		840468		6.286		514326		8.022	
03	LCSD-77724	220478		4.663		848418		6.281		528399		8.023	
04	DSY-SB305-0305	213064		4.663		824266		6.282		495332		8.023	

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8D - FORM VIII SV-2

SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

EPA Sample No.(SSTD020##) SSTD0253U Date Analyzed: 06/25/2014

Lab File ID (Standard): S3J1361.D Time Analyzed: 7:53

Instrument ID: S3 GC Column: Rxi-5sil MS ID: 0.25 (mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	834463		9.3		996341		11.623		887394		13.755	
	UPPER LIMIT	1668926		9.8		1992682		12.123		1774788		14.255	
	LOWER LIMIT	417232		8.8		498171		11.123		443697		13.255	
	SAMPLE NO.												
01	MB-77724	943768		9.300		968765		11.618		824929		13.755	
02	LCS-77724	972529		9.299		1011517		11.628		835836		13.765	
03	LCSD-77724	981755		9.300		1034631		11.623		869383		13.755	
04	DSY-SB305-0305	935646		9.300		945310		11.634		814599		13.777	

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

SW846 8270D SIM, SVOA by GC-MS

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8270D SIM

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3510C

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: S6
Instrument Type: GCMS-Semi

Description: HP7890A
Manufacturer: Agilent
Model: 7890A/5973
GC Column used: 30 m X 0.25 mm ID [0.25 um thickness] Rxi-5sil MS capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits.

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Matrix spikes were performed on samples: DSY-MW204-0614 (N1023-11GMS) and DSY-MW204-0614 (N1023-11GMSD).

Percent recoveries were within the QC limits with the following exceptions:

DSY-MW204-0614 (N1023-11GMS), recovery is below criteria for Benzo(a)pyrene at 60% with criteria of (66-114), Benzo(b)fluoranthene at 61% with criteria of (61-130), Benzo(g,h,i)perylene at 51% with criteria of (52-135), Benzo(k)fluoranthene at 62% with criteria of (62-131), Chrysene at 63% with criteria of (64-110) and Indeno(1,2,3-cd)pyrene at 50% with criteria of (52-142).

DSY-MW204-0614 (N1023-11GMSD), recovery is below criteria for Benzo(a)pyrene at 58% with criteria of (66-114), Benzo(g,h,i)perylene at 51% with criteria of (52-135), Benzo(k)fluoranthene at 54% with criteria of (62-131) and

Indeno(1,2,3-cd)pyrene at 49% with criteria of (52-142).

Replicate RPDs were within the advisory QC limits.

E. Internal Standards:

Internal standard peak areas were within the QC limits.

F. Dilutions:

No sample in this SDG required analysis at dilution.

G. Samples:

No other unusual occurrences were noted during sample analysis.

H. Manual Integration

No manual integrations were performed on any sample or standard.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed:_____ _____

Date:_____6/27/2014_____

5B - FORM V SV

SEMIVOLATILE ORGANIC INSTRUMENT

PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)

EPA SAMPLE NO.

DFTPP6I

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S6B8140.D DFTPP Injection Date: 06/20/2014

Instrument ID: S6 DFTPP Injection Time: 7:23

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	44.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	47.2
70	Less than 2.0% of mass 69	0.1 (0.2)1
127	10.0 - 80.0% of mass 198	45.7
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	26.0
365	Greater than 1.0% of mass 198	3.2
441	Present, but less than mass 443	9.6
442	50.0 - 100% of mass 198	75.8
443	15.0 - 24.0% of mass 442	14.9 (19.6)2

1 - Value is % mass 69 2 - Value is % mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD0.16I	SSTD0.16I	S6B8143.D	06/20/2014	9:11
02	SSTD0056I	SSTD0056I	S6B8144.D	06/20/2014	9:32
03	SSTD0.56I	SSTD0.56I	S6B8145.D	06/20/2014	9:54
04	SSTD0016I	SSTD0016I	S6B8146.D	06/20/2014	10:15
05	SSTD0106I	SSTD0106I	S6B8148.D	06/20/2014	10:58
06	SICV0106I	SICV0106I	S6B8149.D	06/20/2014	11:19

6H - FORM VI SV-SIM

SEMIVOLATILE ORGANICS SIM INITIAL CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S6 Calibration Date(s): 06/20/2014 06/20/2014

Calibration Time(s): 9:11 10:58

LAB FILE ID: RRF0.1 = S6B8143.D RRF0.5 = S6B8145.D

RRF010 = S6B8148.D RRF005 = S6B8144.D RRF010 = S6B8148.D

COMPOUND	RRF0.1	RRF0.5	RRF010	RRF005	RRF010	$\overline{RRF}$	%RSD
Naphthalene	1.378	1.273	1.159	1.196	1.159	1.233	7.5
2-Methylnaphthalene	0.994	0.959	0.955	1.000	0.955	0.973	2.3
Acenaphthylene	2.272	2.302	2.516	2.534	2.516	2.428	5.3
Acenaphthene	1.701	1.635	1.272	1.492	1.272	1.474	13.5
Fluorene	2.727	2.508	2.379	2.579	2.379	2.514	5.8
Phenanthrene	0.994	0.963	0.913	0.922	0.913	0.941	3.8
Anthracene	0.857	0.853	0.998	0.892	0.998	0.920	8.0
Fluoranthene	2.383	2.201	2.054	2.049	2.054	2.148	6.8
Pyrene	2.257	2.253	2.068	2.078	2.068	2.145	4.7
Benzo(a)anthracene	1.819	1.473	1.329	1.414	1.329	1.473	13.8
Chrysene	1.468	1.520	1.238	1.380	1.238	1.369	9.5
Benzo(b)fluoranthene	1.638	1.504	1.478	1.451	1.478	1.510	4.9
Benzo(k)fluoranthene	1.819	1.643	1.525	1.678	1.525	1.638	7.5
Benzo(a)pyrene	1.513	1.408	1.390	1.425	1.390	1.425	3.6
Indeno(1,2,3-cd)pyrene	1.381	1.232	1.291	1.260	1.291	1.291	4.3
Dibenzo(a,h)anthracene	1.338	1.255	1.258	1.241	1.258	1.270	3.0
Benzo(g,h,i)perylene	1.454	1.342	1.347	1.327	1.347	1.363	3.8
Benzo(e)pyrene-d12	1.027	0.903	0.890	0.898	0.890	0.922	6.4

7H - FORM VII SV-SIM

SEMIVOLATILE SIM CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S6 Calibration Date: 06/20/2014 Time: 11:19

Lab File ID: S6B8149.D Init. Calib. Date(s): 06/20/2014 06/20/2014

EPA Sample No.(SSTD0.4##) SICV0106I Init. Calib. Time(s): 9:11 10:58

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF010	MIN RRF	%D	MAX %D
Naphthalene	1.233	1.215	0.010	-1.5	20.0
2-Methylnaphthalene	0.973	0.962	0.010	-1.1	20.0
Acenaphthylene	2.428	2.322	0.010	-4.4	20.0
Acenaphthene	1.474	1.553	0.010	5.4	20.0
Fluorene	2.514	2.442	0.010	-2.9	20.0
Phenanthrene	0.941	0.935	0.010	-0.6	20.0
Anthracene	0.920	0.861	0.010	-6.4	20.0
Fluoranthene	2.148	2.196	0.010	2.2	20.0
Pyrene	2.145	2.172	0.010	1.3	20.0
Benzo(a)anthracene	1.473	1.412	0.010	-4.1	20.0
Chrysene	1.369	1.452	0.010	6.1	20.0
Benzo(b)fluoranthene	1.510	1.502	0.010	-0.5	20.0
Benzo(k)fluoranthene	1.638	1.682	0.010	2.7	20.0
Benzo(a)pyrene	1.425	1.406	0.010	-1.4	20.0
Indeno(1,2,3-cd)pyrene	1.291	1.210	0.010	-6.3	20.0
Dibenzo(a,h)anthracene	1.270	1.153	0.010	-9.2	20.0
Benzo(g,h,i)perylene	1.363	1.279	0.010	-6.2	20.0
Benzo(e)pyrene-d12	0.922	0.896	0.010	-2.8	20.0

5B - FORM V SV

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)

EPA SAMPLE NO.

DFTPP6J

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S6B8150.D DFTPP Injection Date: 06/20/2014

Instrument ID: S6 DFTPP Injection Time: 11:47

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	45.0
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	46.2
70	Less than 2.0% of mass 69	0.3 (0.6)1
127	10.0 - 80.0% of mass 198	46.1
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.2
275	10.0 - 60.0% of mass 198	24.6
365	Greater than 1.0% of mass 198	2.9
441	Present, but less than mass 443	9.8
442	50.0 - 100% of mass 198	71.6
443	15.0 - 24.0% of mass 442	14.2 (19.8)2

1 - Value is % mass 69 2 - Value is % mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD0016J	SSTD0016J	S6B8151.D	06/20/2014	11:58
02	MB-77570	MB-77570	S6B8157.D	06/20/2014	14:08
03	LCS-77570	LCS-77570	S6B8158.D	06/20/2014	14:29
04	DSY-MW08-061 4	N1023-02C	S6B8159.D	06/20/2014	14:50
05	DSY-MW219-06 14	N1023-04C	S6B8160.D	06/20/2014	15:12
06	DSY-MW-DUP01 -061214	N1023-05C	S6B8161.D	06/20/2014	15:33
07	DSY-MW218-06 14	N1023-07C	S6B8162.D	06/20/2014	15:54
08	DSY-MW204-06 14	N1023-11G	S6B8163.D	06/20/2014	16:15
09	DSY-MW204-06 14MS	N1023-11GMS	S6B8164.D	06/20/2014	16:37
10	DSY-MW204-06 14MSD	N1023-11GMSD	S6B8165.D	06/20/2014	16:58
11	DSY-MW-RB01- 061314	N1023-13D	S6B8166.D	06/20/2014	17:20

7H - FORM VII SV-SIM

SEMIVOLATILE SIM CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S6 Calibration Date: 06/20/2014 Time: 11:58

Lab File ID: S6B8151.D Init. Calib. Date(s): 06/20/2014 06/20/2014

EPA Sample No.(SSTD0.4##) SSTD0016J Init. Calib. Time(s): 9:11 10:58

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF001	MIN RRF	%D	MAX %D
Naphthalene	1.233	1.243	0.010	0.8	20.0
2-Methylnaphthalene	0.973	1.016	0.010	4.5	20.0
Acenaphthylene	2.428	2.314	0.010	-4.7	20.0
Acenaphthene	1.474	1.567	0.010	6.3	20.0
Fluorene	2.514	2.566	0.010	2.1	20.0
Phenanthrene	0.941	0.946	0.010	0.5	20.0
Anthracene	0.920	0.860	0.010	-6.5	20.0
Fluoranthene	2.148	2.206	0.010	2.7	20.0
Pyrene	2.145	2.234	0.010	4.1	20.0
Benzo(a)anthracene	1.473	1.519	0.010	3.2	20.0
Chrysene	1.369	1.374	0.010	0.4	20.0
Benzo(b)fluoranthene	1.510	1.571	0.010	4.1	20.0
Benzo(k)fluoranthene	1.638	1.623	0.010	-0.9	20.0
Benzo(a)pyrene	1.425	1.418	0.010	-0.5	20.0
Indeno(1,2,3-cd)pyrene	1.291	1.207	0.010	-6.5	20.0
Dibenzo(a,h)anthracene	1.270	1.213	0.010	-4.4	20.0
Benzo(g,h,i)perylene	1.363	1.317	0.010	-3.4	20.0
Benzo(e)pyrene-d12	0.922	0.906	0.010	-1.7	20.0

4D - FORM IV SV-SIM

SEMIVOLATILE SIM METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-77570

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S6B8157.D Lab Sample ID: MB-77570

Instrument ID: S6 Date Extracted: 06/13/2014

Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 06/20/2014

Time Analyzed: 14:08

Extraction: (Type) SEPF GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-77570	LCS-77570	S6B8158.D	06/20/2014
02	DSY-MW08-0614	N1023-02C	S6B8159.D	06/20/2014
03	DSY-MW219-0614	N1023-04C	S6B8160.D	06/20/2014
04	DSY-MW-DUP01-061214	N1023-05C	S6B8161.D	06/20/2014
05	DSY-MW218-0614	N1023-07C	S6B8162.D	06/20/2014
06	DSY-MW204-0614	N1023-11G	S6B8163.D	06/20/2014
07	DSY-MW204-0614MS	N1023-11GMS	S6B8164.D	06/20/2014
08	DSY-MW204-0614MSD	N1023-11GMSD	S6B8165.D	06/20/2014
09	DSY-MW-RB01-061314	N1023-13D	S6B8166.D	06/20/2014

COMMENTS:

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-77570

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77570

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8157.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

5B - FORM V SV

SEMIVOLATILE ORGANIC INSTRUMENT

PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)

EPA SAMPLE NO.

DFTPP6M

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S6B8230.D DFTPP Injection Date: 06/25/2014

Instrument ID: S6 DFTPP Injection Time: 7:34

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	45.5
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	48.0
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	46.7
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 60.0% of mass 198	26.6
365	Greater than 1.0% of mass 198	3.3
441	Present, but less than mass 443	6.7
442	50.0 - 100% of mass 198	73.6
443	15.0 - 24.0% of mass 442	14.0 (19.1)2

1 - Value is % mass 69 2 - Value is % mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD0016M	SSTD0016M	S6B8231.D	06/25/2014	7:53
02	MB-77704	MB-77704	S6B8232.D	06/25/2014	8:27
03	LCS-77704	LCS-77704	S6B8233.D	06/25/2014	8:48
04	DSY-SB-RB01-061714	N1023-24A	S6B8234.D	06/25/2014	9:09

7H - FORM VII SV-SIM

SEMIVOLATILE SIM CONTINUING CALIBRATION DATA

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Instrument ID: S6 Calibration Date: 06/25/2014 Time: 7:53

Lab File ID: S6B8231.D Init. Calib. Date(s): 06/20/2014 06/20/2014

EPA Sample No.(SSTD0.4##) SSTD0016M Init. Calib. Time(s): 9:11 10:58

GC Column: Rxi-5sil MS ID: 0.25 (mm)

COMPOUND	RRF	RRF001	MIN RRF	%D	MAX %D
Naphthalene	1.233	1.225	0.010	-0.7	20.0
2-Methylnaphthalene	0.973	0.950	0.010	-2.3	20.0
Acenaphthylene	2.428	2.541	0.010	4.7	20.0
Acenaphthene	1.474	1.611	0.010	9.3	20.0
Fluorene	2.514	2.704	0.010	7.6	20.0
Phenanthrene	0.941	1.102	0.010	17.1	20.0
Anthracene	0.920	1.177	0.010	27.9	20.0
Fluoranthene	2.148	2.532	0.010	17.9	20.0
Pyrene	2.145	2.534	0.010	18.1	20.0
Benzo(a)anthracene	1.473	1.428	0.010	-3.0	20.0
Chrysene	1.369	1.440	0.010	5.2	20.0
Benzo(b)fluoranthene	1.510	1.567	0.010	3.7	20.0
Benzo(k)fluoranthene	1.638	1.607	0.010	-1.9	20.0
Benzo(a)pyrene	1.425	1.413	0.010	-0.9	20.0
Indeno(1,2,3-cd)pyrene	1.291	1.139	0.010	-11.8	20.0
Dibenzo(a,h)anthracene	1.270	1.104	0.010	-13.0	20.0
Benzo(g,h,i)perylene	1.363	1.250	0.010	-8.3	20.0
Benzo(e)pyrene-d12	0.922	0.907	0.010	-1.6	20.0

4D - FORM IV SV-SIM

SEMIVOLATILE SIM METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-77704

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab File ID: S6B8232.D Lab Sample ID: MB-77704

Instrument ID: S6 Date Extracted: 06/23/2014

Matrix: (SOIL/SED/WATER) WATER Date Analyzed: 06/25/2014

Time Analyzed: 8:27

Extraction: (Type) SEPF GPC Cleanup: (Y/N) N

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS-77704	LCS-77704	S6B8233.D	06/25/2014
02	DSY-SB-RB01-061714	N1023-24A	S6B8234.D	06/25/2014

COMMENTS:

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-77704

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-77704

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8232.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received:

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/23/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/25/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

WATER SEMIVOLATILE SIM DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

	EPA SAMPLE NO.	SDMC17 (BEP) #		TOT OUT
01	MB-77570	64		0
02	LCS-77570	65		0
03	DSY-MW08-0614	66		0
04	DSY-MW219-0614	63		0
05	DSY-MW-DUP01-061214	65		0
06	DSY-MW218-0614	62		0
07	DSY-MW204-0614	61		0
08	DSY-MW204-0614MS	64		0
09	DSY-MW204-0614MSD	59		0
10	DSY-MW-RB01-061314	66		0
11	MB-77704	80		0
12	LCS-77704	88		0
13	DSY-SB-RB01-061714	84		0

	QC LIMITS
SDMC17 (BEP) = Benzo(e)pyrene-d12	(48-162)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D DMC diluted out

som14.06.20.1307

1F - FORM I SV-SIM

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW219-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-04C

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S6B8160.D

Extraction: (Type) SEPF

% Moisture: Decanted: (Y/N) Date Received: 06/12/2014

Concentrated Extract Volume: 1000 (uL) Date Extracted: 06/13/2014

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Date Analyzed: 06/20/2014

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION: µG/L	Q	DL	LOD	LOQ
91-20-3	Naphthalene	0.10	U	0.050	0.10	0.10
91-57-6	2-Methylnaphthalene	0.10	U	0.018	0.10	0.10
208-96-8	Acenaphthylene	0.10	U	0.017	0.10	0.10
83-32-9	Acenaphthene	0.10	U	0.019	0.10	0.10
86-73-7	Fluorene	0.10	U	0.017	0.10	0.10
85-01-8	Phenanthrene	0.10	U	0.019	0.10	0.10
120-12-7	Anthracene	0.10	U	0.017	0.10	0.10
206-44-0	Fluoranthene	0.10	U	0.019	0.10	0.10
129-00-0	Pyrene	0.10	U	0.016	0.10	0.10
56-55-3	Benzo(a)anthracene	0.10	U	0.042	0.10	0.10
218-01-9	Chrysene	0.10	U	0.073	0.10	0.10
205-99-2	Benzo(b)fluoranthene	0.10	U	0.056	0.10	0.10
207-08-9	Benzo(k)fluoranthene	0.10	U	0.020	0.10	0.10
50-32-8	Benzo(a)pyrene	0.10	U	0.017	0.10	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	U	0.019	0.10	0.10
53-70-3	Dibenzo(a,h)anthracene	0.10	U	0.018	0.10	0.10
191-24-2	Benzo(g,h,i)perylene	0.10	U	0.021	0.10	0.10

3E - FORM III SIM1

WATER SEMIVOLATILE SIM MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix Spike - EPA Sample No.: DSY-MW204-0614

COMPOUND	SPIKE ADDED (µg/L)	SAMPLE CONCENTRATION (µg/L)	MS CONCENTRATION (µg/L)	MS %REC	#	QC. LIMITS REC.
Naphthalene	2.5000	0.0000	1.5476	62		47-105
2-Methylnaphthalene	2.5000	0.0000	1.6405	66		43-115
Acenaphthylene	2.5000	0.0000	1.6964	68		51-106
Acenaphthene	2.5000	0.0000	1.5068	60		53-108
Fluorene	2.5000	0.0000	1.6993	68		56-109
Phenanthrene	2.5000	0.0000	1.7523	70		56-108
Anthracene	2.5000	0.0000	1.9823	79		58-103
Fluoranthene	2.5000	0.0000	1.8618	74		60-117
Pyrene	2.5000	0.0000	1.9230	77		59-115
Benzo(a)anthracene	2.5000	0.0000	1.6268	65		58-112
Chrysene	2.5000	0.0000	1.5874	63	*	64-110
Benzo(b)fluoranthene	2.5000	0.0000	1.5150	61	*	61-130
Benzo(k)fluoranthene	2.5000	0.0000	1.5465	62	*	62-131
Benzo(a)pyrene	2.5000	0.0000	1.5098	60	*	66-114
Indeno(1,2,3-cd)pyrene	2.5000	0.0000	1.2606	50	*	52-142
Dibenzo(a,h)anthracene	2.5000	0.0000	1.2399	50		49-143
Benzo(g,h,i)perylene	2.5000	0.0000	1.2823	51	*	52-135

COMPOUND	SPIKE ADDED (µg/L)	MSD CONCENTRATION (µg/L)	MSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Naphthalene	2.5000	1.5483	62		0		0-40	47-105
2-Methylnaphthalene	2.5000	1.6102	64		2		0-40	43-115
Acenaphthylene	2.5000	1.6545	66		3		0-40	51-106
Acenaphthene	2.5000	1.4414	58		4		0-40	53-108
Fluorene	2.5000	1.5696	63		8		0-40	56-109
Phenanthrene	2.5000	1.6719	67		5		0-40	56-108
Anthracene	2.5000	1.7865	71		10		0-40	58-103
Fluoranthene	2.5000	1.6935	68		9		0-40	60-117
Pyrene	2.5000	1.7493	70		9		0-40	59-115
Benzo(a)anthracene	2.5000	1.5685	63		4		0-40	58-112
Chrysene	2.5000	1.6936	68		6		0-40	64-110
Benzo(b)fluoranthene	2.5000	1.5688	63		3		0-40	61-130
Benzo(k)fluoranthene	2.5000	1.3391	54	*	14		0-40	62-131
Benzo(a)pyrene	2.5000	1.4542	58	*	4		0-40	66-114
Indeno(1,2,3-cd)pyrene	2.5000	1.2274	49	*	3		0-40	52-142
Dibenzo(a,h)anthracene	2.5000	1.2261	49		1		0-40	49-143
Benzo(g,h,i)perylene	2.5000	1.2852	51	*	0		0-40	52-135

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 17 outside limits

3E - FORM III SIM1

WATER SEMIVOLATILE SIM MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix Spike - EPA Sample No.: DSY-MW204-0614

Spike Recovery: 10 out of 34 outside limits

COMMENTS:

3 - FORM III
WATER LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.
LCS-77570

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77570 LCS Lot No.:

Date Extracted: 06/13/2014 Date Analyzed (1): 06/20/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Naphthalene	2.5000	0.0000	1.6436	66		47 - 105
2-Methylnaphthalene	2.5000	0.0000	1.7754	71		43 - 115
Acenaphthylene	2.5000	0.0000	1.7048	68		51 - 106
Acenaphthene	2.5000	0.0000	1.5967	64		53 - 108
Fluorene	2.5000	0.0000	1.6922	68		56 - 109
Phenanthrene	2.5000	0.0000	1.7086	68		56 - 108
Anthracene	2.5000	0.0000	1.8283	73		58 - 103
Fluoranthene	2.5000	0.0000	1.8473	74		60 - 117
Pyrene	2.5000	0.0000	1.8612	74		59 - 115
Benzo(a)anthracene	2.5000	0.0000	1.7105	68		58 - 112
Chrysene	2.5000	0.0000	1.7814	71		64 - 110
Benzo(b)fluoranthene	2.5000	0.0000	1.6358	65		61 - 130
Benzo(k)fluoranthene	2.5000	0.0000	1.6687	67		62 - 131
Benzo(a)pyrene	2.5000	0.0000	1.6546	66		66 - 114
Indeno(1,2,3-cd)pyrene	2.5000	0.0000	1.5527	62		52 - 142
Dibenzo(a,h)anthracene	2.5000	0.0000	1.5413	62		49 - 143
Benzo(g,h,i)perylene	2.5000	0.0000	1.5562	62		52 - 135

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 17 outside limits

COMMENTS:

3 - FORM III

WATER LABORATORY CONTROL

SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-77704

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77704 LCS Lot No.:

Date Extracted: 06/23/2014 Date Analyzed (1): 06/25/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Naphthalene	2.5000	0.0000	2.0841	83		47 - 105
2-Methylnaphthalene	2.5000	0.0000	2.1020	84		43 - 115
Acenaphthylene	2.5000	0.0000	2.0109	80		51 - 106
Acenaphthene	2.5000	0.0000	2.3418	94		53 - 108
Fluorene	2.5000	0.0000	1.8650	75		56 - 109
Phenanthrene	2.5000	0.0000	2.0955	84		56 - 108
Anthracene	2.5000	0.0000	2.2203	89		58 - 103
Fluoranthene	2.5000	0.0000	2.2526	90		60 - 117
Pyrene	2.5000	0.0000	2.2979	92		59 - 115
Benzo(a)anthracene	2.5000	0.0000	2.2721	91		58 - 112
Chrysene	2.5000	0.0000	2.1207	85		64 - 110
Benzo(b)fluoranthene	2.5000	0.0000	2.2176	89		61 - 130
Benzo(k)fluoranthene	2.5000	0.0000	2.2142	89		62 - 131
Benzo(a)pyrene	2.5000	0.0000	2.1694	87		66 - 114
Indeno(1,2,3-cd)pyrene	2.5000	0.0000	1.9252	77		52 - 142
Dibenzo(a,h)anthracene	2.5000	0.0000	1.9190	77		49 - 143
Benzo(g,h,i)perylene	2.5000	0.0000	1.9451	78		52 - 135

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 17 outside limits

COMMENTS:

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE RECOVERY

CLIENT SAMPLE NO.
LCS-77724

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCS-77724 LCS Lot No.: A0100278

Date Extracted: 06/24/2014 Date Analyzed (1): 06/25/2014

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	LCS CONCENTRATION	LCS %REC	#	QC. LIMITS REC.
Naphthalene	3333.0000	0.0000	2699.6164	81		40 - 105
2-Methylnaphthalene	3333.0000	0.0000	2894.7000	87		45 - 105
Acenaphthylene	3333.0000	0.0000	2820.4412	85		45 - 105
Acenaphthene	3333.0000	0.0000	2773.8503	83		45 - 110
Fluorene	3333.0000	0.0000	2799.1222	84		50 - 110
Phenanthrene	3333.0000	0.0000	2818.6420	85		50 - 110
Anthracene	3333.0000	0.0000	2764.5324	83		55 - 105
Fluoranthene	3333.0000	0.0000	2690.8761	81		55 - 115
Pyrene	3333.0000	0.0000	3140.0547	94		45 - 125
Benzo(a)anthracene	3333.0000	0.0000	2901.8892	87		50 - 110
Chrysene	3333.0000	0.0000	2829.8076	85		55 - 110
Benzo(b)fluoranthene	3333.0000	0.0000	3196.1934	96		45 - 115
Benzo(k)fluoranthene	3333.0000	0.0000	3019.5501	91		45 - 125
Benzo(a)pyrene	3333.0000	0.0000	3038.9126	91		50 - 110
Indeno(1,2,3-cd)pyrene	3333.0000	0.0000	2862.8781	86		40 - 120
Dibenzo(a,h)anthracene	3333.0000	0.0000	2764.3589	83		40 - 125
Benzo(g,h,i)perylene	3333.0000	0.0000	2727.9243	82		40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 17 outside limits

COMMENTS:

3 - FORM III
SOIL LABORATORY CONTROL
SAMPLE DUPLICATE RECOVERY

EPA SAMPLE NO.
LCSD-77724

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Lab Sample ID: LCSD-77724 LCS Lot No.: A0100278

COMPOUND	SPIKE ADDED	LCSD CONCENTRATION	LCSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
Naphthalene	3333.0000	2559.6816	77		5		40	40 - 105
2-Methylnaphthalene	3333.0000	2739.0994	82		6		40	45 - 105
Acenaphthylene	3333.0000	2634.7750	79		7		40	45 - 105
Acenaphthene	3333.0000	2554.4218	77		8		40	45 - 110
Fluorene	3333.0000	2588.3026	78		7		40	50 - 110
Phenanthrene	3333.0000	2647.6027	79		7		40	50 - 110
Anthracene	3333.0000	2579.3752	77		8		40	55 - 105
Fluoranthene	3333.0000	2558.9626	77		5		40	55 - 115
Pyrene	3333.0000	2977.9477	89		5		40	45 - 125
Benzo(a)anthracene	3333.0000	2756.2496	83		5		40	50 - 110
Chrysene	3333.0000	2712.2845	81		5		40	55 - 110
Benzo(b)fluoranthene	3333.0000	2920.8766	88		9		40	45 - 115
Benzo(k)fluoranthene	3333.0000	2771.9558	83		9		40	45 - 125
Benzo(a)pyrene	3333.0000	2805.6999	84		8		40	50 - 110
Indeno(1,2,3-cd)pyrene	3333.0000	2690.6540	81		6		40	40 - 120
Dibenzo(a,h)anthracene	3333.0000	2594.4828	78		6		40	40 - 125
Benzo(g,h,i)perylene	3333.0000	2495.4560	75		9		40	40 - 125

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 17 outside limits

Spike Recovery: 0 out of 17 outside limits

COMMENTS:

8E - FORM VIII SV-SIM1

SEMIVOLATILE SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: Rxi-5sil MS ID: 0.25 (mm) Init. Calib. Date(s): 06/20/2014 06/20/2014

EPA Sample No.(SSTD0.4##) SSTD0016J Date Analyzed: 06/20/2014

Lab File ID (Standard): S6B8151.D Time Analyzed: 11:58

Instrument ID: S6

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD	147873		2.877		404815		3.864		204459		5.27	
	UPPER LIMIT	295746		3.377		809630		4.364		408918		5.77	
	LOWER LIMIT	73937		2.377		202408		3.364		102230		4.77	
	EPA SAMPLE NO.												
01	MB-77570	142163		2.876		397598		3.864		204502		5.270	
02	LCS-77570	127260		2.876		358531		3.864		182764		5.283	
03	DSY-MW08-061 4	115082		2.877		332306		3.865		164616		5.270	
04	DSY-MW219-06 14	98350		2.884		280371		3.864		134127		5.270	
05	DSY-MW-DUP01 -061214	117781		2.877		334100		3.864		162580		5.270	
06	DSY-MW218-06 14	149508		2.877		412750		3.864		201263		5.270	
07	DSY-MW204-06 14	139911		2.877		395168		3.865		195862		5.270	
08	DSY-MW204-06 14MS	128825		2.877		372633		3.865		189405		5.284	
09	DSY-MW204-06 14MSD	140189		2.884		381732		3.865		189002		5.283	
10	DSY-MW-RB01- 061314	140655		2.877		392009		3.865		193324		5.283	

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = 200% of internal standard area

AREA LOWER LIMIT = 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8F - FORM VIII SV-SIM2

SEMIVOLATILE SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

EPA Sample No.(SSTD0.4##) SSTD0016J Date Analyzed: 06/20/2014

Lab File ID (Standard): S6B8151.D Time Analyzed: 11:58

Instrument ID: S6 GC Column: Rxi-5sil MS ID: 0.25 (mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	588811		6.483		804475		8.654		709495		10.07	
	UPPER LIMIT	1177622		6.983		1608950		9.154		1418990		10.57	
	LOWER LIMIT	294406		5.983		402238		8.154		354748		9.57	
	EPA SAMPLE NO.												
01	MB-77570	592387		6.483		787481		8.654		677326		10.064	
02	LCS-77570	508923		6.483		722699		8.654		661434		10.064	
03	DSY-MW08-0614	494286		6.483		698053		8.654		616792		10.064	
04	DSY-MW219-0614	388180		6.483		571129		8.654		527989		10.064	
05	DSY-MW-DUP01-061214	479025		6.483		687359		8.654		624102		10.064	
06	DSY-MW218-0614	572820		6.483		763636		8.654		646053		10.064	
07	DSY-MW204-0614	541859		6.483		718713		8.654		629333		10.064	
08	DSY-MW204-0614MS	507043		6.483		770061		8.654		696967		10.070	
09	DSY-MW204-0614MSD	497743		6.483		699397		8.654		656227		10.064	
10	DSY-MW-RB01-061314	529109		6.483		702603		8.654		604990		10.064	

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = 200% of internal standard area

AREA LOWER LIMIT = 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8E - FORM VIII SV-SIM1

SEMIVOLATILE SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

GC Column: Rxi-5sil MS ID: 0.25 (mm) Init. Calib. Date(s): 06/20/2014 06/20/2014

EPA Sample No.(SSTD0.4##) SSTD0016M Date Analyzed: 06/25/2014

Lab File ID (Standard): S6B8231.D Time Analyzed: 7:53

Instrument ID: S6

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD	123609		2.877		339455		3.865		163043		5.27	
	UPPER LIMIT	247218		3.377		678910		4.365		326086		5.77	
	LOWER LIMIT	61805		2.377		169728		3.365		81522		4.77	
	EPA SAMPLE NO.												
01	MB-77704	100439		2.877		284947		3.865		138630		5.270	
02	LCS-77704	109680		2.877		309334		3.865		173015		5.270	
03	DSY-SB-RB01-061714	103840		2.877		287547		3.865		175814		5.270	

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

8F - FORM VIII SV-SIM2

SEMIVOLATILE SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

EPA Sample No.(SSTD0.4##) SSTD0016M Date Analyzed: 06/25/2014

Lab File ID (Standard): S6B8231.D Time Analyzed: 7:53

Instrument ID: S6 GC Column: Rxi-5sil MS ID: 0.25 (mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD	417517		6.483		625484		8.68		516916		10.104	
	UPPER LIMIT	835034		6.983		1250968		9.18		1033832		10.604	
	LOWER LIMIT	208759		5.983		312742		8.18		258458		9.604	
	EPA SAMPLE NO.												
01	MB-77704	345515		6.483		583655		8.688		485954		10.127	
02	LCS-77704	448078		6.483		601559		8.663		504857		10.081	
03	DSY-SB-RB01-061714	413545		6.483		546982		8.654		482115		10.070	

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12
AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside contract required QC limits with an asterisk.

SAMPLE ID DSY-MW08-0614

SAMPLE CALC for trichloroethene

IS AREA	DILUTION	COMPOUND OF INTEREST AREA	IS AMOUNT (ng/mL)	Final Extract Volume (mL)	AVE RRF	CONCENTRATION PPB
318871	1	8743	50	5	0.4130	3.32

Sample Volume (mL)
5

SAMPLE ID DSY-MW218-0614

SAMPLE CALC for methane

Initial Calibration Area	DILUTION	COMPOUND OF INTEREST AREA	CONCENTRATION PPB
3298	1	16902874	512.52

Sample Calculation

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DSY-MW08-0614

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: N1023 Mod. Ref No.: SDG No.: SN1023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: N1023-02A

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: V8D5427.D

Level: (TRACE/LOW/MED) LOW Date Received: 06/12/2014

% Moisture: not dec. Date Analyzed: 06/16/2014

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION: UG/L	Q	DL	LOD	LOQ
75-71-8	Dichlorodifluoromethane	1.0	U	0.66	1.0	1.0
74-87-3	Chloromethane	0.50	U	0.26	0.50	1.0
75-01-4	Vinyl chloride	0.50	U	0.50	0.50	1.0
74-83-9	Bromomethane	1.0	U	0.80	1.0	1.0
75-00-3	Chloroethane	0.50	U	0.48	0.50	1.0
75-69-4	Trichlorofluoromethane	1.0	U	0.54	1.0	1.0
75-35-4	1,1-Dichloroethene	0.50	U	0.39	0.50	1.0
67-64-1	Acetone	2.5	U	2.2	2.5	5.0
75-15-0	Carbon disulfide	0.50	U	0.34	0.50	1.0
75-09-2	Methylene chloride	0.50	U	0.41	0.50	1.0
156-60-5	trans-1,2-Dichloroethene	1.0	U	0.65	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.50	U	0.24	0.50	1.0
75-34-3	1,1-Dichloroethane	0.50	U	0.25	0.50	1.0
78-93-3	2-Butanone	2.5	U	2.1	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	7.0		0.48	0.50	1.0
67-66-3	Chloroform	0.50	U	0.33	0.50	1.0
71-55-6	1,1,1-Trichloroethane	0.50	U	0.50	0.50	1.0
56-23-5	Carbon tetrachloride	1.0	U	0.54	1.0	1.0
107-06-2	1,2-Dichloroethane	0.50	U	0.41	0.50	1.0
71-43-2	Benzene	0.50	U	0.33	0.50	1.0
79-01-6	Trichloroethene	3.3		0.36	0.50	1.0
78-87-5	1,2-Dichloropropane	1.0	U	0.61	1.0	1.0
75-27-4	Bromodichloromethane	0.50	U	0.26	0.50	1.0
10061-01-5	cis-1,3-Dichloropropene	0.50	U	0.45	0.50	1.0
108-10-1	4-Methyl-2-pentanone	1.0	U	0.82	1.0	5.0
108-88-3	Toluene	0.50	U	0.32	0.50	1.0
10061-02-6	trans-1,3-Dichloropropene	0.50	U	0.48	0.50	1.0
79-00-5	1,1,2-Trichloroethane	1.0	U	0.38	1.0	1.0
127-18-4	Tetrachloroethene	1.0	U	0.65	1.0	1.0
591-78-6	2-Hexanone	2.5	U	1.7	2.5	5.0
124-48-1	Dibromochloromethane	1.0	U	0.57	1.0	1.0
106-93-4	1,2-Dibromoethane	0.50	U	0.50	0.50	1.0
108-90-7	Chlorobenzene	0.50	U	0.26	0.50	1.0
100-41-4	Ethylbenzene	0.50	U	0.35	0.50	1.0
179601-23-1	m,p-Xylene	1.0	U	0.77	1.0	1.0

Sample Calculation

Data File: \\Avogadro\Organics\V10.I\140616A.B\V8D5427.d
Report Date: 17-Jun-2014 10:34

Spectrum Analytical, Inc. RI Division

Method 8260 Water and Medium Soil

Data file : \\Avogadro\Organics\V10.I\140616A.B\V8D5427.d
Lab Smp Id: N1023-02A Client Smp ID: DSY-MW08-0614
Inj Date : 16-JUN-2014 20:25
Operator : WL SRC: LIMS Inst ID: V10.i
Smp Info : 5ML,N1023-02A,,77583,
Misc Info :
Comment :
Method : \\Avogadro\Organics\V10.I\140616A.B\v108260Gadd-6lvl.m
Meth Date : 17-Jun-2014 10:33 amarquis Quant Type: ISTD
Cal Date : 16-JUN-2014 11:41 Cal File: V8D5408.d
Als bottle: 28
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * 5/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
	28 cis-1,2-Dichloroethene	96	4.258	4.258	(0.813)	19653	7.02492	7.0(Q)
$	36 Dibromofluoromethane	113	4.644	4.644	(0.886)	123681	52.1216	52
$	42 1,2-Dichloroethane-d4	102	4.946	4.940	(0.944)	20255	50.4881	50
*	46 Fluorobenzene	96	5.239	5.236	(1.000)	318871	50.0000	
	47 Trichloroethene	130	5.567	5.564	(1.063)	8743	3.32230	3.3
$	58 Toluene-d8	98	6.718	6.718	(0.817)	368756	49.6431	50
*	68 Chlorobenzene-d5	117	8.223	8.223	(1.000)	324601	50.0000	
$	79 Bromofluorobenzene	95	9.525	9.522	(1.158)	182139	45.6761	46
*	92 1,4-Dichlorobenzene-d4	152	10.727	10.724	(1.000)	142933	50.0000	

QC Flag Legend

Q - Qualifier signal failed the ratio test.

Sample Calculation

N1023

6C - FORM VI VOA-3

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Spectrum Analytical, Inc. Contract:

Lab Code: MITKEM Case No.: N1023 SAS No.: SDG No.: SN1023

Instrument ID: V10 Calibration Date(s): 06/16/2014 06/16/2014

Heated Purge: (Y/N) N Calibration Times: 10:17 13:04

Purge Volume: 5 (mL)

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (mm)

LAB FILE ID: RRF005 = V8D5407.D RRF020 = V8D5406.D RRF050 = V8D5405.D RRF100 = V8D5411.D RRF200 = V8D5410.D

RRF001 = V8D5408.D

COMPOUND	RRF005	RRF020	RRF050	RRF100	RRF200	RRF001					RRF	% RSD
Dichlorodifluoromethane	0.656	0.759	0.665	0.613	0.620	0.678					0.665	7.9
Chloromethane	0.985	1.095	1.043	1.061	1.037	1.367					1.098	12.4
Vinyl chloride	0.661	0.792	0.709	0.720	0.684	0.760					0.721	6.7
Bromomethane	0.218	0.286	0.277	0.272	0.249	0.335					0.273	14.3
Chloroethane	0.350	0.405	0.355	0.361	0.346	0.302					0.353	9.3
Trichlorofluoromethane	0.981	1.122	0.999	0.969	0.986	1.016					1.012	5.6
1,1-Dichloroethene	0.412	0.465	0.415	0.410	0.402	0.492					0.433	8.5
Acetone	0.075	0.082	0.075	0.057	0.056						0.069	16.9
Carbon disulfide	1.162	1.365	1.314	1.231	1.259	1.739					1.345	15.2
Methylene chloride	0.405	0.459	0.437	0.427	0.424	0.462					0.436	5.0
trans-1,2-Dichloroethene	0.380	0.456	0.408	0.401	0.409	0.441					0.416	6.7
Methyl tert-butyl ether	1.237	1.544	1.490	1.431	1.485	1.418					1.434	7.5
1,1-Dichloroethane	1.047	1.212	1.139	1.088	1.112	1.070					1.112	5.3
2-Butanone	0.040	0.057	0.052	0.047	0.048						0.049	12.7
cis-1,2-Dichloroethene	0.403	0.467	0.441	0.432	0.437	0.452					0.439	4.9
Chloroform	0.966	1.095	1.011	0.992	1.025	0.946					1.006	5.2
1,1,1-Trichloroethane	0.947	1.115	1.019	0.981	1.026	0.967					1.009	6.0
Carbon tetrachloride	0.847	0.953	0.903	0.878	0.912	0.857					0.892	4.4
1,2-Dichloroethane	1.010	1.256	1.208	1.175	1.244	1.190					1.181	7.6
Benzene	1.368	1.675	1.523	1.516	1.568	1.407					1.510	7.3
Trichloroethene	0.396	0.450	0.426	0.416	0.430	0.358					0.413	7.7
1,2-Dichloropropane	0.462	0.562	0.543	0.530	0.555	0.533					0.531	6.8
Bromodichloromethane	0.647	0.799	0.802	0.782	0.832	0.687					0.758	9.7
cis-1,3-Dichloropropene	0.518	0.680	0.716	0.710	0.759	0.517					0.650	16.2
4-Methyl-2-pentanone	0.644	0.908	0.816	0.780	0.828						0.795	12.2
Toluene	1.534	1.747	1.618	1.614	1.686	1.647					1.641	4.4
trans-1,3-Dichloropropene	0.487	0.630	0.711	0.703	0.779	0.455					0.627	20.8

Report 1,4-Dioxane-d8 for Low-Medium VOA analysis only

SW846

Sample Calculation

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

06/27/2014

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW218-0614
Lab ID: N1023-07
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 14:07

Analyses	Result	Qual	LOD	LOQ	Units	DF	Date Analyzed	Batch ID
RSK175 -- DISSOLVED GASES BY GC-FID						RSK175		
Methane	570		0.61 ^	0.61	µg/L	1	06/19/2014 8:07	77657
Ethane	ND		1.3 ^	1.3	µg/L	1	06/19/2014 8:07	77657
Ethene	ND		1.6 ^	1.6	µg/L	1	06/19/2014 8:07	77657

Qualifiers:
ND - Not Detected at the Limit of Detection
J - Analyte detected below Limit of Quantitation
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
^ Qualified to Limit of Detection (LOD)
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
LOQ - Limit of Quantitation
LOD - Limit of Detection

m14.06.26.1533

Data File: \\Avogadro\Organics\V7.i\140619.B\V7B03148.D
Report Date: 23-Jun-2014 15:34

Sample Calculation

Spectrum Analytical, Inc. RI Division

Method 8260 Water and Medium Soil

Data file : \\Avogadro\Organics\V7.i\140619.B\V7B03148.D
Lab Smp Id: N1023-07A DSY-MW218-0614
Inj Date : 19-JUN-2014 08:07
Operator : ALM Inst ID: V7.i
Smp Info : N1023-07A
Misc Info :
Comment :
Method : \\Avogadro\Organics\V7.i\140619.B\v7RSK.m
Meth Date : 23-Jun-2014 15:33 V7.i Quant Type: ESTD
Cal Date : 21-APR-2014 13:13 Cal File: V7B02944.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP Genie Compound Sublist: all.sub
Target Version: 4.14
Processing Host: TARGET104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (PPM)	FINAL (PPM)
1 Methane	0.611	0.620	-0.009	16902874	5124.67	5100

Report Date : 26-Jun-2014 14:40

Sample Calculation

Spectrum Analytical, Inc. RI Division

INITIAL CALIBRATION DATA

Start Cal Date : 21-APR-2014 11:00
End Cal Date : 21-APR-2014 13:13
Quant Method : ESTD
Origin : Disabled
Target Version : 4.14
Integrator : HP Genie
Method file : \\Avogadro\Organics\V7.i\140625.B\v7RSK.m
Last Edit : 25-Jun-2014 14:41 V7.i
Curve Type : Average

Calibration File Names:
Level 1: \\Avogadro\Organics\V7.i\140421.B\V7B02944.D
Level 2: \\Avogadro\Organics\V7.i\140421.B\V7B02943.D
Level 3: \\Avogadro\Organics\V7.i\140421.B\V7B02942.D
Level 4: \\Avogadro\Organics\V7.i\140421.B\V7B02941.D
Level 5: \\Avogadro\Organics\V7.i\140421.B\V7B02940.D

Compound	5.000 Level 1	100.000 Level 2	2000.000 Level 3	4000.000 Level 4	1.000e+04 Level 5	___ RRF	% RSD
1 Methane	3808	3834	3345	3119	2386	3298	18.021
2 Ethene	7132	8135	7221	6762	5212	6892	15.477
3 Ethane	7068	8166	7236	6737	5054	6852	16.584

Tetra Tech, Inc. **INTERNAL CORRESPONDENCE**

TO: **E. CORACK** **DATE:** **JULY 8, 2014**

FROM: **MICHELLE L. ALLEN** **COPIES:** **DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – TOTAL & DISSOLVED METALS/MISCELLANEOUS**
CTO 165, NAVAL STATION (NAVSTA) NEWPORT
SAMPLE DELIVERY GROUP (SDG) N1023

SAMPLES: 7/Soil/SPLP Lead

DSY-SB-DUP01-061614	DSY-SB301-0001	DSY-SB302-0001
DSY-SB303-1213	DSY-SB304-0001	DSY-SB306-0001
DSY-SB307-0.51.5		

7/Aqueous/Total & Dissolved Metals

DSY-MW-DUP01-061214	DSY-MW-RB01-061314	DSY-MW08-0614
DSY-MW104A-0614	DSY-MW204-0614	DSY-MW218-0614
DSY-MW219-0614		

1/Aqueous/Total Metals

DSY-SB-RB01-061714

13/Aqueous/Miscellaneous

DSY-MW-DUP01-061214	DSY-MW-DUP02-062014	DSY-MW02A-0614
DSY-MW03-0614	DSY-MW08-0614	DSY-MW11B-0614
DSY-MW12-0614	DSY-MW204-0614	DSY-MW218-0614
DSY-MW219-0614	DSY-MW220-0614	DSY-MW221-0614
DSY-MW222-0614		

Overview

The sample set for NAVSTA Newport, CTO 165, SDG N1023 consisted of seven (7) soil environmental samples, fourteen (14) aqueous environmental samples, and two (2) rinsate blanks. All seven (7) soil samples were analyzed for Synthetic Precipitation Leaching Procedure (SPLP) lead. Seven (7) aqueous samples and one (1) rinsate blank were analyzed for total and dissolved metals. One (1) rinsate blank was analyzed for lead only. Thirteen (13) aqueous samples were analyzed for miscellaneous parameters (alkalinity, sulfide, chloride, nitrate, nitrate, sulfate, and Total Organic Carbon (TOC)). Three field duplicate pairs were included in this sample delivery group (SDG): DSY-SB-DUP01-061614/DSY-SB304-0001, DSY-MW-DUP01-061214/DSY-MW219-0614, and DSY-MW-DUP02-062014/DSY-MW11B-0614.

The samples were collected by Tetra Tech, Inc. on June 12, 13, 16, 17, 19, and 20, 2014 and analyzed by Spectrum Analytical, Inc. All analyses were conducted in accordance with SW846 Methods 6010C, 7470A, 9056A, and 9060A, and Standard Methods 2320B and 4500D S- analytical and reporting protocols.

The data was evaluated based on the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	Initial and Continuing Calibration Verification Results
	•	Laboratory Method/Preparation Blank Analyses
*	•	ICP Interference Results
*	•	Laboratory Duplicate Results
*	•	Laboratory Control Sample/Laboratory Control Sample Duplicate Results
	•	Matrix Spike/Matrix Spike Duplicate Recoveries
*	•	Field Duplicate Precision
*	•	ICP Serial Dilution
*	•	Detection Limits
*	•	Analyte Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report. An EPA Region 1 tier II validation was performed on the data in this SDG. The text of this report has been formulated to address only those areas affecting data quality.

LABORATORY METHOD/PREPARATION BLANK ANALYSES

The following analytes were detected in the laboratory method and preparation blanks the following maximum concentrations:

Analyte	Maximum Concentration (µg/L)	Action Level (µg/L)
Barium [1]	3.4	17
Calcium [1]	251.2	1258
Cobalt [1]	0.9	4.5
Iron [1]	45.6	228
Nickel [1]	1.1	5.5
Potassium [1]	161.1	805.5
Sodium [1]	125.8	629
Vanadium [1]	1.1	5.5
Zinc [1]	15.4	77
Arsenic [2]	4.9	24.5
Barium [2]	2.7	13.5
Cobalt [2]	0.7	3.5
Potassium [2]	293.1	1465.5
Sodium [2]	394.0	1970
Barium [3]	2.0	10.0
Mercury [4]	0.155	0.775

(1) Maximum concentration found in initial and/or continuing calibration blanks affecting total and dissolved metal samples analyzed for these analytes on 06/16/14.
(2) Maximum concentration found in initial and/or continuing calibration blanks affecting total and dissolved metal samples analyzed for these analytes on 06/17/14.
(3) Maximum concentration found in continuing calibration blanks affecting total and dissolved metal sample, DSY-MW104A-0614, analyzed for barium on 06/25/14.
(4) Maximum concentration found in initial and/or continuing calibration blanks affecting total and dissolved metal sample, DSY-MW104A-0614, analyzed for mercury on 06/25/14.

An action level of 5X the maximum contaminant concentration was established to evaluate blank contamination. Dilution factor and sample aliquot were taken into consideration during the application of the action level. Detected results reported for analytes below the established action levels were qualified as non-detected, (U). Results reported greater than the Method Detection Limit (MDL) but less than the Limit of Detection (LOD) were raised to the LOD. Rinsate blanks are not qualified for laboratory blank contamination.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

The Matrix Spike (MS) Percent Recovery (%R) for nitrite in sample DSY-MW204-0614 from preparation batch #77559 was below the 80% quality control limit. In addition, the Relative Percent Difference (RPD) exceeded the 15% quality control criterion. Only non-detected results were reported for nitrite in the samples associated with this preparation batch and these non-detects were qualified as estimated, (UJ).

The Matrix Spike Duplicate (MSD) %Rs for nitrate and sulfate exceeded 120% in sample DSY-MW204-0614 from preparation batch #77559. The detected results reported for nitrate and sulfate in the associated samples were qualified as estimated, (J).

NOTES

The sample Form Is in the dissolved metals fraction did not agree with the database results. The results were corrected in the database.

The MS %R for chloride in sample DSY-MW204-0614 from preparation batch #77559 was below the 80% quality control limit. No action was taken because the concentration of chloride in the unspiked sample was greater than 4X the amount spiked in the MS sample.

Total and dissolved calcium was reported from 20X dilutions for sample DSY-MW104A-0614.

Chloride was analyzed at the following dilutions:

Sample	Dilution
DSY-MW-DUP02-062014	2X
DSY-MW02A-0614	3X
DSY-MW03-0614	5X
DSY-MW08-0614	10X
DSY-MW11B-0614	2X
DSY-MW12-0614	3X
DSY-MW204-0614	5X
DSY-MW218-0614	3X
DSY-MW220-0614	3X
DSY-MW221-0614	2X
DSY-MW222-0614	2X

Samples for TOC were collected on a later date from the other miscellaneous parameters for samples DSY-MW220-0614, DSY-MW221-0614, and DSY-MW222-0614.

Detected results reported above the MDL but below the Practical Quantitation Limit (PQL) were qualified as estimated, (J). Non-detected results are reported to the LOD.

EXECUTIVE SUMMARY

Laboratory Performance: Blank contamination was noted in the laboratory method and preparation blanks.

Other Factors Affecting Data Quality: The MS and/or MSD samples had noncompliant %Rs and a RPD in the miscellaneous fractions.

The data for these analyses were accomplished with reference to the criteria for the "USEPA National Functional Guidelines for Inorganic Data Validation" (January 2010), and the Department of Defense (DOD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013).

Tetra Tech, Inc.
Michelle L. Allen
Environmental Chemist

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Regional Worksheets
4. Appendix D - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 04095	NSAMPLE	DSY-SB301-0001			DSY-SB302-0001			DSY-SB303-1213			DSY-SB304-0001		
SDG: N1023	LAB_ID	N1023-14A			N1023-16A			N1023-27A			N1023-17A		
FRACTION: M	SAMP_DATE	6/16/2014			6/16/2014			6/19/2014			6/16/2014		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		5	U		5	U		5	U		15.2		

PROJ_NO: 04095	NSAMPLE	DSY-SB306-0001			DSY-SB307-0.51.5			DSY-SB-DUP01-061614		
SDG: N1023	LAB_ID	N1023-28A			N1023-26A			N1023-18A		
FRACTION: M	SAMP_DATE	6/19/2014			6/19/2014			6/16/2014		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF							DSY-SB304-0001		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		5	U		5	U		25.4		

PROJ_NO: 04095	NSAMPLE	DSY-MW08-0614			DSY-MW104A-0614			DSY-MW104A-0614-DL			DSY-MW204-0614		
SDG: N1023	LAB_ID	N1023-02F			N1023-21B			N1023-21B			N1023-11E		
FRACTION: M	SAMP_DATE	6/12/2014			6/20/2014			6/20/2014			6/13/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		100	U		2000						87.7	J	P
ANTIMONY		15	U		15	U					15	U	
ARSENIC		5	U		5.2	J	P				5	U	
BARIUM		18.3	J	P	392						18.6	J	P
BERYLLIUM		1	U		1	U					1	U	
CADMIUM		1.5	U		1.5	U					1.5	U	
CALCIUM		74700			124000						54500		
CHROMIUM		1	U		10.7	J	P				1	U	
COBALT		1	U	A	12.4	J	P				1	U	
COPPER		5	U		54.6						5	U	
IRON		420			3830						81.6	J	P
LEAD		5	U		13.7						5	U	
MAGNESIUM		13700			30100						13000		
MANGANESE		458			7600						33.4	J	P
MERCURY		0.05	U		0.09	U	A				0.05	U	
NICKEL		1.3	U	A	46.5	J	P				2.9	J	P
POTASSIUM		7740			43300						2940		
SELENIUM		20	U		20	U					20	U	
SILVER		10	U		10	U					10	U	
SODIUM		273000						604000			80100		
THALLIUM		10	U		10	U					10	U	
VANADIUM		2	U		3.1	J	P				2	U	
ZINC		10.6	U	A	87.2						11.4	J	P

PROJ_NO: 04095	NSAMPLE	DSY-MW218-0614			DSY-MW219-0614			DSY-MW-DUP01-061214			DSY-MW-RB01-061314		
SDG: N1023	LAB_ID	N1023-07F			N1023-04F			N1023-05F			N1023-13B		
FRACTION: M	SAMP_DATE	6/12/2014			6/12/2014			6/12/2014			6/13/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							DSY-MW219-0614					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		100	U		100	U		100	U		100	U	
ANTIMONY		15	U		15	U		15	U		10.3	J	P
ARSENIC		155			106			115			5	U	
BARIUM		35.2	J	P	32.9	J	P	30.9	J	P	4.2	J	P
BERYLLIUM		1	U		1	U		1	U		1	U	
CADMIUM		1.5	U		1.5	U		1.5	U		1.5	U	
CALCIUM		90400			54800			57800			300	U	
CHROMIUM		1	U		1	U		1	U		1	U	
COBALT		17.4	J	P	11.2	J	P	11.5	J	P	0.82	J	P
COPPER		5	U		5	U		5	U		5	U	
IRON		56200			70800			76300			50	U	
LEAD		5	U		5	U		5	U		5	U	
MAGNESIUM		21700			10500			11200			100	U	
MANGANESE		6980			4830			5210			15	U	
MERCURY		0.05	U		0.05	U		0.05	U		0.05	U	
NICKEL		1.2	U	A	1	U		1	U		1	U	
POTASSIUM		11600			8650			9300			119	J	P
SELENIUM		20	U		20	U		20	U		20	U	
SILVER		10	U		10	U		10	U		10	U	
SODIUM		81400			38100			40900			271	J	P
THALLIUM		10	U		10	U		10	U		10	U	
VANADIUM		2	U		2	U		2	U		1.3	J	P
ZINC		7.5	U		7.5	U		7.5	U		7.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-SB-RB01-061714
SDG: N1023	LAB_ID	N1023-24B
FRACTION: M	SAMP_DATE	6/17/2014
MEDIA: WATER	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
ALUMINUM	100	U	
ANTIMONY	15	U	
ARSENIC	5	U	
BARIUM	3	U	
BERYLLIUM	1	U	
CADMIUM	1.5	U	
CALCIUM	300	U	
CHROMIUM	1	U	
COBALT	1	U	
COPPER	5	U	
IRON	50	U	
LEAD	5	U	
MAGNESIUM	100	U	
MANGANESE	15	U	
MERCURY	0.05	U	
NICKEL	1	U	
POTASSIUM	100	U	
SELENIUM	20	U	
SILVER	10	U	
SODIUM	122	J	P
THALLIUM	10	U	
VANADIUM	2	U	
ZINC	7.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW08-0614			DSY-MW104A-0614			DSY-MW104A-0614-DL			DSY-MW204-0614		
SDG: N1023	LAB_ID	N1023-02G			N1023-21C			N1023-21C			N1023-11F		
FRACTION: MF	SAMP_DATE	6/12/2014			6/20/2014			6/20/2014			6/13/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		100	U		100	U					100	U	
ANTIMONY		15	U		15	U					15	U	
ARSENIC		5	U		5	U					5	U	
BARIUM		18.5	J	P	253						21.7	J	P
BERYLLIUM		1	U		1	U					1	U	
CADMIUM		1.5	U		1.5	U					1.5	U	
CALCIUM		76900			108000						55900		
CHROMIUM		1	U		1	U					1	U	
COBALT		1	U		8.5	J	P				1	U	
COPPER		5	U		19.8	J	P				4	J	P
IRON		413			50	U					50	U	
LEAD		5	U		5	U					5	U	
MAGNESIUM		13900			24900						13500		
MANGANESE		502			6260						37.1	J	P
MERCURY		0.05	U		0.05	U					0.05	U	
NICKEL		1.2	U	A	31	J	P				3.3	J	P
POTASSIUM		7800			33200						3050		
SELENIUM		20	U		20	U					13.1	J	P
SILVER		10	U		10	U					10	U	
SODIUM		282000						472000			82400		
THALLIUM		10	U		10	U					10	U	
VANADIUM		2	U		2	U					1.2	J	P
ZINC		7.5	U	A	36.6	J	P				13	J	P

PROJ_NO: 04095	NSAMPLE	DSY-MW218-0614			DSY-MW219-0614			DSY-MW-DUP01-061214			DSY-MW-RB01-061314		
SDG: N1023	LAB_ID	N1023-07G			N1023-04G			N1023-05G			N1023-13C		
FRACTION: MF	SAMP_DATE	6/12/2014			6/12/2014			6/12/2014			6/13/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							DSY-MW219-0614					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALUMINUM		100	U		100	U		100	U		100	U	
ANTIMONY		15	U		15	U		15	U		15	U	
ARSENIC		134			94			97			5	U	
BARIUM		33.2	J	P	28.2	J	P	28.6	J	P	3	U	
BERYLLIUM		1	U		1	U		1	U		1	U	
CADMIUM		1.5	U		1.5	U		1.5	U		1.5	U	
CALCIUM		86900			55000			56500			300	U	
CHROMIUM		1	U		1	U		1	U		1	U	
COBALT		16.5	J	P	11.2	J	P	11.2	J	P	1	U	
COPPER		5	U		5	U		5	U		5	U	
IRON		53400			70800			72000			50	U	
LEAD		5	U		5	U		5	U		5	U	
MAGNESIUM		20600			10600			10800			100	U	
MANGANESE		6770			4910			5010			15	U	
MERCURY		0.05	U		0.05	U		0.05	U		0.05	U	
NICKEL		1.3	U	A	1	U		1	U		1	U	
POTASSIUM		11300			8640			8850			119	J	P
SELENIUM		20	U		20	U		12.6	J	P	20	U	
SILVER		10	U		10	U		10	U		10	U	
SODIUM		79600			38100			39000			201	J	P
THALLIUM		10	U		10	U		10	U		10	U	
VANADIUM		2	U		2	U		2	U		2	U	
ZINC		7.5	U		7.5	U		7.5	U		7.5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW02A-0614			DSY-MW02A-0614-DL			DSY-MW03-0614			DSY-MW03-0614-DL		
SDG: N1023	LAB_ID	N1023-12B			N1023-12C			N1023-09B			N1023-09C		
FRACTION: MISC	SAMP_DATE	6/13/2014			6/13/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		140						20	U				
CHLORIDE					130						160		
NITRATE-N		0.042	U					1.4	J	D			
NITRITE-N		0.013	UJ	D				0.013	UJ	D			
SULFATE		40	J	D				23	J	D			
SULFIDE		0.29						0.03	U				
TOTAL ORGANIC CARBON		5	U					5	U				

PROJ_NO: 04095	NSAMPLE	DSY-MW08-0614			DSY-MW08-0614-DL			DSY-MW11B-0614			DSY-MW11B-0614-DL		
SDG: N1023	LAB_ID	N1023-02B			N1023-02D			N1023-22B			N1023-22C		
FRACTION: MISC	SAMP_DATE	6/12/2014			6/12/2014			6/20/2014			6/20/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		64						150					
CHLORIDE					510						81		
NITRATE-N		0.38						0.042	U				
NITRITE-N		0.013	U					0.013	U				
SULFATE		9.3						31					
SULFIDE		0.03	U					0.03	U				
TOTAL ORGANIC CARBON		5	U					5	U				

PROJ_NO: 04095	NSAMPLE	DSY-MW12-0614			DSY-MW12-0614-DL			DSY-MW204-0614			DSY-MW204-0614-DL		
SDG: N1023	LAB_ID	N1023-19B			N1023-19C			N1023-11B			N1023-11C		
FRACTION: MISC	SAMP_DATE	6/16/2014			6/16/2014			6/13/2014			6/13/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		100						49					
CHLORIDE					94						190		
NITRATE-N		0.042	U					2.3	J	D			
NITRITE-N		0.013	U					0.013	UJ	D			
SULFATE		27						25	J	D			
SULFIDE		0.03	U					0.03	U				
TOTAL ORGANIC CARBON		5	U					5	U				

PROJ_NO: 04095	NSAMPLE	DSY-MW218-0614			DSY-MW218-0614-DL			DSY-MW219-0614			DSY-MW220-0614		
SDG: N1023	LAB_ID	N1023-07B			N1023-07D			N1023-04B			N1023-06B		
FRACTION: MISC	SAMP_DATE	6/12/2014			6/12/2014			6/12/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		320						210			170		
CHLORIDE					130			47					
NITRATE-N		0.042	U					0.042	U		0.042	U	
NITRITE-N		0.013	U					0.013	U		0.013	U	
SULFATE		8.8						21			45		
SULFIDE		0.03	U					0.03	U		0.03	U	
TOTAL ORGANIC CARBON		12						12					

PROJ_NO: 04095	NSAMPLE	DSY-MW220-0614			DSY-MW220-0614-DL			DSY-MW221-0614					
SDG: N1023	LAB_ID	N1023-06B			N1023-06C			N1023-10B					
FRACTION: MISC	SAMP_DATE	6/13/2014			6/12/2014			6/12/2014			6/17/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY								31					
CHLORIDE					130								
NITRATE-N								0.42	J	D			
NITRITE-N								0.013	UJ	D			
SULFATE								36	J	D			
SULFIDE								0.03	U				
TOTAL ORGANIC CARBON		5	U								5	U	

PROJ_NO: 04095	NSAMPLE	DSY-MW221-0614-DL			DSY-MW222-0614						DSY-MW222-0614-DL		
SDG: N1023	LAB_ID	N1023-10C			N1023-03B						N1023-03C		
FRACTION: MISC	SAMP_DATE	6/12/2014			6/12/2014			6/13/2014			6/12/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY					190								
CHLORIDE		93									91		
NITRATE-N					1.2								
NITRITE-N					0.013	U							
SULFATE					23								
SULFIDE					0.03	U							
TOTAL ORGANIC CARBON								5	U				

PROJ_NO: 04095	NSAMPLE	DSY-MW-DUP01-061214			DSY-MW-DUP02-062014			DSY-MW-DUP02-062014-DL		
SDG: N1023	LAB_ID	N1023-05B			N1023-23B			N1023-23C		
FRACTION: MISC	SAMP_DATE	6/12/2014			6/20/2014			6/20/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM		
	UNITS	MG/L			MG/L			MG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF	DSY-MW219-0614			DSY-MW11B-0614			DSY-MW11B-0614		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ALKALINITY		210			160					
CHLORIDE		47						80		
NITRATE-N		0.042	U		0.042	U				
NITRITE-N		0.013	U		0.013	U				
SULFATE		21			32					
SULFIDE		0.03	U		0.03	U				
TOTAL ORGANIC CARBON		12			5	U				

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW-DUP01-061214

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-05

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	115			P	4.3	5.0	20.0
7440-39-3	Barium	30.9	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	57800			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	11.5	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	76300			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	11200			P	76.0	100	500
7439-96-5	Manganese	5210			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	9300			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	40900			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW-RB01-061314

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-13

Level (low/med): MED Date Received: 06/13/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	10.3	B		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	4.2	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	300	U		P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	0.82	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	50	U		P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	100	U		P	76.0	100	500
7439-96-5	Manganese	15	U		P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	119	B		P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	271	B		P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	1.3	B		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW08-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-02

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	18.3	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	74700			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	0.89	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	420			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	13700			P	76.0	100	500
7439-96-5	Manganese	458			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1.3	B		P	0.85	1.0	50.0
7440-09-7	Potassium	7740			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	273000			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	10.6	B		P	4.9	7.5	50.0

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW104A-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-21

Level (low/med): MED Date Received: 06/20/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	2000			P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5.2	B		P	4.3	5.0	20.0
7440-39-3	Barium	392			P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	124000			P	110	300	800
7440-47-3	Chromium	10.7	B		P	0.64	1.0	20.0
7440-48-4	Cobalt	12.4	B		P	0.67	1.0	50.0
7440-50-8	Copper	54.6			P	3.6	5.0	30.0
7439-89-6	Iron	3830			P	31.0	50.0	200
7439-92-1	Lead	13.7			P	4.2	5.0	10.0
7439-95-4	Magnesium	30100			P	76.0	100	500
7439-96-5	Manganese	7600			P	10.0	15.0	50.0
7439-97-6	Mercury	0.090	B		CV	0.028	0.050	0.20
7440-02-0	Nickel	46.5	B		P	0.85	1.0	50.0
7440-09-7	Potassium	43300			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	604000			P	580	2000	20000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	3.1	B		P	1.1	2.0	50.0
7440-66-6	Zinc	87.2			P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW204-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-11

Level (low/med): MED Date Received: 06/13/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	87.7	B		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	18.6	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	54500			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	1	U		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	81.6	B		P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	13000			P	76.0	100	500
7439-96-5	Manganese	33.4	B		P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	2.9	B		P	0.85	1.0	50.0
7440-09-7	Potassium	2940			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	80100			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	11.4	B		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW218-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-07

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	155			P	4.3	5.0	20.0
7440-39-3	Barium	35.2	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	90400			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	17.4	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	56200			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	21700			P	76.0	100	500
7439-96-5	Manganese	6980			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1.2	B		P	0.85	1.0	50.0
7440-09-7	Potassium	11600			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	81400			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW219-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-04

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	106			P	4.3	5.0	20.0
7440-39-3	Barium	32.9	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	54800			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	11.2	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	70800			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	10500			P	76.0	100	500
7439-96-5	Manganese	4830			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	8650			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	38100			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB-RB01-061714

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-24

Level (low/med): MED Date Received: 06/20/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	3	U		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	300	U		P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	1	U		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	50	U		P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	100	U		P	76.0	100	500
7439-96-5	Manganese	15	U		P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	100	U		P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	122	B		P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB-DUP01-061614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-18

Level (low/med): MED Date Received: 06/17/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	25.4			P	4.2	5.0	10.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB301-0001

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-14

Level (low/med): MED Date Received: 06/17/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	5	U		P	4.2	5.0	10.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB302-0001

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-16

Level (low/med): MED Date Received: 06/17/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	5	U		P	4.2	5.0	10.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB303-1213

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-27

Level (low/med): MED Date Received: 06/20/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	5	U		P	4.2	5.0	10.0

Comments:

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB304-0001

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-17

Level (low/med): MED Date Received: 06/17/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	15.2			P	4.2	5.0	10.0

Comments:

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB306-0001

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-28

Level (low/med): MED Date Received: 06/20/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	5	U		P	4.2	5.0	10.0

Comments:

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-SB307-0.51.5

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Lab Sample ID: N1023-26

Level (low/med): MED Date Received: 06/20/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7439-92-1	Lead	5	U		P	4.2	5.0	10.0

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW-DUP01-061214

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-05

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	97.0			P	4.3	5.0	20.0
7440-39-3	Barium	28.6	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	56500			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	11.2	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	72000			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	10800			P	76.0	100	500
7439-96-5	Manganese	5010			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	8850			P	76.0	100	1000
7782-49-2	Selenium	12.6	B		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	39000			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW-RB01-061314

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-13

Level (low/med): MED Date Received: 06/13/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	3	U		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	300	U		P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	1	U		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	50	U		P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	100	U		P	76.0	100	500
7439-96-5	Manganese	15	U		P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	119	B		P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	201	B		P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW08-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-02

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	18.5	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	76900			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	1	U		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	413			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	13900			P	76.0	100	500
7439-96-5	Manganese	502			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1.2	B		P	0.85	1.0	50.0
7440-09-7	Potassium	7800			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	282000			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	6.1	B		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

DSY-MW104A-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-21

Level (low/med): MED Date Received: 06/20/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	253			P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	108000			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	8.5	B		P	0.67	1.0	50.0
7440-50-8	Copper	19.8	B		P	3.6	5.0	30.0
7439-89-6	Iron	50	U		P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	24900			P	76.0	100	500
7439-96-5	Manganese	6260			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	31.0	B		P	0.85	1.0	50.0
7440-09-7	Potassium	33200			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	472000			P	580	2000	20000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	36.6	B		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW204-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-11

Level (low/med): MED Date Received: 06/13/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	5	U		P	4.3	5.0	20.0
7440-39-3	Barium	21.7	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	55900			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	1	U		P	0.67	1.0	50.0
7440-50-8	Copper	4.0	B		P	3.6	5.0	30.0
7439-89-6	Iron	50	U		P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	13500			P	76.0	100	500
7439-96-5	Manganese	37.1	B		P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	3.3	B		P	0.85	1.0	50.0
7440-09-7	Potassium	3050			P	76.0	100	1000
7782-49-2	Selenium	13.1	B		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	82400			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	1.2	B		P	1.1	2.0	50.0
7440-66-6	Zinc	13.0	B		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW218-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-07

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	134			P	4.3	5.0	20.0
7440-39-3	Barium	33.2	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	86900			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	16.5	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	53400			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	20600			P	76.0	100	500
7439-96-5	Manganese	6770			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1.3	B		P	0.85	1.0	50.0
7440-09-7	Potassium	11300			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	79600			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

DSY-MW219-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Lab Sample ID: N1023-04

Level (low/med): MED Date Received: 06/12/2014

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	MDL	LOD	PQL
7429-90-5	Aluminum	100	U		P	66.0	100	200
7440-36-0	Antimony	15	U		P	9.3	15.0	20.0
7440-38-2	Arsenic	94.0			P	4.3	5.0	20.0
7440-39-3	Barium	28.2	B		P	1.1	3.0	200
7440-41-7	Beryllium	1	U		P	0.26	1.0	5.0
7440-43-9	Cadmium	1.5	U		P	0.89	1.5	5.0
7440-70-2	Calcium	55000			P	110	300	800
7440-47-3	Chromium	1	U		P	0.64	1.0	20.0
7440-48-4	Cobalt	11.2	B		P	0.67	1.0	50.0
7440-50-8	Copper	5	U		P	3.6	5.0	30.0
7439-89-6	Iron	70800			P	31.0	50.0	200
7439-92-1	Lead	5	U		P	4.2	5.0	10.0
7439-95-4	Magnesium	10600			P	76.0	100	500
7439-96-5	Manganese	4910			P	10.0	15.0	50.0
7439-97-6	Mercury	0.05	U		CV	0.028	0.050	0.20
7440-02-0	Nickel	1	U		P	0.85	1.0	50.0
7440-09-7	Potassium	8640			P	76.0	100	1000
7782-49-2	Selenium	20	U		P	12.0	20.0	30.0
7440-22-4	Silver	10	U		P	6.9	10.0	30.0
7440-23-5	Sodium	38100			P	29.0	100	1000
7440-28-0	Thallium	10	U		P	6.2	10.0	20.0
7440-62-2	Vanadium	2	U		P	1.1	2.0	50.0
7440-66-6	Zinc	7.5	U		P	4.9	7.5	50.0

Comments:

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW-DUP01-061214
Lab ID: N1023-05
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 13:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	210		20	mg/L CaCO3	1	06/19/2014 13:01	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:07	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	47		2.0	mg/L	1	06/13/2014 1:11	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 1:11	77535
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/13/2014 1:11	77535
Sulfate	21		5.0	mg/L	1	06/13/2014 1:11	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	12		10	mg/L	1	06/17/2014 14:02	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW-DUP02-062014
Lab ID: N1023-23
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/20/14 12:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	160		20	mg/L CaCO3	1	06/23/2014 13:31	77720
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/26/2014 9:12	77800
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	80		4.0	mg/L	2	06/21/2014 14:11	77700
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/21/2014 13:24	77700
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/21/2014 13:24	77700
Sulfate	32		5.0	mg/L	1	06/21/2014 13:24	77700
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/25/2014 14:23	77770

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW02A-0614
Lab ID: N1023-12
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/13/14 0:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	140		20	mg/L CaCO3	1	06/19/2014 15:00	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	0.29		0.030	mg/L	1	06/16/2014 15:26	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	130		6.0	mg/L	3	06/18/2014 1:10	77559
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 19:29	77559
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/13/2014 19:29	77559
Sulfate	40		5.0	mg/L	1	06/13/2014 19:29	77559
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 17:31	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW03-0614
Lab ID: N1023-09
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 16:47

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	ND		20	mg/L CaCO3	1	06/19/2014 13:46	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:14	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	160		10	mg/L	5	06/18/2014 0:11	77559
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 18:30	77559
Nitrogen, Nitrate (As N)	1.4		0.13	mg/L	1	06/13/2014 18:30	77559
Sulfate	23		5.0	mg/L	1	06/13/2014 18:30	77559
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 18:28	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW08-0614
Lab ID: N1023-02
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 10:02

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	64		20	mg/L CaCO3	1	06/19/2014 12:17	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:55	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	510		20	mg/L	10	06/13/2014 13:00	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 0:36	77535
Nitrogen, Nitrate (As N)	0.38		0.13	mg/L	1	06/13/2014 0:36	77535
Sulfate	9.3		5.0	mg/L	1	06/13/2014 0:36	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 13:05	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW11B-0614
Lab ID: N1023-22
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/20/14 8:57

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	150		20	mg/L CaCO3	1	06/23/2014 13:23	77720
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/26/2014 9:09	77800
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	81		4.0	mg/L	2	06/21/2014 13:59	77700
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/21/2014 13:12	77700
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/21/2014 13:12	77700
Sulfate	31		5.0	mg/L	1	06/21/2014 13:12	77700
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/25/2014 14:02	77770

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW12-0614
Lab ID: N1023-19
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/16/14 17:17

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	100		20	mg/L CaCO3	1	06/19/2014 15:15	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/19/2014 16:52	77677
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	94		6.0	mg/L	3	06/17/2014 17:20	77622
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/17/2014 16:45	77622
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/17/2014 16:45	77622
Sulfate	27		5.0	mg/L	1	06/17/2014 16:45	77622
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 18:49	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW204-0614
Lab ID: N1023-11
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/13/14 10:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	49		20	mg/L CaCO3	1	06/19/2014 14:15	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:19	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	190		10	mg/L	5	06/18/2014 0:35	77559
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 18:53	77559
Nitrogen, Nitrate (As N)	2.3		0.13	mg/L	1	06/13/2014 18:53	77559
Sulfate	25		5.0	mg/L	1	06/13/2014 18:53	77559
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 16:29	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW218-0614
Lab ID: N1023-07
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 14:07

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	320		20	mg/L CaCO3	1	06/19/2014 13:31	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:12	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	130		6.0	mg/L	3	06/13/2014 13:35	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 1:35	77535
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/13/2014 1:35	77535
Sulfate	8.8		5.0	mg/L	1	06/13/2014 1:35	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	12		10	mg/L	1	06/17/2014 18:09	77607

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW219-0614
Lab ID: N1023-04

Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 12:27

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	210		20	mg/L CaCO3	1	06/19/2014 12:46	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:04	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	47		2.0	mg/L	1	06/13/2014 1:00	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 1:00	77535
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/13/2014 1:00	77535
Sulfate	21		5.0	mg/L	1	06/13/2014 1:00	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	12		10	mg/L	1	06/17/2014 13:43	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW220-0614
Lab ID: N1023-06

Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/13/14 11:50

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	170		20	mg/L CaCO3	1	06/19/2014 13:16	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:09	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	130		6.0	mg/L	3	06/13/2014 13:23	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 1:23	77535
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/13/2014 1:23	77535
Sulfate	45		5.0	mg/L	1	06/13/2014 1:23	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 14:21	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW220-0614
Lab ID: N1023-06

Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 14:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	170		20	mg/L CaCO3	1	06/19/2014 13:16	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:09	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	130		6.0	mg/L	3	06/13/2014 13:23	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 1:23	77535
Nitrogen, Nitrate (As N)	ND		0.13	mg/L	1	06/13/2014 1:23	77535
Sulfate	45		5.0	mg/L	1	06/13/2014 1:23	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 14:21	77607

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW221-0614
Lab ID: N1023-10
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/17/14 16:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	31		20	mg/L CaCO3	1	06/19/2014 14:01	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:16	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	93		4.0	mg/L	2	06/18/2014 0:23	77559
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 18:42	77559
Nitrogen, Nitrate (As N)	0.42		0.13	mg/L	1	06/13/2014 18:42	77559
Sulfate	36		5.0	mg/L	1	06/13/2014 18:42	77559
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/25/2014 13:44	77770

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW221-0614
Lab ID: N1023-10
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 0:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	31		20	mg/L CaCO3	1	06/19/2014 14:01	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:16	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	93		4.0	mg/L	2	06/18/2014 0:23	77559
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 18:42	77559
Nitrogen, Nitrate (As N)	0.42		0.13	mg/L	1	06/13/2014 18:42	77559
Sulfate	36		5.0	mg/L	1	06/13/2014 18:42	77559
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/25/2014 13:44	77770

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW222-0614
Lab ID: N1023-03
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/12/14 10:20

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	190		20	mg/L CaCO3	1	06/19/2014 12:32	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:57	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	91		4.0	mg/L	2	06/13/2014 13:11	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 0:48	77535
Nitrogen, Nitrate (As N)	1.2		0.13	mg/L	1	06/13/2014 0:48	77535
Sulfate	23		5.0	mg/L	1	06/13/2014 0:48	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 13:24	77607

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Client: Tetra Tech, Inc.
Client Sample ID: DSY-MW222-0614
Lab ID: N1023-03
Project: CTO-165, NAVSTA-NEWPORT
Collection Date: 06/13/14 11:25

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SM 2320B -- Alkalinity (Total)							**SM2320_W**
Alkalinity, Total (As CaCO3)	190		20	mg/L CaCO3	1	06/19/2014 12:32	77670
SM 4500D S- -- Total Sulfides by Methylene Blue Method							**SM4500_S-_W**
Sulfide	ND		0.030	mg/L	1	06/16/2014 15:57	77588
SW846 9056A -- Ion Chromotography							**SW9056_W**
Chloride	91		4.0	mg/L	2	06/13/2014 13:11	77535
Nitrogen, Nitrite (As N)	ND		0.13	mg/L	1	06/13/2014 0:48	77535
Nitrogen, Nitrate (As N)	1.2		0.13	mg/L	1	06/13/2014 0:48	77535
Sulfate	23		5.0	mg/L	1	06/13/2014 0:48	77535
SW846 9060A -- Total Organic Carbon by combustion							**SW9060_TOC_W**
Organic Carbon, Total	ND		10	mg/L	1	06/17/2014 13:24	77607

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

APPENDIX C

REGIONAL WORKSHEETS

EPA-NE - Data Validation Worksheet
INORG
Case: _____ SDG: SN1023

COMPLETE SDG FILE (CSF) AUDIT

Inorganic Parameters: TOTAL & DISS METALS / MISC

Missing Information	Date Lab Contacted	Date Received

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-I
Case: _____ SDG: _____ see DV letter

I. PRESERVATION AND HOLDING TIMES

Circle sample numbers with exceeded technical holding times or omitted preservation.
Circle all exceeded technical holding times.

Sample No.	Matrix	Pres. Code		Date Sampled	Metals		Hg		CN		Action
		Metals	CN		Date Analyzed	# of Days from Samp. to Analysis	Date Analyzed	# of Days from Samp. to Analysis	Date Analyzed	# of Days from Samp. to Analysis	

Preservation Code:
1. Cool (≤ 6°C)
2. pH < 2 with HNO_3
3. pH > 12 with NaOH
4. Room Temperature
5. Freeze
6. Reducing agent (for oxidants)
7. Treated for sulfides
8. Other - _____

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Sampler: _____ Company: _____ Contacted: Y N Date: _____

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-II
Case: _____ SDG: _____

II. ICP-MS TUNE

List all Tunes that are outside method QC acceptance criteria. Use a separate sheet if more than one instrument was used for sample analysis.

Method:_____Instrument ID: _____

Method QC acceptance criteria for mass calibration:_____

Method QC acceptance criteria for resolution check/peak width:_____ at_____% peak height.

Method QC acceptance criteria for % RSD:_____ per DV Letter

Analysis Date and Time	Analyte	Mass Calibration			Mass Resolution		% RSD of Absolute Signals	Analyte/Samples Affected	Action
		True Mass (amu)	Measured Mass (amu)	Absolute Difference of Masses (amu)	Peak Width (amu)	% Peak Height			

Comments:

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-III-C/D
Case: _____ SDG: _____

III. CALIBRATIONS

See DV letter

C. Initial and Continuing Calibration Verifications - List all ICV and CCV analyte recoveries that are outside the method QC acceptance criteria.

ICV method QC acceptance criteria: _____ CCV method QC acceptance criteria: _____

Date/Time	Instrument ID	Analyte	ICV/CCV #	% R	Samples Affected	Action

D. Quantitation Limit Check Standard - List all QL Check Standard analytes that are outside method QC acceptance criteria (for non-CLP methods).

QL Check Standard method QC acceptance criteria: _____

Date	Instr.	Analyte	QL Check Std. #	% R	Affected Range	Samples Affected	Action

Comments: _____

EPA-NE - Data Validation Worksheet
INORG-III-A/B
Case: _____ SDG: _____

III. CALIBRATIONS

see DV Letter

A. Initial Calibration - List all calibration correlation coefficients that are outside the method QC acceptance criteria and/or the y-intercept of the calibration curve that is >CRQL.

Calibration correlation QC acceptance criteria: _____ Calibration Type: _____

Date/Time	Instrument ID	Analyte	Correlation Coefficient.	y-Intercept	CRQL	Samples Affected	Action

B. Initial Calibration Standard Concentration Verifications – Review CLP Form 16-IN and list all calculated %Ds that are >30 of the true value of any non-zero standard.

Date/time	Instrument ID	Analyte	True Conc.	Found Conc.	%D	Samples Affected	Action

Comments: _____

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-IV-C.2
Case: _____ SDG: _____

IV. BLANKS

See DV Letter

C.2 Blank Actions - List the maximum concentrations of each analyte among all blanks associated with each sample.

Analyte	Type of Blank	Date Blank Originated	Max. Conc. (units)	MDL or (-MDL) (units)	CRQL or (-CRQL) (units)	10xCRQL	Samples Affected	Action

Comments:

Refer to EPA New England Data Review Program Supplemental guidance for blank contamination actions (Section 2.6).

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-IV-A/B
Case: _____ SDG: _____

IV. BLANKS - List the blank contamination and negative blank results below. see DV letter

Sampler: _____ Company: _____ Contacted: Y N Date: _____

A. Laboratory: Preparation (Method) and Calibration (Instrument) Blanks

Date Prepared	Date Analyzed	Blank Type (ICB/CCB#/Prep Blank)	Matrix	Instrument	Analyte	Concentration	Units

B. Field: Equipment (Rinsate) and Bottle Blanks

Date Sampled	Date Analyzed	Sample No. (Blank Type)	Matrix	Instrument	Analyte	Concentration	Units

Were the proper number of blanks analyzed at the proper frequency? Y N

For ICP MS - Are internal standard responses in all blanks within method QC acceptance criteria? Y N

Comments: _____

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-IV-C.1
Case: _____ SDG: _____
IV. BLANKS **C.1 Blank Contamination Worksheet**

Circle or list the highest concentration of each contaminant. See DV letter

Analyte	Date Analyzed	ICB	CCB							PBW	PBS	EB	BB	Max. Conc.	CRQL
			1	2	3	4	5	6	7						
Aluminum															
Antimony															
Arsenic															
Barium															
Beryllium															
Cadmium															
Calcium															
Chromium															
Cobalt															
Copper															
Iron															
Lead															
Magnesium															
Manganese															
Mercury															
Nickel															
Potassium															
Selenium															
Silver															
Sodium															
Thallium															
Vanadium															
Zinc															
Cyanide															

Validator: M. Allen Date: 7/6/14

EPA NE - Data Validation Worksheet
INORG-V-A
Case: _____ SDG: _____

V. A. ICP-AES INTERFERENCE CHECK SAMPLE - ICSAB

see DV Letter

List all analytes in the ICSAB that are outside ICSAB recovery of 80-120% or outside true value (TV) ± CRQL, whichever is greater.

Date	Analyte	%R	ICSAB Found Conc.	ICSAB True Value	Analyte CRQL	TV ± CRQL	Conc. of Interferents Observed in ICSAB (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: M. Allen

Date: 7/6/14

EPA NE - Data Validation Worksheet
INORG-V-B
Case: _____ SDG: _____

V. B. ICP-AES INTERFERENCE CHECK SAMPLE - ICSA

See DV Letter

List all analytes in the ICSA that are outside ICSA recovery of 80-120% or outside true value (TV) ± CRQL, whichever is greater.

Date	Analyte	%R	ICSA Found Conc.	ICSA True Value	Analyte CRQL	TV ± CRQL	Conc. of Interferents Observed in ICSA (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: M. Allen Date: 7/6/14

EPA NE - Data Validation Worksheet
INORG-VI-A
Case: _____ SDG: _____

VI. A. ICP-MS INTERFERENCE CHECK SAMPLE - ICSAB see DV letter

List all analytes in the ICSAB that are outside ICSAB recovery of 80-120% or outside true value (TV) ± 2xCRQL, whichever is greater.

Date	Analyte	%R	ICSAB Found Conc.	ICSAB True Value	Analyte CRQL	TV ± 2xCRQL	Conc. of Interferents Observed in ICSAB (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: M. Allen Date: 7/6/14

EPA NE - Data Validation Worksheet
INORG-VI-B
Case: _____ SDG: _____

VI. B. ICP-MS INTERFERENCE CHECK SAMPLE - ICSA

see DV letter

List all analytes in the ICSA that are outside ICSA recovery of 80-120% or outside true value (TV) ± 2xCRQL, whichever is greater.

Date	Analyte	%R	ICSA Found Conc.	ICSA True Value	Analyte CRQL	TV ± 2xCRQL	Conc. of Interferents Observed in ICSA (ug/L)				Associated Samples	Action
							Al	Ca	Fe	Mg		
Comments:												

Validator: M. Allen

Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-VII
Case: _____ SDG: _____

VII. ICP-MS INTERNAL STANDARDS

List all internal standards that are outside method QC acceptance criteria.

Method: _____ Method QC acceptance criteria: All DV Letter

Sample Number	Date and Time Analyzed	IS, amu	% RI	Analytes Affected (amu)	Action
Comments:					

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-VIII
Case: _____ SDG: _____

VIII. MATRIX SPIKES - List all matrix spike analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each matrix spike sample.

Sample No.: _____ Matrix: _____ see DV Letter

Method	Analyte	Spiked Sample Result	Sample Result	Amount of Spike Added	MS % Recovery	Method QC Limits % Recovery	Post-Digest Spike % Recovery	Action
Comments:								

Refer to EPA New England Data Review Program Supplemental guidance for additional matrix spike actions (Section 2.12).

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-IX
Case: _____ SDG: _____

IX. LABORATORY DUPLICATE SAMPLES - List all analytes that are outside method QC acceptance criteria for the specific matrix.

Use a separate worksheet for each laboratory duplicate sample.

Sample No.:_____ Duplicate Sample No.: See DV letter Matrix:_____

Laboratory duplicate sample method QC acceptance criteria:_____

Method	Analyte	Sample Conc.	Sample		Duplicate Conc.	Duplicate		RPD or Abs. Diff.	QC Acceptance Criteria (RPD or Abs. Diff.)	Action
			SQL	5xSQL		SQL	5xSQL			

Do the field duplicate sample data indicate acceptable field precision? Y N

Comments:_____

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-X
Case: _____ SDG: _____

X. FIELD DUPLICATES - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample No.: _____ Duplicate Sample No.: ALL DV Letter Matrix: _____

Method	Analyte	Sample Conc.	Sample		Duplicate Conc.	Duplicate		RPD or Abs. Diff.	QC Acceptance Criteria (RPD or Abs. Diff.)	Action
			SQL	5xSQL		SQL	5xSQL			

Do the laboratory duplicate sample data indicate acceptable laboratory precision? Y N
Refer to EPA New England Data Review Program Supplemental guidance for field duplicate actions (Section 2.9).

Comments: _____

Sampler Name: _____ Contractor Name: _____ Date Contacted: _____

Reason for contact and resolution obtained: _____

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-XI
Case: _____ SDG: _____

XI. ICP SERIAL DILUTIONS

Use a separate worksheet for each serial dilution sample.

Sample No.:_____ Matrix:_____ Method:_____

List all serial dilution analytes that are outside method QC acceptance criteria.

% Difference method QC acceptance criteria: See DV letter
Minimum concentration required to apply the % D criteria (e.g., 50x MDL): _____

Analyte	MDL	Min. Conc. Required	Sample Result	Serial Dilution Sample Result (corrected for dilution)	% D	Action
Comments:						

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-XII
Case: _____ SDG: _____

XII. LABORATORY CONTROL SAMPLES

List all analytes that are outside criteria.

SDG No.:_____ Case:_____ see DV Letter

Are more than one-half of the LCS analytes within criteria for each parameter and method? **Y** **N**

Date Prepared	Date Analyzed	Parameter/ Method	Matrix	Analyte	% Recovery (or Observed Conc.)	Method QC Acceptance Criteria	Samples Affected	Action

Comments:

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet
INORG-XIII
Case: _____ SDG: _____

XIII. PERFORMANCE EVALUATION SAMPLES

List all analytes that are outside criteria.

Indicate the source of the PES: Region 1 EPA PES Non-EPA PES see DV letter

Are more than one-half of the PES analytes within criteria for each parameter and method? **Y** **N**

PE Sample Number	Ampule Number	Parameter/ Method	Type of PES	Matrix	Analyte	Conc.	PES Score*	Samples Affected	Action

* For Region I PESs indicate the Region I PES Score Report Result: Action High, Action Low, Analyte Missed, Contaminant.
For Non-EPA PESs indicate the Non-EPA PES Score: PES Analyte Missed; PES Analyte Contaminant; PES Analyte Hit (% Recovery Limits).
Refer to EPA New England Data Review Program Supplemental guidance for EPA PES and actions (Section 2.7).

Comments: _____

Validator: M. Allen Date: 7/6/14

EPA-NE - Data Validation Worksheet

INORG-XIV

Case: _____ SDG: _____

XIV. ANALYTE QUANTITATION, REPORTED QUANTITATION LIMITS AND % SOLIDS

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per analytical method

Do all soil/sediment samples have % solids greater than 30%? Y N All DV Letter

- If no, were any steps employed to address the high moisture content? _____
- Indicate the action and list the affected sample nos.: _____

Refer to EPA New England Data Review Supplemental Program guidance for actions related to %solids (Section 2.10).

Method		Calculation
ICP-AES		
Sample No.:		
Reported Analyte:		
Reported Value:		
Non-Detected Analyte:		
Reported Quantitation Limit:		
ICP-MS		
Sample No.:		
Reported Analyte:		
Reported Value:		
Non-Detected Analyte:		
Reported Quantitation Limit:		
Mercury		
Sample No.:		
Reported Value:		
Sample No.:		
Reported Quantitation Limit:		
Cyanide		
Sample No.:		
Reported Value:		
Sample No.:		
Reported Quantitation Limit:		

Validator: M. Allen Date: 7/6/14

APPENDIX D

SUPPORT DOCUMENTATION

N1023

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 Almgren Drive, Agawam, MA 01001, (413) 789-9018
☐ 8405 Benjamin Road, Ste A, Tampa, FL 33634, (813) 888-9507
☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Indicate Date Needed: 7day
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502

Telephone #: 757-466-4904
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO 165
Site Name: NAVSTA Newport Site 19
Location: Site 19 Newport State: RI
Sampler(s): Jacob Birkett Peter Seward

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= H_3PO_4 12= Zn NaOH

List preservative code below: 2 | 4 | 4 | – | – | 12 | 11 | 2

QA/QC Reporting Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	TCL VOCs	Analyses: Total Metals (Field Filtered) Dissolved Metals	PAHs	Alkalinity / Ion Chromat.	Total Sulfides	Total Organic Carbon	Dissolved Gases (Methane, Ethane, Ethene)	
V1023 - 01	DSY-TB01-061214	6-12-14	0910	–	QA	2	1	1		2	1 –	–	1	1	1	1	Trip Blank
- 02	DSY-MW08-0614	6-12-14	1002	G	GW	5	2	4	4	2	1 1	2	1	1	1	2	
- 03	DSY-MW222-0614	6-12-14	1020	G	GW	5	1	1	2	2	– –	–	1	1	①	2	
- 04	DSY-MW219-0614	6-12-14	1227	G	GW	5	2	-	4	2	1 1	2	1	1	1	2	
- 05	DSY-MW-Dup01-061214	6-12-14	1300	G	GW	5	2	-	4	2	1 1	2	1	1	1	2	Duplicate
- 06	DSY-MW220-0614	6-12-14	1410	G	GW	5	-	-	2	2	– –	–	1	1	①	2	
- 07	DSY-MW218-0614	6-12-14	1407	G	GW	5	2	-	4	2	1 1	2	1	1	1	2	

6-12-14

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-12-14	1500	24°c, 52°F

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☑ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Page 9 of 1482

Revised Feb 2013

N1023

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 Almgren Drive, Agawam, MA 01001, (413) 789-9018
☐ 8405 Benjamin Road, Ste A, Tampa, FL 33634, (813) 888-9507
☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Indicate Date Needed: 7 day
· All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
· Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502
Telephone #: 757-466-4904
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO 165
Site Name: NAVSTA Newport ✓ Site 19
Location: Site 19 Newport State: RI
Sampler(s): Jacob Birkett

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= H_3PO_4 12= Zn NaOH

List preservative code below: 2 4 4 – – 12 11 2

QA/QC Reporting Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	—	Analyses: TCL VOCs	Total Metals	Total Metals (Field Filtered) Dissolved Metals	PAHs	Alkalinity/Anions	Total Sulfides	Total Organic Carbon	Dissolved Gases (RSK 175)	QA/QC Reporting Level
08	DSY-TB02-061214	6-12-14	1520	–	QA	2	–	–	–	–	2	–	–	–	–	–	–	–	Trip Blank
09	DSY-MW03-0614	6-12-14	1647	G	GW	4	–	–	2	–	2	–	–	–	1	1	1	2	No TOC will ship later
10	DSY-MW221-0614	6-12-14		G	GW	5	–	–	2	–	2	–	–	–	1	1	0	2	
11	DSY-MW204-0614	6-13-14	1000	G	GW	15	4	–	8	–	6	2	2	4	2	2	3	6	Run MS MSD
	~~DSY-MW223-0614~~	~~6-13-14~~		~~G~~	~~GW~~	~~5~~	~~–~~	~~–~~	~~2~~	~~–~~	~~2~~	~~–~~			~~1~~	~~1~~	~~1~~	~~2~~	Did not sample
12	DSY-MW02A-0614	6-13-14		G	GW	5	–	–	2	–	2	–	–	–	1	1	1	2	
13	DSY-MW-RB01-061314	6-13-14	1330	G	GW	2	2	–	2	–	2	1	1	2	–	–	–	–	Rinsate Blank
06 14	DSY-MW220-0614	6-13-14	1150	G	GW	1	–	–	1	–	–	–	–	–	–	–	1	–	Replace earlier
03 15	DSY-MW222-0614	6-13-14	1125	G	GW	1	–	–	–	–	–	–	–	–	–	–	1	–	TOC sample from 6-12-14
WLC 06/19/14																			

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-13-14	1500	1.1°C / 1.0°C

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Page 10 of 1482

N1023

SPECTRUM ANALYTICAL, INC.
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Page 1 of 1

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☐ 8405 Benjamin Road, Ste A
Tampa, FL 33634
(813) 888-9507

☒ 646 Camp Avenue
N Kingstown, RI 02852
(401) 732-3400

Special Handling:

TAT- Ind icate Date Needed: 7 TAT
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502

Telephone #: 757-466-4908
Project Mgr. Ed Coiack

Invoice To: See Contract

P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO-165
Site Name: NAVSTA Newport Site 19
Location: Newport State: RI
Sampler(s): Jacob Birkett

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9= Deionized Water 10=H_3PO_4 11= H_3PO_4 12=Zn Acetate NaOH

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

List preservative code below:

\	\	2	2	11	\	12

Containers:

Analyses:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		SPLP Lead	Naphthalene	VOCs	Dissolved Gases MEE	TOC	Alkalinity and Anions	Total Sulfides	
14	DSY-SB301-0001	6-16-14	1350	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	
15	DSY-TB03-061614	6-16-14	1400	—	QA	2	—	—	—	—	—	—	2	—	—	—	—	Trip Blank
16	DSY-SB302-0001	6-16-14	1420	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	
17	DSY-SB304-0001	6-16-14	1525	G	SO	—	—	4	—	—	2	2	—	—	—	—	—	Run MSMSD
18	DSY-SB-Dup01-061614	6-16-14	1200	G	SO	—	—	2	—	—	1	1	—	—	—	—	—	
19	DSY-MW12-0614	6-16-14	1717	G	GW	5	—	—	2	—	—	—	2	2	1	1	1	

QA/QC Reporting Notes:

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____

State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-17-14	1500	3.2°c

☐ EDD Format _____
☐ E-mail to _____

DROP off

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Page 11 of 1482

N1023

SPECTRUM ANALYTICAL, INC.
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Page 1 of 1

CHAIN OF CUSTODY RECORD

☐ 11 Almgren Drive
Agawam, MA 01001
(413) 789-9018

☐ 8405 Benjamin Road, Ste A
Tampa, FL 33634
(813) 888-9507

~~☐~~ 646 Camp Avenue
N Kingstown, RI 02852
(401) 732-3400

Special Handling:

TAT- Ind icate Date Needed: 7 TAT

- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502

Telephone #: 757-466-4908
Project Mgr. Ed Corack

Invoice To: See Contract

P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO-165
Site Name: NAVSTA Newport Site 19
Location: Newport State: RI
Sampler(s): Jacob Birkett

1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= Deionized Water 10=H_3PO_4 11= Zn Acetate + NaOH 12= _____

List preservative code below:

2	2	10	—	11	—	4	4

QA/QC Reporting Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analyses: VOCs	Dissolved Gases MEE	TOC	Alkalinity and Anions	Total Sulfides	PAHs	Total Metals	Dissolved Metals	
20	DSY-TB04-062014	6-20-14	0700	—	QA	2	~~2~~	~~—~~	1	—	2	—	—	—	—	—	—	—	Trip Blank
21	DSY-MW104A0614	6-20-14	0725	G	GW	~~2~~ 4	~~2~~ 0	~~4~~ 0	~~2~~ —	—	2	40	D	D	D	Q	1	1	Well did not produce, only sampled VOCs and Metals
22	DSY-MW11B-0614	6-20-14	0857	G	GW	5	—	—	2	—	2	2	1	1	1	—	—	—	
23	DSY-MW-Dup02-062014	6-20-14	1200	G	GW	5	—	—	2	—	2	2	1	1	1	—	—	—	
	~~DSY-AQUEOUS-062014~~	~~6-20-14~~		~~C~~	~~GW~~														
		6-20-14																	

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-20-14	13:00	3.4°C

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____
State-specific reporting standards: _____

N1023

SPECTRUM ANALYTICAL, INC.
Featuring
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Page 1 of 1

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☒ 646 Camp Avenue, N Kingstown, RI 02852, (401) 732-3400

Special Handling:
TAT- Ind icate Date Needed: 7 TAT
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Tetra Tech
5700 Lake Wright Dr. Suite 309
Norfolk, VA 23502
Telephone #: 757-466-4908
Project Mgr. Ed Corack

Invoice To: See Contract
P.O. No.: _____ RQN: _____

Project No.: 112G04095 CTO-165
Site Name: NAVSTA Newport Site 19
Location: Newport State: RI
Sampler(s): Jacob Birkett

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= Zn Acetate NaOH 12= _____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

List preservative code below: / / 2 2 ½ / 11 / 4 4

QA/QC Reporting Notes:

QA/QC Reporting Level
☐ Level I ☐ Level II
☐ Level III ☐ Level IV
☐ Other _____
State-specific reporting standards: _____

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analyses: SPLP Lead	Naphthalene	VOCs	Dissolved Gases MEE	TOC	Alkalinity and Anions	Total Sulfides	PAHs	Total Metals	Dissolved Metals	
N1023																					
24	DSY-SB-RB01-061714	6-17-14	1530	~~QAG~~	QA	—	2	—	1	—	—	—	—	—	—	—	—	2	1	—	Rinsate Blank Lead and Naphthalene only
10-25	DSY-MW221-0614	6-17-14	1610	G	GW	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	TOC only
25 26	DSY-SB305-0305	6-19-14	0940	G	SO	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	
26 27	DSY-SB307-0.5 1.5	6-19-14	1030	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	
27 28	DSY-SB303-1213	6-19-14	1355	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	
28 29	DSY-SB306-0001	6-19-14	1820	G	SO	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	
WJL 06/20/14																					

6-19-14

Relinquished by:	Received by:	Date:	Time:	Temp°C
Jacob Birkett		6-19-14	1630	3.4 C
		6-20-14	13:00	

☐ EDD Format _____
☐ E-mail to _____

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Page 13 of 1482

NAVSTA NEWPORT
WATER DATA
N1023

FRACTION	CHEMICAL	DSY-MW-DUP01-061214	UNITS	DSY-MW219-0614	RPD	D
M	ARSENIC	115	UG/L	106	8.14	9.00
M	BARIUM	30.9	UG/L	32.9	6.27	2.00
M	CALCIUM	57800	UG/L	54800	5.33	3000.00
M	COBALT	11.5	UG/L	11.2	2.64	0.30
M	IRON	76300	UG/L	70800	7.48	5500.00
M	MAGNESIUM	11200	UG/L	10500	6.45	700.00
M	MANGANESE	5210	UG/L	4830	7.57	380.00
M	POTASSIUM	9300	UG/L	8650	7.24	650.00
M	SODIUM	40900	UG/L	38100	7.09	2800.00
MF	ARSENIC	97	UG/L	94	3.14	3.00
MF	BARIUM	29 J	UG/L	28 J	3.51	1.00
MF	CALCIUM	57000	UG/L	55000	3.57	2000.00
MF	COBALT	11 J	UG/L	11 J	0.00	0.00
MF	IRON	72000	UG/L	71000	1.40	1000.00
MF	MAGNESIUM	11000	UG/L	11000	0.00	0.00
MF	MANGANESE	5000	UG/L	4900	2.02	100.00
MF	POTASSIUM	8800	UG/L	8600	2.30	200.00
MF	SELENIUM PQL= 50	13 J	UG/L	ND	200.00	13.00 ✓
MF	SODIUM	39000	UG/L	38000	2.60	1000.00
MISC	ALKALINITY	210	MG/L	210	0.00	0.00
MISC	CHLORIDE	47	MG/L	47	0.00	0.00
MISC	SULFATE	21	MG/L	21	0.00	0.00
MISC	TOTAL ORGANIC CARBON	12	MG/L	12	0.00	0.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NAVSTA NEWPORT
WATER DATA
N1023

FRACTION	CHEMICAL	DSY-MW-DUP02-062014	UNITS	DSY-MW11B-0614	RPD	D
MISC	ALKALINITY	160	MG/L	150	6.45	10.00
MISC	SULFATE	32	MG/L	31	3.17	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NAVSTA NEWPORT
WATER DATA
N1023

FRACTION	CHEMICAL	SY-MW-DUP02-052014-D	UNITS	DSY-MW11B-0614-DL	RPD	D
MISC	CHLORIDE	80	MG/L	81	1.24	1.00

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NAVSTA NEWPORT
SOIL DATA
N1023

FRACTION	CHEMICAL		DSY-SB-DUP01-061614	UNITS	DSY-SB304-0001	RPD	D
M	LEAD	PQL = 10	25.4	UG/L	15.2	50.25	10.20 ✓

< 2x PQL

Current RPD Quality Control Limit: 50 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

Sequence No.: 18
Sample ID: N1023-24B~DSY-SB-RB01-061
Analyst:
Logged In Analyst (Original) : mitOptima3
Initial Sample Wt:
Dilution:

Autosampler Location: 44
Date Collected: 6/25/2014 12:35:49 PM
Data Type: Reprocessed on 6/27/2014 11:08:06 AM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: N1023-24B~DSY-SB-RB01-061

Analyte	Mean Corrected Intensity	Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Y 360.073	1727577.2	100.28	%	0.871				0.87%
Lu 261.542	1060104.0	100.5	%	0.91				0.91%
Ag 328.068†	-63.0	-0.00043	mg/L	0.000110	-0.00043	mg/L	0.000110	25.57%
Al 308.215†	179.4	0.00930	mg/L	0.006795	0.00930	mg/L	0.006795	73.05%
As 188.979†	0.4	0.00047	mg/L	0.003168	0.00047	mg/L	0.003168	680.20%
Ba 233.527†	13.3	0.00018	mg/L	0.000091	0.00018	mg/L	0.000091	52.14%
Be 313.107†	41.7	0.00002	mg/L	0.000025	0.00002	mg/L	0.000025	120.27%
Co 228.616†	2.6	0.00010	mg/L	0.000188	0.00010	mg/L	0.000188	196.65%
Cr 267.716†	22.0	0.00037	mg/L	0.000210	0.00037	mg/L	0.000210	57.10%
Cu 324.752†	151.5	0.00069	mg/L	0.000499	0.00069	mg/L	0.000499	71.90%
Fe 273.955†	136.9	0.00671	mg/L	0.000346	0.00671	mg/L	0.000346	5.15%
Mg 279.077†	41.9	0.00311	mg/L	0.000408	0.00311	mg/L	0.000408	13.11%
Mn 257.610†	685.0	0.00134	mg/L	0.000217	0.00134	mg/L	0.000217	16.27%
Ni 231.604†	4.2	0.00021	mg/L	0.000144	0.00021	mg/L	0.000144	70.14%
Pb 220.353†	0.7	0.00019	mg/L	0.001121	0.00019	mg/L	0.001121	605.72%
Sb 206.836†	3.9	0.00319	mg/L	0.001730	0.00319	mg/L	0.001730	54.18%
Se 196.026†	3.8	0.00697	mg/L	0.003014	0.00697	mg/L	0.003014	43.22%
Tl 190.801†	-1.8	-0.00187	mg/L	0.002053	-0.00187	mg/L	0.002053	109.93%
V 292.402†	-30.0	-0.00028	mg/L	0.000196	-0.00028	mg/L	0.000196	68.73%
Zn 206.200†	45.8	0.00237	mg/L	0.000151	0.00237	mg/L	0.000151	6.40%
Cd 226.502†	-2.4	-0.00007	mg/L	0.000047	-0.00007	mg/L	0.000047	64.46%
Ti 334.940†	29.1	0.00005	mg/L	0.000086	0.00005	mg/L	0.000086	167.86%
Ca 227.546†	-3.0	-0.01942	mg/L	0.057699	-0.01942	mg/L	0.057699	297.05%
Na 589.592	722.9	0.12175	mg/L	0.003835	0.12175	mg/L	0.003835	3.15%
K 766.490	34.0	0.01678	mg/L	0.036114	0.01678	mg/L	0.036114	215.16%

Sequence No.: 19
Sample ID: N1023-21B~DSY-MW104A 20X DF
Analyst:
Logged In Analyst (Original) : mitOptima3
Initial Sample Wt:
Dilution:

Autosampler Location: 35
Date Collected: 6/25/2014 12:39:28 PM
Data Type: Reprocessed on 6/27/2014 11:08:07 AM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: N1023-21B~DSY-MW104A 20X

Analyte	Mean Corrected Intensity	Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Y 360.073	1711013.3	99.315	%	1.1488				1.16%
Lu 261.542	1054994.0	100.0	%	1.07				1.07%
Ag 328.068†	-65.8	-0.00044	mg/L	0.000359	-0.00044	mg/L	0.000359	81.00%
Al 308.215†	1783.8	0.09109	mg/L	0.010999	0.09109	mg/L	0.010999	12.07%
As 188.979†	0.6	0.00079	mg/L	0.002821	0.00079	mg/L	0.002821	357.24%
Ba 233.527†	1463.6	0.01924	mg/L	0.000234	0.01924	mg/L	0.000234	1.22%
Be 313.107†	1.2	0.00000	mg/L	0.000020	0.00000	mg/L	0.000020	618.27%
Co 228.616†	15.2	0.00057	mg/L	0.000129	0.00057	mg/L	0.000129	22.72%
Cr 267.716†	43.5	0.00059	mg/L	0.000088	0.00059	mg/L	0.000088	14.96%
Cu 324.752†	525.2	0.00242	mg/L	0.000241	0.00242	mg/L	0.000241	9.97%
Fe 273.955†	3818.4	0.18718	mg/L	0.003064	0.18718	mg/L	0.003064	1.64%
Mg 279.077†	20753.9	1.5403	mg/L	0.02592	1.5403	mg/L	0.02592	1.68%
Mn 257.610†	198619.5	0.38751	mg/L	0.001033	0.38751	mg/L	0.001033	0.27%
Ni 231.604†	47.4	0.00229	mg/L	0.000340	0.00229	mg/L	0.000340	14.89%
Pb 220.353†	1.4	0.00044	mg/L	0.002545	0.00044	mg/L	0.002545	575.64%
Sb 206.836†	-1.1	-0.00099	mg/L	0.002089	-0.00099	mg/L	0.002089	210.00%
Se 196.026†	1.6	0.00276	mg/L	0.005574	0.00276	mg/L	0.005574	202.27%
Tl 190.801†	0.4	-0.00015	mg/L	0.002730	-0.00015	mg/L	0.002730	>999.9%
V 292.402†	1.0	0.00002	mg/L	0.000166	0.00002	mg/L	0.000166	813.53%
Zn 206.200†	83.8	0.00433	mg/L	0.000157	0.00433	mg/L	0.000157	3.63%

30.19 mg/L x 20 = 603.8 mg/L (604000 µg/L)

Cd 226.502†	1.8	0.00005	mg/L	0.000226	0.00005	mg/L	0.000226 491.63%
Ti 334.940†	828.4	0.00149	mg/L	0.000608	0.00149	mg/L	0.000608 40.74%
Ca 227.546†	849.9	5.5173	mg/L	0.08240	5.5173	mg/L	0.08240 1.49%
Na 589.592	179246.1	30.190	mg/L	0.3784	30.190	mg/L	0.3784 1.25%
K 766.490	4578.9	2.2587	mg/L	0.04698	2.2587	mg/L	0.04698 2.08%

Sequence No.: 20
Sample ID: N1023-21C~DSY-MW104A 20X
Analyst:
Logged In Analyst (Original) : mitOptima3
Initial Sample Wt:
Dilution:

Autosampler Location: 36
Date Collected: 6/25/2014 12:43:10 PM
Data Type: Reprocessed on 6/27/2014 11:08:08 AM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: N1023-21C~DSY-MW104A 20X

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Y 360.073	1708248.3	99.154	%	0.4510				0.45%
Lu 261.542	1053054.8	99.86	%	0.384				0.38%
Ag 328.068†	-37.8	-0.00026	mg/L	0.000156	-0.00026	mg/L	0.000156	60.52%
Al 308.215†	104.8	0.00424	mg/L	0.001614	0.00424	mg/L	0.001614	38.09%
As 188.979†	-0.7	-0.00082	mg/L	0.005796	-0.00082	mg/L	0.005796	706.42%
Ba 233.527†	968.0	0.01273	mg/L	0.000068	0.01273	mg/L	0.000068	0.53%
Be 313.107†	-1.3	0.00000	mg/L	0.000017	0.00000	mg/L	0.000017	>999.9%
Co 228.616†	10.3	0.00039	mg/L	0.000169	0.00039	mg/L	0.000169	43.49%
Cr 267.716†	4.5	-0.00004	mg/L	0.000114	-0.00004	mg/L	0.000114	256.94%
Cu 324.752†	192.8	0.00088	mg/L	0.000097	0.00088	mg/L	0.000097	11.00%
Fe 273.955†	-78.6	-0.00412	mg/L	0.000413	-0.00412	mg/L	0.000413	10.03%
Mg 279.077†	17183.0	1.2752	mg/L	0.00609	1.2752	mg/L	0.00609	0.48%
Mn 257.610†	167988.4	0.32775	mg/L	0.000350	0.32775	mg/L	0.000350	0.11%
Ni 231.604†	32.3	0.00156	mg/L	0.000336	0.00156	mg/L	0.000336	21.52%
Pb 220.353†	-2.1	-0.00051	mg/L	0.001384	-0.00051	mg/L	0.001384	270.17%
Sb 206.836†	0.3	0.00024	mg/L	0.001500	0.00024	mg/L	0.001500	620.05%
Se 196.026†	1.6	0.00261	mg/L	0.008546	0.00261	mg/L	0.008546	327.10%
Tl 190.801†	-1.1	-0.00156	mg/L	0.004514	-0.00156	mg/L	0.004514	288.99%
V 292.402†	-7.4	-0.00007	mg/L	0.000369	-0.00007	mg/L	0.000369	524.03%
Zn 206.200†	34.3	0.00177	mg/L	0.000031	0.00177	mg/L	0.000031	1.74%
Cd 226.502†	4.3	0.00013	mg/L	0.000225	0.00013	mg/L	0.000225	172.51%
Ti 334.940†	-98.3	-0.00016	mg/L	0.000057	-0.00016	mg/L	0.000057	36.17%
Ca 227.546†	760.4	4.9348	mg/L	0.03833	4.9348	mg/L	0.03833	0.78%
Na 589.592	139974.1	23.575	mg/L	0.3207	23.575	mg/L	0.3207	1.36%
K 766.490	3495.7	1.7244	mg/L	0.01991	1.7244	mg/L	0.01991	1.15%

Sequence No.: 21
Sample ID: N1023-21CSD~DSY-MW1 100X
Analyst:
Logged In Analyst (Original) : mitOptima3
Initial Sample Wt:
Dilution:

Autosampler Location: 37
Date Collected: 6/25/2014 12:46:52 PM
Data Type: Reprocessed on 6/27/2014 11:08:08 AM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: N1023-21CSD~DSY-MW1 100X

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Y 360.073	1711550.2	99.346	%	0.5277				0.53%
Lu 261.542	1051816.3	99.74	%	0.518				0.52%
Ag 328.068†	-81.2	-0.00055	mg/L	0.000183	-0.00055	mg/L	0.000183	33.15%
Al 308.215†	107.1	0.00532	mg/L	0.004006	0.00532	mg/L	0.004006	75.30%
As 188.979†	2.2	0.00278	mg/L	0.002781	0.00278	mg/L	0.002781	100.02%
Ba 233.527†	190.1	0.00250	mg/L	0.000038	0.00250	mg/L	0.000038	1.51%
Be 313.107†	20.0	0.00001	mg/L	0.000051	0.00001	mg/L	0.000051	512.88%
Co 228.616†	6.0	0.00022	mg/L	0.000116	0.00022	mg/L	0.000116	51.64%
Cr 267.716†	0.8	-0.00001	mg/L	0.000116	-0.00001	mg/L	0.000116	>999.9%
Cu 324.752†	1.3	0.00001	mg/L	0.000368	0.00001	mg/L	0.000368	>999.9%
Fe 273.955†	-106.5	-0.00529	mg/L	0.000076	-0.00529	mg/L	0.000076	1.44%
Mg 279.077†	3502.2	0.25990	mg/L	0.006414	0.25990	mg/L	0.006414	2.47%
Mn 257.610†	33867.2	0.06608	mg/L	0.000709	0.06608	mg/L	0.000709	1.07%
Ni 231.604†	8.1	0.00039	mg/L	0.000140	0.00039	mg/L	0.000140	35.78%
Pb 220.353†	-3.1	-0.00084	mg/L	0.001110	-0.00084	mg/L	0.001110	131.96%

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: JRB	Page 01 of 00
Reviewed By: KP	Log-in Date 06/12/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s)	Present / Absent
	Intact / Broken
2. Custody Seal Nos.	N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent
4. Airbill	AirBill / Sticker Present / Absent
5. Airbill No.	Courier 5.2
6. Sample Tags	Present / Absent
Sample Tag Numbers	Listed / Not Listed on Chain-of-Custody
7. Sample Condition	Intact / Broken / Leaking
8. Cooler Temperature Indicator Bottle	Present / Absent
9. Cooler Temperature	2.4 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/12/2014
12. Time Received	15:00

Sample Transfer	
Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-01						H	
N1023-02	<2			>12	<2	H	
N1023-03				>12	<2	H	
N1023-04	<2			>12	<2	H	
N1023-05	<2			>12	<2	H	
N1023-06				>12	<2	H	
N1023-07	<2			>12	<2	H	

VOA Matrix Key:

US = Unpreserved Soil — A= Air

UA = Unpreserved Aqueous — H = HCl

M = MeOH — E = Encore

N = NaHSO4 — F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: WJL	Page 01 of 00
Reviewed By: VRB	Log-in Date 06/13/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s)	Present / Absent
	Intact / Broken
2. Custody Seal Nos.	N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present / Absent
4. Airbill	AirBill / Sticker
	Present / Absent
5. Airbill No.	Drop Off N/A
6. Sample Tags	Present / Absent
Sample Tag Numbers	Listed / Not Listed on Chain-of-Custody
7. Sample Condition	Intact / Broken / Leaking
8. Cooler Temperature Indicator Bottle	Present / Absent
9. Cooler Temperature	1.6 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/13/2014
12. Time Received	15:00

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-03					<2		
N1023-06					<2		
N1023-08				>12	<2		
N1023-09				>12			
N1023-10				>12	<2		
N1023-11	<2			>12	<2		
N1023-12				>12	<2		
N1023-13	<2						

Sample Transfer

Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

VOA Matrix Key:

US = Unpreserved Soil	A= Air
UA = Unpreserved Aqueous	H = HCl
M = MeOH	E = Encore
N = NaHSO4	F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: WJW	Page 01 of 00
Reviewed By: JRB	Log-in Date 06/17/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s) — Present / Absent
   Intact / Broken
2. Custody Seal Nos. N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists — Present / Absent
4. Airbill — AirBill / Sticker
   Present / Absent
5. Airbill No. Drop Off N/A
6. Sample Tags — Present / Absent
   Sample Tag Numbers — Listed / Not Listed on Chain-of-Custody
7. Sample Condition — Intact / Broken / Leaking
8. Cooler Temperature Indicator Bottle — Present / Absent

9. Cooler Temperature	3.2 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/17/2014
12. Time Received	15:00

Sample Transfer

Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-14							
N1023-15						H	
N1023-16							
N1023-17							
N1023-18							
N1023-19				>12	<2	H	

VOA Matrix Key:

US = Unpreserved Soil — A= Air
UA = Unpreserved Aqueous — H = HCl
M = MeOH — E = Encore
N = NaHSO4 — F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

Received By: WJV	Page 01 of 00
Reviewed By: VRB	Log-in Date 06/20/2014
Work Order: N1023	Client Name: Tetra Tech, Inc.
Project Name/Event: CTO-165, NAVSTA-NEWPORT / 112G04095, N62472-03-D-0057	

Remarks: (1/2) Please see associated sample/extract transfer logbook pages submitted with this data package.

1. Custody Seal(s) — Present / Absent
   Intact / Broken
2. Custody Seal Nos. N/A
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists — Present / Absent
4. Airbill — AirBill / Sticker
   Present / Absent
5. Airbill No. Drop Off N/A
6. Sample Tags — Present / Absent
   Sample Tag Numbers — Listed / Not Listed on Chain-of-Custody
7. Sample Condition — Intact / Broken/ Leaking
8. Cooler Temperature Indicator Bottle — Present / Absent

9. Cooler Temperature	3.4 °C
10. Does information on TR/COCs and sample tags agree?	Yes / No
11. Date Received at Laboratory	06/20/2014
12. Time Received	13:00

Sample Transfer

Fraction (1) TVOA/VOA	Fraction (2) SVOA/PEST/ARO
Area #	Area #
By	By
On	On

IR Temp Gun ID:MT-74

CoolantCondition: ICE

Preservative Name/Lot No:

Lab Sample ID	Preservation (pH) HNO3	H2SO4	HCl	NaOH	H3PO4	VOA Matrix	Soil HeadSpace or Air Bubble > or equal to 1/4"
N1023-10					<2		
N1023-20						H	
N1023-21	<2					H	
N1023-22					<2	H	
N1023-23					<2	H	
N1023-24	<2						
N1023-25							
N1023-26							
N1023-27							
N1023-28							

VOA Matrix Key:

US = Unpreserved Soil — A= Air
UA = Unpreserved Aqueous — H = HCl
M = MeOH — E = Encore
N = NaHSO4 — F = Freeze

See Sample Condition Notification/Corrective Action Form Yes / No

Rad OK Yes / No

N1023

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** *DoD*

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-01A	DSY-TB01-061214	06/12/2014 09:10	06/12/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-02A	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	RSK175	/					VOA
N1023-02A	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-02B	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-02C	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,				Y	I2
N1023-02D	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SM2320_W	/					I2
N1023-02D	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-02E	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SM4500_S-_W	/					I2
N1023-02F	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW6010_W	/ TAL				Y	M6
N1023-02F	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW7470	/ TAL					M6
N1023-02G	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW6010_W	DISSOLVED / TAL;				Y	M6
N1023-02G	DSY-MW08-0614	06/12/2014 10:02	06/12/2014	Aqueous	SW7470	DISSOLVED / TAL;					M6
N1023-03A	DSY-MW222-0614	06/12/2014 10:20	06/12/2014	Aqueous	RSK175	/					VOA
N1023-03A	DSY-MW222-0614	06/12/2014 10:20	06/12/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-03B	DSY-MW222-0614	06/13/2014 11:25	06/13/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-03C	DSY-MW222-0614	06/12/2014 10:20	06/12/2014	Aqueous	SM2320_W	/					I2
N1023-03C	DSY-MW222-0614	06/12/2014 10:20	06/12/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-03D	DSY-MW222-0614	06/12/2014 10:20	06/12/2014	Aqueous	SM4500_S-_W	/					I2
N1023-04A	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	RSK175	/					VOA
N1023-04A	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW8260_W	/				Y	VOA

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Page 1 of 301

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** DoD

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-04B	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-04C	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,				Y	I2
N1023-04D	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SM2320_W	/					I2
N1023-04D	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-04E	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SM4500_S-_W	/					I2
N1023-04F	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW6010_W	/ TAL				Y	M6
N1023-04F	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW7470	/ TAL					M6
N1023-04G	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW6010_W	DISSOLVED / TAL;				Y	M6
N1023-04G	DSY-MW219-0614	06/12/2014 12:27	06/12/2014	Aqueous	SW7470	DISSOLVED / TAL;					M6
N1023-05A	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	RSK175	/					VOA
N1023-05A	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-05B	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-05C	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,				Y	I2
N1023-05D	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SM2320_W	/					I2
N1023-05D	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-05E	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SM4500_S-_W	/					I2
N1023-05F	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW6010_W	/ TAL				Y	M6
N1023-05F	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW7470	/ TAL					M6
N1023-05G	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW6010_W	DISSOLVED / TAL				Y	M6
N1023-05G	DSY-MW-DUP01-061214	06/12/2014 13:00	06/12/2014	Aqueous	SW7470	DISSOLVED / TAL					M6

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** *DoD*

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-06A	DSY-MW220-0614	06/12/2014 14:10	06/12/2014	Aqueous	RSK175	/					VOA
N1023-06A	DSY-MW220-0614	06/12/2014 14:10	06/12/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-06B	DSY-MW220-0614	06/13/2014 11:50	06/13/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-06C	DSY-MW220-0614	06/12/2014 14:10	06/12/2014	Aqueous	SM2320_W	/					I2
N1023-06C	DSY-MW220-0614	06/12/2014 14:10	06/12/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-06D	DSY-MW220-0614	06/12/2014 14:10	06/12/2014	Aqueous	SM4500_S-_W	/					I2
N1023-07A	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	RSK175	/					VOA
N1023-07A	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-07B	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-07C	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,				Y	I2
N1023-07D	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SM2320_W	/					I2
N1023-07D	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-07E	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SM4500_S-_W	/					I2
N1023-07F	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW6010_W	/ TAL				Y	M6
N1023-07F	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW7470	/ TAL					M6
N1023-07G	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW6010_W	DISSOLVED / TAL				Y	M6
N1023-07G	DSY-MW218-0614	06/12/2014 14:07	06/12/2014	Aqueous	SW7470	DISSOLVED / TAL					M6
N1023-08A	DSY-TB02-061214	06/12/2014 15:20	06/13/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-09A	DSY-MW03-0614	06/12/2014 16:47	06/13/2014	Aqueous	RSK175	/					VOA
N1023-09A	DSY-MW03-0614	06/12/2014 16:47	06/13/2014	Aqueous	SW8260_W	/				Y	VOA

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** *DoD*

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-09B	DSY-MW03-0614	06/12/2014 16:47	06/13/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-09C	DSY-MW03-0614	06/12/2014 16:47	06/13/2014	Aqueous	SM2320_W	/					I2
N1023-09C	DSY-MW03-0614	06/12/2014 16:47	06/13/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-09D	DSY-MW03-0614	06/12/2014 16:47	06/13/2014	Aqueous	SM4500_S-_W	/					I2
N1023-10A	DSY-MW221-0614	06/12/2014 00:00	06/13/2014	Aqueous	RSK175	/					VOA
N1023-10A	DSY-MW221-0614	06/12/2014 00:00	06/13/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-10B	DSY-MW221-0614	06/17/2014 16:10	06/20/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-10C	DSY-MW221-0614	06/12/2014 00:00	06/13/2014	Aqueous	SM2320_W	/					I2
N1023-10C	DSY-MW221-0614	06/12/2014 00:00	06/13/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-10D	DSY-MW221-0614	06/12/2014 00:00	06/13/2014	Aqueous	SM4500_S-_W	/					I2
N1023-11A	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	RSK175	/			Y		VOA
N1023-11A	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW8260_W	/			Y	Y	VOA
N1023-11B	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW9060_TOC_W	/			Y		R22
N1023-11C	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SM2320_W	/			Y		I2
N1023-11C	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate			Y	Y	I2
N1023-11D	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SM4500_S-_W	/			Y		I2
N1023-11E	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW6010_W	/ TAL			Y	Y	M1
N1023-11E	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW7470	/ TAL			Y		M1
N1023-11F	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW6010_W	DISSOLVED / TAL			Y	Y	M1
N1023-11F	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	SW7470	DISSOLVED / TAL			Y		M1

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

N1023

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** *DoD*

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-11G	DSY-MW204-0614	06/13/2014 10:00	06/13/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,			Y	Y	I2
N1023-12A	DSY-MW02A-0614	06/13/2014 00:00	06/13/2014	Aqueous	RSK175	/					VOA
N1023-12A	DSY-MW02A-0614	06/13/2014 00:00	06/13/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-12B	DSY-MW02A-0614	06/13/2014 00:00	06/13/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-12C	DSY-MW02A-0614	06/13/2014 00:00	06/13/2014	Aqueous	SM2320_W	/					I2
N1023-12C	DSY-MW02A-0614	06/13/2014 00:00	06/13/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-12D	DSY-MW02A-0614	06/13/2014 00:00	06/13/2014	Aqueous	SM4500_S-_W	/					I2
N1023-13A	DSY-MW-RB01-061314	06/13/2014 13:30	06/13/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-13B	DSY-MW-RB01-061314	06/13/2014 13:30	06/13/2014	Aqueous	SW6010_W	/ TAL				Y	M1
N1023-13B	DSY-MW-RB01-061314	06/13/2014 13:30	06/13/2014	Aqueous	SW7470	/ TAL					M1
N1023-13C	DSY-MW-RB01-061314	06/13/2014 13:30	06/13/2014	Aqueous	SW6010_W	DISSOLVED / TAL				Y	M1
N1023-13C	DSY-MW-RB01-061314	06/13/2014 13:30	06/13/2014	Aqueous	SW7470	DISSOLVED / TAL					M1
N1023-13D	DSY-MW-RB01-061314	06/13/2014 13:30	06/13/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,				Y	I2
N1023-14A	DSY-SB301-0001	06/16/2014 13:50	06/17/2014	Soil	PMoist	/					I2
N1023-14A	DSY-SB301-0001	06/16/2014 13:50	06/17/2014	Soil	SW6010_W	/ SPLP-Lead Only				Y	I2
N1023-15A	DSY-TB03-061614	06/16/2014 14:00	06/17/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-16A	DSY-SB302-0001	06/16/2014 14:20	06/17/2014	Soil	PMoist	/					I2
N1023-16A	DSY-SB302-0001	06/16/2014 14:20	06/17/2014	Soil	SW6010_W	/ SPLP-Lead Only				Y	I2
N1023-17A	DSY-SB304-0001	06/16/2014 15:25	06/17/2014	Soil	PMoist	/					I2
N1023-17A	DSY-SB304-0001	06/16/2014 15:25	06/17/2014	Soil	SW6010_W	/ SPLP-Lead Only			Y	Y	I2

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Page 5 of 301

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** DoD

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-17A	DSY-SB304-0001	06/16/2014 15:25	06/17/2014	Soil	SW8270_S	/ Naphthalene Only			Y	Y	I2
N1023-18A	DSY-SB-DUP01-061614	06/16/2014 12:00	06/17/2014	Soil	PMoist	/					I2
N1023-18A	DSY-SB-DUP01-061614	06/16/2014 12:00	06/17/2014	Soil	SW6010_W	/ SPLP-Lead Only				Y	I2
N1023-18A	DSY-SB-DUP01-061614	06/16/2014 12:00	06/17/2014	Soil	SW8270_S	/ Naphthalene Only				Y	I2
N1023-19A	DSY-MW12-0614	06/16/2014 17:17	06/17/2014	Aqueous	RSK175	/					VOA
N1023-19A	DSY-MW12-0614	06/16/2014 17:17	06/17/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-19B	DSY-MW12-0614	06/16/2014 17:17	06/17/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-19C	DSY-MW12-0614	06/16/2014 17:17	06/17/2014	Aqueous	SM2320_W	/					I2
N1023-19C	DSY-MW12-0614	06/16/2014 17:17	06/17/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-19D	DSY-MW12-0614	06/16/2014 17:17	06/17/2014	Aqueous	SM4500_S-_W	/					I2
N1023-20A	DSY-TB04-062014	06/20/2014 07:00	06/20/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-21A	DSY-MW104A-0614	06/20/2014 07:25	06/20/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-21B	DSY-MW104A-0614	06/20/2014 07:25	06/20/2014	Aqueous	SW6010_W	/ TAL				Y	M3
N1023-21B	DSY-MW104A-0614	06/20/2014 07:25	06/20/2014	Aqueous	SW7470	/ TAL					M3
N1023-21C	DSY-MW104A-0614	06/20/2014 07:25	06/20/2014	Aqueous	SW6010_W	DISSOLVED / TAL				Y	M3
N1023-21C	DSY-MW104A-0614	06/20/2014 07:25	06/20/2014	Aqueous	SW7470	DISSOLVED / TAL					M3
N1023-22A	DSY-MW11B-0614	06/20/2014 08:57	06/20/2014	Aqueous	RSK175	/					VOA
N1023-22A	DSY-MW11B-0614	06/20/2014 08:57	06/20/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-22B	DSY-MW11B-0614	06/20/2014 08:57	06/20/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-22C	DSY-MW11B-0614	06/20/2014 08:57	06/20/2014	Aqueous	SM2320_W	/					I2

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: N1023

Client ID: TETRA_NAVY **Case:** **HC Due:** 06/27/14 **Report Level:** LEVEL 4

Project: CTO-165, NAVSTA-NEWPORT **SDG:** **Fax Due:** 06/27/14 **Special Program:** *DoD*

WO Name: CTO-165, NAVSTA-NEWPORT **Fax Report:** ☑ **EDD:** ADAPT_TTNUS

Location: CTO-165_NEWPORT, 112G04095, N62472-03-D-0057 **PO:** 1106151, 24-CTO-165

Comments: CD to Vanessa Good. Upload EDD and PDF to TT system as well. Hardcopy DP in 5 working days. Two SDGs, SN1023 for Totals, SN1023-D for Dissolved (field filtered) metals only. Email results to Ed Corack on fax due date.

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
N1023-22C	DSY-MW11B-0614	06/20/2014 08:57	06/20/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-22D	DSY-MW11B-0614	06/20/2014 08:57	06/20/2014	Aqueous	SM4500_S-_W	/					I2
N1023-23A	DSY-MW-DUP02-062014	06/20/2014 12:00	06/20/2014	Aqueous	RSK175	/					VOA
N1023-23A	DSY-MW-DUP02-062014	06/20/2014 12:00	06/20/2014	Aqueous	SW8260_W	/				Y	VOA
N1023-23B	DSY-MW-DUP02-062014	06/20/2014 12:00	06/20/2014	Aqueous	SW9060_TOC_W	/					R22
N1023-23C	DSY-MW-DUP02-062014	06/20/2014 12:00	06/20/2014	Aqueous	SM2320_W	/					I2
N1023-23C	DSY-MW-DUP02-062014	06/20/2014 12:00	06/20/2014	Aqueous	SW9056_W	/ Nitrate, Nitrite, Chloride, Sulfate				Y	I2
N1023-23D	DSY-MW-DUP02-062014	06/20/2014 12:00	06/20/2014	Aqueous	SM4500_S-_W	/					I2
N1023-24A	DSY-SB-RB01-061714	06/17/2014 15:30	06/20/2014	Aqueous	BNA_SIM_W	/ 8270_PAH,				Y	I2
N1023-24B	DSY-SB-RB01-061714	06/17/2014 15:30	06/20/2014	Aqueous	SW6010_W	/ TAL				Y	M1
N1023-24B	DSY-SB-RB01-061714	06/17/2014 15:30	06/20/2014	Aqueous	SW7470	/ TAL					M1
N1023-25A	DSY-SB305-0305	06/19/2014 09:40	06/20/2014	Soil	PMoist	/					I2
N1023-25A	DSY-SB305-0305	06/19/2014 09:40	06/20/2014	Soil	SW8270_S	/ Naphthalene Only				Y	I2
N1023-26A	DSY-SB307-0.51.5	06/19/2014 13:55	06/20/2014	Soil	PMoist	/					I2
N1023-26A	DSY-SB307-0.51.5	06/19/2014 13:55	06/20/2014	Soil	SW6010_W	/ SPLP-Lead Only				Y	I2
N1023-27A	DSY-SB303-1213	06/19/2014 13:55	06/20/2014	Soil	PMoist	/					I2
N1023-27A	DSY-SB303-1213	06/19/2014 13:55	06/20/2014	Soil	SW6010_W	/ SPLP-Lead Only				Y	I2
N1023-28A	DSY-SB306-0001	06/19/2014 18:20	06/20/2014	Soil	PMoist	/					I2
N1023-28A	DSY-SB306-0001	06/19/2014 18:20	06/20/2014	Soil	SW6010_W	/ SPLP-Lead Only				Y	I2

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

Report Date:
27-Jun-14 16:52

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

Laboratory Report

Tetra Tech, Inc.
661 Andersen Drive, Foster Plaza #7
Pittsburgh, PA 15220

Work Order: N1023
Project : CTO-165, NAVSTA-NEWPORT
Project #: 112G04095, N62472-03-D-0057

Attn: Vanessa Good

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
N1023-01	DSY-TB01-061214	Aqueous	12-Jun-14 09:10	12-Jun-14 15:00
N1023-02	DSY-MW08-0614	Aqueous	12-Jun-14 10:02	12-Jun-14 15:00
N1023-03	DSY-MW222-0614	Aqueous	12-Jun-14 10:20	12-Jun-14 15:00
N1023-03	DSY-MW222-0614	Aqueous	13-Jun-14 11:25	13-Jun-14 15:00
N1023-04	DSY-MW219-0614	Aqueous	12-Jun-14 12:27	12-Jun-14 15:00
N1023-05	DSY-MW-DUP01-061214	Aqueous	12-Jun-14 13:00	12-Jun-14 15:00
N1023-06	DSY-MW220-0614	Aqueous	12-Jun-14 14:10	12-Jun-14 15:00
N1023-06	DSY-MW220-0614	Aqueous	13-Jun-14 11:50	13-Jun-14 15:00
N1023-07	DSY-MW218-0614	Aqueous	12-Jun-14 14:07	12-Jun-14 15:00
N1023-08	DSY-TB02-061214	Aqueous	12-Jun-14 15:20	13-Jun-14 15:00
N1023-09	DSY-MW03-0614	Aqueous	12-Jun-14 16:47	13-Jun-14 15:00
N1023-10	DSY-MW221-0614	Aqueous	12-Jun-14 00:00	13-Jun-14 15:00
N1023-10	DSY-MW221-0614	Aqueous	17-Jun-14 16:10	20-Jun-14 13:00
N1023-11	DSY-MW204-0614	Aqueous	13-Jun-14 10:00	13-Jun-14 15:00
N1023-12	DSY-MW02A-0614	Aqueous	13-Jun-14 00:00	13-Jun-14 15:00
N1023-13	DSY-MW-RB01-061314	Aqueous	13-Jun-14 13:30	13-Jun-14 15:00
N1023-14	DSY-SB301-0001	Soil	16-Jun-14 13:50	17-Jun-14 15:00
N1023-15	DSY-TB03-061614	Aqueous	16-Jun-14 14:00	17-Jun-14 15:00
N1023-16	DSY-SB302-0001	Soil	16-Jun-14 14:20	17-Jun-14 15:00
N1023-17	DSY-SB304-0001	Soil	16-Jun-14 15:25	17-Jun-14 15:00
N1023-18	DSY-SB-DUP01-061614	Soil	16-Jun-14 12:00	17-Jun-14 15:00
N1023-19	DSY-MW12-0614	Aqueous	16-Jun-14 17:17	17-Jun-14 15:00
N1023-20	DSY-TB04-062014	Aqueous	20-Jun-14 07:00	20-Jun-14 13:00
N1023-21	DSY-MW104A-0614	Aqueous	20-Jun-14 07:25	20-Jun-14 13:00
N1023-22	DSY-MW11B-0614	Aqueous	20-Jun-14 08:57	20-Jun-14 13:00
N1023-23	DSY-MW-DUP02-062014	Aqueous	20-Jun-14 12:00	20-Jun-14 13:00
N1023-24	DSY-SB-RB01-061714	Aqueous	17-Jun-14 15:30	20-Jun-14 13:00
N1023-25	DSY-SB305-0305	Soil	19-Jun-14 09:40	20-Jun-14 13:00
N1023-26	DSY-SB307-0.51.5	Soil	19-Jun-14 13:55	20-Jun-14 13:00
N1023-27	DSY-SB303-1213	Soil	19-Jun-14 13:55	20-Jun-14 13:00
N1023-28	DSY-SB306-0001	Soil	19-Jun-14 18:20	20-Jun-14 13:00

Report Date:
27-Jun-14 16:52

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

Tetra Tech, Inc.
661 Andersen Drive, Foster Plaza #7
Pittsburgh, PA 15220

Work Order: N1023
Project : CTO-165, NAVSTA-NEWPORT
Project #: 112G04095, N62472-03-D-0057

Attn: Vanessa Good

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the samples(s) as received. This report may not be reproduced, except in full, without written approval from Spectrum Analytical.

All applicable NELAC or USEPA CLP requirments have been meet.

Spectrum Analytical (Rhode Island) is accredited under the National Environmental Laboratory Approval Program (NELAP) and DoD Environmental Laboratory Accreditation Program (ELAP), holds Organic and Inorganic contracts under the USEPA CLP Program and is certified under several states. The current list of our laboratory approvals and certifications is available on the Certifications page on our web site at www.spectrum-analytical.com.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Department of Defense	N/A
Connecticut	PH-0153
Delaware	N/A
Florida	E87664
Maine	2007037
Massachusetts	M-RI907
New Hampshire	2631
New Jersey	RI001
New York	11522
Rhode Island	LAI00301
USDA	P330-08-00023
USEPA - ISM	EP-W-09-039
USEPA - SOM	EP-W-11-033

LABORATORY ACCREDITATION BUREAU ACCREDITED
Certificate # L2247 Testing

Authorized by:

Yihai Ding
Laboratory Director

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

SW846 6010C, SW846 7470A and SPLP Pb only

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 6010C, SW846 7470A

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3005A
Aqueous Samples were prepared following procedures in laboratory test code: SW7470A

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

Matrix spikes were performed on samples: DSY-MW204-0614, DSY-SB304-0001 and DSY-SB306-0001.

Percent recoveries were within the QC limits.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

Duplicate analyses were performed on samples: DSY-MW204-0614, and DSY-SB304-0001.

Relative percent differences were within the QC limits.

F. Serial Dilution (SD):

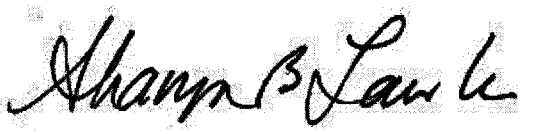
Serial Dilution analyses were performed on samples: DSY-MW204-0614, DSY-SB304-0001 and DSY-SB306-0001.

Percent differences were within the QC limits.

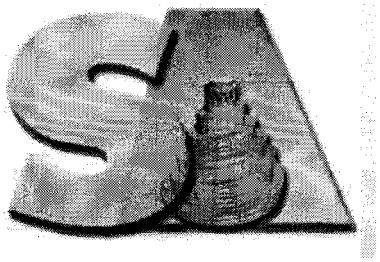
G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: 

Date: 06/27/2014



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

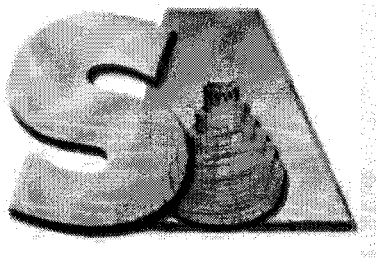
B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

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10

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument Type: CV InstrumentID: FIMS2 Date: 03/04/2010

Preparation Method: 7470A

Concentration Units (ug/L or mg/kg): ug/L

Analyte	Wavelength /Mass	CRDL	MDL
Mercury	253.70	0.2	0.028

Comments:

U.S. EPA - CLP

10

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument Type: P InstrumentID: OPTIMA3 Date: 03/03/2010

Preparation Method: 3005A

Concentration Units (ug/L or mg/kg): ug/L

Analyte	Wavelength /Mass	CRDL	MDL
Aluminum	308.21	200	66.0
Antimony	206.83	20	9.3
Arsenic	188.98	20	4.3
Barium	233.53	200	1.1
Beryllium	313.11	5.0	0.26
Cadmium	226.50	5.0	0.89
Calcium	227.54	800	110
Chromium	267.72	20	0.64
Cobalt	228.62	50	0.67
Copper	324.75	30	3.6
Iron	273.96	200	31.0
Lead	220.35	10	4.2
Magnesium	279.08	500	76.0
Manganese	257.61	50	10.0
Nickel	231.60	50	0.85
Potassium	766.49	1000	76.0
Selenium	196.03	30	12.0
Silver	328.07	30	6.9
Sodium	589.59	1000	29.0
Thallium	190.80	20	6.2
Vanadium	292.40	50	1.1
Zinc	206.20	50	4.9

Comments:

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 Date: 5/23/2014

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	Co
Aluminum	308.21		0.2233080	0.0000000	0.0701020	0.0000000
Antimony	206.83	0.0701592	0.0000000	0.0674350	0.0179504	0.0000000
Arsenic	188.97	0.0174178	-0.0088265	-0.0884562	0.0000000	0.0000000
Barium	233.52	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.10	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0431756	0.0000000	-0.0609472
Calcium	227.54	-0.3243120		-10.8248000	0.0000000	132.9590000
Chromium	267.71	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.61	0.0000000	0.0000000	0.0000000	0.0000000	
Copper	324.75	0.0000000	0.0000000	-0.0700935	0.0000000	0.0000000
Iron	273.95	0.1343570	0.0000000		0.0470804	0.0000000
Lead	220.35	-0.0790092	0.0000000	0.0463435	0.0000000	0.0000000
Magnesium	279.07	0.0000000	0.0000000	-0.4904110		0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0382888	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0070901	-0.2299410
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.02	-0.0317526	0.0130577	-0.3368140	0.0140859	-0.8537130
Silver	328.06	0.0000000	0.0000000	-0.0189754	0.0000000	0.0000000
Sodium	589.59	0.5397120	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0182396	-0.0273424	-0.1178140	-0.0203476	7.3690700
Titanium	334.94	0.0000000	-0.0139899	0.0000000	0.0397935	0.0000000
Vanadium	292.40	0.0000000	0.0000000	-0.0584959	0.0000000	0.0000000
Zinc	206.20	0.0180111	0.0000000	0.0274464	0.0000000	0.0000000

Comments:

U.S. EPA - CLP

11B

ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 Date: 5/23/2014

Analyte	Wave-length (nm)	Interelement Correction Factors for: Cr	Cu	Mn	Ni	Tl
Aluminum	308.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.83	12.4849000	0.3430880	0.0000000	0.0000000	0.0000000
Arsenic	188.97	-8.3245900	0.0000000	0.1625520	0.0000000	0.0000000
Barium	233.52	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.10	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0000000	-0.2837500	0.0000000
Calcium	227.54	0.0000000	0.0000000	0.0000000	50.2995000	0.0000000
Chromium	267.71		0.0000000	0.3638410	0.0000000	0.0000000
Cobalt	228.61	0.0000000	0.0000000	0.0000000	0.1588660	0.0000000
Copper	324.75	0.0000000		0.0000000	0.0000000	0.0000000
Iron	273.95	-3.2165500	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0000000	0.5546330	0.0000000	0.0827949	0.0000000
Magnesium	279.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000		0.0622839	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000		0.4445250
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.02	0.0000000	0.0000000	0.5398860	0.1103120	0.4185850
Silver	328.06	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.3498510	0.0000000	1.8574100	0.0000000	
Titanium	334.94	0.2442790	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	-2.1106300	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.20	-3.0140700	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

U.S. EPA - CLP

11B

ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 Date: 5/23/2014

Analyte	Wave-length (nm)	Interelement Correction Factors for: Ti	V	___	___	___
Aluminum	308.21	0.0000000	9.7081300			
Antimony	206.83	-0.7999450	-1.2353600			
Arsenic	188.97	0.0000000	0.0000000			
Barium	233.52	0.0000000	-1.2005400			
Beryllium	313.10	-1.7540100	-0.0381459			
Cadmium	226.50	0.0000000	0.0000000			
Calcium	227.54	0.0000000	59.4637000			
Chromium	267.71	0.0000000	-0.4278750			
Cobalt	228.61	2.0394600	0.0000000			
Copper	324.75	0.0000000	-0.1382010			
Iron	273.95	0.0000000	-35.2675000			
Lead	220.35	-0.5991290	0.0000000			
Magnesium	279.07	0.0000000	0.0000000			
Manganese	257.61	0.0000000	0.0000000			
Nickel	231.60	0.5814680	0.0000000			
Potassium	766.49	0.0000000	0.0000000			
Selenium	196.02	0.0000000	-0.1990150			
Silver	328.06	0.0000000	-0.8036820			
Sodium	589.59	0.0000000	0.0000000			
Thallium	190.80	1.1836200	5.3996100			
Titanium	334.94		0.0000000			
Vanadium	292.40	1.0181800				
Zinc	206.20	0.0000000	0.0000000			

Comments:

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12

ICP LINEAR RANGES (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 Date: 1/15/2014

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	0.20	500000	P
Antimony	0.20	50000	P
Arsenic	0.20	50000	P
Barium	0.20	100000	P
Beryllium	0.20	1000	P
Cadmium	0.20	50000	P
Calcium	0.20	500000	P
Chromium	0.20	50000	P
Cobalt	0.20	100000	P
Copper	0.20	50000	P
Iron	0.20	500000	P
Lead	0.20	100000	P
Magnesium	0.20	500000	P
Manganese	0.20	50000	P
Nickel	0.20	100000	P
Potassium	0.20	500000	P
Selenium	0.20	50000	P
Silver	0.20	2500	P
Sodium	0.20	500000	P
Thallium	0.20	50000	P
Vanadium	0.20	50000	P
Zinc	0.20	50000	P

Comments:

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13

PREPARATION LOG

TOT MBTAL

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 3005A Batch ID: 77552

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-MW-DUP01-061214	06/13/2014		50
DSY-MW08-0614	06/13/2014		50
DSY-MW218-0614	06/13/2014		50
DSY-MW219-0614	06/13/2014		50
LCSW	06/13/2014		50
PBW	06/13/2014		50

Comments:

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77552**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9448.65	103.8						
Antimony	455.0	486.95	107.0						
Arsenic	455.0	494.92	108.8						
Barium	9100.0	9633.41	105.9						
Beryllium	227.0	239.56	105.5						
Cadmium	227.0	247.73	109.1						
Calcium	22700.0	23023.30	101.4						
Chromium	910.0	982.32	107.9						
Cobalt	2270.0	2439.62	107.5						
Copper	1130.0	1195.36	105.8						
Iron	4550.0	5215.94	114.6						
Lead	455.0	481.97	105.9						
Magnesium	22700.0	24033.43	105.9						
Manganese	2270.0	2420.17	106.6						
Nickel	2270.0	2445.81	107.7						
Potassium	22700.0	24540.80	108.1						
Selenium	455.0	478.54	105.2						
Silver	1130.0	1200.23	106.2						
Sodium	22700.0	24294.75	107.0						
Thallium	455.0	439.18	96.5						
Vanadium	2270.0	2377.44	104.7						
Zinc	2270.0	2456.36	108.2						

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/16/2014 End Date: 06/16/2014

OPTIMA3_140616A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	0913		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S1	1.0	0916		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S2	1.0	0920		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S3	1.0	0924		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICV	1.0	0928		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICB	1.0	0931		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0935																									
ICSA	1.0	0939		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICSAB	1.0	0942		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	0946		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0950		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0954																									
ZZZZZZ	1.0	0957																									
ZZZZZZ	1.0	1001																									
ZZZZZZ	1.0	1005																									
ZZZZZZ	1.0	1009																									
ZZZZZZ	1.0	1013																									
ZZZZZZ	1.0	1016																									
CCV	1.0	1020		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1024		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1028																									
ZZZZZZ	1.0	1032																									
ZZZZZZ	1.0	1035																									
ZZZZZZ	1.0	1039																									
ZZZZZZ	1.0	1043																									
ZZZZZZ	5.0	1047																									
ZZZZZZ	1.0	1051																									
ZZZZZZ	20.0	1055																									
CCV	1.0	1059		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1102		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	20.0	1106																									
ZZZZZZ	20.0	1110																									

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/16/2014 End Date: 06/16/2014

OPTIMA3_140616A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	20.0	1113																								
ZZZZZZ	20.0	1117																								
CCV	1.0	1121		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1125		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PBW	1.0	1128		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW	1.0	1132		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1136																									
ZZZZZZ	1.0	1139																									
ZZZZZZ	1.0	1143																									
ZZZZZZ	1.0	1147																									
ZZZZZZ	1.0	1151																									
ZZZZZZ	1.0	1154																									
CCV	1.0	1158		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1202		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1205																									
ZZZZZZ	1.0	1209																									
ZZZZZZ	1.0	1213																									
ZZZZZZ	1.0	1217																									
ZZZZZZ	1.0	1221																									
ZZZZZZ	1.0	1225																									
ZZZZZZ	1.0	1228																									
ZZZZZZ	1.0	1232																									
ZZZZZZ	5.0	1236																									
CCV	1.0	1240		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1244		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1247																									
ZZZZZZ	20.0	1251																									
DSY-MW08-0614	1.0	1255		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1259																									
DSY-MW219-0614	1.0	1303		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1306																									

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/16/2014 End Date: 06/16/2014

OPTIMA3_140616A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
DSY-MW-DUP01-061214	1.0	1310		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1314																									
DSY-MW218-0614	1.0	1318		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1321																									
CCV	1.0	1325		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1329		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/16/14 9:28				06/16/14 9:46		06/16/14 10:20		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum	10000.0	10131.49	101.3	10000.0	10166.85	101.7	10126.20	101.3	P
Antimony	500.0	476.49	95.3	500.0	469.06	93.8	474.48	94.9	P
Arsenic	500.0	508.19	101.6	500.0	505.19	101.0	503.34	100.7	P
Barium	10000.0	10146.62	101.5	10000.0	10040.59	100.4	10096.08	101.0	P
Beryllium	250.0	248.10	99.2	250.0	246.05	98.4	246.52	98.6	P
Cadmium	250.0	255.77	102.3	250.0	251.98	100.8	249.70	99.9	P
Calcium	25000.0	24232.47	96.9	25000.0	23986.17	95.9	24142.63	96.6	P
Chromium	1000.0	1011.77	101.2	1000.0	994.37	99.4	988.84	98.9	P
Cobalt	2500.0	2469.11	98.8	2500.0	2429.94	97.2	2418.40	96.7	P
Copper	1250.0	1242.54	99.4	1250.0	1229.76	98.4	1238.22	99.1	P
Iron	5000.0	5228.12	104.6	5000.0	5199.54	104.0	5187.73	103.8	P
Lead	500.0	502.45	100.5	500.0	497.99	99.6	499.28	99.9	P
Magnesium	25000.0	25035.37	100.1	25000.0	24939.75	99.8	24906.69	99.6	P
Manganese	2500.0	2527.65	101.1	2500.0	2500.00	100.0	2512.93	100.5	P
Nickel	2500.0	2518.51	100.7	2500.0	2473.03	98.9	2461.37	98.5	P
Potassium	25000.0	25118.67	100.5	25000.0	25251.33	101.0	25367.86	101.5	P
Selenium	500.0	498.00	99.6	500.0	493.19	98.6	501.03	100.2	P
Silver	1250.0	1249.39	100	1250.0	1237.07	99.0	1245.26	99.6	P
Sodium	25000.0	25224.75	100.9	25000.0	25325.83	101.3	25454.13	101.8	P
Thallium	500.0	459.95	92.0	500.0	456.59	91.3	456.93	91.4	P
Vanadium	2500.0	2505.71	100.2	2500.0	2481.45	99.3	2493.27	99.7	P
Zinc	2500.0	2577.90	103.1	2500.0	2542.80	101.7	2514.73	100.6	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/16/14 10:59		06/16/14 11:21		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10239.53	102.4	10160.44	101.6	P
Antimony				500.0	485.75	97.1	486.00	97.2	P
Arsenic				500.0	517.32	103.5	518.57	103.7	P
Barium				10000.0	10228.53	102.3	10157.55	101.6	P
Beryllium				250.0	250.42	100.2	248.48	99.4	P
Cadmium				250.0	258.42	103.4	255.71	102.3	P
Calcium				25000.0	24456.83	97.8	24415.90	97.7	P
Chromium				1000.0	1020.02	102.0	1020.27	102.0	P
Cobalt				2500.0	2496.10	99.8	2487.68	99.5	P
Copper				1250.0	1248.34	99.9	1243.90	99.5	P
Iron				5000.0	5378.77	107.6	5292.35	105.8	P
Lead				500.0	512.53	102.5	507.44	101.5	P
Magnesium				25000.0	25339.58	101.4	25079.34	100.3	P
Manganese				2500.0	2547.51	101.9	2535.21	101.4	P
Nickel				2500.0	2548.85	102.0	2541.14	101.6	P
Potassium				25000.0	25927.79	103.7	26072.53	104.3	P
Selenium				500.0	511.35	102.3	502.22	100.4	P
Silver				1250.0	1254.25	100.3	1249.23	99.9	P
Sodium				25000.0	25683.48	102.7	25809.82	103.2	P
Thallium				500.0	469.44	93.9	472.13	94.4	P
Vanadium				2500.0	2521.04	100.8	2504.18	100.2	P
Zinc				2500.0	2643.67	105.7	2608.66	104.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/16/14 11:58		06/16/14 12:40		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10267.51	102.7	10215.49	102.2	P
Antimony				500.0	485.14	97.0	492.95	98.6	P
Arsenic				500.0	519.55	103.9	519.99	104.0	P
Barium				10000.0	10275.36	102.8	10213.39	102.1	P
Beryllium				250.0	251.81	100.7	249.52	99.8	P
Cadmium				250.0	254.00	101.6	256.52	102.6	P
Calcium				25000.0	24345.62	97.4	24606.17	98.4	P
Chromium				1000.0	1006.34	100.6	1020.01	102.0	P
Cobalt				2500.0	2462.95	98.5	2494.72	99.8	P
Copper				1250.0	1256.68	100.5	1251.86	100.1	P
Iron				5000.0	5227.89	104.6	5287.07	105.7	P
Lead				500.0	509.35	101.9	512.07	102.4	P
Magnesium				25000.0	25404.03	101.6	25180.94	100.7	P
Manganese				2500.0	2562.59	102.5	2548.40	101.9	P
Nickel				2500.0	2520.72	100.8	2543.16	101.7	P
Potassium				25000.0	25853.56	103.4	26277.61	105.1	P
Selenium				500.0	513.12	102.6	508.17	101.6	P
Silver				1250.0	1259.07	100.7	1254.88	100.4	P
Sodium				25000.0	25665.41	102.7	26286.52	105.1	P
Thallium				500.0	467.31	93.5	471.16	94.2	P
Vanadium				2500.0	2529.54	101.2	2515.83	100.6	P
Zinc				2500.0	2581.22	103.2	2603.00	104.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/16/14 13:25				
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10352.28	103.5			P
Antimony				500.0	488.31	97.7			P
Arsenic				500.0	516.90	103.4			P
Barium				10000.0	10344.49	103.4			P
Beryllium				250.0	253.68	101.5			P
Cadmium				250.0	255.60	102.2			P
Calcium				25000.0	24536.58	98.1			P
Chromium				1000.0	1014.40	101.4			P
Cobalt				2500.0	2477.71	99.1			P
Copper				1250.0	1268.31	101.5			P
Iron				5000.0	5278.46	105.6			P
Lead				500.0	508.73	101.7			P
Magnesium				25000.0	25579.09	102.3			P
Manganese				2500.0	2586.53	103.5			P
Nickel				2500.0	2530.85	101.2			P
Potassium				25000.0	26358.03	105.4			P
Selenium				500.0	509.33	101.9			P
Silver				1250.0	1268.01	101.4			P
Sodium				25000.0	26073.38	104.3			P
Thallium				500.0	472.44	94.5			P
Vanadium				2500.0	2550.75	102.0			P
Zinc				2500.0	2594.43	103.8			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77552**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140616A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/16/14 9:50	C	06/16/14 10:24	C	06/16/14 11:02	C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.3	U	4.300	U	P
Barium	2.3	B	1.2	B	1.6	B	2.9	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	110.0	U	131.4	B	251.2	B	110.0	U	110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.7	U	0.7	U	0.7	U	0.9	B	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	45.6	B	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	B	0.8	B	0.8	U	1.0	B	0.850	U	P
Potassium	76.0	U	132.1	B	149.6	B	121.9	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	29.0	U	-35.0	B	-101.0	B	-160.7	B	29.000	U	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.2	B	1.100	U	P
Zinc	4.9	U	4.9	U	5.0	B	15.4	B	9.456	B	P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140616A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/16/14 11:25	C	06/16/14 12:02	C	06/16/14 12:44	C	Preparation Blank	C	M
Aluminum			66.0	U	66.0	U	66.0	U			P
Antimony			9.3	U	9.3	U	9.3	U			P
Arsenic			4.3	U	4.3	U	4.3	U			P
Barium			1.7	B	1.9	B	3.4	B			P
Beryllium			0.3	U	0.3	U	0.3	U			P
Cadmium			0.9	U	0.9	U	0.9	U			P
Calcium			110.0	U	110.0	U	110.0	U			P
Chromium			0.6	U	0.6	U	0.6	U			P
Cobalt			0.7	U	0.7	U	0.9	B			P
Copper			3.6	U	3.6	U	3.6	U			P
Iron			31.0	U	31.0	U	31.0	U			P
Lead			4.2	U	4.2	U	4.2	U			P
Magnesium			76.0	U	76.0	U	76.0	U			P
Manganese			10.0	U	10.0	U	10.0	U			P
Nickel			0.8	U	0.8	U	1.1	B			P
Potassium			76.0	U	76.0	U	161.1	B			P
Selenium			12.0	U	12.0	U	12.0	U			P
Silver			6.9	U	6.9	U	6.9	U			P
Sodium			-183.3	B	-195.2	B	125.8	B			P
Thallium			6.2	U	6.2	U	6.2	U			P
Vanadium			1.1	U	1.1	U	1.1	U			P
Zinc			5.0	B	4.9	U	4.9	U			P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140616A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/16/14 13:29	C		C		C	Preparation Blank	C	M
Aluminum			66.0	U							P
Antimony			9.3	U							P
Arsenic			4.3	U							P
Barium			2.2	B							P
Beryllium			0.3	U							P
Cadmium			0.9	U							P
Calcium			110.0	U							P
Chromium			0.6	U							P
Cobalt			0.7	U							P
Copper			3.6	U							P
Iron			31.0	U							P
Lead			4.2	U							P
Magnesium			76.0	U							P
Manganese			10.0	U							P
Nickel			0.8	U							P
Potassium			121.2	B							P
Selenium			12.0	U							P
Silver			6.9	U							P
Sodium			-39.1	B							P
Thallium			6.2	U							P
Vanadium			1.1	B							P
Zinc			4.9	U							P

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	544239	552471	110.5				
Antimony	0	600	-9	636.5	106.1				
Arsenic	0	100	-2	103.7	103.7				
Barium	0	500	4	527	105.4				
Beryllium	0	500	0	505.5	101.1				
Cadmium	0	1000	2	975.6	97.6				
Calcium	500000	500000	555749	557790.8	111.6				
Chromium	0	500	1	498.1	99.6				
Cobalt	0	500	2	479.8	96.0				
Copper	0	500	1	539.5	107.9				
Iron	200000	200000	192192	195218.9	97.6				
Lead	0	500	1	499.1	99.8				
Magnesium	500000	500000	497179	503270.9	100.7				
Manganese	0	500	-19	489.3	97.9				
Nickel	0	1000	0	937.1	93.7				
Potassium	0	25000	48	26555.8	106.2				
Selenium	0	500	12	507.3	101.5				
Silver	0	200	4	223.4	111.7				
Sodium	0	25000	-63	26166.4	104.7				
Thallium	0	100	11	98	98.0				
Vanadium	0	500	-1	503.8	100.8				
Zinc	0	1000	-1	952.8	95.3				

6/16

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13

PREPARATION LOG

TOT METAL

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 3005A Batch ID: 77590

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-MW-RB01-061314	06/16/2014		50
DSY-MW204-0614	06/16/2014		50
DSY-MW204-0614D	06/16/2014		50
DSY-MW204-0614S	06/16/2014		50
LCSW	06/16/2014		50
PBW	06/16/2014		50

Comments:

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77590**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9343.63	102.7						
Antimony	455.0	495.83	109.0						
Arsenic	455.0	497.13	109.3						
Barium	9100.0	9544.32	104.9						
Beryllium	227.0	237.43	104.6						
Cadmium	227.0	246.66	108.7						
Calcium	22700.0	22526.58	99.2						
Chromium	910.0	967.94	106.4						
Cobalt	2270.0	2405.91	106.0						
Copper	1130.0	1183.54	104.7						
Iron	4550.0	4987.19	109.6						
Lead	455.0	484.86	106.6						
Magnesium	22700.0	23969.12	105.6						
Manganese	2270.0	2398.85	105.7						
Nickel	2270.0	2412.38	106.3						
Potassium	22700.0	24641.26	108.6						
Selenium	455.0	491.66	108.1						
Silver	1130.0	1177.26	104.2						
Sodium	22700.0	24851.10	109.5						
Thallium	455.0	442.51	97.3						
Vanadium	2270.0	2367.74	104.3						
Zinc	2270.0	2416.13	106.4						

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5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

DSY-MW204-0614S

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	9820		87.7	B	9100	107		P
Antimony	75-125	497		9.3	U	456	109		P
Arsenic	75-125	509		4.3	U	456	112		P
Barium	75-125	9450		18.6	B	9100	104		P
Beryllium	75-125	239		0.26	U	227	105		P
Cadmium	75-125	233		0.89	U	227	103		P
Chromium	75-125	969		0.64	U	910	107		P
Cobalt	75-125	2380		0.67	U	2270	105		P
Copper	75-125	1200		3.6	U	1130	107		P
Iron	75-125	5170		81.6	B	4550	112		P
Lead	75-125	479		4.2	U	455	105		P
Manganese	75-125	2430		33.4	B	2270	106		P
Nickel	75-125	2380		2.9	B	2270	105		P
Selenium	75-125	488		12.0	U	455	107		P
Silver	75-125	1180		6.9	U	1130	105		P
Thallium	75-125	433		6.2	U	455	95		P
Vanadium	75-125	2390		1.1	U	2270	105		P
Zinc	75-125	2410		11.4	B	2270	106		P
Mercury	75-125	4.6		0.028	U	4.6	101		CV

Comments:

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6

DUPLICATES

EPA SAMPLE NO.

DSY-MW204-0614D

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		87.6720	B	85.1123	B	3		P
Antimony		9.3000	U	9.3000	U			P
Arsenic		4.3000	U	4.3000	U			P
Barium		18.5614	B	18.4452	B	0.6		P
Beryllium		0.2600	U	0.2600	U			P
Cadmium		0.8900	U	0.8900	U			P
Calcium		54529.4322		54671.5856		0.3		P
Chromium		0.6400	U	0.6400	U			P
Cobalt		0.6700	U	0.6700	U			P
Copper		3.6000	U	3.6000	U			P
Iron		81.5706	B	80.1197	B	1.8		P
Lead		4.2000	U	4.2000	U			P
Magnesium		13042.7295		13133.4600		0.7		P
Manganese		33.4182	B	33.4595	B	0.1		P
Nickel		2.8717	B	2.5011	B	13.8		P
Potassium	1000.0	2943.0363		2956.6939		0.5		P
Selenium		12.0000	U	12.0000	U			P
Silver		6.9000	U	6.9000	U			P
Sodium		80142.3514		81295.6257		1.4		P
Thallium		6.2000	U	6.2000	U			P
Vanadium		1.1000	U	1.1000	U			P
Zinc		11.4499	B	10.6512	B	7.2		P
Mercury		0.0280	U	0.0280	U			CV

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

DSY-MW204-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	87.67	B	330.00	U	100		P
Antimony	9.30	U	46.50	U			P
Arsenic	4.30	U	21.50	U			P
Barium	18.56	B	38.77	B	109		P
Beryllium	0.26	U	1.30	U			P
Cadmium	0.89	U	4.45	U			P
Calcium	54529.43		54084.02		1	✓	P
Chromium	0.64	U	3.20	U			P
Cobalt	0.67	U	3.96	B			P
Copper	3.60	U	18.00	U			P
Iron	81.57	B	155.00	U	100		P
Lead	4.20	U	21.00	U			P
Magnesium	13042.73		13683.07		5	✓	P
Manganese	33.42	B	50.00	U	100		P
Nickel	2.87	B	6.12	B	113		P
Potassium	2943.04		3571.34		21		P
Selenium	12.00	U	60.00	U			P
Silver	6.90	U	34.50	U			P
Sodium	80142.35		82710.00		3	✓	P
Thallium	6.20	U	31.00	U			P
Vanadium	1.10	U	5.50	U			P
Zinc	11.45	B	24.50	U	100		P

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
S0	1.0	0748		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S1	1.0	0751		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S2	1.0	0755		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S3	1.0	0759		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICV	1.0	0802		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICB	1.0	0806		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0810																										
ICSA	1.0	0814		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICSAB	1.0	0817		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	0821		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0825		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0829																										
ZZZZZZ	1.0	0832																										
ZZZZZZ	1.0	0836																										
ZZZZZZ	1.0	0840																										
ZZZZZZ	1.0	0843																										
ZZZZZZ	1.0	0847																										
CCV	1.0	0851		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0854		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0858																										
ZZZZZZ	1.0	0902																										
ZZZZZZ	1.0	0906																										
ZZZZZZ	1.0	0909																										
ZZZZZZ	1.0	0913																										
ZZZZZZ	1.0	0917																										
ZZZZZZ	5.0	0921																										
CCV	1.0	0925		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0929		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0932																										
ZZZZZZ	1.0	0936																										
ZZZZZZ	1.0	0940																										
ZZZZZZ	1.0	0943																										

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	0947																								
ZZZZZZ	20.0	0951																								
ZZZZZZ	1.0	0955																								
ZZZZZZ	1.0	0958																								
ZZZZZZ	1.0	1002																								
ZZZZZZ	1.0	1006																								
CCV	1.0	1010		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1013		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1017																								
ZZZZZZ	1.0	1021																								
ZZZZZZ	1.0	1024																								
ZZZZZZ	1.0	1028																								
ZZZZZZ	1.0	1032																								
ZZZZZZ	1.0	1036																								
ZZZZZZ	1.0	1040																								
ZZZZZZ	5.0	1043																								
ZZZZZZ	20.0	1047																								
CCV	1.0	1051		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1054		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PBW	1.0	1058		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW	1.0	1102		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1106																								
ZZZZZZ	1.0	1109																								
ZZZZZZ	1.0	1113																								
ZZZZZZ	1.0	1117																								
ZZZZZZ	1.0	1121																								
ZZZZZZ	1.0	1125																								
ZZZZZZ	1.0	1129																								
ZZZZZZ	1.0	1132																								
CCV	1.0	1136		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1140		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1144																								

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	1147																								
ZZZZZZ	1.0	1151																								
ZZZZZZ	1.0	1155																								
ZZZZZZ	5.0	1159																								
ZZZZZZ	1.0	1203																								
ZZZZZZ	1.0	1206																								
ZZZZZZ	1.0	1210																								
ZZZZZZ	1.0	1214																								
ZZZZZZ	5.0	1218																								
CCV	1.0	1222		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1225		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1229																								
ZZZZZZ	1.0	1233																								
ZZZZZZ	1.0	1236																								
ZZZZZZ	1.0	1240																								
ZZZZZZ	1.0	1244																								
ZZZZZZ	1.0	1247																								
CCV	1.0	1251		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1255		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	20.0	1259																								
DSY-MW204-0614	1.0	1303		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DSY-MW204-0614D	1.0	1307		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DSY-MW204-0614S	1.0	1310		X	X	X	X	X	X		X	X	X	X	X		X		X		X	X		X	X	X	
DSY-MW204-0614L	5.0	1314		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1318																								
ZZZZZZ	1.0	1322																								
ZZZZZZ	1.0	1326																								
ZZZZZZ	1.0	1329																								
ZZZZZZ	5.0	1333																								

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV	1.0	1337		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CCB	1.0	1341		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1344																									
DSY-MW-RB01-061314	1.0	1348		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1352																									
ZZZZZZ	1.0	1356																									
ZZZZZZ	1.0	1359																									
CCV	1.0	1403		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CCB	1.0	1407		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/17/14 8:02				06/17/14 8:21		06/17/14 08:51		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum	10000.0	10108.82	101.1	10000.0	10312.58	103.1	10146.57	101.5	P
Antimony	500.0	470.88	94.2	500.0	483.92	96.8	478.55	95.7	P
Arsenic	500.0	518.25	103.7	500.0	525.02	105.0	517.23	103.4	P
Barium	10000.0	10173.14	101.7	10000.0	10231.08	102.3	10212.76	102.1	P
Beryllium	250.0	248.65	99.5	250.0	248.96	99.6	248.67	99.5	P
Cadmium	250.0	253.14	101.3	250.0	255.95	102.4	254.82	101.9	P
Calcium	25000.0	24166.43	96.7	25000.0	24526.59	98.1	24019.66	96.1	P
Chromium	1000.0	1004.89	100.5	1000.0	1014.40	101.4	1007.19	100.7	P
Cobalt	2500.0	2452.60	98.1	2500.0	2477.97	99.1	2456.13	98.2	P
Copper	1250.0	1245.86	99.7	1250.0	1253.86	100.3	1252.09	100.2	P
Iron	5000.0	5188.26	103.8	5000.0	5298.62	106.0	5188.95	103.8	P
Lead	500.0	510.90	102.2	500.0	516.09	103.2	505.09	101.0	P
Magnesium	25000.0	25035.42	100.1	25000.0	25313.35	101.3	25153.98	100.6	P
Manganese	2500.0	2532.07	101.3	2500.0	2541.09	101.6	2536.60	101.5	P
Nickel	2500.0	2505.77	100.2	2500.0	2531.32	101.3	2507.71	100.3	P
Potassium	25000.0	25048.70	100.2	25000.0	25682.62	102.7	25891.40	103.6	P
Selenium	500.0	510.16	102.0	500.0	519.41	103.9	512.66	102.5	P
Silver	1250.0	1253.67	100.3	1250.0	1262.22	101.0	1258.88	100.7	P
Sodium	25000.0	25397.63	101.6	25000.0	25976.69	103.9	26135.45	104.5	P
Thallium	500.0	465.84	93.2	500.0	468.38	93.7	466.48	93.3	P
Vanadium	2500.0	2515.11	100.6	2500.0	2533.94	101.4	2526.57	101.1	P
Zinc	2500.0	2555.22	102.2	2500.0	2567.27	102.7	2544.04	101.8	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 9:25		06/17/14 10:10		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10151.17	101.5	10243.27	102.4	P
Antimony				500.0	489.73	97.9	502.09	100.4	P
Arsenic				500.0	514.78	103.0	521.19	104.2	P
Barium				10000.0	10219.49	102.2	10342.13	103.4	P
Beryllium				250.0	247.64	99.1	252.05	100.8	P
Cadmium				250.0	254.48	101.8	255.94	102.4	P
Calcium				25000.0	24160.33	96.6	24200.15	96.8	P
Chromium				1000.0	1012.02	101.2	1010.32	101.0	P
Cobalt				2500.0	2473.46	98.9	2471.86	98.9	P
Copper				1250.0	1249.24	99.9	1262.04	101.0	P
Iron				5000.0	5220.13	104.4	5212.36	104.2	P
Lead				500.0	508.81	101.8	513.65	102.7	P
Magnesium				25000.0	25171.72	100.7	25551.61	102.2	P
Manganese				2500.0	2535.30	101.4	2566.49	102.7	P
Nickel				2500.0	2519.91	100.8	2520.86	100.8	P
Potassium				25000.0	25901.64	103.6	26001.75	104.0	P
Selenium				500.0	511.80	102.4	525.76	105.2	P
Silver				1250.0	1257.45	100.6	1267.82	101.4	P
Sodium				25000.0	26255.32	105.0	26182.40	104.7	P
Thallium				500.0	464.25	92.9	468.76	93.8	P
Vanadium				2500.0	2524.11	101.0	2556.51	102.3	P
Zinc				2500.0	2560.35	102.4	2559.46	102.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 10:51		06/17/14 11:36		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10335.37	103.4	10295.84	103.0	P
Antimony				500.0	516.79	103.4	516.97	103.4	P
Arsenic				500.0	533.27	106.7	532.10	106.4	P
Barium				10000.0	10400.65	104.0	10377.67	103.8	P
Beryllium				250.0	254.14	101.7	252.82	101.1	P
Cadmium				250.0	261.47	104.6	260.47	104.2	P
Calcium				25000.0	24665.25	98.7	24707.74	98.8	P
Chromium				1000.0	1032.23	103.2	1029.03	102.9	P
Cobalt				2500.0	2530.85	101.2	2514.56	100.6	P
Copper				1250.0	1270.55	101.6	1271.06	101.7	P
Iron				5000.0	5345.93	106.9	5318.42	106.4	P
Lead				500.0	523.75	104.7	524.20	104.8	P
Magnesium				25000.0	25739.03	103.0	25619.48	102.5	P
Manganese				2500.0	2585.56	103.4	2580.43	103.2	P
Nickel				2500.0	2579.16	103.2	2564.12	102.6	P
Potassium				25000.0	26268.32	105.1	26620.20	106.5	P
Selenium				500.0	526.43	105.3	529.14	105.8	P
Silver				1250.0	1275.10	102.0	1275.35	102.0	P
Sodium				25000.0	26471.64	105.9	27035.67	108.1	P
Thallium				500.0	483.32	96.7	483.14	96.6	P
Vanadium				2500.0	2568.45	102.7	2567.77	102.7	P
Zinc				2500.0	2636.74	105.5	2608.39	104.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 12:22		06/17/14 12:51		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10452.12	104.5	10394.43	103.9	P
Antimony				500.0	516.26	103.3	514.67	102.9	P
Arsenic				500.0	529.89	106.0	530.05	106.0	P
Barium				10000.0	10472.60	104.7	10430.11	104.3	P
Beryllium				250.0	257.34	102.9	257.17	102.9	P
Cadmium				250.0	256.77	102.7	257.71	103.1	P
Calcium				25000.0	24649.31	98.6	24655.68	98.6	P
Chromium				1000.0	1025.24	102.5	1038.72	103.9	P
Cobalt				2500.0	2510.45	100.4	2530.00	101.2	P
Copper				1250.0	1286.98	103.0	1280.78	102.5	P
Iron				5000.0	5326.61	106.5	5402.37	108.0	P
Lead				500.0	515.16	103.0	515.85	103.2	P
Magnesium				25000.0	25910.65	103.6	25772.55	103.1	P
Manganese				2500.0	2616.89	104.7	2611.93	104.5	P
Nickel				2500.0	2562.21	102.5	2589.42	103.6	P
Potassium				25000.0	26869.60	107.5	26401.42	105.6	P
Selenium				500.0	524.43	104.9	530.02	106.0	P
Silver				1250.0	1282.91	102.6	1277.62	102.2	P
Sodium				25000.0	27032.80	108.1	27189.77	108.8	P
Thallium				500.0	483.35	96.7	483.36	96.7	P
Vanadium				2500.0	2580.53	103.2	2567.84	102.7	P
Zinc				2500.0	2631.48	105.3	2654.63	106.2	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 13:37		06/17/14 14:03		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10403.34	104.0	10436.91	104.4	P
Antimony				500.0	494.92	99.0	499.31	99.9	P
Arsenic				500.0	534.53	106.9	535.38	107.1	P
Barium				10000.0	10446.48	104.5	10476.53	104.8	P
Beryllium				250.0	257.61	103.0	257.79	103.1	P
Cadmium				250.0	257.80	103.1	259.37	103.7	P
Calcium				25000.0	24762.55	99.1	24625.08	98.5	P
Chromium				1000.0	1034.82	103.5	1032.86	103.3	P
Cobalt				2500.0	2531.03	101.2	2529.54	101.2	P
Copper				1250.0	1282.36	102.6	1282.16	102.6	P
Iron				5000.0	5371.33	107.4	5369.04	107.4	P
Lead				500.0	518.50	103.7	520.08	104.0	P
Magnesium				25000.0	25832.26	103.3	26033.45	104.1	P
Manganese				2500.0	2612.25	104.5	2620.41	104.8	P
Nickel				2500.0	2582.33	103.3	2586.13	103.4	P
Potassium				25000.0	26519.92	106.1	27456.30	109.8	P
Selenium				500.0	531.73	106.3	526.04	105.2	P
Silver				1250.0	1274.41	102.0	1273.50	101.9	P
Sodium				25000.0	26616.39	106.5	27408.40	109.6	P
Thallium				500.0	479.46	95.9	482.74	96.5	P
Vanadium				2500.0	2571.70	102.9	2577.08	103.1	P
Zinc				2500.0	2653.64	106.1	2657.77	106.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77590**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 8:25	C	06/17/14 8:54	C	06/17/14 9:29	C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.3	U	4.300	U	P
Barium	2.6	B	1.8	B	2.4	B	2.7	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	110.0	U	110.0	U	110.0	U	110.0	U	110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.7	B	0.7	U	0.7	U	0.7	U	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	31.0	U	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	U	0.8	U	0.8	U	0.8	U	0.850	U	P
Potassium	95.1	B	108.5	B	92.0	B	89.7	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	66.6	B	70.4	B	91.6	B	144.3	B	120.650	B	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.1	U	1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U	4.9	U	4.900	U	P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 10:13	C	06/17/14 10:54	C	06/17/14 11:40	C	Preparation Blank	C	M
Aluminum			66.0	U	66.0	U	66.0	U			P
Antimony			9.3	U	9.3	U	9.3	U			P
Arsenic			4.3	U	4.3	U	4.3	U			P
Barium			2.0	B	2.2	B	1.7	B			P
Beryllium			0.3	U	0.3	U	0.3	U			P
Cadmium			0.9	U	0.9	U	0.9	U			P
Calcium			110.0	U	110.0	U	110.0	U			P
Chromium			0.6	U	0.6	U	0.6	U			P
Cobalt			0.7	U	0.7	U	0.7	U			P
Copper			3.6	U	3.6	U	3.6	U			P
Iron			31.0	U	31.0	U	31.0	U			P
Lead			4.2	U	4.2	U	4.2	U			P
Magnesium			76.0	U	76.0	U	76.0	U			P
Manganese			10.0	U	10.0	U	10.0	U			P
Nickel			0.8	U	0.8	U	0.8	U			P
Potassium			159.8	B	81.5	B	98.0	B			P
Selenium			12.0	U	12.0	U	12.0	U			P
Silver			6.9	U	6.9	U	6.9	U			P
Sodium			155.1	B	150.8	B	232.2	B			P
Thallium			6.2	U	6.2	U	6.2	U			P
Vanadium			1.1	U	1.1	U	1.1	U			P
Zinc			4.9	U	4.9	U	4.9	U			P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 12:25	C	06/17/14 12:55	C	06/17/14 13:41	C	Preparation Blank	C	M
Aluminum			66.0	U	66.0	U	66.0	U			P
Antimony			9.3	U	9.3	U	9.3	U			P
Arsenic			4.3	U	4.9	B	4.3	U			P
Barium			2.3	B	2.1	B	2.4	B			P
Beryllium			0.3	U	0.3	U	0.3	U			P
Cadmium			0.9	U	0.9	U	0.9	U			P
Calcium			110.0	U	110.0	U	110.0	U			P
Chromium			0.6	U	0.6	U	0.6	U			P
Cobalt			0.7	U	0.7	U	0.7	U			P
Copper			3.6	U	3.6	U	3.6	U			P
Iron			31.0	U	31.0	U	31.0	U			P
Lead			4.2	U	4.2	U	4.2	U			P
Magnesium			76.0	U	76.0	U	76.0	U			P
Manganese			10.0	U	10.0	U	10.0	U			P
Nickel			0.8	U	0.8	U	0.8	U			P
Potassium			93.7	B	143.6	B	155.9	B			P
Selenium			12.0	U	12.0	U	12.0	U			P
Silver			6.9	U	6.9	U	6.9	U			P
Sodium			153.5	B	394.0	B	161.9	B			P
Thallium			6.2	U	6.2	U	6.2	U			P
Vanadium			1.1	U	1.1	U	1.1	U			P
Zinc			4.9	U	4.9	U	4.9	U			P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 14:07	C		C		C	Preparation Blank	C	M
Aluminum			66.0	U							P
Antimony			9.3	U							P
Arsenic			4.3	U							P
Barium			2.4	B							P
Beryllium			0.3	U							P
Cadmium			0.9	U							P
Calcium			110.0	U							P
Chromium			0.6	U							P
Cobalt			0.7	U							P
Copper			3.6	U							P
Iron			31.0	U							P
Lead			4.2	U							P
Magnesium			76.0	U							P
Manganese			10.0	U							P
Nickel			0.8	U							P
Potassium			293.1	B							P
Selenium			12.0	U							P
Silver			6.9	U							P
Sodium			206.1	B							P
Thallium			6.2	U							P
Vanadium			1.1	U							P
Zinc			4.9	U							P

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	539029	539066.8	107.8				
Antimony	0	600	-10	626.8	104.5				
Arsenic	0	100	2	104.9	104.9				
Barium	0	500	4	519.3	103.9				
Beryllium	0	500	0	494.3	98.9				
Cadmium	0	1000	2	953	95.3				
Calcium	500000	500000	547222	543493.1	108.7				
Chromium	0	500	1	483.3	96.7				
Cobalt	0	500	2	466	93.2				
Copper	0	500	1	530	106.0				
Iron	200000	200000	190563	190738.5	95.4				
Lead	0	500	-1	488.8	97.8				
Magnesium	500000	500000	494913	494138.8	98.8				
Manganese	0	500	-19	479.9	96.0				
Nickel	0	1000	-2	908.5	90.8				
Potassium	0	25000	10	26044.2	104.2				
Selenium	0	500	8	504.1	100.8				
Silver	0	200	2	218.6	109.3				
Sodium	0	25000	-2	25731.4	102.9				
Thallium	0	100	18	100.9	100.9				
Vanadium	0	500	0	497.6	99.5				
Zinc	0	1000	0	919.6	92.0				

6/17

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13

PREPARATION LOG

SPLP Pb

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 3005A Batch ID: 77708

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-SB-DUP01-061614	06/23/2014		50
DSY-SB301-0001	06/23/2014		50
DSY-SB302-0001	06/23/2014		50
DSY-SB304-0001	06/23/2014		50
DSY-SB304-0001D	06/23/2014		50
DSY-SB304-0001S	06/23/2014		50
LCSW	06/23/2014		50
PBW	06/23/2014		50
PBW	06/23/2014		50

Comments:

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77708**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Arsenic	455.0	473.68	104.1						
Barium	9100.0	9349.66	102.7						
Cadmium	227.0	235.16	103.6						
Chromium	910.0	938.18	103.1						
Iron	4550.0	4832.18	106.2						
Lead	455.0	462.73	101.7						
Selenium	455.0	452.13	99.4						
Silver	1130.0	1151.67	101.9						

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5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.: DSY-SB304-0001S

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Lead	75-125	494		15.2		455	105		P

Comments:

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6

DUPLICATES

EPA SAMPLE NO.

DSY-SB304-0001D

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Lead	10.0	15.2497		14.7950		3		P

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9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

DSY-SB304-0001

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Lead	15.25		21.00	U	100		P

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/24/2014 End Date: 06/24/2014

OPTIMA3_140624B

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	0805													X												
S1	1.0	0809													X												
S2	1.0	0812													X												
S3	1.0	0816													X												
ICV	1.0	0820													X												
ICB	1.0	0824													X												
ZZZZZZ	1.0	0827																									
ICSA	1.0	0831													X												
ICSAB	1.0	0835													X												
CCV	1.0	0838													X												
CCB	1.0	0842													X												
PBW	1.0	0846													X												
PBW	1.0	0850													X												
LCSW	1.0	0853													X												
ZZZZZZ	1.0	0857																									
ZZZZZZ	1.0	0901																									
ZZZZZZ	1.0	0905																									
ZZZZZZ	1.0	0908																									
CCV	1.0	0912													X												
CCB	1.0	0916													X												
ZZZZZZ	1.0	0919																									
ZZZZZZ	1.0	0923																									
ZZZZZZ	1.0	0927																									
ZZZZZZ	1.0	0931																									
ZZZZZZ	1.0	0934																									
ZZZZZZ	5.0	0938																									
ZZZZZZ	1.0	0942																									
ZZZZZZ	1.0	0945																									
ZZZZZZ	1.0	0949																									
CCV	1.0	0953													X												
CCB	1.0	0957													X												
ZZZZZZ	1.0	1000																									

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/24/2014 End Date: 06/24/2014

OPTIMA3_140624B

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	1004																										
DSY-SB301-0001	1.0	1008													X													
DSY-SB302-0001	1.0	1012													X													
DSY-SB304-0001	1.0	1015													X													
DSY-SB304-0001D	1.0	1019													X													
DSY-SB304-0001S	1.0	1023													X													
DSY-SB304-0001L	5.0	1026													X													
CCV	1.0	1030													X													
CCB	1.0	1034													X													
ZZZZZZ	1.0	1038																										
DSY-SB-DUP01-061614	1.0	1041													X													
ZZZZZZ	1.0	1045																										
ZZZZZZ	1.0	1049																										
ZZZZZZ	1.0	1052																										
ZZZZZZ	1.0	1056																										
CCV	1.0	1100													X													
CCB	1.0	1103													X													

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/24/14 8:20				06/24/14 8:38		06/24/14 09:12		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Lead	500.0	502.65	100.5	500.0	487.30	97.5	489.30	97.9	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1023

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/24/14 9:53		06/24/14 10:30		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Lead				500.0	512.50	102.5	497.55	99.5	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/24/14 11:00				
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Lead				500.0	497.09	99.4			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER

Method Blank ID: **MB-77675**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140624B

	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
Analyte		C	06/24/14 8:42	C	06/24/14 9:16	C	06/24/14 9:57	C		C	M
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER

Method Blank ID: **MB-77708**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140624B

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/24/14 10:34	C	06/24/14 11:03	C		C	Preparation Blank	C	M
Lead			4.2	U	4.2	U			4.200	U	P

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Lead	0	500	7	513.2	102.6				

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13

PREPARATION LOG

TAT MET

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 3005A Batch ID: 77745

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-MW104A-0614	06/24/2014		50
DSY-SB-RB01-061714	06/24/2014		50
LCSW	06/24/2014		50
LCSW02	06/24/2014		50
PBW	06/24/2014		50

Comments:

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77745**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9436.41	103.7						
Antimony	455.0	491.26	108.0						
Arsenic	455.0	489.23	107.5						
Barium	9100.0	9711.67	106.7						
Beryllium	227.0	244.27	107.6						
Cadmium	227.0	243.43	107.2						
Calcium	22700.0	23004.53	101.3						
Chromium	910.0	977.93	107.5						
Cobalt	2270.0	2414.17	106.4						
Copper	1130.0	1212.03	107.3						
Iron	4550.0	5022.49	110.4						
Lead	455.0	481.35	105.8						
Magnesium	22700.0	24325.59	107.2						
Manganese	2270.0	2450.36	107.9						
Nickel	2270.0	2427.10	106.9						
Potassium	22700.0	24031.72	105.9						
Selenium	455.0	475.95	104.6						
Silver	1130.0	1203.30	106.5						
Sodium	22700.0	24413.51	107.5						
Thallium	455.0	436.24	95.9						
Vanadium	2270.0	2415.73	106.4						
Zinc	2270.0	2439.47	107.5						

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCSD-77745**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9018.19	99.1						
Antimony	455.0	464.47	102.1						
Arsenic	455.0	467.27	102.7						
Barium	9100.0	9295.26	102.1						
Beryllium	227.0	233.58	102.9						
Cadmium	227.0	233.56	102.9						
Calcium	22700.0	21883.36	96.4						
Chromium	910.0	938.41	103.1						
Cobalt	2270.0	2319.54	102.2						
Copper	1130.0	1158.14	102.5						
Iron	4550.0	4828.97	106.1						
Lead	455.0	458.39	100.7						
Magnesium	22700.0	23369.40	102.9						
Manganese	2270.0	2346.12	103.4						
Nickel	2270.0	2333.47	102.8						
Potassium	22700.0	24139.17	106.3						
Selenium	455.0	459.32	100.9						
Silver	1130.0	1153.61	102.1						
Sodium	22700.0	24474.24	107.8						
Thallium	455.0	422.09	92.8						
Vanadium	2270.0	2307.23	101.6						
Zinc	2270.0	2354.72	103.7						

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/25/2014 End Date: 06/25/2014

OPTIMA3_140625B

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	1132		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S1	1.0	1136		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S2	1.0	1139		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S3	1.0	1143		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICV	1.0	1147		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICB	1.0	1150		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1154																										
ICSA	1.0	1158		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICSAB	1.0	1202		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	1205		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1209		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PBW	1.0	1213		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW	1.0	1216		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW02	1.0	1220		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DSY-MW104A-0614	1.0	1224		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	
ZZZZZZ	1.0	1228																										
ZZZZZZ	5.0	1232																										
DSY-SB-RB01-061714	1.0	1235		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DSY-MW104A-0614	20.0	1239																					X					
ZZZZZZ	20.0	1243																										
ZZZZZZ	100.0	1246																										
CCV	1.0	1250		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1254		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/25/14 11:47				06/25/14 12:05		06/25/14 12:50		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum	10000.0	10337.91	103.4	10000.0	9983.54	99.8	10365.00	103.7	P
Antimony	500.0	477.81	95.6	500.0	461.77	92.4	490.83	98.2	P
Arsenic	500.0	525.68	105.1	500.0	507.55	101.5	525.50	105.1	P
Barium	10000.0	10480.36	104.8	10000.0	10120.62	101.2	10495.55	105.0	P
Beryllium	250.0	257.29	102.9	250.0	248.66	99.5	259.30	103.7	P
Cadmium	250.0	264.22	105.7	250.0	250.56	100.2	256.98	102.8	P
Calcium	25000.0	25155.67	100.6	25000.0	24027.51	96.1	24875.99	99.5	P
Chromium	1000.0	1052.71	105.3	1000.0	999.86	100	1033.29	103.3	P
Cobalt	2500.0	2559.40	102.4	2500.0	2431.14	97.2	2504.73	100.2	P
Copper	1250.0	1286.37	102.9	1250.0	1240.79	99.3	1290.69	103.3	P
Iron	5000.0	5413.32	108.3	5000.0	5174.68	103.5	5315.14	106.3	P
Lead	500.0	520.54	104.1	500.0	497.04	99.4	517.75	103.6	P
Magnesium	25000.0	25827.20	103.3	25000.0	24963.05	99.9	25899.73	103.6	P
Manganese	2500.0	2609.07	104.4	2500.0	2522.69	100.9	2622.57	104.9	P
Nickel	2500.0	2618.08	104.7	2500.0	2490.31	99.6	2568.41	102.7	P
Potassium	25000.0	25793.97	103.2	25000.0	25927.12	103.7	26131.66	104.5	P
Selenium	500.0	520.71	104.1	500.0	504.48	100.9	522.71	104.5	P
Silver	1250.0	1282.41	102.6	1250.0	1238.77	99.1	1283.52	102.7	P
Sodium	25000.0	26170.53	104.7	25000.0	26282.61	105.1	26442.63	105.8	P
Thallium	500.0	485.64	97.1	500.0	461.14	92.2	478.04	95.6	P
Vanadium	2500.0	2585.96	103.4	2500.0	2497.55	99.9	2591.79	103.7	P
Zinc	2500.0	2677.55	107.1	2500.0	2552.20	102.1	2628.10	105.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77745**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140625B

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/25/14 12:09	C	06/25/14 12:54	C		C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U			66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U			9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U			4.300	U	P
Barium	1.1	U	1.3	B	2.0	B			1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U			0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U			0.890	U	P
Calcium	110.0	U	110.0	U	110.0	U			110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U			0.640	U	P
Cobalt	0.7	U	0.7	U	0.7	U			0.670	U	P
Copper	3.6	U	3.6	U	3.6	U			3.600	U	P
Iron	31.0	U	31.0	U	31.0	U			31.000	U	P
Lead	4.2	U	4.2	U	4.2	U			4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U			76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U			10.000	U	P
Nickel	0.9	U	0.8	U	0.8	U			0.850	U	P
Potassium	76.0	U	76.0	U	76.0	U			76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U			12.000	U	P
Silver	6.9	U	6.9	U	6.9	U			6.900	U	P
Sodium	29.0	U	-29.1	B	29.0	U			29.000	U	P
Thallium	6.2	U	6.2	U	6.2	U			6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U			1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U			4.900	U	P

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	542648	533515.7	106.7				
Antimony	0	600	-2	629.2	104.9				
Arsenic	0	100	1	94.4	94.4				
Barium	0	500	5	517.3	103.5				
Beryllium	0	500	0	494.8	99.0				
Cadmium	0	1000	1	941.4	94.1				
Calcium	500000	500000	563007	540294.2	108.1				
Chromium	0	500	1	482.8	96.6				
Cobalt	0	500	2	462.5	92.5				
Copper	0	500	0	528	105.6				
Iron	200000	200000	194739	191946.7	96.0				
Lead	0	500	6	486.9	97.4				
Magnesium	500000	500000	504795	495725.4	99.1				
Manganese	0	500	-9	488.6	97.7				
Nickel	0	1000	-1	907.1	90.7				
Potassium	0	25000	200	25886.8	103.5				
Selenium	0	500	5	496.3	99.3				
Silver	0	200	1	217.3	108.7				
Sodium	0	25000	39	25521.7	102.1				
Thallium	0	100	-7	88.4	88.4				
Vanadium	0	500	0	495	99.0				
Zinc	0	1000	0	922.2	92.2				

6/25

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13

PREPARATION LOG

SPLP Lead

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 3005A Batch ID: 77803

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-SB303-1213	06/26/2014		50
DSY-SB306-0001	06/26/2014		50
DSY-SB306-0001S	06/26/2014		50
DSY-SB307-0.51.5	06/26/2014		50
LCSW	06/26/2014		50
LCSW02	06/26/2014		50
PBW	06/26/2014		50
PBW	06/26/2014		50

Comments:

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77803**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Lead	455.0	469.48	103.2						

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCSD-77803**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Lead	455.0	465.71	102.4						

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5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

DSY-SB306-0001S

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Lead	75-125	448		4.2	U	455	99		P

Comments:

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

DSY-SB306-0001

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Matrix (soil/water): WATER Level (low/med): MED

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Lead	4.20	U	21.00	U			P

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/27/2014 End Date: 06/27/2014

OPTIMA3_140627A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	0943													X												
S1	1.0	0946													X												
S2	1.0	0950													X												
S3	1.0	0953													X												
ICV	1.0	0957													X												
ICB	1.0	1000													X												
ZZZZZZ	1.0	1004																									
ICSA	1.0	1007													X												
ICSAB	1.0	1011													X												
CCV	1.0	1015													X												
CCB	1.0	1018													X												
PBW	1.0	1022													X												
PBW	1.0	1025													X												
LCSW	1.0	1029													X												
LCSW02	1.0	1032													X												
DSY-SB307-0.51.5	1.0	1036													X												
DSY-SB303-1213	1.0	1039													X												
DSY-SB306-0001	1.0	1043													X												
DSY-SB306-0001S	1.0	1046													X												
DSY-SB306-0001L	5.0	1050													X												
CCV	1.0	1054													X												
CCB	1.0	1057													X												

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/27/14 9:57				06/27/14 10:15		06/27/14 10:54		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Lead	500.0	506.66	101.3	500.0	499.52	99.9	501.34	100.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77758**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140627A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/27/14 10:18	C	06/27/14 10:57	C		C	Preparation Blank	C	M
Lead	4.2	U	4.2	U	4.2	U			4.200	U	P

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER

Method Blank ID: **MB-77803**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140627A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L)	C		C		C	Preparation Blank	C	M
Lead									4.200	U	P

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Lead	0	500	5	476.4	95.3				

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13

PREPARATION LOG

Hg TOT

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 7470A Batch ID: 77585

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
CCB	06/16/2014		100
CCV	06/16/2014		100
ICB	06/16/2014		100
ICV	06/16/2014		100
S0	06/16/2014		100
S0.2	06/16/2014		100
S1.0	06/16/2014		100
S10.0	06/16/2014		100
S2.0	06/16/2014		100
S5.0	06/16/2014		100
DSY-MW-DUP01-061214	06/16/2014		100
DSY-MW-RB01-061314	06/16/2014		100
DSY-MW08-0614	06/16/2014		100
DSY-MW204-0614	06/16/2014		100
DSY-MW204-0614D	06/16/2014		100
DSY-MW204-0614S	06/16/2014		100
DSY-MW218-0614	06/16/2014		100
DSY-MW219-0614	06/16/2014		100
LCSW	06/16/2014		100
PBW	06/16/2014		100

Comments:

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77585**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury	4.6	4.76	103.5						

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: FIMS2 Method: CV

Start Date: 06/17/2014 End Date: 06/17/2014

FIMS2_140617A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	1722																X									
S0.2	1.0	1723																X									
S1.0	1.0	1725																X									
S2.0	1.0	1727																X									
S5.0	1.0	1728																X									
S10.0	1.0	1730																X									
ICV	1.0	1732																X									
ICB	1.0	1733																X									
PBW	1.0	1735																X									
LCSW	1.0	1737																X									
ZZZZZZ	1.0	1738																									
ZZZZZZ	1.0	1740																									
ZZZZZZ	1.0	1742																									
ZZZZZZ	1.0	1743																									
ZZZZZZ	1.0	1745																									
ZZZZZZ	1.0	1747																									
ZZZZZZ	1.0	1748																									
CCV	1.0	1750																X									
CCB	1.0	1752																X									
ZZZZZZ	1.0	1753																									
ZZZZZZ	1.0	1755																									
DSY-MW08-0614	1.0	1757																X									
ZZZZZZ	1.0	1758																									
DSY-MW219-0614	1.0	1800																X									
ZZZZZZ	1.0	1802																									
DSY-MW-DUP01-061214	1.0	1803																X									
ZZZZZZ	1.0	1805																									
DSY-MW218-0614	1.0	1807																X									
CCV	1.0	1808																X									
CCB	1.0	1810																X									
ZZZZZZ	1.0	1812																									

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: FIMS2 Method: CV

Start Date: 06/17/2014 End Date: 06/17/2014

FIMS2_140617A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
DSY-MW204-0614	1.0	1813																X									
DSY-MW204-0614D	1.0	1815																X									
DSY-MW204-0614S	1.0	1817																X									
ZZZZZZ	1.0	1818																									
ZZZZZZ	1.0	1820																									
ZZZZZZ	1.0	1822																									
DSY-MW-RB01-061314	1.0	1823																X									
ZZZZZZ	1.0	1825																									
CCV	1.0	1827																X									
CCB	1.0	1828																X									

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1023

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/17/14 17:32				06/17/14 17:50		06/17/14 18:08		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury	5.0	5.12	102.4	5.0	5.14	102.8	5.09	101.9	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 18:27				
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury				5.0	4.87	97.4			CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77585**

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

FIMS2_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 17:52	C	06/17/14 18:10	C	06/17/14 18:28	C	Preparation Blank	C	M
Mercury	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	CV

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13

PREPARATION LOG

Hg TOT

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Method: 7470A Batch ID: 77747

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
CCB	06/24/2014		100
CCV	06/24/2014		100
ICB	06/24/2014		100
ICV	06/24/2014		100
S0	06/24/2014		100
S1.0	06/24/2014		100
S10.0	06/24/2014		100
S2.0	06/24/2014		100
S5.0	06/24/2014		100
DSY-MW104A-0614	06/24/2014		100
DSY-SB-RB01-061714	06/24/2014		100
LCSW	06/24/2014		100
LCSW02	06/24/2014		100
PBW	06/24/2014		100

Comments:

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77747**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury	4.6	4.49	97.6						

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCSD-77747**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury	4.6	4.64	100.9						

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Instrument ID Number: FIMS2 Method: CV

Start Date: 06/25/2014 End Date: 06/25/2014

FIMS2_140625A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	1017																X								
S0.20	1.0	1019																X								
S1.0	1.0	1020																X								
S2.0	1.0	1022																X								
S5.0	1.0	1024																X								
S10.0	1.0	1025																X								
ICV	1.0	1027																X								
ICB	1.0	1029																X								
PBW	1.0	1030																X								
LCSW	1.0	1032																X								
LCSW02	1.0	1034																X								
ZZZZZZ	1.0	1035																								
ZZZZZZ	1.0	1037																								
ZZZZZZ	1.0	1039																								
ZZZZZZ	1.0	1040																								
ZZZZZZ	1.0	1042																								
DSY-MW104A-0614	1.0	1044																X								
CCV	1.0	1045																X								
CCB	1.0	1047																X								
ZZZZZZ	1.0	1049																								
DSY-SB-RB01-061714	1.0	1050																X								
CCV	1.0	1052																X								
CCB	1.0	1054																X								

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1023

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/25/14 10:27				06/25/14 10:45		06/25/14 10:52		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury	5.0	5.03	100.6	5.0	4.89	97.7	5.00	100.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023

Preparation Blank Matrix (soil/water): WATER

Method Blank ID: **MB-77747**

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

FIMS2_140625A

	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
Analyte		C	06/25/14 10:47	C	06/25/14 10:54	C		C		C	M
Mercury	0.155	B	0.128	B	0.121	B			0.028	U	CV

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

SW846 6010C, SW846 7470A

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times. Samples were field filtered prior to receipt at the lab.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 6010C, SW846 7470A

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3005A
Aqueous Samples were prepared following procedures in laboratory test code: SW7470A

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: FIMS2
Instrument Type: CVAA
Description: FIMS
Manufacturer: Perkin-Elmer
Model: FIMS100

Instrument Code: OPTIMA3
Instrument Type: ICP
Description: Optima ICP-OES
Manufacturer: Perkin-Elmer
Model: 4300 DV

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for laboratory control samples were within the QC limits.

2. Matrix spike (MS):

Matrix spikes were performed on samples: DSY-MW204-0614.

Percent recoveries were within the QC limits.

D. Post Digestion Spike (PDS):

A post-digestion spike was not performed on any sample in this SDG.

E. Duplicate sample:

Duplicate analyses were performed on sample: DSY-MW204-0614.

Relative percent differences were within the QC limits.

F. Serial Dilution (SD):

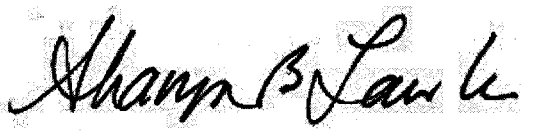
Serial Dilution analyses were performed on samples: DSY-MW104A-0614 and DSY-MW204-0614.

Percent differences were within the QC limits.

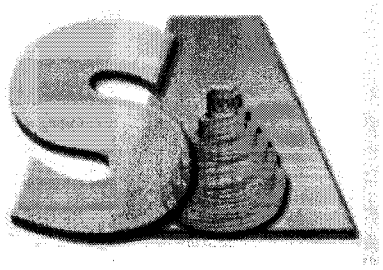
G. Samples:

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: 

Date: 06/27/2014



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Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

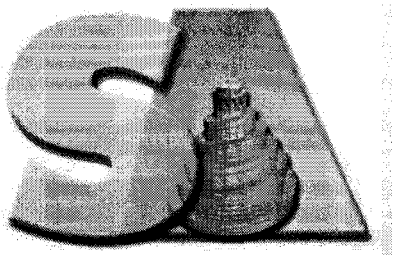
A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.

Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

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10

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument Type: CV InstrumentID: FIMS2 Date: 03/04/2010

Preparation Method: 7470A

Concentration Units (ug/L or mg/kg): ug/L

Analyte	Wavelength /Mass	CRDL	MDL
Mercury	253.70	0.2	0.028

Comments:

U.S. EPA - CLP

10

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument Type: P InstrumentID: OPTIMA3 Date: 03/03/2010

Preparation Method: 3005A

Concentration Units (ug/L or mg/kg): ug/L

Analyte	Wavelength /Mass	CRDL	MDL
Aluminum	308.21	200	66.0
Antimony	206.83	20	9.3
Arsenic	188.98	20	4.3
Barium	233.53	200	1.1
Beryllium	313.11	5.0	0.26
Cadmium	226.50	5.0	0.89
Calcium	227.54	800	110
Chromium	267.72	20	0.64
Cobalt	228.62	50	0.67
Copper	324.75	30	3.6
Iron	273.96	200	31.0
Lead	220.35	10	4.2
Magnesium	279.08	500	76.0
Manganese	257.61	50	10.0
Nickel	231.60	50	0.85
Potassium	766.49	1000	76.0
Selenium	196.03	30	12.0
Silver	328.07	30	6.9
Sodium	589.59	1000	29.0
Thallium	190.80	20	6.2
Vanadium	292.40	50	1.1
Zinc	206.20	50	4.9

Comments:

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 Date: 5/23/2014

Analyte	Wave-length (nm)	Interelement Correction Factors for: Al	Ca	Fe	Mg	Co
Aluminum	308.21		0.2233080	0.0000000	0.0701020	0.0000000
Antimony	206.83	0.0701592	0.0000000	0.0674350	0.0179504	0.0000000
Arsenic	188.97	0.0174178	-0.0088265	-0.0884562	0.0000000	0.0000000
Barium	233.52	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.10	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0431756	0.0000000	-0.0609472
Calcium	227.54	-0.3243120		-10.8248000	0.0000000	132.9590000
Chromium	267.71	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.61	0.0000000	0.0000000	0.0000000	0.0000000	
Copper	324.75	0.0000000	0.0000000	-0.0700935	0.0000000	0.0000000
Iron	273.95	0.1343570	0.0000000		0.0470804	0.0000000
Lead	220.35	-0.0790092	0.0000000	0.0463435	0.0000000	0.0000000
Magnesium	279.07	0.0000000	0.0000000	-0.4904110		0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0382888	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0070901	-0.2299410
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.02	-0.0317526	0.0130577	-0.3368140	0.0140859	-0.8537130
Silver	328.06	0.0000000	0.0000000	-0.0189754	0.0000000	0.0000000
Sodium	589.59	0.5397120	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0182396	-0.0273424	-0.1178140	-0.0203476	7.3690700
Titanium	334.94	0.0000000	-0.0139899	0.0000000	0.0397935	0.0000000
Vanadium	292.40	0.0000000	0.0000000	-0.0584959	0.0000000	0.0000000
Zinc	206.20	0.0180111	0.0000000	0.0274464	0.0000000	0.0000000

Comments:

U.S. EPA - CLP

11B

ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 Date: 5/23/2014

Analyte	Wave-length (nm)	Interelement Correction Factors for: Cr	Cu	Mn	Ni	Tl
Aluminum	308.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.83	12.4849000	0.3430880	0.0000000	0.0000000	0.0000000
Arsenic	188.97	-8.3245900	0.0000000	0.1625520	0.0000000	0.0000000
Barium	233.52	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.10	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0000000	-0.2837500	0.0000000
Calcium	227.54	0.0000000	0.0000000	0.0000000	50.2995000	0.0000000
Chromium	267.71		0.0000000	0.3638410	0.0000000	0.0000000
Cobalt	228.61	0.0000000	0.0000000	0.0000000	0.1588660	0.0000000
Copper	324.75	0.0000000		0.0000000	0.0000000	0.0000000
Iron	273.95	-3.2165500	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0000000	0.5546330	0.0000000	0.0827949	0.0000000
Magnesium	279.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000		0.0622839	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000		0.4445250
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.02	0.0000000	0.0000000	0.5398860	0.1103120	0.4185850
Silver	328.06	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.3498510	0.0000000	1.8574100	0.0000000	
Titanium	334.94	0.2442790	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	-2.1106300	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.20	-3.0140700	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

U.S. EPA - CLP

11B

ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 Date: 5/23/2014

Analyte	Wave-length (nm)	Interelement Correction Factors for: Ti	V	___	___	___
Aluminum	308.21	0.0000000	9.7081300			
Antimony	206.83	-0.7999450	-1.2353600			
Arsenic	188.97	0.0000000	0.0000000			
Barium	233.52	0.0000000	-1.2005400			
Beryllium	313.10	-1.7540100	-0.0381459			
Cadmium	226.50	0.0000000	0.0000000			
Calcium	227.54	0.0000000	59.4637000			
Chromium	267.71	0.0000000	-0.4278750			
Cobalt	228.61	2.0394600	0.0000000			
Copper	324.75	0.0000000	-0.1382010			
Iron	273.95	0.0000000	-35.2675000			
Lead	220.35	-0.5991290	0.0000000			
Magnesium	279.07	0.0000000	0.0000000			
Manganese	257.61	0.0000000	0.0000000			
Nickel	231.60	0.5814680	0.0000000			
Potassium	766.49	0.0000000	0.0000000			
Selenium	196.02	0.0000000	-0.1990150			
Silver	328.06	0.0000000	-0.8036820			
Sodium	589.59	0.0000000	0.0000000			
Thallium	190.80	1.1836200	5.3996100			
Titanium	334.94		0.0000000			
Vanadium	292.40	1.0181800				
Zinc	206.20	0.0000000	0.0000000			

Comments:

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12

ICP LINEAR RANGES (BIANNUALLY)

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 Date: 1/15/2014

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	0.20	500000	P
Antimony	0.20	50000	P
Arsenic	0.20	50000	P
Barium	0.20	100000	P
Beryllium	0.20	1000	P
Cadmium	0.20	50000	P
Calcium	0.20	500000	P
Chromium	0.20	50000	P
Cobalt	0.20	100000	P
Copper	0.20	50000	P
Iron	0.20	500000	P
Lead	0.20	100000	P
Magnesium	0.20	500000	P
Manganese	0.20	50000	P
Nickel	0.20	100000	P
Potassium	0.20	500000	P
Selenium	0.20	50000	P
Silver	0.20	2500	P
Sodium	0.20	500000	P
Thallium	0.20	50000	P
Vanadium	0.20	50000	P
Zinc	0.20	50000	P

Comments:

U.S. EPA - CLP

13

PREPARATION LOG

Diss Metals

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Method: 3005A Batch ID: 77552

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-MW-DUP01-061214	06/13/2014		50
DSY-MW08-0614	06/13/2014		50
DSY-MW218-0614	06/13/2014		50
DSY-MW219-0614	06/13/2014		50
LCSW	06/13/2014		50
PBW	06/13/2014		50

Comments:

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77552**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9448.65	103.8						
Antimony	455.0	486.95	107.0						
Arsenic	455.0	494.92	108.8						
Barium	9100.0	9633.41	105.9						
Beryllium	227.0	239.56	105.5						
Cadmium	227.0	247.73	109.1						
Calcium	22700.0	23023.30	101.4						
Chromium	910.0	982.32	107.9						
Cobalt	2270.0	2439.62	107.5						
Copper	1130.0	1195.36	105.8						
Iron	4550.0	5215.94	114.6						
Lead	455.0	481.97	105.9						
Magnesium	22700.0	24033.43	105.9						
Manganese	2270.0	2420.17	106.6						
Nickel	2270.0	2445.81	107.7						
Potassium	22700.0	24540.80	108.1						
Selenium	455.0	478.54	105.2						
Silver	1130.0	1200.23	106.2						
Sodium	22700.0	24294.75	107.0						
Thallium	455.0	439.18	96.5						
Vanadium	2270.0	2377.44	104.7						
Zinc	2270.0	2456.36	108.2						

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/16/2014 End Date: 06/16/2014

OPTIMA3_140616A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	0913		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S1	1.0	0916		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S2	1.0	0920		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S3	1.0	0924		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICV	1.0	0928		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICB	1.0	0931		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0935																									
ICSA	1.0	0939		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICSAB	1.0	0942		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	0946		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0950		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0954																									
ZZZZZZ	1.0	0957																									
ZZZZZZ	1.0	1001																									
ZZZZZZ	1.0	1005																									
ZZZZZZ	1.0	1009																									
ZZZZZZ	1.0	1013																									
ZZZZZZ	1.0	1016																									
CCV	1.0	1020		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1024		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1028																									
ZZZZZZ	1.0	1032																									
ZZZZZZ	1.0	1035																									
ZZZZZZ	1.0	1039																									
ZZZZZZ	1.0	1043																									
ZZZZZZ	5.0	1047																									
ZZZZZZ	1.0	1051																									
ZZZZZZ	20.0	1055																									
CCV	1.0	1059		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1102		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	20.0	1106																									
ZZZZZZ	20.0	1110																									

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/16/2014 End Date: 06/16/2014

OPTIMA3_140616A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	20.0	1113																								
ZZZZZZ	20.0	1117																								
CCV	1.0	1121		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1125		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PBW	1.0	1128		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW	1.0	1132		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1136																								
ZZZZZZ	1.0	1139																								
ZZZZZZ	1.0	1143																								
ZZZZZZ	1.0	1147																								
ZZZZZZ	1.0	1151																								
ZZZZZZ	1.0	1154																								
CCV	1.0	1158		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1202		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1205																								
ZZZZZZ	1.0	1209																								
ZZZZZZ	1.0	1213																								
ZZZZZZ	1.0	1217																								
ZZZZZZ	1.0	1221																								
ZZZZZZ	1.0	1225																								
ZZZZZZ	1.0	1228																								
ZZZZZZ	1.0	1232																								
ZZZZZZ	5.0	1236																								
CCV	1.0	1240		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1244		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1247																								
ZZZZZZ	20.0	1251																								
ZZZZZZ	1.0	1255																								
DSY-MW08-0614	1.0	1259		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1303																								
DSY-MW219-0614	1.0	1306		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1310																								

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/16/2014 End Date: 06/16/2014

OPTIMA3_140616A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
DSY-MW-DUP01-061214	1.0	1314		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1318																									
DSY-MW218-0614	1.0	1321		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	1325		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1329		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1023-D

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/16/14 9:28				06/16/14 9:46		06/16/14 10:20		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum	10000.0	10131.49	101.3	10000.0	10166.85	101.7	10126.20	101.3	P
Antimony	500.0	476.49	95.3	500.0	469.06	93.8	474.48	94.9	P
Arsenic	500.0	508.19	101.6	500.0	505.19	101.0	503.34	100.7	P
Barium	10000.0	10146.62	101.5	10000.0	10040.59	100.4	10096.08	101.0	P
Beryllium	250.0	248.10	99.2	250.0	246.05	98.4	246.52	98.6	P
Cadmium	250.0	255.77	102.3	250.0	251.98	100.8	249.70	99.9	P
Calcium	25000.0	24232.47	96.9	25000.0	23986.17	95.9	24142.63	96.6	P
Chromium	1000.0	1011.77	101.2	1000.0	994.37	99.4	988.84	98.9	P
Cobalt	2500.0	2469.11	98.8	2500.0	2429.94	97.2	2418.40	96.7	P
Copper	1250.0	1242.54	99.4	1250.0	1229.76	98.4	1238.22	99.1	P
Iron	5000.0	5228.12	104.6	5000.0	5199.54	104.0	5187.73	103.8	P
Lead	500.0	502.45	100.5	500.0	497.99	99.6	499.28	99.9	P
Magnesium	25000.0	25035.37	100.1	25000.0	24939.75	99.8	24906.69	99.6	P
Manganese	2500.0	2527.65	101.1	2500.0	2500.00	100.0	2512.93	100.5	P
Nickel	2500.0	2518.51	100.7	2500.0	2473.03	98.9	2461.37	98.5	P
Potassium	25000.0	25118.67	100.5	25000.0	25251.33	101.0	25367.86	101.5	P
Selenium	500.0	498.00	99.6	500.0	493.19	98.6	501.03	100.2	P
Silver	1250.0	1249.39	100	1250.0	1237.07	99.0	1245.26	99.6	P
Sodium	25000.0	25224.75	100.9	25000.0	25325.83	101.3	25454.13	101.8	P
Thallium	500.0	459.95	92.0	500.0	456.59	91.3	456.93	91.4	P
Vanadium	2500.0	2505.71	100.2	2500.0	2481.45	99.3	2493.27	99.7	P
Zinc	2500.0	2577.90	103.1	2500.0	2542.80	101.7	2514.73	100.6	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/16/14 10:59		06/16/14 11:21		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10239.53	102.4	10160.44	101.6	P
Antimony				500.0	485.75	97.1	486.00	97.2	P
Arsenic				500.0	517.32	103.5	518.57	103.7	P
Barium				10000.0	10228.53	102.3	10157.55	101.6	P
Beryllium				250.0	250.42	100.2	248.48	99.4	P
Cadmium				250.0	258.42	103.4	255.71	102.3	P
Calcium				25000.0	24456.83	97.8	24415.90	97.7	P
Chromium				1000.0	1020.02	102.0	1020.27	102.0	P
Cobalt				2500.0	2496.10	99.8	2487.68	99.5	P
Copper				1250.0	1248.34	99.9	1243.90	99.5	P
Iron				5000.0	5378.77	107.6	5292.35	105.8	P
Lead				500.0	512.53	102.5	507.44	101.5	P
Magnesium				25000.0	25339.58	101.4	25079.34	100.3	P
Manganese				2500.0	2547.51	101.9	2535.21	101.4	P
Nickel				2500.0	2548.85	102.0	2541.14	101.6	P
Potassium				25000.0	25927.79	103.7	26072.53	104.3	P
Selenium				500.0	511.35	102.3	502.22	100.4	P
Silver				1250.0	1254.25	100.3	1249.23	99.9	P
Sodium				25000.0	25683.48	102.7	25809.82	103.2	P
Thallium				500.0	469.44	93.9	472.13	94.4	P
Vanadium				2500.0	2521.04	100.8	2504.18	100.2	P
Zinc				2500.0	2643.67	105.7	2608.66	104.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/16/14 11:58		06/16/14 12:40		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10267.51	102.7	10215.49	102.2	P
Antimony				500.0	485.14	97.0	492.95	98.6	P
Arsenic				500.0	519.55	103.9	519.99	104.0	P
Barium				10000.0	10275.36	102.8	10213.39	102.1	P
Beryllium				250.0	251.81	100.7	249.52	99.8	P
Cadmium				250.0	254.00	101.6	256.52	102.6	P
Calcium				25000.0	24345.62	97.4	24606.17	98.4	P
Chromium				1000.0	1006.34	100.6	1020.01	102.0	P
Cobalt				2500.0	2462.95	98.5	2494.72	99.8	P
Copper				1250.0	1256.68	100.5	1251.86	100.1	P
Iron				5000.0	5227.89	104.6	5287.07	105.7	P
Lead				500.0	509.35	101.9	512.07	102.4	P
Magnesium				25000.0	25404.03	101.6	25180.94	100.7	P
Manganese				2500.0	2562.59	102.5	2548.40	101.9	P
Nickel				2500.0	2520.72	100.8	2543.16	101.7	P
Potassium				25000.0	25853.56	103.4	26277.61	105.1	P
Selenium				500.0	513.12	102.6	508.17	101.6	P
Silver				1250.0	1259.07	100.7	1254.88	100.4	P
Sodium				25000.0	25665.41	102.7	26286.52	105.1	P
Thallium				500.0	467.31	93.5	471.16	94.2	P
Vanadium				2500.0	2529.54	101.2	2515.83	100.6	P
Zinc				2500.0	2581.22	103.2	2603.00	104.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/16/14 13:25				
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10352.28	103.5			P
Antimony				500.0	488.31	97.7			P
Arsenic				500.0	516.90	103.4			P
Barium				10000.0	10344.49	103.4			P
Beryllium				250.0	253.68	101.5			P
Cadmium				250.0	255.60	102.2			P
Calcium				25000.0	24536.58	98.1			P
Chromium				1000.0	1014.40	101.4			P
Cobalt				2500.0	2477.71	99.1			P
Copper				1250.0	1268.31	101.5			P
Iron				5000.0	5278.46	105.6			P
Lead				500.0	508.73	101.7			P
Magnesium				25000.0	25579.09	102.3			P
Manganese				2500.0	2586.53	103.5			P
Nickel				2500.0	2530.85	101.2			P
Potassium				25000.0	26358.03	105.4			P
Selenium				500.0	509.33	101.9			P
Silver				1250.0	1268.01	101.4			P
Sodium				25000.0	26073.38	104.3			P
Thallium				500.0	472.44	94.5			P
Vanadium				2500.0	2550.75	102.0			P
Zinc				2500.0	2594.43	103.8			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77552**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140616A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/16/14 9:50	C	06/16/14 10:24	C	06/16/14 11:02	C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.3	U	4.300	U	P
Barium	2.3	B	1.2	B	1.6	B	2.9	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	110.0	U	131.4	B	251.2	B	110.0	U	110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.7	U	0.7	U	0.7	U	0.9	B	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	45.6	B	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	B	0.8	U	0.8	U	1.0	B	0.850	U	P
Potassium	76.0	U	132.1	B	149.6	B	121.9	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	29.0	U	-35.0	B	-101.0	B	-160.7	B	29.000	U	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.2	B	1.100	U	P
Zinc	4.9	U	4.9	U	5.0	B	15.4	B	9.456	B	P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140616A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/16/14 11:25	C	06/16/14 12:02	C	06/16/14 12:44	C	Preparation Blank	C	M
Aluminum			66.0	U	66.0	U	66.0	U			P
Antimony			9.3	U	9.3	U	9.3	U			P
Arsenic			4.3	U	4.3	U	4.3	U			P
Barium			1.7	B	1.9	B	3.4	B			P
Beryllium			0.3	U	0.3	U	0.3	U			P
Cadmium			0.9	U	0.9	U	0.9	U			P
Calcium			110.0	U	110.0	U	110.0	U			P
Chromium			0.6	U	0.6	U	0.6	U			P
Cobalt			0.7	U	0.7	U	0.9	B			P
Copper			3.6	U	3.6	U	3.6	U			P
Iron			31.0	U	31.0	U	31.0	U			P
Lead			4.2	U	4.2	U	4.2	U			P
Magnesium			76.0	U	76.0	U	76.0	U			P
Manganese			10.0	U	10.0	U	10.0	U			P
Nickel			0.8	U	0.8	U	1.1	B			P
Potassium			76.0	U	76.0	U	161.1	B			P
Selenium			12.0	U	12.0	U	12.0	U			P
Silver			6.9	U	6.9	U	6.9	U			P
Sodium			-183.3	B	-195.2	B	125.8	B			P
Thallium			6.2	U	6.2	U	6.2	U			P
Vanadium			1.1	U	1.1	U	1.1	U			P
Zinc			5.0	B	4.9	U	4.9	U			P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140616A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/16/14 13:29	C		C		C	Preparation Blank	C	M
Aluminum			66.0	U							P
Antimony			9.3	U							P
Arsenic			4.3	U							P
Barium			2.2	B							P
Beryllium			0.3	U							P
Cadmium			0.9	U							P
Calcium			110.0	U							P
Chromium			0.6	U							P
Cobalt			0.7	U							P
Copper			3.6	U							P
Iron			31.0	U							P
Lead			4.2	U							P
Magnesium			76.0	U							P
Manganese			10.0	U							P
Nickel			0.8	U							P
Potassium			121.2	B							P
Selenium			12.0	U							P
Silver			6.9	U							P
Sodium			-39.1	B							P
Thallium			6.2	U							P
Vanadium			1.1	B							P
Zinc			4.9	U							P

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	544239	552471	110.5				
Antimony	0	600	-9	636.5	106.1				
Arsenic	0	100	-2	103.7	103.7				
Barium	0	500	4	527	105.4				
Beryllium	0	500	0	505.5	101.1				
Cadmium	0	1000	2	975.6	97.6				
Calcium	500000	500000	555749	557790.8	111.6				
Chromium	0	500	1	498.1	99.6				
Cobalt	0	500	2	479.8	96.0				
Copper	0	500	1	539.5	107.9				
Iron	200000	200000	192192	195218.9	97.6				
Lead	0	500	1	499.1	99.8				
Magnesium	500000	500000	497179	503270.9	100.7				
Manganese	0	500	-19	489.3	97.9				
Nickel	0	1000	0	937.1	93.7				
Potassium	0	25000	48	26555.8	106.2				
Selenium	0	500	12	507.3	101.5				
Silver	0	200	4	223.4	111.7				
Sodium	0	25000	-63	26166.4	104.7				
Thallium	0	100	11	98	98.0				
Vanadium	0	500	-1	503.8	100.8				
Zinc	0	1000	-1	952.8	95.3				

6/16

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13

PREPARATION LOG

DISS Metals

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Method: 3005A Batch ID: 77590

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-MW-RB01-061314	06/16/2014		50
DSY-MW204-0614	06/16/2014		50
DSY-MW204-0614D	06/16/2014		50
DSY-MW204-0614S	06/16/2014		50
LCSW	06/16/2014		50
PBW	06/16/2014		50

Comments:

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source:

Aqueous LCS Source:

LCS(D) ID:
LCS-77590

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9343.63	102.7						
Antimony	455.0	495.83	109.0						
Arsenic	455.0	497.13	109.3						
Barium	9100.0	9544.32	104.9						
Beryllium	227.0	237.43	104.6						
Cadmium	227.0	246.66	108.7						
Calcium	22700.0	22526.58	99.2						
Chromium	910.0	967.94	106.4						
Cobalt	2270.0	2405.91	106.0						
Copper	1130.0	1183.54	104.7						
Iron	4550.0	4987.19	109.6						
Lead	455.0	484.86	106.6						
Magnesium	22700.0	23969.12	105.6						
Manganese	2270.0	2398.85	105.7						
Nickel	2270.0	2412.38	106.3						
Potassium	22700.0	24641.26	108.6						
Selenium	455.0	491.66	108.1						
Silver	1130.0	1177.26	104.2						
Sodium	22700.0	24851.10	109.5						
Thallium	455.0	442.51	97.3						
Vanadium	2270.0	2367.74	104.3						
Zinc	2270.0	2416.13	106.4						

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5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

DSY-MW204-0614S

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	9860		66.0	U	9100	108		P
Antimony	75-125	499		9.3	U	456	110		P
Arsenic	75-125	518		4.3	U	456	114		P
Barium	75-125	9660		21.7	B	9100	106		P
Beryllium	75-125	244		0.26	U	227	108		P
Cadmium	75-125	238		0.89	U	227	105		P
Chromium	75-125	980		0.64	U	910	108		P
Cobalt	75-125	2420		0.67	U	2270	106		P
Copper	75-125	1220		4.0	B	1130	107		P
Iron	75-125	5120		31.0	U	4550	112		P
Lead	75-125	486		4.2	U	455	107		P
Manganese	75-125	2490		37.1	B	2270	108		P
Nickel	75-125	2410		3.3	B	2270	106		P
Selenium	75-125	497		13.1	B	455	106		P
Silver	75-125	1190		6.9	U	1130	106		P
Thallium	75-125	441		6.2	U	455	97		P
Vanadium	75-125	2410		1.2	B	2270	106		P
Zinc	75-125	2440		13.0	B	2270	107		P
Mercury	75-125	4.7		0.028	U	4.6	103		CV

Comments:

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6

DUPLICATES

EPA SAMPLE NO.

DSY-MW204-0614D

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Level (low/med): MED

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		66.0000	U	66.0000	U			P
Antimony		9.3000	U	9.3000	U			P
Arsenic		4.3000	U	4.3000	U			P
Barium	PQL = 200	21.6922	B	17.9741	B	18.7		P
Beryllium		0.2600	U	0.2600	U			P
Cadmium		0.8900	U	0.8900	U			P
Calcium		55880.9066		53161.9757		5		P
Chromium		0.6400	U	0.6400	U			P
Cobalt		0.6700	U	0.6700	U			P
Copper	PQL = 30	3.9830	B	3.6000	U	200		P
Iron		31.0000	U	31.0000	U			P
Lead		4.2000	U	4.2000	U			P
Magnesium		13460.0975		12661.2305		6.1		P
Manganese		37.0755	B	32.9986	B	11.6		P
Nickel	PQL = 50	3.2911	B	2.2561	B	37.3		P
Potassium	1000.0	3048.7125		2911.7185		4.6		P
Selenium	PQL = 30	13.0608	B	12.0000	U	200		P
Silver		6.9000	U	6.9000	U			P
Sodium		82421.1429		77290.9852		6.4		P
Thallium		6.2000	U	6.2000	U			P
Vanadium	PQL = 50	1.1745	B	1.1000	U	200		P
Zinc	PQL = 50	13.0273	B	10.6961	B	19.7		P
Mercury		0.0280	U	0.0280	U			CV

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9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

DSY-MW204-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Level (low/med): MED

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	66.00	U	330.00	U			P
Antimony	9.30	U	46.50	U			P
Arsenic	4.30	U	21.50	U			P
Barium	21.69	B	33.51	B	55		P
Beryllium	0.26	U	1.30	U			P
Cadmium	0.89	U	4.45	U			P
Calcium	55880.91		54391.58		3	✓	P
Chromium	0.64	U	3.20	U			P
Cobalt	0.67	U	3.35	U			P
Copper	3.98	B	18.00	U	100		P
Iron	31.00	U	155.00	U			P
Lead	4.20	U	21.00	U			P
Magnesium	13460.10		13772.95		2	✓	P
Manganese	37.08	B	50.00	U	100		P
Nickel	3.29	B	4.33	B	32		P
Potassium	3048.71		3738.71		23		P
Selenium	13.06	B	60.00	U	100		P
Silver	6.90	U	34.50	U			P
Sodium	82421.14		85455.08		4	✓	P
Thallium	6.20	U	31.00	U			P
Vanadium	1.17	B	5.50	U	100		P
Zinc	13.03	B	24.50	U	100		P

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN	
S0	1.0	0748		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S1	1.0	0751		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S2	1.0	0755		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S3	1.0	0759		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICV	1.0	0802		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICB	1.0	0806		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0810																										
ICSA	1.0	0814		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICSAB	1.0	0817		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	0821		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0825		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0829																										
ZZZZZZ	1.0	0832																										
ZZZZZZ	1.0	0836																										
ZZZZZZ	1.0	0840																										
ZZZZZZ	1.0	0843																										
ZZZZZZ	1.0	0847																										
CCV	1.0	0851		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0854		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0858																										
ZZZZZZ	1.0	0902																										
ZZZZZZ	1.0	0906																										
ZZZZZZ	1.0	0909																										
ZZZZZZ	1.0	0913																										
ZZZZZZ	1.0	0917																										
ZZZZZZ	5.0	0921																										
CCV	1.0	0925		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	0929		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	0932																										
ZZZZZZ	1.0	0936																										
ZZZZZZ	1.0	0940																										
ZZZZZZ	1.0	0943																										

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	0947																								
ZZZZZZ	20.0	0951																								
ZZZZZZ	1.0	0955																								
ZZZZZZ	1.0	0958																								
ZZZZZZ	1.0	1002																								
ZZZZZZ	1.0	1006																								
CCV	1.0	1010		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1013		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1017																								
ZZZZZZ	1.0	1021																								
ZZZZZZ	1.0	1024																								
ZZZZZZ	1.0	1028																								
ZZZZZZ	1.0	1032																								
ZZZZZZ	1.0	1036																								
ZZZZZZ	1.0	1040																								
ZZZZZZ	5.0	1043																								
ZZZZZZ	20.0	1047																								
CCV	1.0	1051		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1054		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PBW	1.0	1058		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW	1.0	1102		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1106																								
ZZZZZZ	1.0	1109																								
ZZZZZZ	1.0	1113																								
ZZZZZZ	1.0	1117																								
ZZZZZZ	1.0	1121																								
ZZZZZZ	1.0	1125																								
ZZZZZZ	1.0	1129																								
ZZZZZZ	1.0	1132																								
CCV	1.0	1136		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1140		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1144																								

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	1147																								
ZZZZZZ	1.0	1151																								
ZZZZZZ	1.0	1155																								
ZZZZZZ	5.0	1159																								
ZZZZZZ	1.0	1203																								
ZZZZZZ	1.0	1206																								
ZZZZZZ	1.0	1210																								
ZZZZZZ	1.0	1214																								
ZZZZZZ	5.0	1218																								
CCV	1.0	1222		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1225		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1229																								
ZZZZZZ	1.0	1233																								
ZZZZZZ	1.0	1236																								
ZZZZZZ	1.0	1240																								
ZZZZZZ	1.0	1244																								
ZZZZZZ	1.0	1247																								
CCV	1.0	1251		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1255		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	20.0	1259																								
ZZZZZZ	1.0	1303																								
ZZZZZZ	1.0	1307																								
ZZZZZZ	1.0	1310																								
ZZZZZZ	5.0	1314																								
ZZZZZZ	1.0	1318																								
DSY-MW204-0614	1.0	1322		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DSY-MW204-0614D	1.0	1326		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
DSY-MW204-0614S	1.0	1329		X	X	X	X	X	X		X	X	X	X	X		X		X		X	X		X	X	X	
DSY-MW204-0614L	5.0	1333		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/17/2014 End Date: 06/17/2014

OPTIMA3_140617A

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV	1.0	1337		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1341		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1344																									
ZZZZZZ	1.0	1348																									
DSY-MW-RB01-061314	1.0	1352		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1356																									
ZZZZZZ	1.0	1359																									
CCV	1.0	1403		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1407		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/17/14 8:02				06/17/14 8:21		06/17/14 08:51		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum	10000.0	10108.82	101.1	10000.0	10312.58	103.1	10146.57	101.5	P
Antimony	500.0	470.88	94.2	500.0	483.92	96.8	478.55	95.7	P
Arsenic	500.0	518.25	103.7	500.0	525.02	105.0	517.23	103.4	P
Barium	10000.0	10173.14	101.7	10000.0	10231.08	102.3	10212.76	102.1	P
Beryllium	250.0	248.65	99.5	250.0	248.96	99.6	248.67	99.5	P
Cadmium	250.0	253.14	101.3	250.0	255.95	102.4	254.82	101.9	P
Calcium	25000.0	24166.43	96.7	25000.0	24526.59	98.1	24019.66	96.1	P
Chromium	1000.0	1004.89	100.5	1000.0	1014.40	101.4	1007.19	100.7	P
Cobalt	2500.0	2452.60	98.1	2500.0	2477.97	99.1	2456.13	98.2	P
Copper	1250.0	1245.86	99.7	1250.0	1253.86	100.3	1252.09	100.2	P
Iron	5000.0	5188.26	103.8	5000.0	5298.62	106.0	5188.95	103.8	P
Lead	500.0	510.90	102.2	500.0	516.09	103.2	505.09	101.0	P
Magnesium	25000.0	25035.42	100.1	25000.0	25313.35	101.3	25153.98	100.6	P
Manganese	2500.0	2532.07	101.3	2500.0	2541.09	101.6	2536.60	101.5	P
Nickel	2500.0	2505.77	100.2	2500.0	2531.32	101.3	2507.71	100.3	P
Potassium	25000.0	25048.70	100.2	25000.0	25682.62	102.7	25891.40	103.6	P
Selenium	500.0	510.16	102.0	500.0	519.41	103.9	512.66	102.5	P
Silver	1250.0	1253.67	100.3	1250.0	1262.22	101.0	1258.88	100.7	P
Sodium	25000.0	25397.63	101.6	25000.0	25976.69	103.9	26135.45	104.5	P
Thallium	500.0	465.84	93.2	500.0	468.38	93.7	466.48	93.3	P
Vanadium	2500.0	2515.11	100.6	2500.0	2533.94	101.4	2526.57	101.1	P
Zinc	2500.0	2555.22	102.2	2500.0	2567.27	102.7	2544.04	101.8	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 9:25		06/17/14 10:10		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10151.17	101.5	10243.27	102.4	P
Antimony				500.0	489.73	97.9	502.09	100.4	P
Arsenic				500.0	514.78	103.0	521.19	104.2	P
Barium				10000.0	10219.49	102.2	10342.13	103.4	P
Beryllium				250.0	247.64	99.1	252.05	100.8	P
Cadmium				250.0	254.48	101.8	255.94	102.4	P
Calcium				25000.0	24160.33	96.6	24200.15	96.8	P
Chromium				1000.0	1012.02	101.2	1010.32	101.0	P
Cobalt				2500.0	2473.46	98.9	2471.86	98.9	P
Copper				1250.0	1249.24	99.9	1262.04	101.0	P
Iron				5000.0	5220.13	104.4	5212.36	104.2	P
Lead				500.0	508.81	101.8	513.65	102.7	P
Magnesium				25000.0	25171.72	100.7	25551.61	102.2	P
Manganese				2500.0	2535.30	101.4	2566.49	102.7	P
Nickel				2500.0	2519.91	100.8	2520.86	100.8	P
Potassium				25000.0	25901.64	103.6	26001.75	104.0	P
Selenium				500.0	511.80	102.4	525.76	105.2	P
Silver				1250.0	1257.45	100.6	1267.82	101.4	P
Sodium				25000.0	26255.32	105.0	26182.40	104.7	P
Thallium				500.0	464.25	92.9	468.76	93.8	P
Vanadium				2500.0	2524.11	101.0	2556.51	102.3	P
Zinc				2500.0	2560.35	102.4	2559.46	102.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: _____ SAS No.: _____ SDG No.: SN1023-D

Initial Calibration Source: _____

Continuing Calibration Source: _____

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 10:51		06/17/14 11:36		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10335.37	103.4	10295.84	103.0	P
Antimony				500.0	516.79	103.4	516.97	103.4	P
Arsenic				500.0	533.27	106.7	532.10	106.4	P
Barium				10000.0	10400.65	104.0	10377.67	103.8	P
Beryllium				250.0	254.14	101.7	252.82	101.1	P
Cadmium				250.0	261.47	104.6	260.47	104.2	P
Calcium				25000.0	24665.25	98.7	24707.74	98.8	P
Chromium				1000.0	1032.23	103.2	1029.03	102.9	P
Cobalt				2500.0	2530.85	101.2	2514.56	100.6	P
Copper				1250.0	1270.55	101.6	1271.06	101.7	P
Iron				5000.0	5345.93	106.9	5318.42	106.4	P
Lead				500.0	523.75	104.7	524.20	104.8	P
Magnesium				25000.0	25739.03	103.0	25619.48	102.5	P
Manganese				2500.0	2585.56	103.4	2580.43	103.2	P
Nickel				2500.0	2579.16	103.2	2564.12	102.6	P
Potassium				25000.0	26268.32	105.1	26620.20	106.5	P
Selenium				500.0	526.43	105.3	529.14	105.8	P
Silver				1250.0	1275.10	102.0	1275.35	102.0	P
Sodium				25000.0	26471.64	105.9	27035.67	108.1	P
Thallium				500.0	483.32	96.7	483.14	96.6	P
Vanadium				2500.0	2568.45	102.7	2567.77	102.7	P
Zinc				2500.0	2636.74	105.5	2608.39	104.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 12:22		06/17/14 12:51		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10452.12	104.5	10394.43	103.9	P
Antimony				500.0	516.26	103.3	514.67	102.9	P
Arsenic				500.0	529.89	106.0	530.05	106.0	P
Barium				10000.0	10472.60	104.7	10430.11	104.3	P
Beryllium				250.0	257.34	102.9	257.17	102.9	P
Cadmium				250.0	256.77	102.7	257.71	103.1	P
Calcium				25000.0	24649.31	98.6	24655.68	98.6	P
Chromium				1000.0	1025.24	102.5	1038.72	103.9	P
Cobalt				2500.0	2510.45	100.4	2530.00	101.2	P
Copper				1250.0	1286.98	103.0	1280.78	102.5	P
Iron				5000.0	5326.61	106.5	5402.37	108.0	P
Lead				500.0	515.16	103.0	515.85	103.2	P
Magnesium				25000.0	25910.65	103.6	25772.55	103.1	P
Manganese				2500.0	2616.89	104.7	2611.93	104.5	P
Nickel				2500.0	2562.21	102.5	2589.42	103.6	P
Potassium				25000.0	26869.60	107.5	26401.42	105.6	P
Selenium				500.0	524.43	104.9	530.02	106.0	P
Silver				1250.0	1282.91	102.6	1277.62	102.2	P
Sodium				25000.0	27032.80	108.1	27189.77	108.8	P
Thallium				500.0	483.35	96.7	483.36	96.7	P
Vanadium				2500.0	2580.53	103.2	2567.84	102.7	P
Zinc				2500.0	2631.48	105.3	2654.63	106.2	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 13:37		06/17/14 14:03		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum				10000.0	10403.34	104.0	10436.91	104.4	P
Antimony				500.0	494.92	99.0	499.31	99.9	P
Arsenic				500.0	534.53	106.9	535.38	107.1	P
Barium				10000.0	10446.48	104.5	10476.53	104.8	P
Beryllium				250.0	257.61	103.0	257.79	103.1	P
Cadmium				250.0	257.80	103.1	259.37	103.7	P
Calcium				25000.0	24762.55	99.1	24625.08	98.5	P
Chromium				1000.0	1034.82	103.5	1032.86	103.3	P
Cobalt				2500.0	2531.03	101.2	2529.54	101.2	P
Copper				1250.0	1282.36	102.6	1282.16	102.6	P
Iron				5000.0	5371.33	107.4	5369.04	107.4	P
Lead				500.0	518.50	103.7	520.08	104.0	P
Magnesium				25000.0	25832.26	103.3	26033.45	104.1	P
Manganese				2500.0	2612.25	104.5	2620.41	104.8	P
Nickel				2500.0	2582.33	103.3	2586.13	103.4	P
Potassium				25000.0	26519.92	106.1	27456.30	109.8	P
Selenium				500.0	531.73	106.3	526.04	105.2	P
Silver				1250.0	1274.41	102.0	1273.50	101.9	P
Sodium				25000.0	26616.39	106.5	27408.40	109.6	P
Thallium				500.0	479.46	95.9	482.74	96.5	P
Vanadium				2500.0	2571.70	102.9	2577.08	103.1	P
Zinc				2500.0	2653.64	106.1	2657.77	106.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77590**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 8:25	C	06/17/14 8:54	C	06/17/14 9:29	C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U	66.0	U	66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U	9.3	U	9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U	4.3	U	4.300	U	P
Barium	2.6	B	1.8	B	2.4	B	2.7	B	1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U	0.3	U	0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U	0.9	U	0.890	U	P
Calcium	110.0	U	110.0	U	110.0	U	110.0	U	110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U	0.6	U	0.640	U	P
Cobalt	0.7	B	0.7	U	0.7	U	0.7	U	0.670	U	P
Copper	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Iron	31.0	U	31.0	U	31.0	U	31.0	U	31.000	U	P
Lead	4.2	U	4.2	U	4.2	U	4.2	U	4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U	76.0	U	76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Nickel	0.9	U	0.8	U	0.8	U	0.8	U	0.850	U	P
Potassium	95.1	B	108.5	B	92.0	B	89.7	B	76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U	12.0	U	12.000	U	P
Silver	6.9	U	6.9	U	6.9	U	6.9	U	6.900	U	P
Sodium	66.6	B	70.4	B	91.6	B	144.3	B	120.650	B	P
Thallium	6.2	U	6.2	U	6.2	U	6.2	U	6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.1	U	1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U	4.9	U	4.900	U	P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 10:13	C	06/17/14 10:54	C	06/17/14 11:40	C	Preparation Blank	C	M
Aluminum			66.0	U	66.0	U	66.0	U			P
Antimony			9.3	U	9.3	U	9.3	U			P
Arsenic			4.3	U	4.3	U	4.3	U			P
Barium			2.0	B	2.2	B	1.7	B			P
Beryllium			0.3	U	0.3	U	0.3	U			P
Cadmium			0.9	U	0.9	U	0.9	U			P
Calcium			110.0	U	110.0	U	110.0	U			P
Chromium			0.6	U	0.6	U	0.6	U			P
Cobalt			0.7	U	0.7	U	0.7	U			P
Copper			3.6	U	3.6	U	3.6	U			P
Iron			31.0	U	31.0	U	31.0	U			P
Lead			4.2	U	4.2	U	4.2	U			P
Magnesium			76.0	U	76.0	U	76.0	U			P
Manganese			10.0	U	10.0	U	10.0	U			P
Nickel			0.8	U	0.8	U	0.8	U			P
Potassium			159.8	B	81.5	B	98.0	B			P
Selenium			12.0	U	12.0	U	12.0	U			P
Silver			6.9	U	6.9	U	6.9	U			P
Sodium			155.1	B	150.8	B	232.2	B			P
Thallium			6.2	U	6.2	U	6.2	U			P
Vanadium			1.1	U	1.1	U	1.1	U			P
Zinc			4.9	U	4.9	U	4.9	U			P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 12:25	C	06/17/14 12:55	C	06/17/14 13:41	C	Preparation Blank	C	M
Aluminum			66.0	U	66.0	U	66.0	U			P
Antimony			9.3	U	9.3	U	9.3	U			P
Arsenic			4.3	U	4.9	B	4.3	U			P
Barium			2.3	B	2.1	B	2.4	B			P
Beryllium			0.3	U	0.3	U	0.3	U			P
Cadmium			0.9	U	0.9	U	0.9	U			P
Calcium			110.0	U	110.0	U	110.0	U			P
Chromium			0.6	U	0.6	U	0.6	U			P
Cobalt			0.7	U	0.7	U	0.7	U			P
Copper			3.6	U	3.6	U	3.6	U			P
Iron			31.0	U	31.0	U	31.0	U			P
Lead			4.2	U	4.2	U	4.2	U			P
Magnesium			76.0	U	76.0	U	76.0	U			P
Manganese			10.0	U	10.0	U	10.0	U			P
Nickel			0.8	U	0.8	U	0.8	U			P
Potassium			93.7	B	143.6	B	155.9	B			P
Selenium			12.0	U	12.0	U	12.0	U			P
Silver			6.9	U	6.9	U	6.9	U			P
Sodium			153.5	B	394.0	B	161.9	B			P
Thallium			6.2	U	6.2	U	6.2	U			P
Vanadium			1.1	U	1.1	U	1.1	U			P
Zinc			4.9	U	4.9	U	4.9	U			P

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): Method Blank ID:

Preparation Blank Concentration Units (ug/L or mg/kg):

OPTIMA3_140617A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/17/14 14:07	C		C		C	Preparation Blank	C	M
Aluminum			66.0	U							P
Antimony			9.3	U							P
Arsenic			4.3	U							P
Barium			2.4	B							P
Beryllium			0.3	U							P
Cadmium			0.9	U							P
Calcium			110.0	U							P
Chromium			0.6	U							P
Cobalt			0.7	U							P
Copper			3.6	U							P
Iron			31.0	U							P
Lead			4.2	U							P
Magnesium			76.0	U							P
Manganese			10.0	U							P
Nickel			0.8	U							P
Potassium			293.1	B							P
Selenium			12.0	U							P
Silver			6.9	U							P
Sodium			206.1	B							P
Thallium			6.2	U							P
Vanadium			1.1	U							P
Zinc			4.9	U							P

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	539029	539066.8	107.8				
Antimony	0	600	-10	626.8	104.5				
Arsenic	0	100	2	104.9	104.9				
Barium	0	500	4	519.3	103.9				
Beryllium	0	500	0	494.3	98.9				
Cadmium	0	1000	2	953	95.3				
Calcium	500000	500000	547222	543493.1	108.7				
Chromium	0	500	1	483.3	96.7				
Cobalt	0	500	2	466	93.2				
Copper	0	500	1	530	106.0				
Iron	200000	200000	190563	190738.5	95.4				
Lead	0	500	-1	488.8	97.8				
Magnesium	500000	500000	494913	494138.8	98.8				
Manganese	0	500	-19	479.9	96.0				
Nickel	0	1000	-2	908.5	90.8				
Potassium	0	25000	10	26044.2	104.2				
Selenium	0	500	8	504.1	100.8				
Silver	0	200	2	218.6	109.3				
Sodium	0	25000	-2	25731.4	102.9				
Thallium	0	100	18	100.9	100.9				
Vanadium	0	500	0	497.6	99.5				
Zinc	0	1000	0	919.6	92.0				

6/17

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13

PREPARATION LOG

Diss metals

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Method: 3005A Batch ID: 77745

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
DSY-MW104A-0614	06/24/2014		50
LCSW	06/24/2014		50
LCSW02	06/24/2014		50
PBW	06/24/2014		50

Comments:

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77745**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9436.41	103.7						
Antimony	455.0	491.26	108.0						
Arsenic	455.0	489.23	107.5						
Barium	9100.0	9711.67	106.7						
Beryllium	227.0	244.27	107.6						
Cadmium	227.0	243.43	107.2						
Calcium	22700.0	23004.53	101.3						
Chromium	910.0	977.93	107.5						
Cobalt	2270.0	2414.17	106.4						
Copper	1130.0	1212.03	107.3						
Iron	4550.0	5022.49	110.4						
Lead	455.0	481.35	105.8						
Magnesium	22700.0	24325.59	107.2						
Manganese	2270.0	2450.36	107.9						
Nickel	2270.0	2427.10	106.9						
Potassium	22700.0	24031.72	105.9						
Selenium	455.0	475.95	104.6						
Silver	1130.0	1203.30	106.5						
Sodium	22700.0	24413.51	107.5						
Thallium	455.0	436.24	95.9						
Vanadium	2270.0	2415.73	106.4						
Zinc	2270.0	2439.47	107.5						

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCSD-77745**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Aluminum	9100.0	9018.19	99.1						
Antimony	455.0	464.47	102.1						
Arsenic	455.0	467.27	102.7						
Barium	9100.0	9295.26	102.1						
Beryllium	227.0	233.58	102.9						
Cadmium	227.0	233.56	102.9						
Calcium	22700.0	21883.36	96.4						
Chromium	910.0	938.41	103.1						
Cobalt	2270.0	2319.54	102.2						
Copper	1130.0	1158.14	102.5						
Iron	4550.0	4828.97	106.1						
Lead	455.0	458.39	100.7						
Magnesium	22700.0	23369.40	102.9						
Manganese	2270.0	2346.12	103.4						
Nickel	2270.0	2333.47	102.8						
Potassium	22700.0	24139.17	106.3						
Selenium	455.0	459.32	100.9						
Silver	1130.0	1153.61	102.1						
Sodium	22700.0	24474.24	107.8						
Thallium	455.0	422.09	92.8						
Vanadium	2270.0	2307.23	101.6						
Zinc	2270.0	2354.72	103.7						

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9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

DSY-MW104A-0614

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 2

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Matrix (soil/water): WATER Level (low/med): MED

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	66.00	U	330.00	U			P
Antimony	9.30	U	46.50	U			P
Arsenic	4.30	U	21.50	U			P
Barium	252.65		256.77		2	✓	P
Beryllium	0.26	U	1.30	U			P
Cadmium	0.89	U	4.45	U			P
Calcium	107960.90		102434.65		5	✓	P
Chromium	0.64	U	3.20	U			P
Cobalt	8.53	B	7.67	B	10		P
Copper	19.76	B	18.65	B	6		P
Iron	31.00	U	155.00	U			P
Lead	4.20	U	21.00	U			P
Magnesium	24859.70		25443.27		2	✓	P
Manganese	6264.64		6410.94		2	✓	P
Nickel	30.97	B	31.68	B	2		P
Potassium	33216.74		34517.55		4	✓	P
Selenium	12.00	U	60.00	U			P
Silver	6.90	U	34.50	U			P
Sodium	23575.22		23509.17		0	✓	P
Thallium	6.20	U	31.00	U			P
Vanadium	1.10	U	5.50	U			P
Zinc	36.57	B	39.20	B	7		P

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: OPTIMA3 Method: P

Start Date: 06/25/2014 End Date: 06/25/2014

OPTIMA3_140625B

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	1132		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S1	1.0	1136		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S2	1.0	1139		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
S3	1.0	1143		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICV	1.0	1147		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICB	1.0	1150		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1154																									
ICSA	1.0	1158		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ICSAB	1.0	1202		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCV	1.0	1205		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1209		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
PBW	1.0	1213		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW	1.0	1216		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
LCSW02	1.0	1220		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
ZZZZZZ	1.0	1224																									
DSY-MW104A-0614	1.0	1228		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	
DSY-MW104A-0614L	5.0	1232		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	
ZZZZZZ	1.0	1235																									
ZZZZZZ	20.0	1239																									
DSY-MW104A-0614	20.0	1243																					X				
DSY-MW104A-0614L	100.0	1246																					X				
CCV	1.0	1250		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	
CCB	1.0	1254		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	

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2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/25/14 11:47				06/25/14 12:05		06/25/14 12:50		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminum	10000.0	10337.91	103.4	10000.0	9983.54	99.8	10365.00	103.7	P
Antimony	500.0	477.81	95.6	500.0	461.77	92.4	490.83	98.2	P
Arsenic	500.0	525.68	105.1	500.0	507.55	101.5	525.50	105.1	P
Barium	10000.0	10480.36	104.8	10000.0	10120.62	101.2	10495.55	105.0	P
Beryllium	250.0	257.29	102.9	250.0	248.66	99.5	259.30	103.7	P
Cadmium	250.0	264.22	105.7	250.0	250.56	100.2	256.98	102.8	P
Calcium	25000.0	25155.67	100.6	25000.0	24027.51	96.1	24875.99	99.5	P
Chromium	1000.0	1052.71	105.3	1000.0	999.86	100	1033.29	103.3	P
Cobalt	2500.0	2559.40	102.4	2500.0	2431.14	97.2	2504.73	100.2	P
Copper	1250.0	1286.37	102.9	1250.0	1240.79	99.3	1290.69	103.3	P
Iron	5000.0	5413.32	108.3	5000.0	5174.68	103.5	5315.14	106.3	P
Lead	500.0	520.54	104.1	500.0	497.04	99.4	517.75	103.6	P
Magnesium	25000.0	25827.20	103.3	25000.0	24963.05	99.9	25899.73	103.6	P
Manganese	2500.0	2609.07	104.4	2500.0	2522.69	100.9	2622.57	104.9	P
Nickel	2500.0	2618.08	104.7	2500.0	2490.31	99.6	2568.41	102.7	P
Potassium	25000.0	25793.97	103.2	25000.0	25927.12	103.7	26131.66	104.5	P
Selenium	500.0	520.71	104.1	500.0	504.48	100.9	522.71	104.5	P
Silver	1250.0	1282.41	102.6	1250.0	1238.77	99.1	1283.52	102.7	P
Sodium	25000.0	26170.53	104.7	25000.0	26282.61	105.1	26442.63	105.8	P
Thallium	500.0	485.64	97.1	500.0	461.14	92.2	478.04	95.6	P
Vanadium	2500.0	2585.96	103.4	2500.0	2497.55	99.9	2591.79	103.7	P
Zinc	2500.0	2677.55	107.1	2500.0	2552.20	102.1	2628.10	105.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77745**

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

OPTIMA3_140625B

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/25/14 12:09	C	06/25/14 12:54	C		C	Preparation Blank	C	M
Aluminum	66.0	U	66.0	U	66.0	U			66.000	U	P
Antimony	9.3	U	9.3	U	9.3	U			9.300	U	P
Arsenic	4.3	U	4.3	U	4.3	U			4.300	U	P
Barium	1.1	U	1.3	B	2.0	B			1.100	U	P
Beryllium	0.3	U	0.3	U	0.3	U			0.260	U	P
Cadmium	0.9	U	0.9	U	0.9	U			0.890	U	P
Calcium	110.0	U	110.0	U	110.0	U			110.000	U	P
Chromium	0.6	U	0.6	U	0.6	U			0.640	U	P
Cobalt	0.7	U	0.7	U	0.7	U			0.670	U	P
Copper	3.6	U	3.6	U	3.6	U			3.600	U	P
Iron	31.0	U	31.0	U	31.0	U			31.000	U	P
Lead	4.2	U	4.2	U	4.2	U			4.200	U	P
Magnesium	76.0	U	76.0	U	76.0	U			76.000	U	P
Manganese	10.0	U	10.0	U	10.0	U			10.000	U	P
Nickel	0.9	U	0.8	U	0.8	U			0.850	U	P
Potassium	76.0	U	76.0	U	76.0	U			76.000	U	P
Selenium	12.0	U	12.0	U	12.0	U			12.000	U	P
Silver	6.9	U	6.9	U	6.9	U			6.900	U	P
Sodium	29.0	U	-29.1	B	29.0	U			29.000	U	P
Thallium	6.2	U	6.2	U	6.2	U			6.200	U	P
Vanadium	1.1	U	1.1	U	1.1	U			1.100	U	P
Zinc	4.9	U	4.9	U	4.9	U			4.900	U	P

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4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

ICP ID Number: OPTIMA3 ICS Source:

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found %R	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	542648	533515.7	106.7				
Antimony	0	600	-2	629.2	104.9				
Arsenic	0	100	1	94.4	94.4				
Barium	0	500	5	517.3	103.5				
Beryllium	0	500	0	494.8	99.0				
Cadmium	0	1000	1	941.4	94.1				
Calcium	500000	500000	563007	540294.2	108.1				
Chromium	0	500	1	482.8	96.6				
Cobalt	0	500	2	462.5	92.5				
Copper	0	500	0	528	105.6				
Iron	200000	200000	194739	191946.7	96.0				
Lead	0	500	6	486.9	97.4				
Magnesium	500000	500000	504795	495725.4	99.1				
Manganese	0	500	-9	488.6	97.7				
Nickel	0	1000	-1	907.1	90.7				
Potassium	0	25000	200	25886.8	103.5				
Selenium	0	500	5	496.3	99.3				
Silver	0	200	1	217.3	108.7				
Sodium	0	25000	39	25521.7	102.1				
Thallium	0	100	-7	88.4	88.4				
Vanadium	0	500	0	495	99.0				
Zinc	0	1000	0	922.2	92.2				

6/25

Hg Diss

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13

PREPARATION LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Method: 7470A Batch ID: 77585

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
CCB	06/16/2014		100
CCV	06/16/2014		100
ICB	06/16/2014		100
ICV	06/16/2014		100
S0	06/16/2014		100
S0.2	06/16/2014		100
S1.0	06/16/2014		100
S10.0	06/16/2014		100
S2.0	06/16/2014		100
S5.0	06/16/2014		100
DSY-MW-DUP01-061214	06/16/2014		100
DSY-MW-RB01-061314	06/16/2014		100
DSY-MW08-0614	06/16/2014		100
DSY-MW204-0614	06/16/2014		100
DSY-MW204-0614D	06/16/2014		100
DSY-MW204-0614S	06/16/2014		100
DSY-MW218-0614	06/16/2014		100
DSY-MW219-0614	06/16/2014		100
LCSW	06/16/2014		100
PBW	06/16/2014		100

Comments:

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7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source:

Aqueous LCS Source:

LCS(D) ID:
LCS-77585

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury	4.6	4.76	103.5						

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: FIMS2 Method: CV

Start Date: 06/17/2014 End Date: 06/17/2014

FIMS2_140617A

EPA Sample No.	D/F	Time	%R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	1722																X								
S0.2	1.0	1723																X								
S1.0	1.0	1725																X								
S2.0	1.0	1727																X								
S5.0	1.0	1728																X								
S10.0	1.0	1730																X								
ICV	1.0	1732																X								
ICB	1.0	1733																X								
PBW	1.0	1735																X								
LCSW	1.0	1737																X								
ZZZZZZ	1.0	1738																								
ZZZZZZ	1.0	1740																								
ZZZZZZ	1.0	1742																								
ZZZZZZ	1.0	1743																								
ZZZZZZ	1.0	1745																								
ZZZZZZ	1.0	1747																								
ZZZZZZ	1.0	1748																								
CCV	1.0	1750																X								
CCB	1.0	1752																X								
ZZZZZZ	1.0	1753																								
ZZZZZZ	1.0	1755																								
ZZZZZZ	1.0	1757																								
DSY-MW08-0614	1.0	1758																X								
ZZZZZZ	1.0	1800																								
DSY-MW219-0614	1.0	1802																X								
ZZZZZZ	1.0	1803																								
DSY-MW-DUP01-061214	1.0	1805																X								
ZZZZZZ	1.0	1807																								
CCV	1.0	1808																X								
CCB	1.0	1810																X								
DSY-MW218-0614	1.0	1812																X								

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14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: FIMS2 Method: CV

Start Date: 06/17/2014 End Date: 06/17/2014

FIMS2_140617A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	1813																										
ZZZZZZ	1.0	1815																										
ZZZZZZ	1.0	1817																										
DSY-MW204-0614	1.0	1818																X										
DSY-MW204-0614D	1.0	1820																X										
DSY-MW204-0614S	1.0	1822																X										
ZZZZZZ	1.0	1823																										
DSY-MW-RB01-061314	1.0	1825																X										
CCV	1.0	1827																X										
CCB	1.0	1828																X										

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/17/14 17:32				06/17/14 17:50		06/17/14 18:08		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury	5.0	5.12	102.4	5.0	5.14	102.8	5.09	101.9	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
					06/17/14 18:27				
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury				5.0	4.87	97.4			CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77585**

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

FIMS2_140617A

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	06/17/14 17:52	C	06/17/14 18:10	C	06/17/14 18:28	C		C	M
Mercury	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	CV

U.S. EPA - CLP

13

PREPARATION LOG

Hg Diss

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Method: 7470A Batch ID: 77747

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
CCB	06/24/2014		100
CCV	06/24/2014		100
ICB	06/24/2014		100
ICV	06/24/2014		100
S0	06/24/2014		100
S1.0	06/24/2014		100
S10.0	06/24/2014		100
S2.0	06/24/2014		100
S5.0	06/24/2014		100
DSY-MW104A-0614	06/24/2014		100
LCSW	06/24/2014		100
LCSW02	06/24/2014		100
PBW	06/24/2014		100

Comments:

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source: LCS(D) ID:

Aqueous LCS Source: **LCS-77747**

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury	4.6	4.49	97.6						

7

LABORATORY CONTROL SAMPLE

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Solid LCS Source:

Aqueous LCS Source:

LCS(D) ID:
LCSD-77747

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/Kg) True	Found	C	Limits		%R
Mercury	4.6	4.64	100.9						

U.S. EPA - CLP

14

ANALYSIS RUN LOG

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Instrument ID Number: FIMS2 Method: CV

Start Date: 06/25/2014 End Date: 06/25/2014

FIMS2_140625A

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CO	CR	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.0	1017																X								
S0.20	1.0	1019																X								
S1.0	1.0	1020																X								
S2.0	1.0	1022																X								
S5.0	1.0	1024																X								
S10.0	1.0	1025																X								
ICV	1.0	1027																X								
ICB	1.0	1029																X								
PBW	1.0	1030																X								
LCSW	1.0	1032																X								
LCSW02	1.0	1034																X								
ZZZZZZ	1.0	1035																								
ZZZZZZ	1.0	1037																								
ZZZZZZ	1.0	1039																								
ZZZZZZ	1.0	1040																								
ZZZZZZ	1.0	1042																								
ZZZZZZ	1.0	1044																								
CCV	1.0	1045																X								
CCB	1.0	1047																X								
DSY-MW104A-0614	1.0	1049																X								
ZZZZZZ	1.0	1050																								
CCV	1.0	1052																X								
CCB	1.0	1054																X								

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
	06/25/14 10:27				06/25/14 10:45		06/25/14 10:52		
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury	5.0	5.03	100.6	5.0	4.89	97.7	5.00	100.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

3

BLANKS

Lab Name: Spectrum Analytical, Inc. Contract: 1106151, 24-CTO-165

Lab Code: MITKEM Case No.: SAS No.: SDG No.: SN1023-D

Preparation Blank Matrix (soil/water): WATER Method Blank ID: **MB-77747**

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

FIMS2_140625A

Analyte	Initial Calibration Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 06/25/14 10:47	C	Continuing Calibration Blank (ug/L) 06/25/14 10:54	C		C	Preparation Blank	C	M
Mercury	0.155	B	0.128	B	0.121	B			0.028	U	CV

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : Tetra Tech, Inc.

Project: CTO-165, NAVSTA-NEWPORT

Laboratory Workorder / SDG #: N1023

SM 2320B, SM 4500D S-, SW846 9056A, SW846 9060A

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test codes:
SM 2320B, SM 4500D S-, SW846 9056A, SW846 9060A

IV. PREPARATION

Samples were prepared following procedures in laboratory test codes:
SM 2320B, SM 4500D S-, SW846 9056A, SW846 9060A

V. INSTRUMENTATION

The following instrumentation was used:

Instrument Code: IC1
Instrument Type: IC

Description: DX-500
Manufacturer: Dionex
Model: DX-500
GC Column used: 0.25 m X 4 mm ID [um thickness] AS14A-7 capillary column.

Instrument Code: SPEC2
Instrument Type: SP
Description: Spectronic 20 Genesys
Manufacturer: Spectronic Instruments
Model: 4004-000

Instrument Code: TOC1
Instrument Type: TOC
Description: TOC
Manufacturer: Tekmar Dohrman
Model: Apollo 9000

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Matrix spikes were performed on samples: DSY-MW12-0614 (N1023-19CMS), DSY-MW12-0614 (N1023-19CMSD), DSY-MW204-0614 (N1023-11BMS), DSY-MW204-0614 (N1023-11CMS), DSY-MW204-0614 (N1023-11CMSD), DSY-MW204-0614 (N1023-11DMS), DSY-MW-DUP02-062014 (N1023-23CMS) and DSY-MW-DUP02-062014 (N1023-23CMSD).

Percent recoveries were within the QC limits with the following exceptions:

DSY-MW204-0614 (N1023-11CMS), recovery is below criteria for Chloride at 48% with criteria of (80-120) and Nitrogen, Nitrite (As N) at 63% with criteria of (80-120).

DSY-MW204-0614 (N1023-11CMSD), recovery is above criteria for Nitrogen, Nitrate (As N) at 137% with criteria of (80-120) and Sulfate at 130% with criteria of (80-120).

Percent recoveries were within the QC limits with the following exceptions:

DSY-MW204-0614 (N1023-11CMSD), Relative Percent Difference is greater than reported RPD limit for Nitrogen, Nitrate (As N), Sulfate, Nitrogen, Nitrite (As N). This sample had high native concentration of Chloride which interfered with the recovery of other anions.

D. Duplicate sample:

Duplicate analyses were performed on samples: DSY-MW204-0614 (N1023-11BDUP), DSY-MW204-0614 (N1023-11CDUP) and DSY-MW204-0614 (N1023-11DDUP).

Relative percent differences were within the QC limits.

E. Dilutions:

The following samples were analyzed at dilution:

DSY-MW08-0614 (N1023-02D), dilution factor: 10 for Chloride
DSY-MW222-0614 (N1023-03C), dilution factor: 2 for Chloride
DSY-MW220-0614 (N1023-06C), dilution factor: 3 for Chloride
DSY-MW218-0614 (N1023-07D), dilution factor: 3 for Chloride
DSY-MW03-0614 (N1023-09C), dilution factor: 5 for Chloride
DSY-MW221-0614 (N1023-10C), dilution factor: 2 for Chloride
DSY-MW204-0614 (N1023-11C), dilution factor: 5 for Chloride
DSY-MW204-0614 (N1023-11CMS), dilution factor: 5 for Chloride
DSY-MW204-0614 (N1023-11CMSD), dilution factor: 5 for Chloride
DSY-MW02A-0614 (N1023-12C), dilution factor: 3 for Chloride
DSY-MW12-0614 (N1023-19C), dilution factor: 3 for Chloride
DSY-MW12-0614 (N1023-19CMS), dilution factor: 3 for Chloride
DSY-MW12-0614 (N1023-19CMSD), dilution factor: 3 for Chloride
DSY-MW11B-0614 (N1023-22C), dilution factor: 2 for Chloride
DSY-MW-DUP02-062014 (N1023-23C), dilution factor: 2 for Chloride
DSY-MW-DUP02-062014 (N1023-23CMS), dilution factor: 2 for Chloride
DSY-MW-DUP02-062014 (N1023-23CMSD), dilution factor: 2 for

Chloride

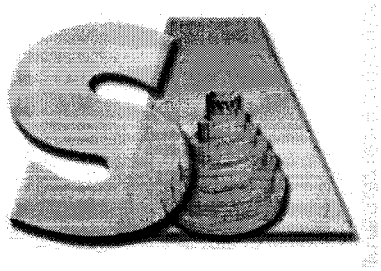
F. **Samples:**

No other unusual occurrences were noted during sample analysis.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed: Shawn B Lawler

Date: 06/27/2014



SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Data Flag/Qualifiers (Page 1 of 2):

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

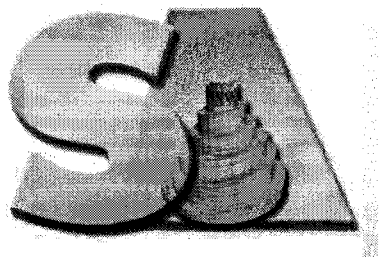
B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as an aldol condensation by-product.



Data Flag/Qualifiers (Page 2 of 2):

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

L NYSDEC qualifier: Result is biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

N1023

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SM2320_W
SM 2320B -- Alkalinity (Total)

Sample ID: **MB-77670**	SampType: **MBLK**	TestCode: **SM2320_W**			Prep Date: **06/19/14 11:47**			Run ID: **MANUAL_140619B**				
Client ID: **MB-77670**	Batch ID: **77670**	Units: **mg/L CaCO3**			Analysis Date: **06/19/14 11:47**			SeqNo: **2105119**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	20 ^	20									

Sample ID: **MB-77720**	SampType: **MBLK**	TestCode: **SM2320_W**			Prep Date: **06/23/14 13:00**			Run ID: **MANUAL_140623A**				
Client ID: **MB-77720**	Batch ID: **77720**	Units: **mg/L CaCO3**			Analysis Date: **06/23/14 13:00**			SeqNo: **2107897**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	20 ^	20									

Sample ID: **LCS-77670**	SampType: **LCS**	TestCode: **SM2320_W**			Prep Date: **06/19/14 11:47**			Run ID: **MANUAL_140619B**				
Client ID: **LCS-77670**	Batch ID: **77670**	Units: **mg/L CaCO3**			Analysis Date: **06/19/14 12:02**			SeqNo: **2105120**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	102.0	20 ^	20	100.0	0	102	80	120	0			

Sample ID: **LCS-77720**	SampType: **LCS**	TestCode: **SM2320_W**			Prep Date: **06/23/14 13:00**			Run ID: **MANUAL_140623A**				
Client ID: **LCS-77720**	Batch ID: **77720**	Units: **mg/L CaCO3**			Analysis Date: **06/23/14 13:07**			SeqNo: **2107898**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101.0	20 ^	20	100.0	0	101	80	120	0			

Sample ID: **LCSD-77720**	SampType: **LCSD**	TestCode: **SM2320_W**			Prep Date: **06/23/14 13:00**			Run ID: **MANUAL_140623A**				
Client ID: **LCSD-77720**	Batch ID: **77720**	Units: **mg/L CaCO3**			Analysis Date: **06/23/14 13:15**			SeqNo: **2107899**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	101.0	20 ^	20	100.0	0	101	80	120	101.0	0	20	

Sample ID: **N1023-11CDUP**	SampType: **DUP**	TestCode: **SM2320_W**			Prep Date: **06/19/14 11:47**			Run ID: **MANUAL_140619B**				
Client ID: **DSY-MW204-0614**	Batch ID: **77670**	Units: **mg/L CaCO3**			Analysis Date: **06/19/14 14:30**			SeqNo: **2105130**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	51.00	20 ^	20	0	0	0	0	0	49.00	4.0	20	

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
m14.06.26.1533 J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

N1023

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SM2320_W
SM 2320B -- Alkalinity (Total)

Sample ID: **N1023-11CMS**	SampType: **MS**	TestCode: **SM2320_W**		Prep Date: **06/19/14 11:47**		Run ID: **MANUAL_140619B**		
Client ID: **DSY-MW204-0614**	Batch ID: **77670**	Units: **mg/L CaCO3**		Analysis Date: **06/19/14 14:45**		SeqNo: **2105131**		

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	99.00	20 ^	20	50.00	49.00	100	75	125	0			

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

N023

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SM4500_S-_W
SM 4500D S- -- Total Sulfides by Methylene Blue Method

Sample ID: **MB-77588**	SampType: **MBLK**	TestCode: **SM4500_S-_W**			Prep Date: **06/16/14 14:45**			Run ID: **SPEC2_140616B**				
Client ID: **MB-77588**	Batch ID: **77588**	Units: **mg/L**			Analysis Date: **06/16/14 15:00**			SeqNo: **2102720**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	ND	0.030 ^	0.030									

Sample ID: **MB-77677**	SampType: **MBLK**	TestCode: **SM4500_S-_W**			Prep Date: **06/19/14 16:30**			Run ID: **SPEC2_140619A**				
Client ID: **MB-77677**	Batch ID: **77677**	Units: **mg/L**			Analysis Date: **06/19/14 16:30**			SeqNo: **2105426**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	ND	0.030 ^	0.030									

Sample ID: **MB-77800**	SampType: **MBLK**	TestCode: **SM4500_S-_W**			Prep Date: **06/26/14 9:00**			Run ID: **SPEC2_140626A**				
Client ID: **MB-77800**	Batch ID: **77800**	Units: **mg/L**			Analysis Date: **06/26/14 9:00**			SeqNo: **2108808**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	ND	0.030 ^	0.030									

Sample ID: **LCS-77588**	SampType: **LCS**	TestCode: **SM4500_S-_W**			Prep Date: **06/16/14 14:45**			Run ID: **SPEC2_140616B**				
Client ID: **LCS-77588**	Batch ID: **77588**	Units: **mg/L**			Analysis Date: **06/16/14 15:02**			SeqNo: **2102696**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	0.1850	0.030 ^	0.030	0.2000	0	92.5	80	120	0			

Sample ID: **LCS-77677**	SampType: **LCS**	TestCode: **SM4500_S-_W**			Prep Date: **06/19/14 16:30**			Run ID: **SPEC2_140619A**				
Client ID: **LCS-77677**	Batch ID: **77677**	Units: **mg/L**			Analysis Date: **06/19/14 16:37**			SeqNo: **2105427**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	0.2000	0.030 ^	0.030	0.2000	0	100	80	120	0			

Sample ID: **LCS-77800**	SampType: **LCS**	TestCode: **SM4500_S-_W**			Prep Date: **06/26/14 9:00**			Run ID: **SPEC2_140626A**				
Client ID: **LCS-77800**	Batch ID: **77800**	Units: **mg/L**			Analysis Date: **06/26/14 9:03**			SeqNo: **2108809**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	0.1880	0.030 ^	0.030	0.2000	0	94.0	80	120	0			

Sample ID: **LCSD-77677**	SampType: **LCSD**	TestCode: **SM4500_S-_W**			Prep Date: **06/19/14 16:30**			Run ID: **SPEC2_140619A**				
Client ID: **LCSD-77677**	Batch ID: **77677**	Units: **mg/L**			Analysis Date: **06/19/14 16:45**			SeqNo: **2105428**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	0.2060	0.030 ^	0.030	0.2000	0	103	80	120	0.2000	2.96	20	

Page 29 of 30

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank

m14.06.26.1533 J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SM4500_S-_W

SM 4500D S- – Total Sulfides by Methylene Blue Method

Sample ID: **LCSD-77800**	SampType: **LCSD**	TestCode: **SM4500_S-_W**			Prep Date: **06/26/14 9:00**			Run ID: **SPEC2_140626A**				
Client ID: **LCSD-77800**	Batch ID: **77800**	Units: **mg/L**			Analysis Date: **06/26/14 9:06**			SeqNo: **2108810**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	0.1890	0.030 ^	0.030	0.2000	0	94.5	80	120	0.1880	0.531	20	

Sample ID: **N1023-11DDUP**	SampType: **DUP**	TestCode: **SM4500_S-_W**			Prep Date: **06/16/14 14:45**			Run ID: **SPEC2_140616B**				
Client ID: **DSY-MW204-0614**	Batch ID: **77588**	Units: **mg/L**			Analysis Date: **06/16/14 15:21**			SeqNo: **2102704**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	ND	0.030 ^	0.030	0	0	0	0	0	0	0	20	

Sample ID: **N1023-11DMS**	SampType: **MS**	TestCode: **SM4500_S-_W**			Prep Date: **06/16/14 14:45**			Run ID: **SPEC2_140616B**				
Client ID: **DSY-MW204-0614**	Batch ID: **77588**	Units: **mg/L**			Analysis Date: **06/16/14 15:24**			SeqNo: **2102705**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	0.1880	0.030 ^	0.030	0.2000	0	94.0	75	125	0			

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
m14.06.26.1533 J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SW9056_W
SW846 9056A -- Ion Chromotography

Sample ID: MB-77700	SampType: MBLK	TestCode: SW9056_W	Prep Date: 06/21/14 9:23	Run ID: IC1_140621B
Client ID: MB-77700	Batch ID: 77700	Units: mg/L	Analysis Date: 06/21/14 12:49	SeqNo: 2107956

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.20 ^	2.0									
Nitrogen, Nitrite (As N)	ND	0.013 ^	0.13									
Nitrogen, Nitrate (As N)	ND	0.042 ^	0.13									
Sulfate	ND	1.7 ^	5.0									

Sample ID: LCS-77700	SampType: LCS	TestCode: SW9056_W	Prep Date: 06/21/14 9:23	Run ID: IC1_140621B
Client ID: LCS-77700	Batch ID: 77700	Units: mg/L	Analysis Date: 06/21/14 13:00	SeqNo: 2107945

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	15.02	0.20 ^	2.0	16.00	0	93.9	80	120	0			
Nitrogen, Nitrite (As N)	0.9938	0.013 ^	0.13	1.000	0	99.4	80	120	0			
Nitrogen, Nitrate (As N)	0.9241	0.042 ^	0.13	1.000	0	92.4	80	120	0			
Sulfate	37.48	1.7 ^	5.0	40.00	0	93.7	80	120	0			

Sample ID: N1023-11CMS	SampType: MS	TestCode: SW9056_W	Prep Date: 06/13/14 16:11	Run ID: IC1_140613B
Client ID: DSY-MW204-0614	Batch ID: 77559	Units: mg/L	Analysis Date: 06/13/14 19:05	SeqNo: 2104314

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.6263	0.013 ^	0.13	1.000	0	62.6	80	120	0			S
Nitrogen, Nitrate (As N)	3.151	0.042 ^	0.13	1.000	2.292	85.9	80	120	0			
Sulfate	61.03	1.7 ^	5.0	40.00	24.53	91.2	80	120	0			

Sample ID: N1023-11CMS	SampType: MS	TestCode: SW9056_W	Prep Date: 06/13/14 16:11	Run ID: IC1_140617A
Client ID: DSY-MW204-0614	Batch ID: 77559	Units: mg/L	Analysis Date: 06/18/14 0:47	SeqNo: 2104578

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	195.1	1.0 ^	10	16.00	187.4	48.2	80	120	0	>4X		S

Sample ID: N1023-19CMS	SampType: MS	TestCode: SW9056_W	Prep Date: 06/17/14 15:05	Run ID: IC1_140617A
Client ID: DSY-MW12-0614	Batch ID: 77622	Units: mg/L	Analysis Date: 06/17/14 16:57	SeqNo: 2104545

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.8288	0.013 ^	0.13	1.000	0	82.9	80	120	0			
Nitrogen, Nitrate (As N)	0.9405	0.042 ^	0.13	1.000	0	94.1	80	120	0			
Sulfate	66.88	1.7 ^	5.0	40.00	26.85	100	80	120	0			

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

m14.06.26.1533

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SW9056_W
SW846 9056A -- Ion Chromotography

Sample ID: N1023-19CMS	SampType: MS	TestCode: SW9056_W	Prep Date: 06/17/14 15:05	Run ID: IC1_140617A
Client ID: DSY-MW12-0614	Batch ID: 77622	Units: mg/L	Analysis Date: 06/17/14 17:32	SeqNo: 2104548

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	107.9	0.60 ^	6.0	16.00	93.73	88.3	80	120	0			

Sample ID: N1023-23CMS	SampType: MS	TestCode: SW9056_W	Prep Date: 06/21/14 9:23	Run ID: IC1_140621B
Client ID: DSY-MW-DUP02-062	Batch ID: 77700	Units: mg/L	Analysis Date: 06/21/14 13:36	SeqNo: 2107951

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.8423	0.013 ^	0.13	1.000	0	84.2	80	120	0			
Nitrogen, Nitrate (As N)	0.9172	0.042 ^	0.13	1.000	0	91.7	80	120	0			
Sulfate	70.69	1.7 ^	5.0	40.00	31.70	97.5	80	120	0			

Sample ID: N1023-23CMS	SampType: MS	TestCode: SW9056_W	Prep Date: 06/21/14 9:23	Run ID: IC1_140621B
Client ID: DSY-MW-DUP02-062	Batch ID: 77700	Units: mg/L	Analysis Date: 06/21/14 14:22	SeqNo: 2107958

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	94.14	0.40 ^	4.0	16.00	80.12	87.6	80	120	0			

Sample ID: N1023-11CMSD	SampType: MSD	TestCode: SW9056_W	Prep Date: 06/13/14 16:11	Run ID: IC1_140613B
Client ID: DSY-MW204-0614	Batch ID: 77559	Units: mg/L	Analysis Date: 06/13/14 19:17	SeqNo: 2104315

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.9884	0.013 ^	0.13	1.000	0	98.8	80	120	0.6263	44.9	15	R
Nitrogen, Nitrate (As N)	3.666	0.042 ^	0.13	1.000	2.292	137	80	120	3.151	15.1	15	SR
Sulfate	76.61	1.7 ^	5.0	40.00	24.53	130	80	120	61.03	22.6	15	SR

Sample ID: N1023-11CMSD	SampType: MSD	TestCode: SW9056_W	Prep Date: 06/13/14 16:11	Run ID: IC1_140617A
Client ID: DSY-MW204-0614	Batch ID: 77559	Units: mg/L	Analysis Date: 06/18/14 0:58	SeqNo: 2104579

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	202.3	1.0 ^	10	16.00	187.4	93.4	80	120	195.1	3.64	15	

Sample ID: N1023-19CMSD	SampType: MSD	TestCode: SW9056_W	Prep Date: 06/17/14 15:05	Run ID: IC1_140617A
Client ID: DSY-MW12-0614	Batch ID: 77622	Units: mg/L	Analysis Date: 06/17/14 17:09	SeqNo: 2104546

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.8273	0.013 ^	0.13	1.000	0	82.7	80	120	0.8288	0.184	15	
Nitrogen, Nitrate (As N)	0.9428	0.042 ^	0.13	1.000	0	94.3	80	120	0.9405	0.242	15	
Sulfate	67.19	1.7 ^	5.0	40.00	26.85	101	80	120	66.88	0.461	15	

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank

m14.06.26.1533 J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SW9056_W
SW846 9056A -- Ion Chromotography

Sample ID: **N1023-19CMSD** SampType: **MSD** TestCode: **SW9056_W** Prep Date: **06/17/14 15:05** Run ID: **IC1_140617A**
Client ID: **DSY-MW12-0614** Batch ID: **77622** Units: **mg/L** Analysis Date: **06/17/14 17:44** SeqNo: **2104549**

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	107.6	0.60 ^	6.0	16.00	93.73	87.0	80	120	107.9	0.199	15	

Sample ID: **N1023-23CMSD** SampType: **MSD** TestCode: **SW9056_W** Prep Date: **06/21/14 9:23** Run ID: **IC1_140621B**
Client ID: **DSY-MW-DUP02-062** Batch ID: **77700** Units: **mg/L** Analysis Date: **06/21/14 13:47** SeqNo: **2107952**

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrite (As N)	0.8679	0.013 ^	0.13	1.000	0	86.8	80	120	0.8423	2.99	15	
Nitrogen, Nitrate (As N)	0.9490	0.042 ^	0.13	1.000	0	94.9	80	120	0.9172	3.4	15	
Sulfate	72.18	1.7 ^	5.0	40.00	31.70	101	80	120	70.69	2.1	15	

Sample ID: **N1023-23CMSD** SampType: **MSD** TestCode: **SW9056_W** Prep Date: **06/21/14 9:23** Run ID: **IC1_140621B**
Client ID: **DSY-MW-DUP02-062** Batch ID: **77700** Units: **mg/L** Analysis Date: **06/21/14 14:34** SeqNo: **2107959**

Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	94.04	0.40 ^	4.0	16.00	80.12	87.0	80	120	94.14	0.102	15	

Qualifiers: ND - Not Detected at the Limit of Detection; S - Recovery outside accepted recovery limits; LOD - Limit of Detection; B - Analyte detected in the associated Method Blank
J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)

N1023

CLIENT: Tetra Tech, Inc.
Work Order: N1023
Project: CTO-165, NAVSTA-NEWPORT

ANALYTICAL QC SUMMARY REPORT

SW9060_TOC_W

SW846 9060A -- Total Organic Carbon by combustion

Sample ID: **MB-77607**	SampType: **MBLK**	TestCode: **SW9060_TOC_W**			Prep Date: **06/17/14 8:55**			Run ID: **TOC1_140617B**				
Client ID: **MB-77607**	Batch ID: **77607**	Units: **mg/L**			Analysis Date: **06/17/14 12:02**			SeqNo: **2103440**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	5.0 ^	10									

Sample ID: **MB-77770**	SampType: **MBLK**	TestCode: **SW9060_TOC_W**			Prep Date: **06/25/14 9:38**			Run ID: **TOC1_140625A**				
Client ID: **MB-77770**	Batch ID: **77770**	Units: **mg/L**			Analysis Date: **06/25/14 12:41**			SeqNo: **2109073**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	5.0 ^	10									

Sample ID: **LCS-77607**	SampType: **LCS**	TestCode: **SW9060_TOC_W**			Prep Date: **06/17/14 8:55**			Run ID: **TOC1_140617B**				
Client ID: **LCS-77607**	Batch ID: **77607**	Units: **mg/L**			Analysis Date: **06/17/14 12:24**			SeqNo: **2103441**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	56.90	5.0 ^	10	60.00	0	94.8	80	120	0			

Sample ID: **LCS-77770**	SampType: **LCS**	TestCode: **SW9060_TOC_W**			Prep Date: **06/25/14 9:38**			Run ID: **TOC1_140625A**				
Client ID: **LCS-77770**	Batch ID: **77770**	Units: **mg/L**			Analysis Date: **06/25/14 13:03**			SeqNo: **2109068**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	64.93	5.0 ^	10	60.00	0	108	80	120	0			

Sample ID: **LCSD-77770**	SampType: **LCSD**	TestCode: **SW9060_TOC_W**			Prep Date: **06/25/14 9:38**			Run ID: **TOC1_140625A**				
Client ID: **LCSD-77770**	Batch ID: **77770**	Units: **mg/L**			Analysis Date: **06/25/14 13:23**			SeqNo: **2109069**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	69.70	5.0 ^	10	60.00	0	116	80	120	64.93	7.09	20	

Sample ID: **N1023-11BDUP**	SampType: **DUP**	TestCode: **SW9060_TOC_W**			Prep Date: **06/17/14 8:55**			Run ID: **TOC1_140617B**				
Client ID: **DSY-MW204-0614**	Batch ID: **77607**	Units: **mg/L**			Analysis Date: **06/17/14 16:50**			SeqNo: **2103448**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	5.0 ^	10	0	0	0	0	0	0	0	20	

Sample ID: **N1023-11BMS**	SampType: **MS**	TestCode: **SW9060_TOC_W**			Prep Date: **06/17/14 8:55**			Run ID: **TOC1_140617B**				
Client ID: **DSY-MW204-0614**	Batch ID: **77607**	Units: **mg/L**			Analysis Date: **06/17/14 17:12**			SeqNo: **2103449**				
Analyte	Result	LOD	LOQ	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	46.14	5.0 ^	10	50.00	0	92.3	75	125	0			

Page 30 of 30

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m14.06.26.1533 J - Analyte detected below Limit of Quantitation; R - RPD outside accepted recovery limits; LOQ - Limit of Quantitation; ^ Qualified to the Limit of Detection (LOD)