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Background Soil Investigation Report

for

NUSC Disposal Area, SA-08
Naval Undersea Warfare Center
Middletown, Rhode Island

Naval Facilities Engineering Command
Mid-Atlantic

Contract Number N62472-03-D-0057
Contract Task Order 43

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BACKGROUND SOIL INVESTIGATION REPORT

FOR

NUSC DISPOSAL AREA, SA-08
NAVAL UNDERSEA WARFARE CENTER
MIDDLETOWN, RHODE ISLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT

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LIST OF ACRONYMS

ACH	Air changes per hour
AST	Aboveground storage tank
BCA	bias-corrected accelerated
BEHP	bis(2-ethylhexyl)phthalate
bgs	below ground surface
BHC	Benzenehexachloride
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLT	central limit theorem
cm	centimeter
COPC	Contaminant of Potential Concern
CSF	cancer slope factor
CTE	Central Tendency Exposure
DABS	Dermal Absorption Factors
DAD	Dermally Absorbed Dose
DA_{event}	Dose absorbed per unit area per event
DDD	dichloro diphenyl dichloroethane
DDE	dichloro diphenyl dichloroethylene
DDT	dichloro diphenyl trichloroethane
dL	deciliter
EBS	Environmental Baseline Survey
ECC	Environmental Chemical Corporation
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentrations
ESTCP	Environmental Security Technology Certification Program
FFA	Federal Facilities Agreement
FID	Flame ionization detector
GA	State of Rhode Island Classification for Drinking Water source
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	hazard index
HMW	high molecular weight
HQ	hazard quotient
IC/DEC	Industrial/commercial direct exposure criteria

Note: See glossary of Statistical Terms for additional explanation of terms.

ICP	Inductively Coupled Plasma
ILCR	incremental lifetime cancer risk
IRIS	Integrated Risk Information System
kg	kilogram
Kp	Permeability Coefficient
L	Liter
LMW	low molecular weight
LNAPL	Light non-aqueous phase liquid
LOAEL	Lowest observed adverse effect level
LTMP	Long-term monitoring program
LUCIP	Land-use control implementation plan
m^3	cubic meters
MCL	Maximum Contaminant Level
ME	Monitoring event
μg	microgram
μg/dL	micrograms per deciliter
μg/kg	micrograms per kilogram
μg/l or μg/L	micrograms per liter
µg/L	Microgram per liter
mg	milligram
mg/cm^2	milligram per square centimeter
mg/kg	milligrams per kilogram
mg/l or mg/L	milligrams per liter
MSL	Mean sea level
MVUE	Minimum variance un-biased estimator
MW	Monitoring well
NCEA	National Center for Environmental Assessment
NETC	Naval Education and Training Center
NOAEL	no observed adverse effect level
NUSC	Naval Undersea Systems Center
NUWC	Naval Undersea Warfare Center
OABS	Oral Absorption Factors
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic Aromatic Hydrocarbons
PAH	polynuclear aromatic hydrocarbon
PAL	Project action limit

Note: See glossary of Statistical Terms for additional explanation of terms.

PID	Photo ionization detector
PCB	polychlorinated biphenyl
PCE	Tetratchloroethene
1,1,1-TCA	1,1,1-trichloroethane
PRG	Preliminary Remediation Goal
QAPP	Quality assurance project plan
RAGS HHEM	Risk Assessment Guidance for Superfund: Human Health Risk Evaluation Manual
RBC	Risk-Based Concentration
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RIDEM	Rhode Island Department of Environmental Management
RIDOT	Rhode Island Department of Transportation
RIEDC	Rhode Island Economic Development Corporation
RME	Reasonable Maximum Exposure
SIM	Selective Ion Monitoring
SSL	Soil Screening Level
SVOC	semi-volatile organic compound
TAL	Target Analyte List for Inorganics
TCE	Trichloroethene
TCL	Target compound list
TEF	Toxicity Equivalence Factor
TPH	Total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TtNUS	Tetra Tech NUS, Inc.
UCL	Upper Concentration Limit
UST	Underground storage tank
VC	Vinyl chloride
VF	Volatilization Factor
VOC	volatile organic compound
Yr	Year

Note: See glossary of Statistical Terms for additional explanation of terms.

E.0 EXECUTIVE SUMMARY

A background soil investigation was conducted at properties surrounding the Naval Undersea Systems Center (NUSC) Disposal Area, Study Area (SA) – 08 (the Site), located within the Naval Underwater Warfare Center (NUWC), in Middletown, Rhode Island. The NUWC is part of Naval Station Newport, located in Newport, Rhode Island. The NUSC Disposal Area is identified as a "site" under the Installation Restoration Program for NAVSTA, based on historic fill activities and presence of hazardous materials at the site. The background soil investigation was conducted at the NUSC Disposal Area to identify the chemical constituents which were expected to be present had the fill activities not occurred. These constituents include naturally occurring and anthropogenic metals, and anthropogenic organic chemicals including pesticides, PCBs and semivolatile organic compounds.

The background soil investigation was conducted in accordance with USEPA and RIDEM regulations and guidance, as well as Navy guidance for evaluation of background soil conditions. A work plan for the investigation was prepared and reviewed by regulatory parties overseeing the Navy investigation and cleanup of the Installation Restoration (IR) program sites at NAVSTA.

The investigation included collection and evaluation of 60 surface soil samples from off site, upgradient locations, targeting three soil types representative of those mapped by the US Soil Conservation Service at the NUSC Disposal Area. Data from the background soil samples were grouped and statistically evaluated for distribution and outliers, and then compared to each other and compared to like Site data sets from samples collected at the NUSC Disposal Area in 2003. The evaluation included detected constituents only, and applied reasonable professional judgment for addressing concentrations that were approximated during validation, non-detected results, and other influencing factors associated with the evaluation of soil chemical data.

The investigation provides a group of three chemical constituent data sets for three soil types at NAVSTA, that can be used for comparison of soil data from like soils. These include soils classified as:

- non-hydric Stissing Silt and Loam (Se soil),
- non-hydric Pittstown Silt and Loam (PmB soil), and
- hydric Stissing Silt and Loam (this unit is defined as sediment in areas classified as Se soil: identification of soil as sediment indicates that the soils are inundated with overlying water during a significant portion of the year).

It was found that the Se and PmB non-hydric soils have statistically similar chemical organic constituents, but statistically different metals constituents. The hydric Se soil group was found to be statistically

different from the non-hydric Se data group. Therefore, the two non-hydric soil data sets for metals can be used individually as two groups of 20 samples, and the organic data from the non-hydric soil can be combined as one group of 40 samples. The hydric soil group is different, and should not be combined with the non-hydric soil types for either organic or metals data.

Hydric and non-hydric soils were differentiated in the field by soil scientists conducting sampling programs. Hydric soils are most simply defined as saturated, flooded, or ponded during the growing season. Non-hydric soils are not. The terms hydric and non-hydric soils are used in this report instead of the common terms “sediment” and “soil” to avoid confusion with the geologic definition of ‘sediment”.

A comparison of the background data to the soil data collected from the NUSC Disposal Area as documented in the Study Area Screening Evaluation Report (SASE) was intended as an objective for this study. However, the site data sets are currently limited to less than 10 samples per soil type and it was determined that a detailed comparison should be withheld until the NUSC Remedial Investigation (RI) is completed to augment that data.

One of the focused interests of the investigation was the background concentrations of arsenic in soil and sediment. Arsenic was noted to be present at the NUSC disposal area at concentrations well above screening criteria, but it was speculated that the arsenic presence in soil is either a naturally occurring or anthropogenic condition. Data available show the following descriptive statistics for arsenic:

Evaluation of Arsenic in Soil and Sediment

Arsenic present in:	Range of Concentrations Detected	Arithmetic Mean (Average)	Geometric Mean
Background Soil: PmB	4.7 – 32.3 mg/kg	9.59 mg/kg	8.86 mg/kg
Background Soil: Se	3.3 – 71.7 mg/kg	13 mg/kg	9.86 mg/kg
Background Sediment: Se	7.5 – 35.5 mg/kg	17.8 mg/kg	16.6 mg/kg

The summary statistics presented in this report show the widespread presence of arsenic in background soils. All the data sets include concentrations well above the RIDEM direct exposure criteria average of 7 mg/kg.

Arsenic data were also evaluated to correlate elevated concentrations to other elements present. A clear correlation was identified for arsenic and iron, and a weak correlation was identified for arsenic and lead. Possible correlations of arsenic to aluminum and to manganese were also tested, because these elements (iron, aluminum and manganese) in their anhydrous form can affect adsorption properties of arsenic in soil. The correlation of arsenic to iron indicates that the arsenic retains itself in the soil as a result of high iron concentrations, and the poor correlation of arsenic to lead indicates arsenic does not appear to be present as a result of lead-arsenate pesticide use.

Based on the data presented in this report, the background data can be used for comparison to the NUSC Disposal Area and other sites at NAVSTA and surrounding properties that have similar soils and parent bedrock. However, to identify a geochemical or anthropogenic source of the arsenic present in the region, additional evaluations of existing data and the collection of new data would be required.

1.0 INTRODUCTION

Under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62472-03-D-0057, Contract Task Order No. 043, Tetra Tech NUS, Inc. (TtNUS) has been contracted to perform a background soil investigation for the NUSC Disposal Area, Study Area (SA)-08 (the Site), at the Naval Undersea Warfare Center (NUWC) (formerly the Naval Undersea Systems Center (NUSC)) in Middletown, Rhode Island. The site is partially used as a storage facility, with a fenced, paved area, and an unimproved area featuring grassy areas, wetlands, and a small retention pond.

1.1 SPECIFIC INVESTIGATION OBJECTIVES

Previous investigations for nearby sites, and the use of surrounding properties indicate that the background levels of some metals and other persistent chemicals such as arsenic and polynuclear aromatic hydrocarbons (PAHs) may be higher in soils at and near this site (from background areas near the site) than in other background areas of Rhode Island. The NUSC Disposal Area is located downgradient of a golf course and historically agricultural land. The first objective for this study was to establish upgradient and background concentrations of metals and organic chemicals in soils for the NUSC Disposal Area by determining the occurrence, geochemical abundance, and variability (scatter) of surface soil chemical concentrations in similar soil types as those present at the Site.

In addition, the data was evaluated to compare the similarities and differences between the background data sets. A statistical comparison of the background data sets to the Site data will be included with the data collected under the NUSC Remedial Investigation.

Section 104(3)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) states “The President shall not provide for a removal or remedial action under this section in response to a release or threat of release of a naturally occurring substance in its unaltered form…”. Therefore, it is necessary to establish, if possible, the naturally occurring substances in the soil, particularly those which may be identified as Contaminants of Potential Concern (COPCs) in a CERCLA – compliant risk assessment.

Navy policy requires that there is a clear and concise understanding of chemicals released from the Site in order to assure proper focus and remediation of the release. To this end, background evaluations are needed during the site investigation in order to differentiate between the site conditions and background sources. These evaluations should include naturally occurring chemicals and anthropogenic chemicals (CNO, 2004).

The U.S. Environmental Protection Agency (USEPA) defines “background” as substances or locations that are not influenced by releases from a site, and are usually described as naturally occurring (not influenced by human activity) or anthropogenic (present as a result of human activity) (EPA, 2002).

The Rhode Island Department of Environmental Management (RIDEM) Site Remediation Regulation (DEM-DSR-01-93), defines “background” as the ambient concentrations of hazardous substances present in the environment that have not been influenced by human activities, ***or*** the ambient concentrations of hazardous substances consistently present in the environment in the vicinity of the contaminated site, which are the result of human activities unrelated to releases at the contaminated site.

Additionally, RIDEM regulations state that background samples provide baseline measurements to determine what the concentrations of chemicals would be at the Site if no releases occurred there. Rhode Island regulations provide an allowance for determining background conditions under the Site Remediation Regulations Section 8.06 A:

> “Sampling of hazardous substances in background areas may be conducted to distinguish concentrations related to the contaminated site from concentrations of hazardous substances not related to activities at the contaminated site or to support the development of soil objectives under the provisions of Rule 8.02 (Soil Objectives).”

Because streams flow to the Site, bringing washed out soil and sediment particles to the on-site wetlands, a separate “upgradient-downgradient” migration condition exists, which is different from the general background conditions of the other off-site soils. As such, this report considered the upgradient hydric soils separately from the non-hydric soils.

The definitions for background are consistent between the Navy, USEPA and RIDEM. As such, both naturally occurring and anthropogenic chemical contributions to the soils for upgradient and background conditions at the site have been considered. The resulting data, presented in this report, provides the baseline measurements to identify site-contaminants from non-site background (naturally occurring and anthropogenic) contaminants.

The objectives of the Background Report can be summarized as:

1) Provide a chemical constituent data set for background hydric and non-hydric soils from the predominant soil types present at NUSC Disposal Area SA-08.

2) Identify similarities and differences in the data sets for each soil type with a statistical significance level of 0.025 for each one-sided comparison, and determine the number of data sets required to represent background soil conditions in the vicinity of the Site.

3) Provide a robust and statistically based background soils data set (or sets) that can be utilized in future site-specific studies to assess the significance of the presence and concentration of individual compounds or analytes.

Hydric and non-hydric soils were differentiated in the field by soil scientists conducting sampling programs. Hydric soils are most simply defined as saturated, flooded, or ponded during the growing season. Non-hydric soils are not. The terms hydric and non-hydric soils are used in this report instead of the common terms “sediment” and “soil” to avoid confusion with the geologic definition of ‘sediment”.

This report will provide a summary of the investigation activities, data interpretation and statistical methods, and the results of the investigation.

1.2 REPORT ORGANIZATION

The report is presented in six sections: Executive Summary, Introduction, Site Background, Site Investigation Activities, Data Analysis and Statistical Testing, and Summary and Conclusions. Tables and figures are presented as separate sections. Appendix A presents field documentation from samples collected. Appendix B presents analytical results from background samples collected as part of this study. Appendix C presents additional statistical backup and calculations not detailed in the text or tables. Appendix D presents graphic interpretations of selected metals correlations described in Section 4.2 of this report. Appendix E displays the statistics and distribution of the measured arsenic concentrations.

2.0 SITE BACKGROUND

A brief description and history of the NUSC Disposal Area (the Site) and surrounding vicinity as well as a summary of the contaminants identified in previous investigations at the NUSC Disposal Area are presented below. A full description of the Site is provided in the Study Area Screening Evaluation Report (TtNUS, 2005).

2.1 SITE DESCRIPTION AND HISTORY

The following section presents a brief description and history of the Middletown area and specifically, the NUSC Disposal Area.

2.1.1 Site Location

The Site is located on the northwestern boundary of the NUWC. NUWC is a tenant of the Naval Station Newport (NAVSTA, formerly NETC). NAVSTA holds ownership responsibility for the Site. As described in the Initial Assessment Study (IAS) (Envirodyne, 1983), and the FFA for NETC, the Site occupies approximately 35 acres south of Building 185 and Cunningham Street. The location of the Site as well as the background study area are shown on Figure 2-1.

The Site consists of approximately 8 acres of land adjacent to two streams, associated wetlands and a small pond. The upland portions were used as fill and storage areas since the early 1950s. Currently, the Site consists of both a secured storage area and an open storage area (both paved – approximately 2.3 acres combined) as well as open fields (1.6 acres) and brush covered areas (4.2 acres).

2.1.2 Middletown Area

Aerial photographic analysis depicts much of the Middletown area as agricultural prior to the 1940s. Development of housing and commercial complexes began in the 1950s and continued through the late 1990s. In aerial photographs evaluated from 1942 and 1951, made available by the Rhode Island State Planning office, it is apparent that the Site was constructed from what was previously farmland during the World War II time period. This aerial photography dates back to the mid 1930s, and shows the NUSC site and the area described in this background study as entirely agricultural.

2.1.3 Site History

There is limited available historical information on the NUSC Disposal Area. Reviewed documentation reported the Site to be used for the disposal of scrap lumber, tires, wire, cable, and empty paint cans for an unspecified period of time (Envirodyne, 1983).

Review of aerial photographs as part of the NUSC Disposal Area SASE indicates disturbance or fill in the paved storage areas, the South Meadow, and the southernmost portions of the North Meadow. This material is present in aerial photographs dated 1951 through 1988, southeast of the unnamed stream, which flows into the Site from the adjacent golf course to the east. These fill areas were targeted for investigation as part of the SASE (TtNUS, 2005).

2.1.4 History and Use of Surrounding Properties

Prior to occupation of the property by the Navy, the land was used for agriculture and the soils were likely treated with pesticides and fertilizers. Metal-bearing pesticides that may have been used at these sites include lead arsenate, sodium arsenate, and arsenic trioxide. Lead arsenate was a common insecticide, and sodium arsenate and arsenic trioxide were formerly used as herbicides. Arsenic, cadmium, and other heavy metals could also have been added to the soils through the application of phosphate fertilizers. Additionally, the soils contain metals originating from the natural weathering of the parent bedrock.

The common and consistent uses of this and surrounding properties strongly suggest that portions of these parcels exhibit conditions that could be considered “background”. The concentrations of elements and compounds present in these areas are likely to reflect both naturally occurring and anthropogenic chemicals present at the NAVSTA IR sites if no releases had occurred there.

The overburden geology beneath the NUSC Disposal Area consists of fill and two thin unconsolidated geologic units: a silt, sand, and gravel unit; and glacial till. Overburden thickness ranges from approximately 2 feet (North Meadow) to 15 feet (South Meadow).

Fill materials overlie both of the unconsolidated units across the southern portions of the Site where past disposal operations filled low-lying areas or grading operations reworked the upper few feet of soil for development purposes, such as the paved storage areas.

A unit of silt and sand with variable amounts of gravel was encountered in test pits and soil borings in the North Meadow, beneath the fill at the site. This fill is not present in the background areas sampled. A

dense, heterogeneous mixture of clay, silt, sand, coarse subangular to angular gravel, cobbles, boulders, and rock fragments was encountered beneath the silt and sand unit and above bedrock in some areas. This material was characterized as possible till. This lower layer appears to be discontinuous across the Site and ranges from approximately 0.5 feet to 5.5 feet thick.

Bedrock was encountered in test pits and soil borings across the Site. The depth to bedrock varies from approximately 2 feet to 15 feet below grade. Bedrock core samples indicate the Site is underlain by a light to dark-gray colored, fine-grained metamorphosed rock, characterized primarily as a slate/phyllite. The upper 5 feet of bedrock is significantly weathered and degraded. Iron-oxide stains were prevalent on the surfaces of fractured pieces, indicating movement of groundwater through the rock. Bedrock at depths of 25 to 30 feet below the rock's surface is characterized by fewer fractures and less evidence of iron-oxide stains and is more competent than the weathered bedrock in the upper zones.

These findings are consistent with the regional geology of the area. The bedrock of the Narragansett basin has been divided into the following five units: The Rhode Island Formation, Dighton Conglomerate, Wamsutta Formation, Pondville Conglomerate, and Felsite at Diamond Hill. At NAVSTA, the bedrock consists of primarily the Rhode Island Formation, with outcrops and borings indicating bedrock types of shale, slate, phylite, and schist. The Purgatory Conglomerate, which consists of quartzite clasts in a predominantly quartz sand matrix, is only found on the base along the western sides of Coasters Harbor Island and Coddington Point. Off the base, the Rhode Island Formation underlies most of the Narragansett Basin.

The Rhode Island Formation is the most extensive and thickest of the Pennsylvania age bedrock formations in Rhode Island. Included within the Rhode Island Formation are fine to coarse conglomerate, sandstone, graywacke, arkose, shale, and small amounts of meta-anthracite and anthracite. Coal deposits have been mined to the north of the site, on Aquidneck Island. Most of the rock is gray, dark gray, and greenish, but the shale and anthracite are often black. Crossbedding and irregular, discontinuous bedding is characteristic of the formation. In the southern portion of the basin, such as at NAVSTA Newport, rocks of the Rhode Island Formation are metamorphosed, and typically include phyllite, quartz-mica schist, feldspathic quartzite, garnet-staurolit schist, and some quartz-mica-sillimanite schist.

Overlying the bedrock of the Narragansett Basin are surficial deposits of Pleistocene sediments. These sediments owe their origin to the Wisconsin glaciation, which covered the area with ice several thousand feet thick. As the glaciers receded, they deposited unconsolidated glacial materials of variable thicknesses throughout the Narragansett Basin area. The glacial deposits are primarily comprised of till and outwash. The glacial till consists of a poorly sorted mixture of sand, gravel, silt, and boulders,

whereas glacial outwash consists of stratified deposits of sand, gravel, and cobbles laid down by streams as the glaciers melted.

2.2 SITE CONTAMINATION

Field investigations were conducted from June to November 2003 to determine if contaminants were present at concentrations exceeding risk based standards, and whether additional investigations are necessary under the IR Program. Analytical results from the phased investigation indicated that fill, containing different types of contaminants, has been placed at the site over time. Some of these contaminants have been released from the fill through leaching or percolation, and have moved from the fill areas to the stream and to the groundwater. Other contaminants within the fill have not been released, due to the inherent nature of those contaminants to be resistant to chemical change or physical movement (TtNUS, 2005). Still other constituents, possibly identified as contaminants have been found at the site but may be present as a naturally occurring or an anthropogenic condition.

Specifically, site contaminants including polynuclear aromatic hydrocarbons (PAHs) and arsenic were expected to provide the elevated risk to humans from exposure to soil and sediment. Lead also offered a likely elevated risk from exposure to sediment. The data collected from the investigation showed arsenic, cadmium, TCE and PCE exceeded the applicable federal maximum contaminant levels (MCLs) for groundwater. Pesticides and metals, most predominantly arsenic, mercury, lead and zinc, were identified as contaminants of potential concern (COPCs) through ecological screening, although pesticide detections were infrequent. Polychlorinated biphenyls (PCBs) and PAHs were also identified as possibly contributing to ecological risk, but less prominently than the others (TtNUS, 2005).

Total Petroleum Hydrocarbons (TPH), while not evaluated in the human health and ecological risk assessments, were detected in soils at concentrations greater than the Rhode Island Direct Exposure Criteria for residential soils (TtNUS, 2005).

The contaminants detected in Site soils may be a result of Site activities. This background soil investigation establishes upgradient and background concentrations of metals and organic chemicals in soil that should be considered applicable to the NUSC Disposal Area.

3.0 SITE INVESTIGATION ACTIVITIES

A summary description of the site investigation activities that were conducted as part of the Background Soil Investigation for the NUSC Disposal Area (Site) is presented in this section. The sampling program for the Background Soil Investigation included the collection of hydric and non-hydric soil samples from a number of locations in an area immediately upgradient and of the same soil type as the Site. Sample analytical results are presented in Section 4 of this report.

3.1 INTRODUCTION

The following sections detail the site investigation activities that were performed during the NUSC Background Soil Investigation. Figure 3-1 shows the soil classification designations for the Site (SA-08) and the surrounding vicinity. Sample locations are depicted on Figure 3-2. Field documentation for the site activities are provided in Appendix A.

Specific Standard Operating Procedures (SOPs) were used as described in the Work Plan for Background Soil Investigation for NUSC Disposal Area, SA-08, Naval Undersea Warfare Center, Middletown, Rhode Island, July 2004 (TtNUS, 2004).

3.2 SOIL SAMPLING

A total of 60 surface soil samples plus duplicate samples and aqueous QC samples were collected in accordance with the Work Plan. All samples were collected on Navy property and were selected to represent soil types present at the Site.

According to soil survey maps presented in the USDA Soil Survey of Rhode Island, the soil type mapped at the Site is largely Stissing silt loam (Se) soil (USDA, 1981). A small fragment of the Pittstown silt loam (PmB) soils are located on the north boundary of the site, which previous investigations suggest may be a portion of the NUSC Disposal Area that was unaffected by Site activities. Both Se and PmB soils were sampled as part of the NUSC Background Soil Investigation. The sampled soil types are depicted on Figure 3-2.

Soil samples were primarily collected from the Stissing silt loam soil as described in the Work Plan. Twenty non-hydric and 20 hydric samples were collected within this area. In addition, 20 non-hydric samples were collected from the Pittstown silt loam soil. The general extent of each mapped soil type was determined by transferring GPS coordinates from the USDA Soil Survey of Rhode Island map using Geographic Information System (GIS) software to a Trimble Global Positioning System (GPS) unit to

identify the soil type boundary at the Site. The description of each soil type was also used as a guide to further determine the exact type of soil to be sampled once in the field. Soil boring logsheets, located in Appendix A, describe the soil characteristics observed for each sample. Discrepancies in the plotted sample locations in relation to overlying soil classification extents on Figure 3-2 may be attributed to the general imprecision of the soil classification layer matching with the base map at the scale of interest. Each sample was inspected by a qualified soil scientist to determine that the sample represented the soil type anticipated.

A surface soil sample was collected at each location and surveyed using a GPS unit. The 0- to 1-foot interval was sampled for non-hydric soils and the 0- to 6-inch interval was sampled for hydric soils. All soil samples were analyzed for metals, pesticides and semivolatile organic compounds (SVOCs). Hydric soil samples were also analyzed for acid volatile sulfide/simultaneously extracted metals (AVS/SEM), total organic carbon (TOC) and grain size distribution.

Appropriate chain-of-custody procedures were followed as described in the Work Plan and samples were labeled, packaged and shipped according to TtNUS SOP SA-6.1.

3.3 DECONTAMINATION PROCEDURES

The equipment decontamination procedures described in TtNUS SOP SA-7-1 were followed in accordance with the Work Plan.

4.0 DATA ANALYSIS AND STATISTICAL TESTING

This section presents the statistical analysis of data collected as described in previous sections. The methodology for comparing data sets is presented first, followed by the evaluation of the background data sets. Background soil data is presented in its entirety in Appendix B.

4.1 STATISTICAL METHODOLOGY FOR BACKGROUND DATA COMPARISONS

The various methods utilized for statistically comparing data are presented below.

4.1.1 General Statistical Approach and Guidelines for this Background Study

Statistical methods applied to planning and developing the background soil database adhere to published guidance (EPA, 2002, 2000, 1997, 1996, 1994a, 1994b, 1992a, 1992b, and 1989; Naval Facilities Engineering Command (NFEC), 2004, 2002, 1999, 1998) and other literature references (Brownlee, 1965, Gilbert, 1993 and 1987; Gehan, 1965; and Millard and Deverel, 1988). Guidance documents recommend several statistical tests to determine whether samples collected from two different areas exhibit similar concentrations that can be viewed as belonging to a single population with common mean, standard deviation, and distributional shape, or instead, whether concentrations in one group of samples exceed those in another data group.

For the development of background soil data sets, statistical tests on background soils were designed to identify whether significant differences exist between analyte concentrations in Stissing silt loam (Se) versus Pittstown silt loam (PmB) soils and between hydric versus non-hydric soils. These tests first measure whether a given data set (A) exhibits concentrations which are significantly greater than those in the other data set (B), followed by the reverse comparison [is data set (B) greater than (A)]. Consistent with recommended guidance, the statistical level of significance was set to a probability level (P-level) of 0.025 for each one-way test, so that the overall chance of mistakenly concluding that two data sets are different, if in fact their concentrations really belong to the same underlying population, would be 0.05. This is because the overall probability of declaring a difference is comprised of two components – a 0.025 probability that concentrations in the first data set appear to be greater than those in the second, plus the probability that the second data set appears to have concentrations greater than the first (also 0.025).

4.1.2 Data Pretreatment

Several data pretreatment steps were necessary prior to conducting statistical tests. Three data sets were evaluated: 1) non-hydric soils collected in the PmB designated area, 2) non-hydric soils collected in

the Se designated area, and 3) hydric soils (sediments) collected from the Se designated area. Before conducting parametric statistical tests, a value of one-half the sample detection/quantitation limit was substituted for each non-detected (U qualified) result; however, this application is only valid if there are less than 15 percent non-detects. Duplicate samples were averaged together and considered as one result. For duplicates, where one result was positive and the other result was a non-detect, the calculation of the average result was modified if half the detection limit exceeded the positive result. In these situations, the positive result was used to represent the average.

All background data sets were evaluated for potential outliers before conducting any statistical comparisons between data groups. Potential outliers were investigated for systematic errors, reporting errors, and analytical bias and then located on a site map to check for any pattern of localized, anthropogenic contamination that is not representative of the background area as a whole. Statistical outlier testing was based on either Dixon's test for normally-distributed data with less than 25 samples or Rosner's test for normally-distributed data with more than 25 samples (EPA, 2000 - QA-G9, Sections 4.4.2 and 4.4.3). For cases where the analytical data for a substance did not fit a normal distribution, Walsh's test is a nonparametric outlier test recommended by the aforementioned guidance. However, Walsh's test could not be applied for this project because no data sets contained the minimum sample size of 60 necessary to perform this test. In addition to formal outlier tests, an upper extreme value screening threshold (four times the 75th quantile) served to highlight unusual data points for illustration only, but the results were not used to rule out formal testing of all data points as candidate outliers using Dixon's or Rosner's tests.

Prior to conducting any comparisons between data sets, the underlying statistical distribution of data was determined for each detected chemical. The Shapiro-Wilk (W-) test or the Shapiro-Francia Test (EPA, 1992a) were performed to determine if the data set matched the shape of a normal or lognormal distribution. The latter test is required if there are greater than 50 samples (EPA, 1992a, 1996). Normally distributed data exhibit a characteristic "bell-shape" curve that is symmetrical, whereas lognormal data have a skewed shape with a longer tail at the high-concentration end. For each analyte, the W-test was performed once using the original data, after data were converted to their logarithms. A 5 percent level of significance was used to determine if the data deviated from either hypothesized distribution. Associated W-test scores greater than the critical value indicate that the hypothesis of a normal or lognormal distribution cannot be rejected at a 0.05 level of significance, respectively.

4.1.3 Specific Tests Used to Identify Background Data Subgroups

The shape of the data distributions and the number of non-detects determined whether nonparametric or parametric statistical tests were applicable to comparing two data groups. When there are less than

15 percent non-detects, EPA and Navy guidance cited above allow the option of using 1/2 of non-detects as a proxy value to compute statistics for parametric tests. When there are more than 15 percent non-detects, but less than 40 to 50 percent non-detects, other methods are available to convert detection limits into surrogate positive values (e.g., Cohen's method). However, for this project only nonparametric methods, and not detection limit adjustments, were used when there were more than 15 percent non-detects. This is the most reliable approach because there are drawbacks with adjustment methods that add uncertainty or bias. First, adjustment methods require that the detection limits must all be the same value (EPA, 2000 - QA-G9, Section 4.7.2.1 and NFEC, 2002, Appendix B, Table B-2), which is a technically incorrect assumption because soil samples may have different preparation weights, percent moisture corrections, and dilution factors. In addition, nonparametric methods can be used successfully to avoid the necessity of imputing surrogate values for non-detected measurements (EPA, 2002, Section 4.4, page 4-7). In addition, the underlying validity of parametric tests depends on the reliability of distributional tests, and "tests for the distribution of the data often fail if there are insufficient data, if the data contain multiple populations, or if there is a high proportion of non-detects in the samples" (EPA, 2002, Section 5.3, page 5-3). The nonparametric Gehan's test was implemented because it can handle multiple detection limits and is statistically equivalent to the Wilcoxon Rank Sum/Mann-Whitney test when there are no non-detects. In addition, the Quantile test was used for upper rank data subset comparisons that consist of positive values all greater than the highest detection limit in the data sets. Both of these tests are valid given a wide range and number of non-detects.

Background soil data were examined to determine whether significant differences in metals concentrations exist between two different soil types and/or between hydric and non-hydric soil. Three potential categories of background soil type and moisture content classification exist; however, if background concentrations were similar between various subgroups then the background data sets could be merged because use of the larger composite background set would result in a much lower chance of overlooking any significant difference that might exist between Site and background populations (i.e., better statistical power).

The array of quantitative statistical tests used to compare each pair of background data subgroups to each other included: three quantitative tests that look for overall differences between two populations of data values; a quantitative test that essentially looks for hot spots in one population relative to the other; and two tests that examine only the frequency of detection (proportion of detected versus non-detected values in one data set versus the other), but not the magnitude of values. Thus, measured statistical differences between populations could reflect either differences in central tendency, upper ranks, or frequency of detection.

To compare two background data groups, each statistical test was run using a one-sided decision-making probability level (P-level) of 0.025, and the overall conclusion (whether one soil data set's concentrations are greater than the other) was assumed to be "yes" if any one of the quantitative tests that use concentrations conclude that data are elevated. If no conclusion (either yes or no) could be reached for any of these quantitative tests (e.g., if the assumptions necessary to run each of the various tests are not valid), then a "yes" or "no" conclusion resulting from the frequency of detection tests was considered applicable. Further information regarding each statistical test is presented below:

- The means of the two soil data sets were compared if both background data sets matched a normal distribution. If the data sets exhibited equal standard deviations (based upon Bartlett's test for equal variances), then the student's t-test was applied; otherwise, Satterthwaite's t-test was performed to see if the means were different. The t-test is valid only if at least 85 percent of each data set consists of positive detects, there are at least three sampling points in each data set, and the pooled standard deviation is not zero. The t-test was not performed using log-transformed data sets because of the potential for misinterpretation of the true underlying distribution that tends to occur with lognormal fitting (EPA, 1997).

- Nonparametric statistical tests, which do not require the assumption of normally distributed data, were also applied in each case. However, if a normal distribution did not match the data set of interest, non-parametric statistical tests were the only tests utilized. An overall conservatism was maintained in all cases because the alternative hypothesis of concentrations being different between two groups was presumed whenever any valid parametric or nonparametric test indicates this to be true. Statistical guidance issued by the Navy (NFEC, 2002) recommends a decision-tree approach wherein only parametric tests of central tendency (overall population differences) are to be performed if the data fit a normal distribution, and in this instance would allow the omission of certain nonparametric tests that compare overall population ranks (Gehan's test or Mann-Whitney test). Similarly, a quantile test that looks for subsets of the data (possible hot spots) is recommended only if the various tests comparing the overall populations do not indicate elevated results. These omissions could help to reduce labor-intensive manual calculations for the purpose of efficiency; however, these are not statistical preconditions that would preclude using the omitted tests on a more general basis. For example, including the quantile test on a general basis yields important information on whether a small subset of elevated values occur in one data set but not the other, even if the means are similar. For this project, computer algorithms were employed to automatically perform applicable statistical tests wherever the necessary underlying assumptions are valid. This approach allows the use of any valid test result that identifies that concentrations from one data set are elevated, regardless of the outcome of unrelated statistical tests.

- The Mann-Whitney U-test was used to determine whether the soil data are from populations with identical medians and rank distributions. The Mann-Whitney test involves combining the two data sets, ranking results from smallest to largest, and evaluating whether the two sets have a similar distribution of data within the range of low to high ranks. If more than 40 percent nondetected results were present in either data set or when multiple levels of detection limits were present, a different statistically valid test, Gehan's test, was substituted because guidance (EPA, 1992a) indicates that the Mann-Whitney U test is not valid in the aforementioned situations. Gehan's test is statistically equivalent to the Mann-Whitney U Test if all results are positive.) For either of these tests to work, not all data points can be tied and there must be at least two data points per set. The Mann-Whitney U test and the Gehan test statistics were computed using appropriate score adjustments for tied values and a normal approximation when sufficient data points were available; whereas, an exact computation of probabilities was used in the situations where there are very few (for example, less than eight) data points. Gehan's test is valid if there are multiple detection limits; however, the underlying distribution of detection limit values (that is, the method of censoring) must be the same between the two data sets.

- The quantile test or upper ranks test (EPA, 1992b, 1996) is a type of hot spot test. This test combines two subgroups of sample data into one set and determines whether an upper rank subset displays an unusually large proportion of data points belonging to one subgroup rather than a mixture of samples from the two groups in the expected proportion equal to the ratio of number of samples between the parent data groups. In this procedure, the probability was calculated that k or more samples from the largest r data points in the combined data set belong to one subgroup, with the null hypothesis that the two subgroups come from the same population. If calculations showed there is less than a five percent chance that k or more samples could be observed among a subset of the r largest upper ranks of the data, then the test concluded that k samples from one subgroup have statistically elevated concentrations, which might reflect one or more hot spots.

- In the event that none of the above quantitative statistical tests yielded a definite "yes" or "no" decision, a test of proportions was used to determine if the percentage of positively detected results is greater in one soil data subgroup versus the other. When only a very small portion of results are detected (less than 10 percent), this test is recommended (EPA, 1996, 1989). The test is routinely applied using a normal distribution approximation to the probability but is not considered valid when fewer than five samples are detected in either data subgroup. To reach a confident decision in such cases, a generalized version of the test of proportions, called the Fisher Exact Test, was applied (Brownlee, 1965). This test can be applied to all situations because it calculates the exact probability for all combinations of possible outcomes and gives a

probability level for the condition where the observed frequency of detects in one subgroup is greater than the other, given the number of samples involved.

The following provides a breakdown of the decision scheme applied to determine which statistical tests were used to compare one subgroup of background soil data to another background soil data subgroup:

Case 1: If the W-test accepted the hypothesis of a normal distribution for both data subgroups, then the W-test using the logarithmic conversion was not applicable and parametric as well as nonparametric background comparisons were conducted. The following tests were performed for Case 1:

- For this case, the parametric t-test was performed to compare the arithmetic means of two soil data subgroups only if there were greater than 85 percent detects in each of the two subgroups. A Satterthwaite adjustment of the t-test was used if the standard deviations between two soil data subgroups were found to be significantly different from one another (criteria based on Bartlett's Test for equal variances).

- For Case 1 (but also applicable to Cases 2 and 3, as discussed later), a nonparametric test was also selected to compare the ranks of the overall populations, based on either the Mann-Whitney U test or Gehan's test. The prevalence and magnitude of non-detects can bias the outcome of the Mann-Whitney U test, but does not adversely bias the accuracy of Gehan's test unless the range of detection limits follows a different pattern in the two groups being compared. Therefore, Gehan's test replaced the Mann-Whitney U test if any of the following circumstances occurred:

    a. if more than 40 percent non-detects were present in either of the two subgroups;

    b. if the number of non-detect data points from the first subgroup that are greater than both data sets' lower 25th percentile for positive detections is greater than 10 percent of the total number of detects in the first subgroup;

    c. if the number of non-detect data points from the second subgroup that are greater than both data sets' lower 25th percentile for positive detections is greater than 10 percent of the total number of detects in the second subgroup;

    d. if the ratio of the highest detection limit to the lowest detection limit among all data groups combined was greater than 3.5; and

e. if greater than 15 % of the data points in the first subgroup consisted of non-detects that were less than the 25th percentile of the subset of non-detected data from the first subgroup but greater than the 25th percentile of the subset of non-detected data from the second subgroup (a relative shift in the distribution of the two data sets' non-detects occurring in a low percentile range). The same test was also performed for the converse situation (more than 15 percent of data from the second subgroup consist of non-detects whose magnitude was less than the 25th percentile of non-detected data from the second subgroup but greater than the 25th percentile of non-detected data from the first subgroup). The same tests were also performed at the 75th percentile and 95th percentile of site and background data sets, such that evaluating all of these tests together served to identify any significant shifts in the relative distribution of non-detects compared between the two subgroups from the background population.

- Technically, although Gehan's test could be substituted for the Mann-Whitney U test in all circumstances, the Mann-Whitney U test is more familiar to scientists and available in software, so the use of the Mann-Whitney U test has been retained because it is easier for a third party to independently verify the calculations and test results.

- For Case 1 (but also applicable to Cases 2 and 3), another nonparametric test was selected to compare the upper ranks (i.e., the upper percentiles) of the two subgroups of soil data. This test has been labeled as "upper ranks" to avoid confusion with a separate test for upper tolerance limits (UTL) that also involves quantiles for the nonparametric case. The term "quantile test" is also used for the upper ranks test. This test was computed multiple times, starting with the highest concentration (rank) data points, and then repeating the test after including the next lower concentration sample results, thereby successively expanding the size of the upper rank subsets to include lower percentiles of the combined subgroups of soil data. The upper ranks tests were concluded when the highest non-detected result was encountered or when the maximum size subgroup of data was found that had at least a probability (P-level) of 0.025 that the upper ranks of this subset of data is significantly greater than the other subgroup.

- For Case 1 (but also applicable to Cases 2 and 3), if each of the applicable test results (t-test, Mann-Whitney U, Gehan, and Upper Ranks) were considered not applicable ("NA") due to insufficient sample size or other limitations, then a test of proportions was considered applicable to determine if the percentage of positively detected results was statistically greater in one subgroup of soil data compared to another. The test of proportions was performed in one of two ways: The first method was based upon combined probabilities calculated using Fisher's exact test if there were less than 5 detects in each data set or less than 5 non-detects in each data set.

The second method applied if there were 5 or more detects and non-detects for each data set, in which case a normal approximation to the probability of proportions was computed using the z-test. These results were used to decide one data subgroup is greater than the other only if other tests were "NA".

Case 2: If the W-test rejected the hypothesis of a normal distribution for two subgroups of soil data, but accepted the hypothesis of a lognormal distribution for both subgroups, then only the set of nonparametric background comparison tests were conducted. The following tests were performed for Case 2:

- Either the Mann-Whitney U or Gehan's test was performed, as discussed above.
- The upper ranks test was performed, as discussed above.
- The t-test was not performed.
- The test of proportions was performed and considered in making decisions only if the Mann-Whitney U, Gehan, and upper ranks tests were all not applicable ("NA").

Case 3: If the W-test rejected both hypotheses of either a normal distribution or lognormal distribution for two subgroups of soil data, then only nonparametric background statistical tests were conducted. The following tests were performed for Case 3:

- Either the Mann-Whitney U or Gehan's test was performed, as discussed above.
- The upper ranks test was performed, as discussed above.
- The t-test was not performed.
- The test of proportions was performed and considered in making decisions only if the Mann-Whitney U, Gehan, and upper ranks tests were all not applicable ("NA").

For this project, computer algorithms were employed to automatically perform applicable statistical tests wherever the necessary underlying assumptions are valid. This approach allows the use of any valid test result that identifies that concentrations from one data set are elevated, regardless of the outcome of unrelated statistical tests.

4.1.4 Type and Number of Samples Needed for Statistical Reliability

Because metals naturally occur in soils, they are the primary constituents of concern associated with background concentrations and the major focus for assessing differences (or similarities) between soil types. The background sampling plan was designed to result in a high probability of sampling sediment and soils in the site vicinity with analyte concentrations that are unaffected by the site. To ensure that reliable decisions could be made regarding whether site concentrations statistically exceed background or are distinguishable from background, a relatively large number of upgradient and background sample stations were required, generally targeted toward areas unlikely to have been affected by activities at the Site, while not sacrificing randomness of individual sample stations.

To control the possibility of statistical tests falsely concluding that Site exceeds background, a selected alpha level was established. The alpha level is the probability of making a wrong decision if a statistical test concludes that samples from data set A belong to a population whose concentrations exceed those in the other population represented by data set B, under the circumstances where in reality both underlying populations are the same. An alpha level of 0.025 was used for one-sided tests that compare one background subgroup to another, while an alpha level of 0.05 should be used for tests that compare site data to background.

To control the possibility of statistical tests falsely concluding that concentrations in the population of Site data are indistinguishable from background, when in actuality site concentrations are elevated above background, a goal for the statistical test's power was established. The power of a test is defined as the probability the statistical test will properly conclude data set A concentrations exceed those of data set B, given a situation where the two populations A and B have a true difference in mean equal to a particular amount, called the minimum detectable difference (MDD).

The numbers of samples required for the t-test, Mann-Whitney test, and upper ranks test were established in the work plan by comparison with formulas for estimating statistical performance presented in Navy guidance (NFEC, 2002) and EPA guidance (EPA, 1992b). In addition, a RIDEM requirement was followed for collecting a minimum of 20 background samples of each three soil types (1-hydric soil or sediment, 2-non-hydric soil of the PmB type, and 3-non-hydric soil of the Se type). Since less than 20 samples for each soil type were available for each soil type on the Site, it was determined that the site comparison to background be postponed until the data set from the RI (anticipated Winter 2007) be available to augment the existing site data.

Using 20 samples, each data group should generally have sufficient statistical power to detect relatively small differences in the site and background population characteristics for most contaminants. However,

several sample-specific properties can adversely affect statistical power, such as frequency of detection, elevated detection limits due to matrix effects or dilution, and population distributional shape and standard deviations. To address this, the limits on decision errors and minimum detectable difference for each analyte can be reassessed after data collection using a retrospective power analysis which considered the actual number of samples in the site and background data sets, frequency of detection, and range of detection limits versus positive results.

4.2 BACKGROUND SOIL DATA EVALUATION

This section presents exploratory data evaluation, distributional analysis, and an evaluation of outliers and extreme values.

4.2.1 Exploratory Data Evaluation

As recommended, quantitative statistical tests were preceded by exploratory data analysis to evaluate the distributional shape for both positive and nondetected data, look for outliers, and compare descriptive statistics. Exploratory data analyses revealed descriptive properties of analyte concentration distributions for each background soil type (non-hydric PmB soil, non-hydric Se soil, and hydric Se soil) and helped determine what valid statistical tests could be utilized to compare the background data (EPA, 1996, 1992a, 1989).

Table 4-1 presents the descriptive summary statistics for the combined background soil data set (comprised of all hydric and non-hydric soil). Tables 4-4, 4-7, and 4-10 present summary statistics for the individual data sets (hydric and non-hydric Se soil and non-hydric PmB soil, respectively). In addition, Appendix E, Tables E-1 through E-3 present descriptive summary statistics for arsenic. Occurrence and distribution statistics for each analyte include frequency of detection, minimum, maximum, location of maximum, interquartile range of detected results, mean, standard deviation, variance, skewness (a measure of non-symmetry in the tails), kurtosis (a measure of the sharpness of the peak of the distribution), and geometric mean (anti-log of the mean of log-transformed data).

A few general observations were noted from the review of descriptive summary statistics. In each background data group, frequency of detection was nearly 100 percent for most metals, with the exception of antimony, beryllium, cadmium, and mercury, which were rarely detected. Data sets with frequencies of detection above 85 percent provide sufficient data to allow parametric statistical tests that require the assumption of a normal distribution. Mean concentrations were notably greater (by approximately 1.5-fold to 2-fold) in hydric soils versus non-hydric soils for most metals, including barium, chromium, cobalt, copper, iron, lead, magnesium, manganese, and zinc.

In each data set, most organic substances were rarely detected, with the exception of certain prominent polyaromatic hydrocarbons (PAHs). Fluoranthene and pyrene were detected at frequencies above 85 percent in the combined background data set, while 13 other PAHs had frequencies of detection ranging from approximately 20 to 50 percent. 10 PAH compounds were detected in all 3 soil type data sets, but the mean PAH concentrations were notably greater in hydric soil (ranging from 5-fold to 20-fold greater) than in non-hydric soil.

Table 4-2 presents the quantile statistics for the combined background soil data set (comprised of all hydric and non-hydric soil). Tables 4-5, 4-8, and 4-11 present quantile statistics for the individual data sets (hydric and non-hydric Se soil and non-hydric PmB soil, respectively). In addition, Appendix E, Tables E-1 through E-3 present quantile statistics for arsenic. For each analyte, the concentrations corresponding to the maximum, 95th percentile, 75th percentile, 50th percentile, and 25th percentile are shown separately for detected results and non-detected results, along with the number of sample results falling within the intervals established by adjacent quantiles. Quantile tables are useful to provide a rough comparison of the shape of the distribution of positive results or detection limits within a data group or between data groups, and can illustrate cases where elevated detection limits could bias or impair statistical tests from providing meaningful conclusions regarding between-group comparisons of means, medians, or upper ranks.

Several observations were noted from review of quantile statistics. In general, detection limits for metals were established based upon instrument detection limits, so that for most metals the majority of positive results were generally reported at concentrations above the range of detection limits. This leads to generally more effective statistical tests because the extent of overlap between the range of positive results versus the range of non-detected values in a data set directly affects uncertainty and bias in drawing conclusions from statistical comparisons between two data sets. In addition, detection limits for most metals were similar between data groups, with implications for a few exceptions noted on a case by case basis in the statistical background comparison tables presented in later sections of this report.

For organic substances, non-detected values were expressed as quantitation limits rather than instrument detection limits, which tends to produce situations where positive results occur at levels within the range observed for most sample quantitation limits. When organic analytes are present at low concentrations, the range of detection limits frequently overlaps with the range of positive results, and consequently limits or prevents the use of parametric tests or nonparametric tests in particular cases.

4.2.2 Distributional Analysis

Table 4-3 presents distributional analysis results for the combined background soil data set (comprised of all hydric and non-hydric soil). Tables 4-6, 4-9, and 4-12 present distributional analysis results for the individual data sets (hydric and non-hydric Se soil and non-hydric PmB soil). In addition, Appendix E, Tables E-1 through E-3 present distributional analysis statistics for arsenic. Shapiro-Wilk W-test scores are presented once for data fit to a normal distribution and a second time after lognormal transformation. Associated W-test scores greater than the critical value indicate that the hypothesis of a normal or lognormal distribution cannot be rejected at a 0.05 level of significance, respectively. When the normal distribution did not match well, this indicated that the t-Test should not be used for a given chemical in comparisons against this background data set.

4.2.3 Evaluation of Outliers and Extreme Values

Outliers were examined according to a five-step process (EPA, 2000 and 2002), consisting of identification of extreme values, application of statistical outlier tests (where feasible), scientific review of candidate outliers to decide on their disposition, conducting data analysis with and without statistical outliers, and documentation of this process.

In the first step, extreme values were identified using Dixon's test for each background data subgroup (Tables 4-13, 4-14, and 4-15). In addition, Appendix E, Tables E-1 through E-3 present Dixon's test statistics for arsenic. Data were examined by successively deleting the largest, second largest, and third largest data points from the set, computing the distributional fit and, if data were normally distributed, then performing Dixon's outlier test on the remaining data points versus the excluded data point. Candidate outliers were located on a map to determine if elevated concentrations were co-located and/or possibly affected by localized anthropogenic contamination unrelated to any region-wide source.

The most pronounced extreme values were highlighted by flagging sample concentrations greater than 4 times the 75th quantile or less than one-fourth the 25th quantile. With environmental data, the 75th quantile is somewhat similar in magnitude to the interquartile range (IQR - defined as the 75th quantile minus the 25th quantile). Therefore, the use of 4 times the 75th quantile as a benchmark for extreme value screening is comparable to Tukey's method of screening using the 75th quantile plus 3 times the IQR. This approach is practical because regional background soil concentrations of organic combustion products and pesticide residues are greatly influenced by the variability of source emissions and dispersion patterns as well as from variations related to chemical sorption and migration processes.

The two right-most columns of Table 4-2 display the results of extreme value (4 times 75th quantile) tabulations for all substances detected in one or more background soil samples. These columns display the calculated upper extreme value screening threshold of 4 times the 75th quantile and the number of positive results exceeding this value.

To examine how extreme values and candidate outliers related to the magnitude of other background samples, soil results were listed separately for each metal in ascending concentration order and are presented in Appendix C, Table C-1. In addition, Appendix E, Tables E-1 through E-3 present a list of sample concentrations in ascending order for arsenic. Data points that were flagged as candidate outliers or extreme values are bolded, with notations describing the rationale for retaining (or discarding) individual candidate outliers.

After candidate outliers were identified based on statistical outlier tests, a scientific review and evaluation of the plausible reasons for outliers was performed for each candidate. The final decision to retain candidate extreme values was based upon considerations that the observed levels were plausibly consistent with natural conditions (within the range of naturally occurring metals concentrations) or because associated samples were beyond the proximal range of influence from Site activities and did not represent evidence of any localized source that is uniquely found within the background area and not plausible to consider as part of a region-wide source or pattern. EPA guidance QA-G9 (EPA, 2000) further elaborates on the rationale for handling outliers: "Outliers may also represent true extreme values of a distribution (for instance, hot spots) and indicate more variability in the population than was expected." In addition, it is noted, "These [outlier] tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set; this decision should be based on judgmental or scientific grounds."

The evaluation and disposition of possible outliers and extreme values observed within the background data sets is presented for substances found to contain candidate outliers in their associated data sets. This is presented in the following paragraphs, with a separate discussion of candidate outliers for each affected substance.

Arsenic

Sample DABK-S-SO06-0001 (shown as SO06, typical, Figure 3-2), contained the highest concentration of arsenic (71.7 mg/kg) within the background area, at a level almost twice the magnitude of the second largest sample concentration and exceeding 4 times the 75th quantile of the combined raw background data set. The value was a candidate outlier based on Dixon's Extreme Value Test for non-hydric soil type

Se. Table 4-9 indicates that, before considering removal of the candidate arsenic outlier at 71.7 mg/kg, the arsenic data set for non-hydric soil type Se acceptably matches the shape of a lognormal distribution (W-score 0.9162, critical value 0.905), but does not have a normal distribution (W-score 0.5162, critical value 0.905). Table 4-14 reveals that, after removal of the candidate outlier, the lognormal fit is slightly better (W-score 0.963, critical value 0.901), but the normal fit now also matches acceptably (but not as good as the lognormal fit). Note that the type of distribution of the data (normal versus lognormal) impacts the scope of statistical tests that can be performed using a data set, since parametric tests require the assumption of normality.

Further evaluation determined that there were no serious data validation QC problems associated with this particular sample, although the value was coded "J" due to positive ICP interference attributed to iron. The estimated interference due to iron was only 11 percent of the value reported for the sample in question, based on the relative proportionality to iron levels in the sample and the ICP QC solution, so the impact on accuracy is minor. It is not possible to further improve the accuracy of arsenic sample results after the fact, since the interference check QC solution contains multiple interferents, and interpretation is more complex than with single analyte QC solutions. In addition, the complexity of environmental samples makes it difficult to apply any further correction to reported results after the fact, since various ICP interference corrections may be applied to the raw signal before the instrument levels are displayed. In the validation process, EPA does not recommend adjustments of any metals concentrations based on ICP interferences. Since background data were gathered and validated using the same procedures as that used for gathering site data, these data are comparable as qualified by the validation procedure.

The sample location was reviewed and found not to be associated with any localized pattern of elevated arsenic contamination. (The nearest sample points were locations SO04, SO05, SO07, SO09, and SO10, and none of these revealed arsenic greater than 12.6 mg/kg.) In the proximity of location SO06, there were no geographic features or structures that might suggest special or unique sources of contamination not representative of the background area as a whole. It is conceivable that arsenic-containing pesticides or herbicides may have contributed to regional background conditions, especially since a farm is located upstream of the area. Constituents present as a result of past use of agricultural pesticides is considered an anthropogenic condition. Lead arsenate, calcium arsenate, and sodium arsenate are the three arsenical pesticides that were most commonly used in the New England area, starting from the mid-1800s until the mid-1970s (USGS, 2004).

The elevated arsenic level in sample SO06 may be related to an elevated iron concentration. Sample SO06 contained the second greatest background concentration of iron (53,900 mg/kg) in the data set, as well as the greatest concentration of arsenic. Hydrous iron, aluminum, and manganese oxides have been considered to be the main component controlling significant adsorption properties of arsenic in soils (Cai,

2002). As shown in Appendix D, Figure D-1, the correlation coefficient between iron and arsenic was 0.96 in non-hydric soil type Se, and 0.87 for the entire combined raw background data set. The correlation coefficient of a data set measures the extent of a linear relationship between two variables on a scale of zero to one, with a score of zero representing no relationship and a score of 1.0 representing all points falling perfectly on a line. The high correlation coefficient indicates that arsenic levels increase with iron levels because of the adsorption capacity of iron in soil. Based on the soil conditions found in this area, the iron is clearly a natural feature, a result of mineral leaching and bedding over time as soils have developed. The sample in question shows the highest concentration of iron and thus the highest concentration of accumulated arsenic. Therefore, sample DABK-S-SO06-0001 is not an anomaly, it is just the high end of the sample group. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the arsenic result for sample DABK-S-SO06-0001 was retained for the final background data set.

Sample DABK-S-SO25-0001 contained the highest concentration of arsenic (21.3 mg/kg) within the data set for non-hydric soil type PmB. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no serious data validation QC problems associated with this particular sample, although the value was coded "J" due to positive ICP interference attributed to iron. ICP interference was estimated to account for a very small percentage of the total analyte signal for arsenic, and the results for this sample are considered usable. The sample location was reviewed and it was found that this location was not associated with any localized pattern of elevated arsenic contamination. (The nearest neighbors were locations SO23 and SO26, none of which revealed arsenic greater than 15 mg/kg.) In the proximity of location SO25, there were no geographical features or structures that might suggest special or unique sources of contamination not representative of the background area as a whole. The cause of the elevated arsenic level in this sample may be explained by the co-occurrence of an elevated iron concentration. As shown in Appendix D, Figure D-1, the correlation coefficient between iron and arsenic was 0.94 in non-hydric soil type PmB. Sample SO25 contained the greatest background concentration of iron (43,300 mg/kg) in the soil type PmB data set, as well as the greatest concentration of arsenic. The high correlation coefficient indicates that arsenic levels increase with iron levels because of the adsorption capacity of iron in soil. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the arsenic result for sample DABK-S-SO25-0001 was retained for the final background data set.

Sample DABK-S-SO20-0001 contained the second highest concentration of arsenic (23.5 mg/kg) within the background data for non-hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no serious data validation QC problems associated with this particular sample, although the result was qualified (J) due to

positive ICP interference associated with iron. ICP interference was estimated to account for a very small percentage of the total analyte signal for arsenic, and the results for this sample are considered usable.

The sample location was reviewed and it was found that this location was not associated with any localized pattern of elevated arsenic contamination in non-hydric soil. The nearest non-hydric soil sample was location SO19, approximately 160 feet from SO20, which revealed arsenic at 9.2 mg/kg. The hydric soil samples SD11 through SD20, which are located in a drainage pathway approximately 60 to 110 feet away from SO20, revealed arsenic concentrations ranging from 10.7 mg/kg to 35.5 mg/kg, with a median of 19 mg/kg, similar to SO20. However, SO20 is located outside of the surface water/sediment drainage pathway. In the proximity of location SO20, there were no geographical features or structures that might suggest special or unique sources of contamination not representative of the background area as a whole. The cause of the elevated arsenic level in this sample may be explained by the co-occurrence of an elevated iron concentration. As shown in Appendix D, Figure D-1, the correlation coefficient between iron and arsenic was 0.96 in non-hydric soil type Se. Sample SO20 contained the second largest background concentration of iron (23,500 mg/kg) in the non-hydric soil type Se data set, as well as the second largest concentration of arsenic. The high correlation coefficient indicates that arsenic levels increase with iron levels because of the adsorption capacity of iron in soil. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the arsenic result for sample DABK-S-SO20-0001 was retained for the final background data set.

Barium

Samples DABK-S-SD11-0000.5 and DABK-S-SD12-0000.5 contained the highest (231 mg/kg) and second highest (210 mg/kg) concentrations of barium within the background data set. There was a gap between these two values and the remaining barium data for hydric soil type Se, which revealed a range of concentrations from 17.9 mg/kg to 119 mg/kg. The hydric soil type Se data set displayed a 75th quantile for barium equal to 96.3 mg/kg, so 25 percent of values were within a factor of two of the candidate outliers. The two largest values were candidate outliers based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with these particular samples. The SD11 and SD12 sample locations were adjacent to one another, and next to the location where the third largest barium concentration was noted (SD13). While this suggests a localized pattern of elevated barium contamination, the three locations are within a creek bed and would be expected to exhibit correlation related to depositional patterns along the pathway of surface water migration. Examining the flow path of this creek, the collective group of samples from this creek bed does not appear to be subject to any particular anthropogenic sources of barium that might be unique to this creek bed. Therefore, there were no scientific or judgmental reasons to justify eliminating

these results, so the barium results for samples DABK-S-SD11-0000.5 and DABK-S-SD12-0000.5 were retained for the final background data set.

Chromium

Sample DABK-S-SD19-000.5 contained the highest concentration of chromium (81.5 mg/kg) within the background area, at a level twice the magnitude of the second largest sample concentration and exceeding 4 times the 75th quantile of the combined raw background data set. The value was a candidate outlier based on Dixon's Extreme Value Test for hydric soil type Se. Further evaluation determined that there were no data validation QC problems associated with this particular sample. This elevated concentration was not associated with a pattern of localized contamination. The nearest locations (SD17, SD18, and SD20) were along a creek bed and exhibited a much lower concentration range of 11.9 mg/kg to 21 mg/kg. Examining the flow path of this creek, the collective group of samples from this creek bed does not appear to be subject to any particular anthropogenic sources of chromium that might be unique to this creek bed. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the chromium result for sample DABK-S-SD19-0000.5 was retained for the final background data set.

Sample DABK-S-SO02-0001 contained the highest concentration of chromium (28.2 mg/kg) within the background data for non-hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The sample location was reviewed and it was found that this location was not associated with any localized pattern of elevated chromium contamination. The nearest neighbors were locations SO01 and SO05, which revealed chromium in a range from 11.9 mg/kg to 15 mg/kg. In the proximity of location SO02, there were no geographical features or structures that might suggest special or unique sources of contamination not representative of the background area as a whole. In the remaining samples of non-hydric soil type Se, chromium was found at levels between 9 mg/kg and 16 mg/kg (between one-third and one-half of the level in SO02), which indicates that the suspect outlier is close to the range of concentrations for other samples. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the chromium result for sample DABK-S-SO02-0001 was retained for the final background data set.

Cobalt

Samples DABK-S-SD11-0000.5 and DABK-S-SD12-0000.5 contained the highest (38 mg/kg) and second highest (33.1 mg/kg) concentrations of cobalt within the background data set. There was a gap between these two values and the remaining cobalt data for hydric soil type Se, which revealed a range of

concentrations from 6.1 mg/kg to 23.6 mg/kg. The hydric soil type Se data set displayed a median for cobalt equal to 17.7 mg/kg, so concentrations for half of the data set were within a factor of two of the candidate outliers. The two largest values were candidate outliers based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with these particular samples. The SD11 and SD12 sample locations were adjacent to one another, and next to the location where the third largest cobalt concentration was noted (SD13). While this suggests a localized pattern of elevated cobalt contamination, the three locations are within a creek bed and would be expected to exhibit correlation related to depositional patterns along the pathway of surface water migration. Examining the flow path of this creek, the collective group of samples from this creek bed does not appear to be subject to any particular anthropogenic sources of cobalt that might be unique to this creek bed. Therefore, there were no scientific or judgmental reasons to justify eliminating these results, so the cobalt results for samples DABK-S-SD11-0000.5 and DABK-S-SD12-0000.5 were retained for the final background data set.

Sample DABK-S-SO32-0001 contained the highest concentration of cobalt (13.8 mg/kg) within the background data for non-hydric soil type PmB. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The PmB soil type data set displayed a median for cobalt equal to 6.95 mg/kg, so concentrations for half of the data set were within a factor of two of the candidate outlier, which indicates that the suspect outlier is close to the range of concentrations for other samples. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the cobalt result for sample DABK-S-SO32-0001 was retained for the final background data set.

Iron

Sample DABK-S-SO06-0001 contained the highest concentration of iron (53,900 mg/kg) within the background area. The value was a candidate outlier based on Dixon's Extreme Value Test for non-hydric soil type Se. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The sample concentration was double that of the next lower iron concentration within the non-hydric soil type Se data set. In addition, the non-hydric soil type Se data set displayed a median concentration for iron equal to 18,500 mg/kg, so concentrations for half of the data set were within a factor of three of the candidate outlier, which indicates that the suspect outlier is close to the range of concentrations for other samples. The sample location was reviewed and it was found that this location was not associated with any localized pattern of elevated iron contamination. The location proximity was not associated with any geographical features or structures that may not be representative of the background area as a whole. Therefore, there were no scientific or judgmental reasons to justify

eliminating this result, so the iron result for sample DABK-S-SO06-0001 was retained for the final background data set.

Sample DABK-S-SO25-0001 contained the highest concentration of iron (43,300 mg/kg) within the background data for non-hydric soil type PmB. The value was a candidate outlier based on Dixon's Extreme Value Test for non-hydric soil type PmB. Further evaluation determined that there were no serious data validation QC problems associated with this particular sample, although the value was coded "J" due to field duplicate imprecision (iron values for this pair were 23,300 and 63,300 mg/kg). The sample location was reviewed and it was found that slightly elevated iron levels in this data set roughly form a line connecting locations SO25, SO26, SO24, and SO22, which together comprise the four highest concentrations of iron in the soil type PmB data set. However, this phenomenon could be related to naturally occurring mineral distributions. Also, the location proximity was not associated with any geographical features or structures that may not be representative of the background area as a whole. In addition, the non-hydric soil type PmB data set displayed a median concentration for iron equal to 18,300 mg/kg, so concentrations for half of the data set were within approximately a factor of two of the candidate outlier, which indicates that the suspect outlier is close to the range of concentrations for other samples. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the iron result for sample DABK-S-SO25-0001 was retained for the final background data set.

Lead

Sample DABK-S-SD19-000.5 contained the highest concentration of lead (297 mg/kg) within the background area and exceeded 4 times the 75th quantile of the combined raw background data set. The value was a candidate outlier based on Dixon's Extreme Value Test for hydric soil type Se. Further evaluation determined that there were no data validation QC problems associated with this particular sample result. In the hydric soil type Se data set, the 6 largest concentrations for lead ranged from 108 mg/kg to 297 mg/kg, and all 6 locations were within a creek bed where sorption of metals is likely to be associated with surface water depositional processes.

Potential sources of lead within the upstream area may include residues from vehicular exhaust from historical use of leaded gasoline, fertilizers that contain iron, lead, and arsenic, and agricultural pesticides that were commonly used in farms prior to the introduction of organochlorine pesticides (USGS, 2004, Dubey, 2004). The possibility of lead arsenate pesticide residues was evaluated because there is an upstream farm. The correlation coefficient between lead and arsenic was calculated for hydric and non-hydric background soils. As shown in Appendix D, Figures D-4, D-5, and D-6, the lead-arsenic correlation coefficient for hydric soil type Se was 0.59, which is considered a moderate degree of correlation,

whereas in non-hydric soil types Se and PmB the correlation was weak to moderate (r values of 0.28 and 0.52, respectively).

The ratio of lead to arsenic concentrations was considerably higher in the candidate outlier SD19 than in other samples from the hydric soil data set. Exclusion of sample SD19 would improve the lead-arsenic correlation coefficient to 0.84, which represents a more significant correlation. This suggests that the source of lead in this sample may not be lead arsenate.

If the source of lead in hydric soils was predominantly residues from the pesticide lead arsenate, observed mass ratios should be approximately 2.8 ppm lead per ppm arsenic. After removal of candidate outliers, the average lead-to-arsenic ratios for hydric soil type Se, non-hydric soil type Se, and non-hydric soil type PmB were 4.4, 2.7, and 3.6, respectively. However, this moderate degree of agreement neither confirms nor refutes lead arsenate as the most likely overall source of lead in background soils, because several factors control the soil-water distribution coefficient (Kd) for lead versus arsenic, which then affect the mineral ratio in sediments downstream from a source area. Iron oxide has been found to control arsenic adsorption in soils to a much greater extent than organic carbon (Cai, 2002). In contrast, reportedly the factors that most strongly affect lead adsorption are, in decreasing order of importance, organic matter, clay minerals, and iron oxides (Sipos, 2005). These differences in sorption, dissolution, and precipitation behaviors between lead and arsenic are related to the different physical and chemical reactions of the various charged species that occur in the environment, for example, arsenic (V) occurs as $HAsO_4^{-2}$ and $H_2AsO_4^{-}$; As (III) as $As(OH)_3^{0}$; while lead exists as Pb^{+2} or various lead carbonate species. The observed consistency in the ratios of lead and arsenic could either be related to independent weathering of arsenic and lead based on soil composition or else an indication of an upstream source of lead arsenate. With SD19, the anomalous ratio might be a reflection of more than one source of lead in background data, but this does not indicate whether an additional lead source affects only the background and not the site areas. In summary, no localized anthropogenic sources of lead were suggested within the background areas that might be unique to the creek bed and not influencing other downstream Site areas. Therefore, there were no scientific or judgmental reasons to justify eliminating the candidate lead outlier, so the lead result for sample DABK-S-SD19-0000.5 was retained for the final background data set.

Manganese

The sample locations (SD11, SD17, SD03, SD04, SD19, and SD13) associated with the six largest manganese concentrations within the background area all displayed concentrations that exceeded 4 times the 75th quantile of the combined raw background data set. All six samples belonged to the hydric soil type Se. Location SD11 displayed the largest manganese concentration (9740 mg/kg) and

was a candidate outlier based on Dixon's Extreme Value Test for hydric soil type Se. Further evaluation determined that there were no serious data validation QC problems associated with these particular samples, although several samples were qualified estimated due to poor laboratory duplicate precision (RPD > 35% in the representative duplicate sample). The six samples were associated with two creek beds, with no apparent spatial pattern among these locations except to note that an overall trend that manganese levels were generally greater in sediment than in non-hydric soil. Therefore, these manganese results were retained for the final background data set.

Zinc

Sample DABK-S-SD12-000.5D contained the highest concentration of zinc (540 mg/kg) within the background area and exceeded 4 times the 75th quantile of the combined raw background data set. The value was a candidate outlier based on Dixon's Extreme Value Test for hydric soil type Se. Further evaluation determined that there were no serious data validation QC problems associated with this particular sample, although the value was qualified estimated due to positive ICP interference attributed to iron. In the hydric soil type Se data set, the 6 largest concentration samples for zinc ranged from 234 mg/kg to 534 mg/kg, and all 6 locations were within a creek bed where elevated levels could be associated with surface water depositional processes. Examining the flow path of this creek, the collective group of samples from this creek bed does not appear to be subject to any particular anthropogenic sources of zinc that might be unique to this creek bed. Therefore, there were no scientific or judgmental reasons to justify eliminating this candidate outlier, so the zinc result for sample DABK-S-SD19-0000.5 was retained for the final background data set.

Sample DABK-S-SO02-0001 contained the highest concentration of zinc (81.7 mg/kg) within the background data for non-hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The non-hydric Se soil type data set displayed a median for zinc equal to 41.7 mg/kg, so concentrations for half of the data set were within a factor of two of the candidate outlier, which indicates that the suspect outlier is close to the range of concentrations for other samples. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the zinc result for sample DABK-S-SO02-0001 was retained for the final background data set.

4,4'-DDD

Samples DABK-S-SD12-000.5, DABK-S-SD07-000.5, and DABK-S-SD17-000.5 contained the highest, second highest, and third highest concentrations of 4,4'-DDD (62.5, 55, and 52 µg/kg, respectively) within the background data for hydric soil type Se. These three values were candidate outliers based on

Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with these particular samples. The hydric Se soil type data set exhibited a detection frequency for 4,4'-DDD of 19 out of 20, and the median of the detected results was 19.5 µg/kg. This indicates that half of the data set is within approximately a factor of 3 of the suspect outlier. 4,4'-DDD was distributed throughout the background hydric soil type Se study area, with no particular spatial pattern except to note that 4,4'- DDD was rarely detected in the non-hydric soil samples. This indicates that the wide prevalence of this substance is related to depositional patterns along the pathway of surface water migration, which is consistent with possible historical use of insecticides on a farm located upstream of the background area. These assumptions are plausible reasons for an observed region-wide pattern of anthropogenic 4,4'-DDD presence in hydric soils. Therefore, there were no scientific or judgmental reasons to justify eliminating 4,4'-DDD results, so the results for samples SD12, SD07, and SD17 were retained for the final background data set.

Alpha-Chlordane

Samples DABK-S-SD17-000.5, DABK-S-SD12-000.5, and DABK-S-SD13-000.5 contained the highest, second highest, and third highest concentrations of alpha-chlordane (110, 105, and 89 µg/kg, respectively) within the background data for hydric soil type Se. These three values were candidate outliers based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with these particular samples. The hydric Se soil type data set exhibited a detection frequency for alpha chlordane of 100 percent, and the median of the detected results was 33.5 µg/kg. This indicates that half of the data set is within approximately a factor of 3 of the suspect outlier. Alpha-chlordane was distributed throughout the background hydric soil type Se study area, with no particular spatial pattern except to note that alpha-chlordane was rarely detected in the non-hydric soil samples. This indicates that the wide prevalence of this substance is related to depositional patterns along the pathway of surface water migration, which is consistent with possible historical use of insecticides on a farm located upstream of the background area. These assumptions are plausible reasons for an observed region-wide pattern of anthropogenic alpha-chlordane contamination in hydric soils. Therefore, there were no scientific or judgmental reasons to justify eliminating alpha-chlordane results, so the results for samples SD17, SD12, and SD13 were retained for the final background data set.

Gamma-Chlordane

Sample DABK-S-SD12-000.5 contained the highest concentration of gamma-chlordane (84 µg/kg) within the background data for hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC

problems associated with this particular sample. The hydric Se soil type data set exhibited a detection frequency for gamma-chlordane of 100 percent, and the median of the detected results was 24 µg/kg. This indicates that half of the data set is within approximately a factor of 3 of the suspect outlier. The related compound alpha-chlordane was also detected in most hydric soil samples. Gamma-chlordane was distributed with no particular spatial pattern of contaminant levels except that it was rarely detected in the non-hydric soil samples. This indicates that the prevalence of this substance is related to depositional patterns along the pathway of surface water migration, which is consistent with possible historical use of insecticides on a farm located upstream of the background area. These assumptions are plausible reasons for an observed region-wide pattern of anthropogenic gamma-chlordane contamination in hydric soils. Therefore, there were no scientific or judgmental reasons to justify eliminating gamma-chlordane results, so the result for sample SD12 was retained for the final background data set.

Acenaphthene

Sample DABK-S-SD08-000.5 contained the highest concentration of acenaphthene (130 µg/kg) within the background data for hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The 75th quantile of the detected results was 61 µg/kg, which indicates that 25 percent of the data set is within a factor of two of the suspect outlier. Acenaphthene was distributed with no particular spatial pattern of contaminant levels. The fact that it was not detected in the non-hydric soil samples is not significant because a more sensitive selected ion monitoring (SIM) method of analysis was used only for the hydric soil type Se. This enabled detection of low levels of acenaphthene in 75 percent samples from this soil type, compared to the results for the non-hydric soil data sets, which were analyzed by full scan GC/MS, and which achieved detection limits an order of magnitude greater than what would be necessary to compare against the observed low levels seen in hydric soils.

Sample SD08 contained the highest level of low molecular weight (LMW) PAHs and the 4th highest levels of high molecular weight (HMW) PAHs. Appendix D, Figure D-10 displays a scatter plot of LMW PAHs versus HMW PAHs and illustrates that the ratio of HMW to LMW PAHs in SD08 was unusually low (4.9) compared to the average ratio (10.6) in other hydric samples. The other hydric samples displayed a consistent ratio of HMW to LMW PAHs, as shown by a correlation coefficient of 0.95 (on a scale of 0 to 1) in Appendix D, Figure D-10. The different PAH composition of SD08 suggests more than one type of PAH source is represented in background areas, but there is no reason to suggest that a second source of PAHs is a localized phenomenon restricted to only the background area and not site areas. Background areas may include multiple PAH sources such as emissions from wood burning, incinerators, engine exhaust, tar, and asphalt, among others. Therefore, for acenaphthene, there were no scientific or

judgmental reasons to justify eliminating the candidate outlier result, so sample SD08 was retained for the final background data set.

Acenaphthylene

Sample DABK-S-SD17-000.5 contained the highest concentration of acenaphthylene (230 µg/kg) within the background data for hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The suspect outlier was more than a factor of 5 times greater than the next largest value in the data set. Sample SD17 contained some of the greatest concentrations observed in the hydric soil type Se data set for several other PAH compounds, and anthracene and fluorene were also candidate outliers in this sample. Acenaphthylene was distributed with no particular spatial pattern of contaminant levels. The fact that it was not detected in the non-hydric soil samples is not significant because a more sensitive SIM method of analysis was used only for the hydric soil type Se. This enabled detection of low levels of acenaphthylene in 80 percent of samples from this soil type, compared to the results for the non-hydric soil data sets, which were analyzed by full scan GC/MS, and which achieved detection limits an order of magnitude greater than what would be necessary to compare against the observed low levels seen in hydric soils. Background areas may include common PAH sources such as emissions from wood burning, incinerators, engine exhaust, tar, and asphalt, among others. There is no reason to believe that the concentrations observed in SD17 represent a localized phenomenon restricted to only the background area and not site areas. Therefore, for acenaphthylene, there were no scientific or judgmental reasons to justify eliminating the candidate outlier result, so sample SD17 was retained for the final background data set.

Anthracene

Samples DABK-S-SD17-000.5 and DABK-S-SD08-000.5 contained the highest concentrations of anthracene (680 and 430 µg/kg, respectively) within the background data for hydric soil type Se. The two values were candidate outliers based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with these samples. The highest value (680 mg/kg) exceeded 4 times the 75th quantile of the combined raw background data set. Sample SD17 contained some of the greatest concentrations among the hydric soil type Se data set for several other PAH compounds, and acenaphthylene and fluorene were also candidate outliers in this sample. Samples SD08 and SD17 also contained the largest and second largest concentrations of total LMW PAHs among the hydric soil type Se data set, and in sample SD08 acenaphthene and fluorene were also suspect outliers. Anthracene was distributed with no particular spatial pattern of contaminant levels. The fact that it was not detected in the non-hydric soil samples is not significant because a more sensitive SIM

method of analysis was used only for the hydric soil type Se. This enabled detection of low levels of anthracene in 95 percent of samples from this soil type, compared to the results for the non-hydric soil data sets, which were analyzed by full scan GC/MS, and which achieved detection limits an order of magnitude greater than what would be necessary to compare against the observed low levels seen in hydric soils. Background areas may include common PAH sources such as emissions from wood burning, incinerators, engine exhaust, tar, and asphalt, among others. There is no reason to believe that the concentrations observed in SD17 represent a localized phenomenon restricted to only the background area and not site areas. Therefore, for anthracene, there were no scientific or judgmental reasons to justify eliminating the candidate outlier results, so samples SD17 and SD08 were retained for the final background data set.

Benzaldehyde

Sample DABK-S-SD07-0000.5 contained the highest concentration of benzaldehyde (860 µg/kg) within the background area, at a level almost 3 times the magnitude of the second largest sample concentration and exceeding 4 times the 75th quantile of the combined raw background data set. The value was a candidate outlier based on Dixon's Extreme Value Test for hydric soil type Se. Further evaluation determined that there were no data validation QC problems associated with this particular sample. The hydric Se soil type data set exhibited a detection frequency for benzaldehyde of 70 percent, and the median of the hydric soil results was 165 µg/kg. Benzaldehyde was distributed with no particular spatial pattern of contaminant levels except that it was rarely detected in the non-hydric soil samples. This indicates that the prevalence of this substance is related to depositional patterns along the pathway of surface water migration. The sample location was reviewed and it was found that the second highest concentration (300 µg/kg) was from an adjacent location (SD08), while the remaining sediment locations detected benzaldehyde at levels between 60 µg/kg and 220 µg/kg. Benzaldehyde was not found to be significantly correlated with total PAH concentrations, with a correlation coefficient of only 0.249 on a scale of 0 to 1 (Appendix D, Figure D-9). Potentially, there could be several types of regional background sources of benzaldehyde, including anthropogenic emissions from wood burning, incinerators, engine exhaust, a degradation product of toluene, an ingredient or intermediate in consumer products such as odorants and flavorants, and also a naturally occurring substance at low levels in some plants. Examining the surface water flow pathways, the collective group of samples from hydric soil type Se does not appear to be subject to any particular anthropogenic sources of benzaldehyde that might be unique to background location SD08. Therefore, there were no scientific or judgmental reasons to justify eliminating this result, so the benzaldehyde result for sample DABK-S-SD07-0000.5 was retained for the final background data set.

Fluoranthene

The sample locations (DABK-S-SD19-000.5, DABK-S-SD13-000.5, and DABK-S-SD17-000.5) associated with the three largest fluoranthene concentrations (4,600, 4,500, and 4,100 µg/kg, respectively) within the background area all displayed concentrations that exceeded 4 times the 75th quantile of the combined raw background data set. These three samples belonged to the hydric soil type Se. Dixon's Extreme Value Test did not identify these samples as outliers at a level of significance of 0.05. Unlike other PAHs, fluoranthene was detected frequently in both hydric and non-hydric soil samples, with a detection frequency of 75 percent in non-hydric soil type Se and 95 percent in non-hydric soil type PmB. Background areas may include common PAH sources such as emissions from wood burning, incinerators, engine exhaust, tar, and asphalt, among others. There is no reason to believe that the concentrations observed in SD13, SD17, and SD19 represent a localized phenomenon restricted to only the background area and not site areas. Therefore, these fluoranthene results were retained for the final background data set.

Fluorene

Samples (DABK-S-SD17-000.5 and DABK-S-SD08-000.5) contained the highest concentrations of fluorene (250 and 160 µg/kg, respectively) within the background data for hydric soil type Se. The two values were candidate outliers based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no data validation QC problems associated with these samples. Sample SD17 contained some of the greatest concentrations among the hydric soil type Se data set for several other PAH compounds, and acenaphthylene and anthracene were also candidate outliers. Sample SD08 also contained the greatest concentration of total LMW PAHs among the hydric soil type Se data set, and in this sample acenaphthene and anthracene were also suggested to be outliers. Fluorene was distributed with no particular spatial pattern of contaminant levels. The fact that it was not detected in the non-hydric soil samples is not significant because a more sensitive SIM method of analysis was used only for the hydric soil type Se. This enabled detection of low levels of fluorene in 80 percent of samples from this soil type, compared to the results for the non-hydric soil data sets, which were analyzed by full scan GC/MS, and which achieved detection limits an order of magnitude greater than what would be necessary to compare against the observed low levels seen in hydric soils. Background areas may include common PAH sources such as emissions from wood burning, incinerators, engine exhaust, tar, and asphalt, among others. There is no reason to believe that the concentrations observed in SD17 and SD08 represent a localized phenomenon restricted to only the background area and not site areas. Therefore, for fluorene, there were no scientific or judgmental reasons to justify eliminating the candidate outlier results, so samples SD17 and SD08 were retained for the final background data set.

Pyrene

Sample DABK-S-SO20-0001 contained the highest concentration of pyrene (190 µg/kg) within the background data for non-hydric soil type Se. The value was a candidate outlier based on Dixon's Extreme Value Test for this soil type. Further evaluation determined that there were no serious data validation QC problems associated with this particular sample. The suspect outlier was only a factor of 2.5 times greater than the median value of 79 µg/kg in the non-hydric soil type Se data set. Unlike other PAHs, pyrene was detected frequently in both hydric and non-hydric soil samples, with a detection frequency of 75 percent in non-hydric soil type Se. The geospatial distribution of pyrene did not suggest any pattern of contaminant levels, except that the maximum level in non-hydric soil was less than the pyrene levels for all hydric soils. Background areas may include common PAH sources such as emissions from wood burning, incinerators, engine exhaust, tar, and asphalt, among others. Therefore, for pyrene, there were no scientific or judgmental reasons to justify eliminating the candidate outlier result, so sample SD17 was retained for the final background data set.

Disposition of Outliers: Data for several samples were identified as potential outliers. However, no results were found to be miscalculated or misreported, and no results were suggested to be attributable to any localized pattern of contamination that would be restricted to the background area but ruled out for affecting the site area as a whole. Therefore, all background data were retained for use either because of considerations that the observed levels were plausibly consistent with natural conditions or because associated samples were beyond the proximal range of influence from Site activities and did not represent evidence of any localized source that is uniquely found within the background area and not part of a region-wide pattern.

4.2.4 Statistical Contrasts to Identify Subgroups by Soil Type

Background soil data were examined to determine whether significant differences in analyte concentrations exist between Se and PmB soil types or between hydric and non-hydric soil. Each pair of soil subgroups was subjected to two series of one-way comparison tests: The first series evaluated whether concentrations in the first data group were greater than those from the second group, while the second series evaluated whether concentrations in the second data set were significantly greater than those in the first data set. Within each series, the level of significance (alpha level) was set to ensure there was only a 0.025 probability of mistakenly declaring one group's concentrations to be greater than the other in situations where both groups actually belonged to the same underlying population.

- Hydric soil type Se was compared to non-hydric soil type Se in Tables 4-16 and 4-17. Overall, 12 metals, 6 pesticides, one PCB, 13 PAHs, and benzaldehyde displayed significantly greater

concentrations in hydric soil type Se, while no substances were shown to be significantly elevated in non-hydric soil type Se. Antimony, cadmium, beryllium, and mercury were the only metals detected in either data set that were not elevated in hydric soil type Se. These four metals had very low frequencies of detection (one or two detects out of 20 versus zero detects), which demonstrates that nearly all of the population distribution in both data sets is hidden below the limits of detection. For this reason, statistical tests were incapable of measuring any population differences between these two data sets, but the overall data quality objectives for minimum required detection limits were satisfied and the lack of detections confirms the absence of substantial concentrations in both data sets. For the 12 metals that were detected at higher frequencies of detection, good statistical power was demonstrated by the fact that in all 12 cases these tests rejected the null hypothesis that concentrations are no different between groups with a one-sided level of significance (p-level) of 0.025.

- Examination of the data for PAHs, pesticides, and PCBs that displayed significantly greater levels in hydric soil compared to non-hydric soil revealed that most samples displayed concentrations above the sample quantitation limits and frequencies of detection greater than 75 percent in hydric soil, whereas these substances showed low frequencies of detection (from zero to 20 percent) in non-hydric soil. The null hypothesis was rejected based on either Gehan's Test, which measures an overall shift in ranks across the whole population, or the upper ranks test, which measures a shift in only the upper ranked data points from the two populations.

- Non-hydric soil type Se was compared to non-hydric soil type PmB in Tables 4-18 and 4-19. Overall, 7 metals, Aroclor-1260, and fluoranthene displayed significantly greater concentrations in non-hydric soil type PmB than non-hydric soil type Se, whereas three metals and benzaldehyde were statistically elevated in non-hydric soil type Se. Arsenic, beryllium, iron, and mercury were the only metals detected that were not statistically elevated in one or the other data set. Of these, arsenic and iron had detection frequencies of 100 percent, which would allow adequate statistical power to detect a specified MDD between data sets as referenced in Appendix C, Tables C-2 and C-3. Beryllium and mercury had very low frequencies of detection (one or two detects out of 20), which demonstrates that nearly all of the population distribution in both data sets was hidden below the limits of detection. For this reason, statistical tests were incapable of measuring any population differences between these two data sets for beryllium and mercury, but the overall data quality objectives for minimum required detection limits were satisfied and the lack of detections confirms the absence of substantial concentrations in both data sets.

- For 8 out of the 10 PAH compounds detected in non-hydric PmB soil or non-hydric Se soil, comparison test results were inconclusive (qualified "NA") because most positive results were

near or below one-half the quantitation limit, which interferes with the power of statistical tests to detect a significant difference between two data sets. However, the overall data quality objectives for minimum required detection limits were satisfied and the lack of detections above quantitation limits confirms the absence of more substantial concentrations in both data sets. Comparison of pyrene levels in these two data sets were not statistically significant at a one sided alpha level of 0.025. However, it was noted that the level of significance was borderline for the upper ranks test (alpha of 0.0527), which suggests that pyrene levels might be elevated in the 11 samples of highest concentration from soil type PmB.

Summary of Background Comparison Tests for Metals: A summary of all of the preceding statistical comparisons between background soil groups is presented in Table 4-20. Overall, numerous differences were seen between the soil subgroups. Hydric soil type Se exhibited greater analyte concentrations compared to non-hydric soil type Se for 12 out of 16 detected metals. Significant differences were also observed between non-hydric soil type PmB and non-hydric soil type Se for 10 out of 13 detected metals, and only arsenic, beryllium, and iron were not statistically different.

Given the large proportion of metals displaying significant differences in concentrations between the tested pairs of soil subgroups, this suggests significant compositional differences exist between hydric and non-hydric soil subgroups and between non-hydric soil types PmB and Se. Underlying compositional differences might also exist for the remaining metals, given difficulties in detecting significant differences for certain metals that displayed a high proportion of non-detects.

Factor Analysis for Metals Composition in Soil Types: To illustrate the compositional differences between the three soil types, Appendix C presents a factor analysis using the principal components method (with varimax rotation) performed upon each matrix of soil concentration data from hydric soil type Se (Table C-8), non-hydric soil type Se (Table C-9), and non-hydric soil type PmB (Table C-10). Factor analysis can be interpreted as a mathematical method that attempts to reproduce an entire data set of sample results by extracting certain common factors, each of which is represented by a linear combination of the different metals concentrations (Malinowski, 1991, and Sharaf, 1986). This is analogous to each sample being composed of a combination of various amounts from each mineral (factor) component, although the extracted factors may or may not actually represent pure mineral components, since other properties such as cation exchange capacity of clays or organic carbon content may simultaneously enhance the concentration of several metals to give the appearance of co-varying levels with constant relative proportions. The metals that were detected in all samples were included in the factor analysis for each soil type. For each soil type, the correlation matrix showed high positive correlation coefficients between metals that contributed to a given factor. This indicates that among the

samples in a given data set, groups of metals which comprise one factor tend to have concentrations in a fixed proportion, given the absence of any other factors affecting the same metals.

The outcome of the factor analysis revealed very different factors for each soil type, which in combination explains the majority of the variance in concentrations within each soil type. For example, hydric soil type Se yielded a first factor (explaining 66 percent of variance) with positive loading coefficients of approximately 0.8 to 0.9 for arsenic, barium, cobalt, iron, nickel, and zinc. The second factor (13 percent of variance) showed aluminum, magnesium, and vanadium, with absolute values of loading coefficients approximately 0.8 to 0.9. The third factor (11 percent of variance) exhibited positive loading coefficients for chromium and lead in the same range. In contrast, non-hydric soil type Se yielded a different composition for the first factor (explaining 62 percent of variance) with positive loading coefficients of approximately 0.8 to 0.9 for chromium, magnesium, nickel, and zinc. The second factor (14 percent of variance) showed arsenic, iron, and manganese, with absolute values of loading coefficients approximately 0.7 to 0.9. The third data set displayed distinctly different factors compared to the first two data sets. Non-hydric soil type PmB yielded a first factor (explaining 48 percent of variance) with positive loading coefficients of approximately 0.7 to 0.9 for aluminum and chromium. The second factor (22 percent of variance) showed arsenic, iron, and vanadium, with positive loading coefficients approximately 0.8 to 0.9. The third factor (9 percent of variance) showed cobalt and manganese, with absolute values of loading coefficients approximately 0.6 to 0.9.

In summary, the comparative statistical method of analysis demonstrated quantitative differences between individual metals concentrations between soil types at a p-level of 0.025, while a geochemical factor analysis demonstrated substantial qualitative differences between the compositional factors that explain the correlation in metals concentrations within each background soil type. Therefore, it was concluded that background soil data sets for metals should be segregated into three separate groups before comparison to other groups of data (site-related data or data from other soil types). These three groups are hydric Se soils, non-hydric Se soils, and non-hydric PmB soils.

Summary of Background Comparison Tests for Organic Substances: The decision to segregate by soil type or combine background data for organic substances was considered independently from the evaluation of data for metals for three reasons: First, anthropogenic organic substances are not an intrinsic component of soil minerals. Second, environmental fate and transport processes are considerably different for organics versus inorganics in soil. Third, regional depositional and migration patterns for anthropogenic substances may not be entirely uniform, depending upon historical activities across the area.

Hydric soil type Se exhibited greater analyte concentrations compared to non-hydric soil type Se for 23 out of 37 detected organic substances. For most substances, the underlying causal basis behind greater concentrations of organics occurring in sediment versus non-hydric soil may be related to the opportunities for migration of organics from various upgradient sources along the sediment drainage pathway, with sediment accumulation enhanced by the hydrophobic nature and high Koc partition coefficients for the detected organic substances and the total organic carbon content of sediments, which ranged from 26,000 mg/kg to 50,500 mg/kg (2.6 to 6 percent). No organic substances were detected at statistically greater concentrations in non-hydric soil type Se compared to hydric soil type Se.

Note that the LMW PAHs, naphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene, and anthracene, and one HMW PAH, dibenz(a,h)anthracene, were each detected in hydric soil type Se at concentrations consistently below the detection limits for these same substances in non-hydric soil type Se. As a result, these particular PAHs were not able to be meaningfully compared between hydric and non-hydric soil because only very low levels were detected and a more sensitive SIM method of analysis was used only for the hydric soil type Se, whereas non-hydric soil data sets were analyzed by full scan GC/MS. Despite the difference in analytical methodology, statistical test results were usable for most HMW PAHs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene, and the LMW PAH phenanthrene. HMW PAH concentrations detected in hydric soil type Se were generally several multiples greater than the detection limits for these same substances in non-hydric soil type Se. As a result, statistical test results for HMW PAHs represented valid indicators of greater concentrations of these particular PAHs in hydric soil type Se versus non-hydric soil type Se.

It is unclear whether any meaningful differences exist between the distribution of trace levels of organics in non-hydric soil type Se versus non-hydric soil type PmB. Eighty percent of comparison test results for PAHs were labeled inconclusive because these organic substances were detected too infrequently and at levels below quantitation limits to yield adequate statistical power to detect significant differences between soil types. All detected concentrations of semivolatiles were below quantitation limits and 5 detected pesticides also displayed very low frequencies of detection in both soil types. In addition, there is no underlying causal basis for a distinction between levels of organic substances in non-hydric soil types Se and PmB. Only two substances (Aroclor-1260 and fluoranthene) exhibited significant differences between soil types, which suggests this finding represents an isolated phenomenon unrelated to soil type and the result of non-uniform and sporadic contaminant depositional patterns across the non-hydric soil background study area.

In conclusion, there is statistical evidence as well as an underlying chemical/physical explanation which supports segregating the organic data for hydric soil from the data for background non-hydric soil. In

contrast, the overall weight of evidence does not support the segregation of non-hydric Se and non-hydric PmB soil organic data into separate groups. This is because there is no compelling underlying causal basis for a distinction between soil types and also because of a combination of statistical uncertainties due to low frequencies of detection and concentrations below the sample quantitation limits. Therefore, an overall recommendation is made to combine organic data for non-hydric soil type Se with data for non-hydric soil type PmB, but to segregate the data for hydric soil type Se as a separate data group.

4.2.5 Properties of the Final Background Soil Data Sets

The final background data sets are comprised of inorganic and organic data for hydric soil type Se, metals data for non-hydric soil type Se, metals data for non-hydric soil type PmB, and organic data for combined data for non-hydric soil types Se and PmB. Properties of inorganic and organic data for hydric soil type Se are presented in Table 4-4 (descriptive summary statistics), Table 4-5 (quantile statistics), and Table 4-6 (distributional analysis results). Properties of metals data for non-hydric soil type Se are included among the comprehensive list of analytes shown in Table 4-7 (descriptive summary statistics), Table 4-8 (quantile statistics), and Table 4-9 (distributional analysis results). Properties of metals data for non-hydric soil type PmB are included among the comprehensive list of analytes shown in Table 4-10 (descriptive summary statistics), Table 4-11 (quantile statistics), and Table 4-12 (distributional analysis results). Properties of organic data for combined non-hydric soil types Se and PmB are presented in Table 4-21 (descriptive summary statistics), Table 4-22 (quantile range distributions), and Table 4-23 (statistical distribution).

5.0 SUMMARY AND CONCLUSIONS

This section presents the summary and conclusions for the NUSC Disposal Area (Site) Background Soil Investigation.

The purpose of the background study was to collect, present, and evaluate data that may be used to represent background conditions in the vicinity of the NUSC Disposal Area, and to add the already established background database for future site-specific studies at Naval Station Newport. In addition, a statistical comparison of Site data to background data was anticipated. However, it was determined that due to the limited Site data set, this evaluation should be done after the data is collected for the NUSC Remedial Investigation.

The analytical results used to develop the background data sets were compiled from samples collected and analyzed specifically for this study. Regional background areas were selected that include the same soil types that are present at the Site. Three soil types, hydric Stissing silt loam (Se), non-hydric Stissing silt loam (Se), and non-hydric Pittstown silt loam (PmB), were identified for consideration in this study, based on mapping performed for the United States Department of Agriculture, Soil Conservation Survey of Rhode Island. A series of statistical tests were performed to determine whether significant differences exist between analyte concentrations found in samples of hydric versus non-hydric samples from the soil type Se and between samples from non-hydric Se soil type and PmB soil type.

The first objective of this report, to provide a chemical constituent data set, as described under Section 1.1, was fulfilled by providing a data set of soil analytical results that are representative of non-site-related background conditions in the vicinity of the Site. The final data sets include analytical results from three different soil types, hydric Stissing silt loam (Se), non-hydric Stissing silt loam (Se), and non-hydric Pittstown silt loam (PmB).

The background database was selected to retain only sample locations that were upgradient or beyond the influence of the Site (Section 2). The database was evaluated to eliminate data points of questionable usability and accuracy (Section 3). In addition, the exploratory data evaluation (Section 4.1.2) identified and determined the disposition of candidate outliers or data points that represented hot spots or anthropogenic sources that did not represent region-wide background conditions.

The second objective of this report, as described under Section 1.1, was to identify the differences or similarities between the soil types, based on chemical concentrations, and determine if all soils can be considered as one background data set or if each soil type represents a different background condition.

For inorganic constituents, substantial differences were seen between the various soil subgroups for all but three or four metals in each case. Significant differences were frequently observed, both between non-hydric soil types Se versus PmB and between hydric soil type Se and non-hydric soil type PmB.

Based on the statistical tests presented in Section 4.2.4, the major proportion of metals displayed significant differences in concentrations between the tested pairs of soil subgroups, which indicates that significant compositional differences exist between all three soil subgroups. Therefore, in order to accurately characterize background soil types for future comparisons with Site data, it was concluded that background soil data sets for metals would have to be segregated into three separate groups (hydric Se, non-hydric Se, and non-hydric PmB), distinguished by two soil types and by hydric versus non-hydric classifications.

The decision to group or segregate background data for organic substances was considered independently from the evaluation of data for metals for three reasons: First, anthropogenic organic substances are not an intrinsic component of soil minerals. Second, environmental fate and transport processes are considerably different for organics versus inorganics in soil. Third, regional depositional and migration patterns for anthropogenic substances may not be entirely uniform, depending upon historical activities across the area.

Hydric soil type Se exhibited greater analyte concentrations compared to non-hydric soil type Se for 23 out of 37 detected organic substances (62%). The underlying causal basis behind greater concentrations of organics occurring in sediment versus non-hydric soil may be related to the opportunities for migration of organics from various upgradient sources along the sediment drainage pathway, with sediment accumulation enhanced by the hydrophobic nature and high Koc partition coefficients for the detected organic substances and the total organic carbon content of sediments.

It is unclear whether any meaningful differences exist between the distribution of trace levels of organics in non-hydric soil type Se versus non-hydric soil type PmB. Eighty percent of comparison test results for PAHs were labeled inconclusive because these organic substances were detected too infrequently and at levels below quantitation limits to yield adequate statistical power to detect significant differences between soil types. All detected concentrations of semivolatiles were below quantitation limits and 5 detected pesticides also displayed very low frequencies of detection in both soil types. In addition, there is no underlying causal basis for a distinction between levels of organic substances in non-hydric soil types Se and PmB.

There is statistical evidence as well as an underlying chemical/physical explanation which supports segregating the organic data for hydric soil from the data for background non-hydric soil. In contrast, the

overall weight of evidence does not support the segregation of non-hydric Se and non-hydric PmB soil organic data into separate groups. Therefore, an overall recommendation is made to combine organic data for non-hydric soil type Se with data for non-hydric soil type PmB, but to segregate the data for hydric soil type Se as a separate data group.

With regard to the third objective, to provide a robust and statistically based background soils data set, as described under Section 1.1, the final background soil data sets, which are summarized in Section 4.2.5, provide robust and statistically based background soils data sets that can be utilized in future studies pertaining to these soil types.

The background soil databases will be made available for use in subsequent investigations at the NUSC Disposal Area, and incorporated into a base-wide background database. Analytical data from on-site or site-related soil samples will be statistically compared to background data representing the same soil type (metals) and moisture content category (metals and organics) to determine concentrations elevated above background following appropriate statistical procedures. Work plans will be prepared to define the use of the data provided in this report, either for qualification of site findings, or to be combined with data from similar, or other soil types as appropriate data to be collected and each project-specific objective.

6.0 GLOSSARY OF ENVIRONMENTAL STATISTICAL TERMS

Critical Value – The reference criteria used in a statistical test, which is a lookup value from a table. Typically, performing a statistical test first requires calculating a sample statistic from the environmental results, then comparing it to a lookup reference value. If the sample statistic falls outside of the limit shown by the critical value, this indicates there is a high chance that the assumed hypothesis is false, for example, that two sets of data are not from the same population or that the shape of the distribution is not what was assumed.

Distributional Shape – For a set of samples collected at random from a single type of source or population, a graph that shows what portion of the samples have concentrations less than the average, similar to the average, or greater than the average. The curved graph typically shows a hump in the middle, where sample concentrations are more likely to fall, versus a downward slope off to the right and to the left, where there are fewer samples at the extremes. A set of environmental data may have a distributional shape similar to a normal (bell-shaped) curve, or the shape may be lopsided (skewed).

Frequency of Detection – For a set of environmental samples, the number of samples where a substance was found divided by the total number of samples collected. Only sample results that are usable are included (not invalid results for which measurement errors were judged to be unacceptable or values qualified as non-detected or unreliable due to blank contamination).

Geometric Mean – A measure of the center of a data set, used when the data have a long right tail, or lognormal in shape. The geometric mean can be computed by averaging the logarithms of individual sample concentrations, and then taking the antilog.

Interquartile Range – The span of concentrations between the 25th quantile and the 75th quantile. (See quantile.) The interquartile range includes half of all of the data points in a data set, with 25 percent of the data points obtained from either side of the median.

Kurtosis – A measure of the flatness or sharpness in the distributional shape of a set of data, as compared to the typical bell shape of a normal distribution. A data set that has negative kurtosis has a cluster of samples spread evenly on either side of the mean or center of the distribution, as shown by a curve that is flatter near the center. Conversely, positive kurtosis means sample concentrations show a sharp spike of maximum occurrence right at the mean or center, but fall off quite rapidly the farther away the values are from the mean, such that the distributional shape has a sharper peak at the center when compared to a normal distribution's bell-shaped curve.

Lognormal Distribution – A set of data ;points that, after taking the logarithms of each sample result, can be plotted to show a spread of data that resembles the bell-shaped curve of the normal distribution, with more points clustered near the mean and fewer data points as one extends to farther distances on either side of the mean.

Mean of All Data – Average of all sample concentrations in a set of data, including samples where the substance was detected and also non-detected results, for which one-half of the detection limit is included in the average.

Median – A concentration that divides a set of sample results into two groups having equal numbers of samples, such that half of the samples in the data set have concentrations less than the median value and the other half have concentrations greater than the median.

Non-parametric Test – A statistical test that does not require the assumption that the sample data have a normal distributional shape. Most non-parametric tests involve comparisons based on the comparative ranks of the sample concentration values instead of calculations involving the concentration values.

Normal Distribution – A set of values that, when plotted, show a spread of data with more points clustered near the mean and displaying fewer data points the farther the distance on either side of the mean, which appears symmetric in shape and resembles a bell-shaped curve. The shape of any normal distribution can be expressed using a specific mathematical formula involving only the mean and the standard deviation.

Outlier – A sample result that has a concentration much greater than all others in a set of data, possibly suggesting measurement errors or an unusual underlying source of contamination different than the rest of the population. Candidate outliers are initially identified by statistical outlier tests, and should be investigated for scientific or judgmental reasons explaining the anomalous value, and may be retained or discarded, depending on further evaluation.

P – Value – The outcome of a statistical test, expressed as the likelihood that the observed amount of disagreement between two data sets could have been caused by random fluctuations and that the two data sets actually belong to the same population. A low probability (for example, less than 0.025) indicates that it is very unlikely this disagreement is due to anything other than a real difference in the two populations being compared.

Parametric Test – A statistical test that requires the assumption that the sample data have a normal distributional shape. Statistical tests that do not require the assumption that the sample data are normal are called non-parametric tests.

Quantile – A particular concentration that divides a set of sample results into two groups of samples, so that a specified percentage of those samples, for example N percent, have concentrations less or equal to this value. Example: 25 percent of samples in a data set have concentrations less than or equal to the concentration defined as the 25th quantile, with the remaining results greater than the 25th quantile.

Range – The span of concentrations identified by the minimum and the maximum in a set of sample results.

Significant Difference – The outcome of a statistical test, as measured by a calculated property being different among two data sets, which suggests that it is highly unlikely that the two data sets would have disagreed in this manner unless the samples came from different populations.

Skewness – A measure of lack of symmetry in the distributional shape of a set of data. Data that are not skewed can be represented by a graphical shape that is similar on the right versus left side of the mean. Positive skewness means a few samples have values that are much more extreme or greater than would be expected along the right-side tail area of the bell shaped curve. Conversely, negative skewness means that a few samples have values much smaller than expected along the left-side tail of the distributional curve.

Standard Deviation – A measure of how widely results in a data set are spread apart from one another. A larger value means more results are far away from the mean, while a smaller value indicates most of the results are closer to the mean.

Statistical Hypothesis – The assertion or claim that one attempts to disprove by performing a statistical test. In this report, each of the various statistical tests start out by assuming that two data sets belong to the same type of population, and then if the test outcome indicates this is highly unlikely to be true, then the hypothesis is disproven and rejected. If the test fails to show there is a significant difference, then the hypothesis may be accepted as true.

Variance – A mathematical property of a group of samples that is equal to the square of the standard deviation of the data. Considered a measure of how widely results in a data set are spread apart.

TABLES

TABLE 4-1

DESCRIPTIVE STATISTICS FOR SUBSTANCES IN BACKGROUND SOIL
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Freq. of Detection	Range of Positive Detection			Mean of All Data	Location of Maximum	Interquartile Range (Detects)	Standard Deviation	Variance	Skewness	Kurtosis	Geometric Mean
		Min.		Max.								
AVS/SEM-Cadmium	8/10	0.002	-	0.004	0.00245	DABK-S-SD07-000.5	0.00175	0.00117	0.00122	-0.000245	-0.000693	0.00211
AVS/SEM-Copper	10/10	0.14	-	0.51	0.334	DABK-S-SD19-000.5	0.227	0.127	0.0144	-0.344	-1.028	0.308
AVS/SEM-Lead	10/10	0.12	-	0.575	0.316	DABK-S-SD15-000.5	0.181	0.151	0.0206	0.730	-0.060	0.284
AVS/SEM-Nickel	10/10	0.04	-	0.15	0.101	DABK-S-SD03-000.5	0.06	0.0378	0.00129	-0.881	-0.961	0.092
AVS/SEM-Zinc	10/10	0.53	-	2.52	1.66	DABK-S-SD11-000.5	1.555	0.816	0.599	-0.362	-1.851	1.43
SEM	10/10	0.84	-	3.59	2.41	DABK-S-SD13-000.5	2.09	1.08	1.05	-0.388	-1.808	2.14
Aluminum	60/60	6230	-	19400	12200	DABK-S-SD07-000.5	4300	2660	6970000	0.112	-0.161	11908
Antimony	1/25	0.83 J	-	0.83 J	3.43	DABK-S-SD13-000.5	0.415	1.45	2.01	-1.196	0.792	2.8
Arsenic	60/60	3.3 J	-	71.7 J	13.5	DABK-S-SO06-0001	8.87	10	98.1	3.626	19.140	11.3
Barium	60/60	15.1 J	-	231	52.7	DABK-S-SD11-000.5	26.5	38.6	1460	3.008	10.910	44.8
Beryllium	2/60	0.37 J	-	0.38 J	0.365	DABK-S-SO25-0001-D	0.106	0.0621	0.0038	2.002	6.302	0.36
Cadmium	1/60	0.12 J	-	0.31 J	0.357	DABK-S-SD12-000.5	0.107	0.0534	0.00281	0.584	0.471	0.35
Chromium	60/60	7.6	-	81.5	16.6	DABK-S-SD19-000.5	6	10.1	100	4.729	29.014	15.2
Cobalt	60/60	3.3 J	-	38	10	DABK-S-SD12-000.5-D	7.95	7.07	49.1	1.811	3.483	8.3
Iron	60/60	8290	-	63300 J	23000	DABK-S-SO25-0001-D	11100	8790	76000000	1.201	1.792	21529
Lead	60/60	13.4	-	297	48.8	DABK-S-SD19-000.5	26.2	48.9	2350	3.061	11.431	36.8
Magnesium	55/60	1360	-	3630	2060	DABK-S-SD07-000.5	1340	805	638000	0.190	-0.686	1884
Manganese	60/60	46.6	-	9740 J	1150	DABK-S-SD11-000.5	908	1870	3450000	2.515	7.251	401
Mercury	6/60	0.1 J	-	0.68	0.0767	DABK-S-SO32-0001	0.265	0.0905	0.00805	5.307	34.272	0.057
Nickel	60/60	5.3 J	-	50.7	15.1	DABK-S-SD12-000.5-D	10.72	8.22	66.4	1.691	3.821	13.4
Vanadium	60/60	10.5	-	43.7 J	28.1	DABK-S-SD12-000.5-D	8.4	6.27	38.7	-0.623	0.500	27.2
Zinc	60/60	21.4	-	540 J	95.7	DABK-S-SD12-000.5-D	73.7	92.6	8440	2.388	7.562	69.1
Total Organic Carbon	10/10	26000	-	50500	37800	DABK-S-SD07-000.5	10500	7730	53800000	-0.136	-0.144	37040
4,4'-DDD	19/60	6.5	-	65	9.21	DABK-S-SD12-000.5-D	14	13.4	175	2.525	6.522	4.8
4,4'-DDE	26/60	5.4	-	190	33.1	DABK-S-SD07-000.5	85.5	49.4	2400	1.598	1.525	9.2
4,4'-DDT	24/60	3.6	-	140	23.6	DABK-S-SD03-000.5	71.2	35.3	1230	1.551	1.090	7.5
Aldrin	1/60	31 J	-	31 J	1.88	DABK-S-SD07-000.5	15.5	3.83	14.4	7.695	59.463	1.4
Alpha-Chlordane	23/60	3.8	-	110	14.5	DABK-S-SD12-000.5-D	32.1	25.2	627	2.414	5.803	3.9
Aroclor-1254	1/60	25 J	-	25 J	27.2	DABK-S-SO02-0001	12.5	4.84	23	1.978	4.259	26.9
Aroclor-1260	22/60	26 J	-	89	36.9	DABK-S-SD16-000.5	26.7	19.1	357	1.352	0.604	33.2
Dieldrin	22/60	8.6	-	190	31.4	DABK-S-SD17-000.5	96.2	51.6	2620	1.781	2.104	7.9
Endosulfan Sulfate	4/60	7.3	-	18	3.18	DABK-S-SD12-000.5-D	7.42	2.29	5.18	4.607	23.779	2.9
Endrin Ketone	4/60	6.9	-	8.6	2.92	DABK-S-SD12-000.5	1.94	1.09	1.18	2.944	8.873	2.8
Gamma-BHC (Lindane)	1/60	3.3	-	3.3	1.42	DABK-S-SD11-000.5	1.65	0.357	0.126	3.066	12.836	1.4
Gamma-Chlordane	23/60	2.8	-	87	10.3	DABK-S-SD12-000.5-D	23.1	17	283	2.414	6.440	3.5
2-Methylnaphthalene	7/60	10	-	40	88.1	DABK-S-SD08-000.5	25	52.8	2740	-0.683	-1.441	59.1
Acenaphthene	15/60	12 J	-	130	95.5	DABK-S-SD08-000.5	33	45.5	2030	-0.892	-0.892	75.8
Acenaphthylene	16/60	13 J	-	230	94.3	DABK-S-SD17-000.5	17.5	51.3	2590	-0.406	-0.677	72.1
Anthracene	19/60	20	-	680	134	DABK-S-SD17-000.5	132	89.1	7810	4.543	25.744	117.5
Benz(a)anthracene	26/60	52 J	-	1900	338	DABK-S-SD19-000.5	1135.2	465	213000	2.198	3.723	189.7
Benzaldehyde	25/60	59 J	-	860	143	DABK-S-SD07-000.5	112	107	11200	5.467	35.676	127.4
Benzo(a)pyrene	31/60	51 J	-	2500	403	DABK-S-SD19-000.5	1136	612	369000	2.227	3.956	193.8
Benzo(b)fluoranthene	33/60	51 J	-	4300	654	DABK-S-SD13-000.5	1724.5	1100	1190000	2.166	3.749	236.0
Benzo(g,h,i)perylene	25/60	55 J	-	2800	440	DABK-S-SD19-000.5	1440	677	451000	2.348	4.828	212.4
Benzo(k)fluoranthene	27/60	52 J	-	1700	278	DABK-S-SD17-000.5	754	362	129000	2.440	5.573	171.0
Bis(2-ethylhexyl) Phthalate	10/60	130 J	-	5600	505	DABK-S-SD15-000.5	2832	1040	1060000	3.358	11.790	210.4
Butyl Benzyl Phthalate	7/60	88 J	-	1600 J	183	DABK-S-SD19-000.5	1080	237	55400	5.145	27.111	146.3
Carbazole	15/60	60 J	-	410 J	138	DABK-S-SD08-000.5	185	57.1	3200	2.976	10.185	130.0
Chrysene	33/60	54 J	-	3200	514	DABK-S-SD19-000.5	1325	828	675000	2.155	3.607	212.4
Dibenz(a,h)anthracene	19/60	20 J	-	620	154	DABK-S-SD19-000.5	309	122	14600	2.664	7.090	123.8
Dibenzofuran	1/60	230 J	-	230 J	138	DABK-S-SD08-000.5	115	36.4	1300	3.175	13.303	134.9
Fluoranthene	51/60	56 J	-	4600	689	DABK-S-SD19-000.5	896	1180	1370000	2.176	3.796	226.7
Fluorene	16/60	16 J	-	250	103	DABK-S-SD17-000.5	45.5	46	2080	-0.347	0.979	85.3
Hexachlorobenzene	1/60	0.2 J	-	0.2 J	86.6	DABK-S-SD13-000.5	0.1	54.8	2960	-0.670	-1.487	50.5
Indeno(1,2,3-cd)pyrene	22/60	60 J	-	2100	355	DABK-S-SD19-000.5	1062	505	251000	2.363	4.780	200.3
N-Nitroso-di-n-propylamine	1/60	310	-	310	141	DABK-S-SO24-0001	155	41.9	1720	2.985	10.352	136.8
Naphthalene	10/60	10 J	-	360 J	95.4	DABK-S-SD08-000.5	51	61.4	3710	0.787	4.379	65.2
Phenanthrene	37/60	51 J	-	2900	351	DABK-S-SD08-000.5	575	551	299000	2.766	8.221	173.4
Phenol	10/60	9	-	88 J	89.1	DABK-S-SD08-000.5	17.8	52.2	2680	-0.736	-1.346	60.3
Pyrene	54/60	44 J	-	4600	737	DABK-S-SD19-000.5	901.2	1260	1560000	2.037	2.937	224.3

Notes:

Units are mg/kg for inorganics, ug/kg for organics.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two.
Frequency of detection refers to number of times compound was detected among all samples versus total number of samples.
Number of samples may vary based on the number of usable results.
Skewness = (n*SUM(x-xbar)3)/((n-1)(n-2)s3) = a measure of asymmetry of a distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis = ((n+1)*n*SUM(x-xbar)4)/((n-1)*(n-2)*(n-3)*s4) - (3*(n-1)2)/((n-2)(n-3)) = measures sharpness of the peak of a distribution (+ or -) relative to normal distribution.

TABLE 4-2

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND SOIL DATA FOR EVALUATION OF EXTREME VALUES
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

	Percentile Distribution of Background Concentrations																					Outlier Screening	
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Pts.> Criteria	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.	No. Pts	4 x 75 % Quantile
AVS/SEM-Cadmium	0.001		0.00075	1	0.0015	1	0.002		0.002		0.002	2	0.002	2	0.003	2	0.00375	2	0.004		0.004		0.015
AVS/SEM-Copper												2	0.193	3	0.365	3	0.42	2	0.51		0.51		1.68
AVS/SEM-Lead												2	0.221	3	0.281	3	0.402	2	0.575		0.575		1.61
AVS/SEM-Nickel												2	0.07	3	0.125	3	0.13	2	0.13		0.13		0.52
AVS/SEM-Zinc												2	0.855	3	1.89	3	2.41	2	2.52		2.52		9.64
SEM												2	1.29	3	2.76	3	3.38	2	3.59		3.59		13.5
Aluminum												15	10000	15	12200	15	14300	12	16300	3	19400		57100
Antimony	0.72	6	7.23	6	7.8	6	8.1	5	11.2	1	11.3		0.415	1	0.83		0.83		0.83		0.83		3.32
Arsenic												15	7.73	15	11.1	15	16.6	12	27.5	3	71.7	1	66.3
Barium												15	32.2	15	41.4	15	58.7	12	118	3	231		235
Beryllium	0.57	14	0.65	15	0.69	15	0.803	12	0.943	2	1.3		0.264	1	0.361	1	0.37		0.37		0.37		1.48
Cadmium	0.57	15	0.65	15	0.68	15	0.78	12	0.92	2	1		0.108	1	0.215		0.215		0.215		0.215		0.86
Chromium												15	11.9	15	13.8	15	17.9	12	28.2	3	81.5	1	71.4
Cobalt												15	5.25	15	7.08	15	13.2	12	23.5	3	36.35		52.6
Iron												15	17400	15	20700	15	28500	12	42600	3	53900		114000
Lead												15	22.6	15	33	15	48.8	12	157	3	297	1	195
Magnesium	964	1	1030	2	1210	1	1360	1	1380		1380	14	1590	14	1910	14	2930	11	3420	2	3630		11700
Manganese												15	122	15	306	15	1030	12	5090	3	9740	6	4100
Mercury	0.031	13	0.0645	14	0.0955	14	0.18	11	0.243	2	0.315	1	0.1	2	0.13	2	0.365	1	0.68		0.68		1.46
Nickel												15	9.58	15	11.9	15	20.3	12	29	3	49.5		81.2
Vanadium												15	24.2	15	29.1	15	32.6	12	35.8	3	42.25		130
Zinc												15	38.3	15	55.4	15	112	12	282	3	534	1	448
Total Organic Carbon												2	32200	3	37900	3	42700	2	50500		50500		171000
4,4'-DDD	3.4	10	4.8	11	4.9	10	5.2	8	5.68	2	6.2	5	13	5	19.5	5	27	4	62.5		62.5		108
4,4'-DDE	3.4	8	4.78	9	5.05	9	5.2	7	5.83	1	6.2	6	27.5	7	69.5	7	113	5	181	1	190		450
4,4'-DDT	4.1	9	4.83	9	5.05	9	5.2	8	5.78	1	6.2	6	19.3	6	53.5	6	90.5	5	124	1	125		362
Aldrin	1.8	15	2.5	15	2.6	15	2.9	12	4.25	2	4.7		15.5	1	31		31		31		31		124
Alpha-Chlordane	1.8	9	2.5	10	2.6	9	2.7	8	2.93	1	3.2	6	8.9	6	33	6	41	4	109	1	110		164
Aroclor-1254	41	15	49	15	51	15	59	12	82.5	2	91		12.5	1	25		25		25		25		100
Aroclor-1260	34	9	47.8	10	50.5	10	52.3	8	63.5	1	91	5	44.8	6	58	6	71.5	4	88.6	1	89		286
Dieldrin	3.4	9	4.8	10	4.95	10	5.2	8	5.73	1	6.2	5	23.8	6	81.5	6	120	4	189	1	190		480
Endosulfan Sulfate	3.4	14	4.9	14	5.1	14	5.48	12	6.88	2	8.4	1	7.78	1	9.4	1	15.2	1	17		17		60.6
Endrin Ketone	3.4	14	4.9	14	5.1	14	5.48	12	7.47	2	9.1	1	5.49	1	6.64	1	7.43	1	7.6		7.6		29.7
Gamma-BHC (Lindane)	1.8	15	2.5	15	2.6	15	3.1	12	4.25	2	4.7		1.65	1	3.3		3.3		3.3		3.3		13.2
Gamma-Chlordane	1.8	9	2.5	10	2.6	9	2.7	8	2.93	1	3.2	6	7.4	6	23	6	30.5	4	79.8	1	84		122
2-Methylnaphthalene	16	13	122	14	240	13	260	11	273	2	310	2	10	2	14	2	35	1	40		40		140
Acenaphthene	16	11	233	12	250	11	260	9	277	2	310	4	28	4	39	4	61	3	130		130		244
Acenaphthylene	19	11	236	11	250	11	260	9	278	2	310	4	19.5	4	27	4	37	4	230		230	1	148
Anthracene	170	10	240	11	250	10	260	8	279	2	310	5	38	5	120	5	170	4	680		680	1	680

TABLE 4-2

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND SOIL DATA FOR EVALUATION OF EXTREME VALUES
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

	Percentile Distribution of Background Concentrations																					Outlier Screening	
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Pts.> Criteria	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.	No. Pts	4 x 75 % Quantile
Benz(a)anthracene	170	8	240	9	248	9	260	7	280	1	310	6	94.8	7	385	7	1230	5	1830	1	1900		4900
Benzaldehyde	170	9	240	9	250	9	260	7	380	1	660	6	73	7	120	6	185	5	692	1	860	1	740
Benzo(a)pyrene	170	7	238	8	250	7	260	6	290	1	310	8	64	8	390	8	1200	6	2380	1	2500		4800
Benzo(b)fluoranthene	170	7	235	7	250	7	260	5	294	1	310	8	75.5	9	360	8	1800	7	4300	1	4300		7200
Benzo(g,h,i)perylene	170	9	240	9	250	9	260	7	286	1	310	6	110	7	660	6	1550	5	2770	1	2800		6200
Benzo(k)fluoranthene	170	8	240	9	250	8	260	7	289	1	310	7	66	7	270	7	820	5	1620	1	1700		3280
Bis(2-ethylhexyl) Phthalate	230	12	240	13	255	13	273	10	822	2	1500	2	768	3	2080	3	3600	2	5600		5600		14400
Butyl Benzyl Phthalate	170	13	240	14	250	13	270	11	378	2	460	2	120	2	210	2	1200	1	1600		1600		4800
Carbazole	170	11	240	12	250	11	260	9	294	2	310	4	95	4	150	4	280	3	410		410		1120
Chrysene	170	7	235	7	250	7	260	5	294	1	310	8	75	9	260	8	1400	7	3130	1	3200		5600
Dibenz(a,h)anthracene	19	10	240	11	250	10	260	8	279	2	310	5	71	5	140	5	380	4	620		620		1520
Dibenzofuran	170	15	240	15	260	15	280	12	415	2	660		115	1	230		230		230		230		920
Fluoranthene	170	2	230	3	250	2	260	2	260		260	13	74	13	120	13	970	10	4260	2	4600	3	3880
Fluorene	16	11	236	11	250	11	260	9	278	2	310	4	35.5	4	55.5	4	81	4	250		250		324
Hexachlorobenzene	10	15	26	15	240	15	260	12	270	2	310		0.1	1	0.2		0.2		0.2		0.2		0.8
Indeno(1,2,3-cd)pyrene	170	9	240	10	250	10	260	8	282	1	310	5	168	6	483	6	1230	4	2090	1	2100		4900
N-Nitroso-di-n-propylamine	170	15	240	15	260	15	300	12	420	2	660		155	1	310		310		310		310		1240
Naphthalene	16	12	230	13	240	13	260	10	275	2	310	2	12.3	3	17	3	63.3	2	360		360	1	253
Phenanthrene	170	6	230	6	250	6	260	4	302	1	310	9	65	10	100	9	640	8	1910	1	2900	1	2560
Phenol	12	12	230	13	240	13	260	10	275	2	310	2	12	3	20.5	3	29.8	2	88		88		119
Pyrene	230	1	230	2	240	2	260	1	260		260	13	78.8	14	110	14	980	11	4300	2	4600	4	3920
Cadmium - AVS SEM	0.001		0.00075	1	0.0015	1	0.002		0.002		0.002	2	0.002	2	0.003	2	0.00375	2	0.004		0.004		0.015
Copper - AVS SEM												2	0.193	3	0.365	3	0.42	2	0.51		0.51		1.68
Lead - AVS SEM												2	0.221	3	0.281	3	0.402	2	0.575		0.575		1.61
Nickel - AVS SEM												2	0.07	3	0.125	3	0.13	2	0.13		0.13		0.52
Sem - AVS SEM												2	1.29	3	2.76	3	3.38	2	3.59		3.59		13.5
Zinc - AVS SEM												2	0.855	3	1.89	3	2.41	2	2.52		2.52		9.64

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
Potential outliers are shown in bold for positives greater than 4 times 75th quantile.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

TABLE 4-3

STATISTICAL DISTRIBUTION OF SUBSTANCES IN RAW BACKGROUND SOIL DATA
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Number of Sample Results	Statistical Distribution of Site Data	Results of Shapiro-Wilk or Shapiro-Francia Distribution Tests		
			W-norm.	W-lognorm.	W-Table
SEM-Cadmium	10	normal	0.9322	0.8474	0.842
SEM-Copper	10	normal	0.931	0.8824	0.842
SEM-Lead	10	normal (skip log test)	0.9005	0.9363	0.842
SEM-Nickel	10	nonparametric	0.757	0.7264	0.842
SEM-Zinc	10	normal	0.8502	0.8276	0.842
SEM	10	normal	0.8676	0.8524	0.842
Aluminum	60	normal	0.9893	0.9759	0.981
Antimony	25	nonparametric	0.778	0.6213	0.918
Arsenic	60	nonparametric	0.6589	0.9733	0.981
Barium	60	nonparametric	0.6505	0.9359	0.981
Beryllium	60	nonparametric	0.8166	0.8968	0.981
Cadmium	60	nonparametric	0.9262	0.9309	0.981
Chromium	60	nonparametric	0.5211	0.8587	0.981
Cobalt	60	nonparametric	0.7788	0.9432	0.981
Iron	60	lognormal	0.9097	0.9837	0.981
Lead	60	nonparametric	0.6122	0.9178	0.981
Magnesium	60	nonparametric	0.9432	0.8845	0.981
Manganese	60	nonparametric	0.6102	0.9417	0.981
Mercury	60	nonparametric	0.455	0.9461	0.981
Nickel	60	nonparametric	0.8117	0.9508	0.981
Vanadium	60	nonparametric	0.9615	0.8759	0.981
Zinc	60	nonparametric	0.7014	0.9421	0.981
Total Organic Carbon	10	normal	0.9473	0.92	0.842
4,4'-DDD	60	nonparametric	0.5768	0.7294	0.981
4,4'-DDE	60	nonparametric	0.6867	0.7846	0.981
4,4'-DDT	60	nonparametric	0.6636	0.7504	0.981
Aldrin	60	nonparametric	0.1218	0.3618	0.981
Alpha-Chlordane	60	nonparametric	0.5885	0.7585	0.981
Aroclor-1254	60	nonparametric	0.7727	0.8444	0.981
Aroclor-1260	60	nonparametric	0.754	0.8208	0.981
Dieldrin	60	nonparametric	0.6305	0.7384	0.981
Endosulfan Sulfate	60	nonparametric	0.3645	0.572	0.981
Endrin Ketone	60	nonparametric	0.5745	0.7176	0.981
Gamma-BHC (Lindane)	60	nonparametric	0.6623	0.8031	0.981
Gamma-Chlordane	60	nonparametric	0.6029	0.7577	0.981
2-Methylnaphthalene	60	nonparametric	0.7487	0.7101	0.981
Acenaphthene	60	nonparametric	0.7891	0.7136	0.981
Acenaphthylene	60	nonparametric	0.7986	0.7563	0.981
Anthracene	60	nonparametric	0.453	0.7012	0.981
Benz(a)anthracene	60	nonparametric	0.5804	0.812	0.981
Benzaldehyde	60	nonparametric	0.4191	0.804	0.981
Benzo(a)pyrene	60	nonparametric	0.579	0.8343	0.981
Benzo(b)fluoranthene	60	nonparametric	0.5798	0.8119	0.981
Benzo(g,h,i)perylene	60	nonparametric	0.5656	0.7767	0.981
Benzo(k)fluoranthene	60	nonparametric	0.5775	0.82	0.981
Bis(2-ethylhexyl) Phthalate	60	nonparametric	0.4133	0.6008	0.981
Butyl Benzyl Phthalate	60	nonparametric	0.2638	0.5057	0.981
Carbazole	60	nonparametric	0.5912	0.7663	0.981
Chrysene	60	nonparametric	0.5781	0.808	0.981
Dibenz(a,h)anthracene	60	nonparametric	0.5853	0.7637	0.981
Dibenzofuran	60	nonparametric	0.6348	0.779	0.981
Fluoranthene	60	nonparametric	0.5853	0.8317	0.981
Fluorene	60	nonparametric	0.8333	0.7119	0.981
Hexachlorobenzene	60	nonparametric	0.7392	0.6922	0.981
Indeno(1,2,3-cd)pyrene	60	nonparametric	0.5515	0.7338	0.981
N-Nitroso-di-n-propylamine	60	nonparametric	0.6252	0.7689	0.981
Naphthalene	60	nonparametric	0.7311	0.7225	0.981
Phenanthrene	60	nonparametric	0.5552	0.8568	0.981
Phenol	60	nonparametric	0.7512	0.7118	0.981
Pyrene	60	nonparametric	0.5909	0.8278	0.981

TABLE 4-3

STATISTICAL DISTRIBUTION OF SUBSTANCES IN RAW BACKGROUND SOIL DATA
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Notes:

Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result. Non-detected results are treated as present at one-half the detection limit in all calculations.

Statistical distribution of data determined using Shapiro-Wilk test for n <= 50, Shapiro-Francia test for n > 50. Statistical significance level is 0.05.

A normal distribution is assumed if the test statistic W-norm. is >= than the reference value (W-table), regardless of whether W-lognorm. is greater than the reference value.

A lognormal distribution is assumed if the test statistic W-lognorm. is >= the reference value (W-table), and the test statistic W-norm. is less than the reference value (W-table).

The decision scheme for when parametric versus nonparametric tests may be used is discussed in the text.

TABLE 4-4

DESCRIPTIVE STATISTICS FOR SUBSTANCES IN BACKGROUND HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Freq. of Detection	Range of Positive Detection Min.		Max.	Mean of All Data	Location of Maximum	Interquartile Range (Detects)	Standard Deviation	Variance	Skewness	Kurtosis	Geometric Mean
AVS/SEM-Cadmium	8/10	0.002	-	0.004	0.00245	DABK-S-SD07-000.5	0.00175	0.00117	0.00122	-0.000245	-0.000693	0.00211
AVS/SEM-Copper	10/10	0.14	-	0.51	0.334	DABK-S-SD19-000.5	0.227	0.127	0.0144	-0.344	-1.028	0.308
AVS/SEM-Lead	10/10	0.12	-	0.575	0.316	DABK-S-SD15-000.5	0.181	0.151	0.0206	0.730	-0.060	0.284
AVS/SEM-Nickel	10/10	0.04	-	0.15	0.101	DABK-S-SD03-000.5	0.06	0.0378	0.00129	-0.881	-0.961	0.092
AVS/SEM-Zinc	10/10	0.53	-	2.52	1.66	DABK-S-SD11-000.5	1.555	0.816	0.599	-0.362	-1.851	1.43
SEM	10/10	0.84	-	3.59	2.41	DABK-S-SD13-000.5	2.09	1.08	1.05	-0.388	-1.808	2.14
Aluminum	20/20	6230	-	19400	13300	DABK-S-SD07-000.5	3900	3500	11600000	-0.781	-0.028	12810
Antimony	1/5	0.83 J	-	0.83 J	3.86	DABK-S-SD13-000.5	0.415	1.94	3	-1.028	0.957	3.22
Arsenic	20/20	7.5 J	-	35.5 J	17.8	DABK-S-SD12-000.5	6.9	6.69	42.5	0.513	0.801	16.6
Barium	20/20	17.9 J	-	231	83.4	DABK-S-SD11-000.5	56.1	54.2	2790	1.636	2.935	69.6
Cadmium	1/20	0.12 J	-	0.31 J	0.394	DABK-S-SD12-000.5	0.107	0.0718	0.0049	-0.869	0.423	0.39
Chromium	20/20	10.5	-	81.5	23.7	DABK-S-SD19-000.5	8.1	14.7	206	3.405	13.715	21.28
Cobalt	20/20	6.1	-	38	17.4	DABK-S-SD12-000.5-D	10.3	7.75	57	0.908	1.078	15.8
Iron	20/20	15700	-	42700	29500	DABK-S-SD08-000.5	9800	6680	42400000	-0.018	0.063	28762
Lead	20/20	22.5	-	297	91.9	DABK-S-SD19-000.5	73.8	65.8	4120	1.798	3.916	74.9
Magnesium	20/20	1540	-	3630	2910	DABK-S-SD07-000.5	780	539	276000	-1.080	0.626	2855
Manganese	20/20	326	-	9740 J	3020	DABK-S-SD11-000.5	3340	2300	5050000	1.329	2.442	2213
Nickel	20/20	11	-	50.7	24	DABK-S-SD12-000.5-D	9.1	8.29	65.3	1.174	3.921	22.7
Vanadium	20/20	10.5	-	43.7 J	28.6	DABK-S-SD12-000.5-D	7.2	8.26	64.9	-0.729	0.118	27.1
Zinc	20/20	77.3 J	-	540 J	193	DABK-S-SD12-000.5-D	128	104	10400	1.791	5.124	171.5
TOC	10/10	26000	-	50500	37800	DABK-S-SD07-000.5	10500	7730	53800000	-0.136	-0.144	37040
4,4'-DDD	19/20	6.5	-	65	22.6	DABK-S-SD12-000.5-D	14	16.4	256	1.331	1.182	17.4
4,4'-DDE	20/20	7.1	-	190	89	DABK-S-SD07-000.5	93.5	50.2	2390	0.238	-0.663	71.0
4,4'-DDT	19/20	16	-	140	63.7	DABK-S-SD03-000.5	66	36.2	1240	-0.035	-1.070	48.1
Aldrin	1/20	31 J	-	31 J	3.06	DABK-S-SD07-000.5	15.5	6.58	41.2	4.454	19.883	1.81
Alpha-Chlordane	20/20	5.6	-	110	40.2	DABK-S-SD12-000.5-D	26	30.5	883	1.234	0.830	30.1
Aroclor-1260	16/20	26 J	-	89	51.2	DABK-S-SD16-000.5	33.6	21.3	431	0.137	-1.235	46.7
Dieldrin	20/20	8.6	-	190	87.4	DABK-S-SD17-000.5	90.2	57.2	3110	0.280	-0.900	64.1
Endosulfan Sulfate	4/20	7.3	-	18	4.53	DABK-S-SD12-000.5-D	7.42	3.66	12.7	2.523	6.768	3.76
Endrin Ketone	4/20	6.9	-	8.6	3.75	DABK-S-SD12-000.5	1.94	1.59	2.4	1.353	0.901	3.49
Gamma-BHC (Lindane)	1/20	3.3	-	3.3	1.7	DABK-S-SD11-000.5	1.65	0.503	0.24	1.771	4.571	1.64
Gamma-Chlordane	20/20	3.6	-	87	27.9	DABK-S-SD12-000.5-D	17.6	20	382	1.364	2.159	21.4
2-Methylnaphthalene	7/20	10	-	40	15.4	DABK-S-SD08-000.5	25	10	94.1	1.763	1.802	13.4
Acenaphthene	15/20	12 J	-	130	37.5	DABK-S-SD08-000.5	33	30.1	859	1.720	3.669	28.3
Acenaphthylene	16/20	13 J	-	230	34	DABK-S-SD17-000.5	17.5	47.1	2110	4.177	18.162	24.3
Anthracene	19/20	20	-	680	153	DABK-S-SD17-000.5	132	155	22700	2.497	7.126	105.4

TABLE 4-4

DESCRIPTIVE STATISTICS FOR SUBSTANCES IN BACKGROUND HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Freq. of Detection	Range of Positive Detection Min.		Max.	Mean of All Data	Location of Maximum	Interquartile Range (Detects)	Standard Deviation	Variance	Skewness	Kurtosis	Geometric Mean
Benz(a)anthracene	20/20	100	-	1900	785	DABK-S-SD19-000.5	992	596	338000	0.620	-1.158	560.4
Benzaldehyde	14/20	74 J	-	860	201	DABK-S-SD07-000.5	123	169	27200	3.393	13.117	168.3
Benzo(a)pyrene	20/20	120	-	2500	995	DABK-S-SD19-000.5	1290	781	579000	0.677	-0.986	694.3
Benzo(b)fluoranthene	20/20	210	-	4300	1740	DABK-S-SD13-000.5	2375	1370	1770000	0.646	-0.894	1194
Benzo(g,h,i)perylene	20/20	89	-	2800	1090	DABK-S-SD19-000.5	1315	874	726000	0.823	-0.461	730.0
Benzo(k)fluoranthene	20/20	62	-	1700	606	DABK-S-SD17-000.5	730	485	224000	0.860	-0.118	412.0
Bis(2-ethylhexyl) Phthalate	8/20	970	-	5600	1260	DABK-S-SD15-000.5	2320	1560	2310000	1.572	1.900	587.2
Butyl Benzyl Phthalate	7/20	88 J	-	1600 J	300	DABK-S-SD19-000.5	1080	391	145000	2.811	7.335	203.3
Carbazole	15/20	60 J	-	410 J	164	DABK-S-SD08-000.5	185	94	8400	1.295	1.026	142.6
Chrysene	20/20	130	-	3200	1330	DABK-S-SD19-000.5	1772	1040	1030000	0.594	-1.051	889.8
Dibenz(a,h)anthracene	19/20	20 J	-	620	212	DABK-S-SD19-000.5	309	201	38400	0.987	-0.358	123.1
Dibenzofuran	1/20	230 J	-	230 J	166	DABK-S-SD08-000.5	115	52	2570	1.819	4.383	159.4
Fluoranthene	20/20	280	-	4600	1870	DABK-S-SD19-000.5	2327	1460	2020000	0.688	-0.891	1307
Fluorene	16/20	16 J	-	250	59.2	DABK-S-SD17-000.5	45.5	58	3200	2.224	5.772	40.3
Hexachlorobenzene	1/20	0.2 J	-	0.2 J	10.8	DABK-S-SD13-000.5	0.1	7.06	47.4	2.591	9.629	8.38
Indeno(1,2,3-cd)pyrene	20/20	81	-	2100	822	DABK-S-SD19-000.5	995	668	424000	0.769	-0.654	550.3
Naphthalene	10/20	10 J	-	360 J	37.3	DABK-S-SD08-000.5	51	78.6	5870	4.036	17.027	18.0
Phenanthrene	20/20	100 J	-	2900	854	DABK-S-SD08-000.5	1132	736	515000	1.319	1.573	585.3
Phenol	10/20	9	-	88 J	18.4	DABK-S-SD08-000.5	17.8	18.8	334	3.124	10.627	14.2
Pyrene	20/20	190	-	4600	2020	DABK-S-SD19-000.5	2642	1520	2200000	0.513	-1.360	1423

Notes:

Units are mg/kg for inorganics, ug/kg for organics.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two.
Frequency of detection refers to number of times compound was detected among all samples versus total number of samples.
Number of samples may vary based on the number of usable results.
Skewness = (n*SUM(x-xbar)3)/((n-1)(n-2)s3) = a measure of asymmetry of a distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis = ((n+1)*n*SUM(x-xbar)4)/((n-1)*(n-2)*(n-3)*s4) - (3*(n-1)2)/((n-2)(n-3)) = measures sharpness of the peak of a distribution (+ or -) relative to normal distribution.

TABLE 4-5

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

	Percentile Distribution of Background Concentrations																					Outlier Screening	
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Pts.> Criteria	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.	No. Pts	4 x 75 % Quantile
AVS/SEM-Cadmium	0.001		0.00075	1	0.0015	1	0.002		0.002		0.002	2	0.002	2	0.003	2	0.00375	2	0.004		0.004		0.015
AVS/SEM-Copper												2	0.193	3	0.365	3	0.42	2	0.51		0.51		1.68
AVS/SEM-Lead												2	0.221	3	0.281	3	0.402	2	0.575		0.575		1.61
AVS/SEM-Nickel												2	0.07	3	0.125	3	0.13	2	0.13		0.13		0.52
AVS/SEM-Zinc												2	0.855	3	1.89	3	2.41	2	2.52		2.52		9.64
SEM												2	1.29	3	2.76	3	3.38	2	3.59		3.59		13.5
Aluminum												5	12000	5	14300	5	15900	4	19200	1	19400		63400
Antimony	7.2	1	7.28	1	9.2	1	11.2	1	11.3		11.3		0.415	1	0.83		0.83		0.83		0.83		3.32
Arsenic												5	14.7	5	17.7	5	21.6	4	34	1	34.35		86.5
Barium												5	40.2	5	77.7	5	96.3	4	230	1	231		385
Cadmium	0.6	5	0.72	5	0.84	5	0.91	4	1		1		0.108	1	0.215		0.215		0.215		0.215		0.86
Chromium												5	16.7	5	22.5	5	24.8	4	79	1	81.5		99.1
Cobalt												5	10.3	5	17.7	5	20.6	4	36.2	1	36.35		82.3
Iron												5	24100	5	30400	5	33900	4	42600	1	42700		136000
Lead												5	43.2	5	72.9	5	117	4	291	1	297		468
Magnesium												5	2470	5	3130	5	3250	4	3620	1	3630		13000
Manganese												5	1020	5	2700	5	4360	4	9560	1	9740		17500
Nickel												5	17.9	5	25.5	5	27	4	48.6	1	49.5		108
Vanadium												5	26.6	5	29.6	5	33.8	4	42.1	1	42.25		135
Zinc												5	110	5	192	5	238	4	522	1	534		951
TOC												2	32200	3	37900	3	42700	2	50500		50500		171000
4,4'-DDD	4.1		2.05	1	4.1		4.1		4.1		4.1	5	13	5	19.5	5	27	4	62.5		62.5		108
4,4'-DDE												5	41.5	5	88	5	135	4	189	1	190		540
4,4'-DDT	4.1		2.05	1	4.1		4.1		4.1		4.1	5	29	5	70	5	95	4	125		125		380
Aldrin	2.1	5	2.7	5	3.1	5	3.5	4	4.7		4.7		15.5	1	31		31		31		31		124
Alpha-Chlordane												5	17.3	5	33.5	5	43.3	4	110	1	110		173
Aroclor-1260	41	1	43.3	1	55.5	1	83.5	1	91		91	4	38.9	4	59	4	72.5	4	89		89		290
Dieldrin												5	29.8	5	89	5	120	4	190	1	190		480
Endosulfan Sulfate	4.1	4	5.05	4	6.05	4	6.73	4	8.4		8.4	1	7.78	1	9.4	1	15.2	1	17		17		60.6
Endrin Ketone	4.1	4	5.05	4	6.1	4	6.73	4	9.1		9.1	1	5.49	1	6.64	1	7.43	1	7.6		7.6		29.7
Gamma-BHC (Lindane)	2.1	5	2.7	5	3.1	5	3.5	4	4.7		4.7		1.65	1	3.3		3.3		3.3		3.3		13.2
Gamma-Chlordane												5	14	5	24	5	31.6	4	83	1	84		127
2-Methylnaphthalene	16	3	18	4	21	3	26.5	3	73		73	2	10	2	14	2	35	1	40		40		140
Acenaphthene	16	1	17.5	2	20	1	25.5	1	27		27	4	28	4	39	4	61	3	130		130		244
Acenaphthylene	19	1	19.5	1	24	1	27	1	27		27	4	19.5	4	27	4	37	4	230		230	1	148

TABLE 4-5

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

	Percentile Distribution of Background Concentrations																					Outlier Screening	
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Pts.> Criteria	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.	No. Pts	4 x 75 % Quantile
Anthracene	260		130	1	260		260		260		260	5	38	5	120	5	170	4	680		680	1	680
Benz(a)anthracene												5	308	5	500	5	1300	4	1890	1	1900		5200
Benzaldehyde	200	1	223	2	250	2	390	1	660		660	3	110	4	165	4	233	3	860		860		930
Benzo(a)pyrene												5	390	5	630	5	1680	4	2490	1	2500		6700
Benzo(b)fluoranthene												5	525	5	1200	5	2900	4	4300	1	4300		11600
Benzo(g,h,i)perylene												5	365	5	743	5	1680	4	2800	1	2800		6700
Benzo(k)fluoranthene												5	183	5	460	5	913	4	1690	1	1700		3650
Bis(2-ethylhexyl) Phthalate	240	3	313	3	400	3	708	3	1500		1500	2	1480	2	2380	2	3800	2	5600		5600		15200
Butyl Benzyl Phthalate	230	3	265	4	310	3	350	3	460		460	2	120	2	210	2	1200	1	1600		1600		4800
Carbazole	200	1	215	2	240	1	280	1	300		300	4	95	4	150	4	280	3	410		410		1120
Chrysene												5	438	5	910	5	2210	4	3200	1	3200		8850
Dibenz(a,h)anthracene	19		9.5	1	19		19		19		19	5	71	5	140	5	380	4	620		620		1520
Dibenzofuran	200	5	260	5	300	5	340	4	660		660		115	1	230		230		230		230		920
Fluoranthene												5	663	5	1300	5	2990	4	4600	1	4600		12000
Fluorene	16	1	16.8	1	21.5	1	26.3	1	27		27	4	35.5	4	55.5	4	81	4	250		250		324
Hexachlorobenzene	10	5	16	5	19	5	26	4	73		73		0.1	1	0.2		0.2		0.2		0.2		0.8
Indeno(1,2,3-cd)pyrene												5	285	5	558	5	1280	4	2100	1	2100		5100
Naphthalene	16	2	18	3	20.5	3	26.3	2	73		73	2	12.3	3	17	3	63.3	2	360		360	1	253
Phenanthrene												5	298	5	610	5	1430	4	2850	1	2900		5700
Phenol	12	2	17.5	3	19.5	3	24.8	2	27		27	2	12	3	20.5	3	29.8	2	88		88		119
Pyrene												5	838	5	1370	5	3480	4	4590	1	4600		13900

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
Potential outliers are shown in bold for positives greater than 4 times 75th quantile.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

TABLE 4-6

STATISTICAL DISTRIBUTION OF SUBSTANCES IN BACKGROUND HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Number of Sample Results	Statistical Distribution of Site Data	Results of Shapiro-Wilk or Shapiro-Francia Distribution Tests		
			W-norm.	W-lognorm.	W-Table
SEM-Cadmium	10	normal	0.9322	0.8474	0.842
SEM-Copper	10	normal	0.931	0.8824	0.842
SEM-Lead	10	normal (skip log test)	0.9005	0.9363	0.842
SEM-Nickel	10	nonparametric	0.757	0.7264	0.842
SEM-Zinc	10	normal	0.8502	0.8276	0.842
SEM	10	normal	0.8676	0.8524	0.842
Aluminum	20	nonparametric	0.8956	0.8291	0.905
Antimony	5	normal	0.8886	0.7664	0.762
Arsenic	20	normal	0.9453	0.9218	0.905
Barium	20	lognormal	0.8254	0.9599	0.905
Cadmium	20	normal	0.9371	0.8825	0.905
Chromium	20	nonparametric	0.6022	0.8742	0.905
Cobalt	20	normal (skip log test)	0.9197	0.9616	0.905
Iron	20	normal	0.9809	0.9579	0.905
Lead	20	lognormal	0.8295	0.9835	0.905
Magnesium	20	nonparametric	0.8901	0.8355	0.905
Manganese	20	lognormal	0.8945	0.9648	0.905
Nickel	20	lognormal	0.8702	0.9161	0.905
Vanadium	20	normal	0.9332	0.8461	0.905
Zinc	20	lognormal	0.8377	0.9486	0.905
TOC	10	normal	0.9473	0.92	0.842
4,4'-DDD	20	lognormal	0.8537	0.9481	0.905
4,4'-DDE	20	normal	0.974	0.8904	0.905
4,4'-DDT	20	normal	0.9598	0.8061	0.905
Aldrin	20	nonparametric	0.2798	0.5097	0.905
Alpha-Chlordane	20	lognormal	0.8483	0.9467	0.905
Aroclor-1260	20	normal	0.9393	0.9258	0.905
Dieldrin	20	normal	0.9395	0.8938	0.905
Endosulfan Sulfate	20	nonparametric	0.6312	0.8018	0.905
Endrin Ketone	20	lognormal	0.8258	0.9142	0.905
Gamma-BHC (Lindane)	20	lognormal	0.849	0.9451	0.905
Gamma-Chlordane	20	lognormal	0.8815	0.9503	0.905
2-Methylnaphthalene	20	nonparametric	0.6822	0.8068	0.905
Acenaphthene	20	lognormal	0.8396	0.9645	0.905
Acenaphthylene	20	nonparametric	0.419	0.8468	0.905
Anthracene	20	lognormal	0.7112	0.9606	0.905
Benz(a)anthracene	20	lognormal	0.8722	0.9283	0.905
Benzaldehyde	20	nonparametric	0.595	0.9011	0.905
Benzo(a)pyrene	20	lognormal	0.872	0.9321	0.905
Benzo(b)fluoranthene	20	lognormal	0.8875	0.9298	0.905
Benzo(g,h,i)perylene	20	lognormal	0.8866	0.9464	0.905
Benzo(k)fluoranthene	20	normal (skip log test)	0.9077	0.9507	0.905
Bis(2-ethylhexyl) Phthalate	20	nonparametric	0.7609	0.8964	0.905
Butyl Benzyl Phthalate	20	nonparametric	0.5105	0.7488	0.905
Carbazole	20	lognormal	0.8521	0.9567	0.905
Chrysene	20	lognormal	0.8868	0.9263	0.905
Dibenz(a,h)anthracene	20	lognormal	0.8449	0.9605	0.905
Dibenzofuran	20	lognormal	0.8401	0.9445	0.905
Fluoranthene	20	lognormal	0.8806	0.9316	0.905
Fluorene	20	lognormal	0.7643	0.9741	0.905
Hexachlorobenzene	20	nonparametric	0.741	0.6505	0.905
Indeno(1,2,3-cd)pyrene	20	lognormal	0.8789	0.9395	0.905
Naphthalene	20	nonparametric	0.3984	0.7535	0.905
Phenanthrene	20	lognormal	0.8585	0.9631	0.905
Phenol	20	nonparametric	0.5819	0.8722	0.905
Pyrene	20	lognormal	0.8766	0.9333	0.905

TABLE 4-6

STATISTICAL DISTRIBUTION OF SUBSTANCES IN BACKGROUND HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Notes:

Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result. Non-detected results are treated as present at one-half the detection limit in all calculations.

Statistical distribution of data determined using Shapiro-Wilk test for n <= 50, Shapiro-Francia test for n > 50. Statistical significance level is 0.05.

A normal distribution is assumed if the test statistic W-norm. is >= than the reference value (W-table), regardless of whether W-lognorm. is greater than the reference value.

A lognormal distribution is assumed if the test statistic W-lognorm. is >= the reference value (W-table), and the test statistic W-norm. is less than the reference value (W-table).

The decision scheme for when parametric versus nonparametric tests may be used is discussed in the text.

TABLE 4-7

DESCRIPTIVE STATISTICS FOR SUBSTANCES IN BACKGROUND NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Freq. of Detection	Range of Positive Detection Min.		Max.	Mean of All Data	Location of Maximum	Interquartile Range (Detects)	Standard Deviation	Variance	Skewness	Kurtosis	Geometric Mean
Aluminum	20/20	7580	-	16700	12100	DABK-S-SO04-0001	3000	2230	4740000	0.122	-0.329	11857
Arsenic	20/20	3.3 J	-	71.7 J	13	DABK-S-SO06-0001	5.77	14.6	201	3.790	15.614	9.86
Barium	20/20	15.1 J	-	60.6	35	DABK-S-SO02-0001	19.9	11.7	130	0.375	-0.526	33.1
Beryllium	1/20	0.37 J	-	0.37 J	0.35	DABK-S-SO06-0001	0.185	0.0318	0.000963	0.046	-0.229	0.349
Chromium	20/20	7.6	-	28.2	12.7	DABK-S-SO02-0001	3.8	4.27	17.3	2.638	9.283	12.2
Cobalt	20/20	3.3 J	-	11.9	5.52	DABK-S-SO06-0001	1.83	2.33	5.17	2.027	3.608	5.18
Iron	20/20	8290	-	53900	19600	DABK-S-SO06-0001	7300	9130	79200000	2.893	11.138	18225
Lead	20/20	13.4	-	38	23.2	DABK-S-SO19-0001	8.2	6.59	41.3	0.604	0.036	22.3
Magnesium	15/20	1570	-	2930	1660	DABK-S-SO20-0001	710	742	522000	-0.199	-0.744	1460
Manganese	20/20	46.6	-	373	130	DABK-S-SO06-0001	108.8	88.4	7430	1.581	1.903	110
Mercury	2/20	0.1 J	-	0.12 J	0.0559	DABK-S-SO20-0001	0.045	0.0293	0.000816	1.189	0.190	0.050
Nickel	20/20	5.3 J	-	19.1	11	DABK-S-SO02-0001	4.95	3.39	10.9	0.387	0.305	10.5
Vanadium	20/20	14	-	34.2	25.1	DABK-S-SO03-0001	7.9	5.41	27.8	0.008	-0.457	24.5
Zinc	20/20	21.4	-	81.7	43.3	DABK-S-SO02-0001	17.9	14.2	193	0.801	1.473	41.1
4,4'-DDE	3/20	5.4	-	43	6.09	DABK-S-SO19-0001	37.6	10.8	110	3.040	8.507	3.37
4,4'-DDT	3/20	3.6	-	23	4.29	DABK-S-SO20-0001	19.4	5.33	27	3.113	9.123	3.16
Alpha-Chlordane	2/20	6.6	-	7	1.83	DABK-S-SO20-0001	2.05	1.7	2.76	2.875	7.034	1.51
Aroclor-1254	1/20	25 J	-	25 J	25.4	DABK-S-SO02-0001	12.5	1.14	1.24	-0.296	-0.031	25.4
Aroclor-1260	1/20	34 J	-	34 J	25.5	DABK-S-SO14-0001	17	2.97	8.4	-0.039	6.178	25.3
Dieldrin	2/20	13	-	26	4.2	DABK-S-SO20-0001	16.25	5.65	30.3	3.558	12.958	3.03
Gamma-Chlordane	1/20	4.2	-	4.2	1.42	DABK-S-SO20-0001	2.1	0.662	0.416	4.279	18.877	1.35
Benz(a)anthracene	3/20	53 J	-	79 J	114	DABK-S-SO20-0001	26	25.5	616	-1.694	1.734	111
Benzaldehyde	9/20	61 J	-	150 J	107	DABK-S-SO14-0001	51	28.8	786	-0.536	-1.271	103
Benzo(a)pyrene	2/20	62 J	-	95 J	119	DABK-S-SO20-0001	48.5	18.5	324	-2.126	4.442	118
Benzo(b)fluoranthene	3/20	64 J	-	130 J	120	DABK-S-SO20-0001	66	17.2	281	-2.407	6.000	119
Benzo(g,h,i)perylene	1/20	100 J	-	100 J	123	DABK-S-SO20-0001	50	12.1	138	-2.037	4.645	122
Benzo(k)fluoranthene	1/20	110 J	-	110 J	123	DABK-S-SO20-0001	55	11.2	120	-2.259	6.667	123
Bis(2-ethylhexyl) Phthalate	2/20	130 J	-	160 J	128	DABK-S-SO02-0001	62.5	9.42	84.3	1.903	6.611	128
Chrysene	3/20	54 J	-	140 J	119	DABK-S-SO20-0001	86	21.7	449	-2.012	3.663	116
Fluoranthene	13/20	56 J	-	230 J	98.8	DABK-S-SO20-0001	33	41.4	1630	1.690	4.167	92.1
Indeno(1,2,3-cd)pyrene	1/20	98 J	-	98 J	123	DABK-S-SO20-0001	49	12.3	143	-2.018	4.374	122
Phenanthrene	4/20	54 J	-	92 J	112	DABK-S-SO20-0001	28.8	26.6	672	-1.410	0.575	108
Pyrene	15/20	44 J	-	190 J	97.7	DABK-S-SO20-0001	47	35.3	1190	0.776	0.875	91.8

Notes:

Units are mg/kg for inorganics, ug/kg for organics.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two.
Frequency of detection refers to number of times compound was detected among all samples versus total number of samples.
Number of samples may vary based on the number of usable results.
Skewness = (n*SUM(x-xbar)3)/((n-1)(n-2)s3) = a measure of asymmetry of a distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis = ((n+1)*n*SUM(x-xbar)4)/((n-1)*(n-2)*(n-3)*s4) - (3*(n-1)2)/((n-2)(n-3)) = measures sharpness of the peak of a distribution (+ or -) relative to normal distribution.

TABLE 4-8

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

	Percentile Distribution of Background Concentrations																					Outlier Screening	
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results										Pts.> Criteria	
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max			
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.	No. Pts	4 x 75 % Quantile
Aluminum												5	10100	5	12300	5	13100	4	16600	1	16700		52600
Arsenic												5	6.73	5	9.7	5	12.5	4	69.3	1	71.7	1	50
Barium												5	25.6	5	32.1	5	45.5	4	60	1	60.6		182
Beryllium	0.57	5	0.65	5	0.7	5	0.75	4	0.815		0.815		0.185	1	0.37		0.37		0.37		0.37		1.48
Chromium												5	10.2	5	11.9	5	14	4	27.6	1	28.2		55.9
Cobalt												5	4.2	5	4.6	5	6.03	4	11.9	1	11.9		24.1
Iron												5	15100	5	18500	5	22400	4	52400	1	53900		89500
Lead												5	18.6	5	22.6	5	26.8	4	37.8	1	38		107
Magnesium	964	1	1030	2	1210	1	1360	1	1380		1380	4	1670	4	1770	4	2380	3	2930		2930		9520
Manganese												5	70.2	5	91.7	5	179	4	369	1	373		716
Mercury	0.052	4	0.069	5	0.0835	5	0.12	4	0.22		0.22		0.075	1	0.11	1	0.12		0.12		0.12		0.48
Nickel												5	8.75	5	10.7	5	13.7	4	18.9	1	19.1		54.6
Vanadium												5	22.3	5	24	5	30.2	4	34.2	1	34.2		121
Zinc												5	34.6	5	41.7	5	52.5	4	80.7	1	81.7		210
4,4'-DDE	3.4	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	5.4	1	31	1	43		43		43		172
4,4'-DDT	4.6	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	3.6	1	16	1	23		23		23		92
Alpha-Chlordane	1.8	4	2.5	5	2.6	5	2.7	4	2.8		2.8		4.95	1	6.8	1	7		7		7		28
Aroclor-1254	46	5	49	5	51	5	53	4	55		55		12.5	1	25		25		25		25		100
Aroclor-1260	34	5	49	5	51	5	53	4	55		55		17	1	34		34		34		34		136
Dieldrin	3.4	4	4.9	5	5.1	5	5.23	4	5.5		5.5		9.75	1	19.5	1	26		26		26		104
Gamma-Chlordane	1.8	5	2.5	5	2.6	5	2.7	4	2.8		2.8		2.1	1	4.2		4.2		4.2		4.2		16.8
Benz(a)anthracene	170	4	240	5	250	4	260	4	270		270	1	53	1	54	1	79		79		79		316
Benzaldehyde	170	3	240	3	250	3	260	2	270		270	2	64	3	72	2	115	2	150		150		460
Benzo(a)pyrene	170	4	240	5	255	5	260	4	270		270		46.5	1	78.5	1	95		95		95		380
Benzo(b)fluoranthene	170	4	240	5	250	4	260	4	270		270	1	64	1	110	1	130		130		130		520
Benzo(g,h,i)perylene	170	5	240	5	250	5	260	4	270		270		50	1	100		100		100		100		400
Benzo(k)fluoranthene	170	5	240	5	250	5	260	4	270		270		55	1	110		110		110		110		440
Bis(2-ethylhexyl) Phthalate	230	4	244	5	255	5	260	4	270		270		97.5	1	145	1	160		160		160		640
Chrysene	170	4	240	5	250	4	260	4	270		270	1	54	1	77	1	140		140		140		560
Fluoranthene	170	2	230	2	250	2	260	1	260		260	3	62	4	71	3	95	3	230		230		380
Indeno(1,2,3-cd)pyrene	170	5	240	5	250	5	260	4	270		270		49	1	98		98		98		98		392
Phenanthrene	170	4	240	4	250	4	260	4	270		270	1	55	1	58.5	1	83.8	1	92		92		335
Pyrene	230	1	230	2	250	1	260	1	260		260	4	63	4	79	4	110	3	190		190		440

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
Potential outliers are shown in bold for positives greater than 4 times 75th quantile.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

TABLE 4-9

STATISTICAL DISTRIBUTION OF SUBSTANCES IN BACKGROUND NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Number of Sample Results	Statistical Distribution of Site Data	Results of Shapiro-Wilk or Shapiro-Francia Distribution Tests		
			W-norm.	W-lognorm.	W-Table
Aluminum	20	normal	0.9713	0.9639	0.905
Arsenic	20	lognormal	0.5162	0.9162	0.905
Barium	20	normal (skip log test)	0.9541	0.964	0.905
Beryllium	20	normal	0.9806	0.9802	0.905
Chromium	20	nonparametric	0.743	0.9016	0.905
Cobalt	20	nonparametric	0.7195	0.8388	0.905
Iron	20	nonparametric	0.6913	0.8931	0.905
Lead	20	normal (skip log test)	0.9616	0.9823	0.905
Magnesium	20	normal	0.9195	0.8392	0.905
Manganese	20	lognormal	0.7928	0.9177	0.905
Mercury	20	lognormal	0.8225	0.9206	0.905
Nickel	20	normal	0.9714	0.9643	0.905
Vanadium	20	normal	0.9567	0.9463	0.905
Zinc	20	normal (skip log test)	0.9511	0.9737	0.905
4,4'-DDE	20	nonparametric	0.4005	0.517	0.905
4,4'-DDT	20	nonparametric	0.3959	0.4629	0.905
Alpha-Chlordane	20	nonparametric	0.407	0.4964	0.905
Aroclor-1254	20	normal	0.965	0.9603	0.905
Aroclor-1260	20	nonparametric	0.7973	0.7712	0.905
Dieldrin	20	nonparametric	0.3807	0.4901	0.905
Gamma-Chlordane	20	nonparametric	0.3638	0.4929	0.905
Benz(a)anthracene	20	nonparametric	0.7113	0.6523	0.905
Benzaldehyde	20	nonparametric	0.8614	0.8303	0.905
Benzo(a)pyrene	20	nonparametric	0.7198	0.6537	0.905
Benzo(b)fluoranthene	20	nonparametric	0.6836	0.6154	0.905
Benzo(g,h,i)perylene	20	nonparametric	0.773	0.7249	0.905
Benzo(k)fluoranthene	20	nonparametric	0.7713	0.7133	0.905
Bis(2-ethylhexyl) Phthalate	20	nonparametric	0.799	0.8367	0.905
Chrysene	20	nonparametric	0.7294	0.6543	0.905
Fluoranthene	20	lognormal	0.8232	0.921	0.905
Indeno(1,2,3-cd)pyrene	20	nonparametric	0.768	0.7212	0.905
Phenanthrene	20	nonparametric	0.7363	0.6878	0.905
Pyrene	20	normal (skip log test)	0.9486	0.9806	0.905

Notes:

Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result. Non-detected results are treated as present at one-half the detection limit in all calculations.

Statistical distribution of data determined using Shapiro-Wilk test for n <= 50, Shapiro-Francia test for n > 50. Statistical significance level is 0.05.

A normal distribution is assumed if the test statistic W-norm. is >= than the reference value (W-table), regardless of whether W-lognorm. is greater than the reference value.

A lognormal distribution is assumed if the test statistic W-lognorm. is >= the reference value (W-table), and the test statistic W-norm. is less than the reference value (W-table).

The decision scheme for when parametric versus nonparametric tests may be used is discussed in the text.

TABLE 4-10

DESCRIPTIVE STATISTICS FOR SUBSTANCES IN BACKGROUND NON-HYDRIC SOIL TYPE PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Freq. of Detection	Range of Positive Detection Min.		Range of Positive Detection Max.	Mean of All Data	Location of Maximum	Interquartile Range (Detects)	Standard Deviation	Variance	Skewness	Kurtosis	Geometric Mean
Aluminum	20/20	9110	-	14600	11200	DABK-S-SO29-0001	2250	1530	2230000	0.633	-0.100	11118
Arsenic	20/20	4.7 J	-	32.3 J	9.59	DABK-S-SO25-0001-D	6.7	4.12	16.1	1.246	1.963	8.86
Barium	20/20	28.1	-	53.1	39.7	DABK-S-SO30-0001	9.4	6.86	44.7	0.120	-0.471	39.1
Beryllium	1/20	0.38 J	-	0.38 J	0.33	DABK-S-SO25-0001-D	0.177	0.0189	0.000339	0.998	2.968	0.330
Chromium	20/20	11.2	-	16	13.5	DABK-S-SO29-0001	2.7	1.41	1.89	0.087	-1.196	13.4
Cobalt	20/20	4.5 J	-	13.8	7.25	DABK-S-SO32-0001	1.65	1.92	3.5	2.204	6.949	7.05
Iron	20/20	12700 J	-	63300 J	19800	DABK-S-SO25-0001-D	7300	6670	42200000	2.406	7.860	19037
Lead	20/20	17.9	-	49.5 J	31.2	DABK-S-SO32-0001	13.2	9.17	79.9	0.272	-0.681	29.9
Magnesium	20/20	1360	-	1960	1610	DABK-S-SO23-0001	220	177	29700	0.465	-0.267	1603
Manganese	20/20	101 J	-	615 J	289	DABK-S-SO25-0001-D	198	113	12100	0.049	-1.058	266
Mercury	4/20	0.1 J	-	0.68	0.0848	DABK-S-SO32-0001	0.465	0.151	0.0218	3.606	13.901	0.045
Nickel	20/20	7.5	-	14.4	10.3	DABK-S-SO26-0001	3.07	1.95	3.6	0.373	-0.487	10.1
Vanadium	20/20	26.1 J	-	42.6	30.5	DABK-S-SO25-0001-D	5	2.95	8.28	0.386	-0.839	30.4
Zinc	20/20	25.9	-	93.7	50.2	DABK-S-SO22-0001	32.1	19.7	368	0.673	-0.340	46.7
4,4'-DDE	3/20	11	-	20	4.33	DABK-S-SO23-0001	9	4.71	21.1	2.616	6.417	3.25
4,4'-DDT	2/20	5.6	-	8.5	2.96	DABK-S-SO23-0001	4.3	1.49	2.1	3.302	11.078	2.77
Alpha-Chlordane	1/20	3.8	-	3.8	1.41	DABK-S-SO22-0001	1.9	0.572	0.31	4.250	18.552	1.35
Aroclor-1260	5/20	49 J	-	86	34	DABK-S-SO26-0001	23.5	17.5	291	1.860	2.982	31.0
Gamma-Chlordane	2/20	2.8	-	7.2	1.66	DABK-S-SO22-0001	5.1	1.35	1.74	4.043	16.945	1.45
Benz(a)anthracene	3/20	52 J	-	66 J	113	DABK-S-SO23-0001	14	25.1	600	-1.526	2.148	110
Benzaldehyde	2/20	59 J	-	130 J	121	DABK-S-SO33-0001	85.7	17	276	-2.291	10.193	119
Benzo(a)pyrene	9/20	51 J	-	78 J	95.2	DABK-S-SO23-0001	13	34	1100	-0.068	-1.621	89.0
Benzo(b)fluoranthene	10/20	51 J	-	120 J	97.8	DABK-S-SO23-0001	17	30.9	906	-0.072	-1.337	92.8
Benzo(g,h,i)perylene	4/20	55 J	-	72 J	112	DABK-S-SO23-0001	13	28.1	748	-1.161	0.500	107
Benzo(k)fluoranthene	6/20	52 J	-	69 J	105	DABK-S-SO26-0001	8	33	1030	-0.658	-1.059	98.7
Chrysene	10/20	55 J	-	90 J	97	DABK-S-SO23-0001	13.2	29.4	824	0.155	-1.294	92.7
Fluoranthene	18/20	56 J	-	170 J	101	DABK-S-SO23-0001	52.5	30	854	0.371	-0.232	96.8
Indeno(1,2,3-cd)pyrene	1/20	60 J	-	60 J	121	DABK-S-SO23-0001	30	17.3	283	-2.064	9.037	120
N-Nitroso-di-n-propylamine	1/20	310	-	310	134	DABK-S-SO24-0001	155	42.5	1720	4.129	17.741	130
Phenanthrene	13/20	51 J	-	95 J	87.8	DABK-S-SO23-0001	16.5	31	914	0.624	-0.847	82.9
Pyrene	19/20	48 J	-	150 J	90.2	DABK-S-SO23-0001	49	26.8	683	0.242	-0.402	86.3

Notes:

Units are mg/kg for inorganics, ug/kg for organics.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two.
Frequency of detection refers to number of times compound was detected among all samples versus total number of samples.
Number of samples may vary based on the number of usable results.
Skewness = (n*SUM(x-xbar)3)/((n-1)(n-2)s3) = a measure of asymmetry of a distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis = ((n+1)*n*SUM(x-xbar)4)/((n-1)*(n-2)*(n-3)*s4) - (3*(n-1)2)/((n-2)(n-3)) = measures sharpness of the peak of a distribution (+ or -) relative to normal distribution.

TABLE 4-11

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND NON-HYDRIC SOIL TYPE PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

	Percentile Distribution of Background Concentrations																					Outlier Screening	
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Pts.> Criteria	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.	No. Pts	4 x 75 % Quantile
Aluminum												5	9850	5	11100	5	12100	4	14600	1	14600		48400
Arsenic												5	6	5	8.6	5	12.7	4	21	1	21.3		50.6
Barium												5	35.6	5	38.8	5	45	4	52.9	1	53.1		180
Beryllium	0.59	5	0.635	5	0.65	5	0.67	4	0.77		0.77		0.176	1	0.353		0.353		0.353		0.3525		1.41
Chromium												5	12.2	5	13.5	5	14.9	4	16	1	16		59.6
Cobalt												5	6.13	5	6.95	5	7.78	4	13.6	1	13.8		31.1
Iron												5	15600	5	18300	5	22900	4	42400	1	43300		91400
Lead												5	23.1	5	32.3	5	36.3	4	49.3	1	49.5		145
Magnesium												5	1460	5	1590	5	1680	4	1960	1	1960		6740
Manganese												5	197	5	280	5	395	4	476	1	477		1580
Mercury	0.031	4	0.042	4	0.0625	4	0.0734	4	0.13		0.13	1	0.11	1	0.2	1	0.575	1	0.68		0.68		2.3
Nickel												5	8.43	5	10.4	5	11.5	4	14.4	1	14.4		45.9
Vanadium												5	28.2	5	30.4	5	33.2	4	35.8	1	35.8		133
Zinc												5	32.5	5	47	5	64.6	4	93.2	1	93.7		258
4,4'-DDE	4.5	4	4.7	5	4.9	4	5.2	4	6.2		6.2	1	11	1	13	1	20		20		20		80
4,4'-DDT	4.5	4	4.7	5	4.9	5	5.2	4	6.2		6.2		4.2	1	7.05	1	8.5		8.5		8.5		34
Alpha-Chlordane	2.3	5	2.4	5	2.5	5	2.7	4	3.2		3.2		1.9	1	3.8		3.8		3.8		3.8		15.2
Aroclor-1260	45	4	47	4	49	4	51	3	62		62	1	50	2	58	1	73.5	1	86		86		294
Gamma-Chlordane	2.3	4	2.4	5	2.5	5	2.7	4	3.2		3.2		2.1	1	5	1	7.2		7.2		7.2		28.8
Benz(a)anthracene	230	4	238	5	240	4	250	4	310		310	1	52	1	59	1	66		66		66		264
Benzaldehyde	230	4	239	5	240	5	253	4	310		310		44.3	1	94.5	1	130		130		130		520
Benzo(a)pyrene	230	3	230	3	240	3	250	2	310		310	2	53	3	58	2	66	2	78		78		264
Benzo(b)fluoranthene	230	2	230	3	240	3	253	2	310		310	2	59.8	3	69.5	3	76.8	2	120		120		307
Benzo(g,h,i)perylene	230	4	236	4	240	4	258	4	310		310	1	55.5	1	57.5	1	68.5	1	72		72		274
Benzo(k)fluoranthene	230	3	234	4	240	4	260	3	310		310	1	52.8	2	57.5	2	60.8	1	69		69		243
Chrysene	230	2	230	3	240	3	253	2	310		310	2	64.3	3	68	3	77.5	2	90		90		310
Fluoranthene	230		173	1	245	1	260		260		260	4	67.5	5	99.3	5	120	4	170		170		480
Indeno(1,2,3-cd)pyrene	230	5	240	5	240	5	260	4	310		310		30	1	60		60		60		60		240
N-Nitroso-di-n-propylamine	230	5	240	5	240	5	260	4	310		310		155	1	310		310		310		310		1240
Phenanthrene	230	2	230	2	240	2	260	1	310		310	3	57	4	65	3	73.5	3	95		95		294
Pyrene	230		115	1	230		230		230		230	5	61	5	93	5	110	4	150		150		440

Notes:

Units are mg/kg for inorganics, ug/kg for organics.

Potential outliers are shown in bold for positives greater than 4 times 75th quantile.

The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.

Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.

Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.

Number of samples may vary based on the number of usable results.

TABLE 4-12

STATISTICAL DISTRIBUTION OF SUBSTANCES IN BACKGROUND NON-HYDRIC SOIL TYPE PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Number of Sample Results	Statistical Distribution of Site Data	Results of Shapiro-Wilk or Shapiro-Francia Distribution Tests		
			W-norm.	W-lognorm.	W-Table
Aluminum	20	normal (skip log test)	0.951	0.966	0.905
Arsenic	20	lognormal	0.8978	0.9677	0.905
Barium	20	normal	0.9719	0.9672	0.905
Beryllium	20	normal (skip log test)	0.9251	0.9418	0.905
Chromium	20	normal (skip log test)	0.9502	0.9508	0.905
Cobalt	20	lognormal	0.8005	0.9173	0.905
Iron	20	lognormal	0.7757	0.9208	0.905
Lead	20	normal	0.9575	0.9541	0.905
Magnesium	20	normal (skip log test)	0.9383	0.9474	0.905
Manganese	20	normal	0.9607	0.9409	0.905
Mercury	20	nonparametric	0.4728	0.8391	0.905
Nickel	20	normal (skip log test)	0.9476	0.9532	0.905
Vanadium	20	normal (skip log test)	0.9418	0.9507	0.905
Zinc	20	normal (skip log test)	0.9344	0.9605	0.905
4,4'-DDE	20	nonparametric	0.4874	0.5488	0.905
4,4'-DDT	20	nonparametric	0.4597	0.5473	0.905
Alpha-Chlordane	20	nonparametric	0.3774	0.482	0.905
Aroclor-1260	20	nonparametric	0.6717	0.723	0.905
Gamma-Chlordane	20	nonparametric	0.3728	0.4985	0.905
Benz(a)anthracene	20	nonparametric	0.7265	0.654	0.905
Benzaldehyde	20	nonparametric	0.6807	0.5672	0.905
Benzo(a)pyrene	20	nonparametric	0.8512	0.8369	0.905
Benzo(b)fluoranthene	20	nonparametric	0.8922	0.8832	0.905
Benzo(g,h,i)perylene	20	nonparametric	0.7902	0.7189	0.905
Benzo(k)fluoranthene	20	nonparametric	0.8209	0.7717	0.905
Chrysene	20	nonparametric	0.8981	0.8979	0.905
Fluoranthene	20	normal	0.9506	0.947	0.905
Indeno(1,2,3-cd)pyrene	20	nonparametric	0.7187	0.6017	0.905
N-Nitroso-di-n-propylamine	20	nonparametric	0.41	0.5061	0.905
Phenanthrene	20	lognormal	0.8919	0.9159	0.905
Pyrene	20	normal	0.9445	0.9313	0.905

Notes:

Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result. Non-detected results are treated as present at one-half the detection limit in all calculations.

Statistical distribution of data determined using Shapiro-Wilk test for n <= 50, Shapiro-Francia test for n > 50. Statistical significance level is 0.05.

A normal distribution is assumed if the test statistic W-norm. is >= than the reference value (W-table), regardless of whether W-lognorm. is greater than the reference value.

A lognormal distribution is assumed if the test statistic W-lognorm. is >= the reference value (W-table), and the test statistic W-norm. is less than the reference value (W-table).

The decision scheme for when parametric versus nonparametric tests may be used is discussed in the text.

TABLE 4-13

DIXON'S OUTLIER TEST FOR BACKGROUND DATA - HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Detection Frequency	1st Test Y/N ?	Largest Value	Largest Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table	2nd Test Y/N ?	Second Value	Second Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table	3rd Test Y/N ?	Third Value	Third Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table
SEM-Cadmium	8/10	N	0.004		0.000	0.477				N	0.004		0.333	0.512				N	0.003		0.000	0.554			
SEM-Copper	10/10	N	0.51		0.088	0.477				N	0.48		0.258	0.512				N	0.4		0.043	0.554			
SEM-Lead	10/10	N	0.575		0.039	0.477				N	0.558		0.502	0.512				N	0.35		0.015	0.554			
SEM-Nickel	10/10	N	0.13		0.000	0.477				N	0.13		0.000	0.512				N	0.13		0.000	0.554			
SEM-Zinc	10/10	N	2.52		0.056	0.477				N	2.41		0.000	0.512				N	2.41		0.027	0.554			
SEM	10/10	N	3.59		0.074	0.477				N	3.4		0.013	0.512				N	3.37		0.043	0.554			
Aluminum	20/20	N	19400		0.294	0.450				N	16300		0.036	0.462				N	16050		0.006	0.475			
Antimony	1/5	ND-NA	11.3							ND-NA	10.9							ND-NA	7.5						
Arsenic	20/20	N	34.35		0.371	0.450				N	27.7		0.194	0.462				N	24.6		0.139	0.475			
Barium	20/20	N	231				Not norm;?Log	0.953	0.901	Y	209.5	DABK-S-SD12-000.5	0.628	0.462	Norm over log	0.955	0.897	N	119		0.260	0.475			
Cadmium	1/20	ND-NA	1							ND-NA	0.94							ND-NA	0.92						
Chromium	20/20	Y	81.5	DABK-S-SD19-000.5	0.786	0.450	Norm over log	0.944	0.901	N	31.8		0.347	0.462				N	27.3		0.169	0.475			
Cobalt	20/20	Y	36.35	DABK-S-SD12-000.5	0.473	0.450	Log over norm	0.950	0.901	Y	33.1	DABK-S-SD11-000.5	0.515	0.462	Norm over log	0.937	0.897	N	23.6		0.201	0.475			
Iron	20/20	N	42700		0.305	0.450				N	40850		0.347	0.462				N	36200		0.149	0.475			
Lead	20/20	Y	297	DABK-S-SD19-000.5	0.537	0.450	Log over norm	0.973	0.901	N	183		0.184	0.462				N	157		0.307	0.475			
Magnesium	20/20	N	3630		0.158	0.450				N	3440		0.083	0.462				N	3410		0.128	0.475			
Manganese	20/20	Y	9740	DABK-S-SD11-000.5	0.515	0.450	Norm over log	0.947	0.901	N	6160		0.270	0.462				N	5110		0.165	0.475			
Nickel	20/20	N	49.5				Nonparametric	0.896	0.901	N	30.9		0.214	0.462				N	29.1		0.142	0.475			
Vanadium	20/20	N	42.25		0.247	0.450				N	38.9		0.151	0.462				N	35.7		0.095	0.475			
Zinc	20/20	Y	534	DABK-S-SD12-000.5	0.554	0.450	Norm over log	0.932	0.901	N	290		0.232	0.462				N	284		0.224	0.475			
TOC	10/10	N	50500		0.169	0.477				N	46400		0.249	0.512				N	41400		0.093	0.554			
4,4'-DDD	19/20	N	62.5		0.189	0.450				Y	55	DABK-S-SD07-000.5	0.479	0.462	Log over norm	0.924	0.897	Y	52	DABK-S-SD17-000.5	0.556	0.475	Normal	0.991	0.892
4,4'-DDE	20/20	N	190		0.311	0.450				N	165		0.184	0.462				N	140			0.475			
4,4'-DDT	19/20	N	125		0.243	0.450				N	120		0.216	0.462				N	99		0.049	0.475			
Aldrin	1/20	>50%ND	31							ND-NA	4.7							ND-NA	4.3						
Alpha-Chlordane	20/20	N	110		0.208	0.450				N	105		0.375	0.462				Y	89	DABK-S-SD13-000.5	0.562	0.475	Norm over log	0.935	0.892
Aroclor-1260	16/20	N	89		0.175	0.450				N	81		0.145	0.462				N	78		0.135	0.475			
Dieldrin	20/20	N	190		0.086	0.450				N	180		0.213	0.462				N	175		0.346	0.475			
Endosulfan Sulfate	4/20	>50%ND	17							>50%ND	9.6							>50%ND	9.2						
Endrin Ketone	4/20	>50%ND	7.6							>50%ND	6.9							>50%ND	6.375						
Gamma-BHC (Lindane)	1/20	>50%ND	3.3							ND-NA	4.7							ND-NA	4.3						
Gamma-Chlordane	20/20	Y	84	DABK-S-SD12-000.5	0.470	0.450	Norm over log	0.929	0.901	N	63		0.270	0.462				N	48		0.394	0.475			
2-Methylnaphthalene	7/20	>50%ND	40							ND-NA	73							>50%ND	35						
Acenaphthene	15/20	Y	130	DABK-S-SD08-000.5	0.542	0.450	Log over norm	0.946	0.901	N	83		0.301	0.462				N	65		0.236	0.475			
Acenaphthylene	16/20	Y	230	DABK-S-SD17-000.5	0.887	0.450	Norm over log	0.929	0.901	N	39		0.077	0.462				N	37.5		0.020	0.475			
Anthracene	19/20	N	680				Not norm;?Log	0.945	0.901	Y	430	DABK-S-SD08-000.5	0.585	0.462	Normal	0.936	0.897	N	210		0.231	0.475			
Benz(a)anthracene	20/20	N	1900		0.118	0.450				N	1700		0.134	0.462				N	1700		0.268	0.475			
Benzaldehyde	14/20	Y	860	DABK-S-SD07-000.5	0.747	0.450	Log over norm	0.969	0.901	ND-NA	660							N	300		0.368	0.475			
Benzo(a)pyrene	20/20	N	2500		0.135	0.450				N	2300		0.296	0.462				N	2200		0.259	0.475			
Benzo(b)fluoranthene	20/20	N	4300		0.177	0.450				N	4300		0.328	0.462				N	3600		0.215	0.475			
Benzo(g,h,i)perylene	20/20	N	2800		0.077	0.450				N	2700		0.339	0.462				N	2600		0.373	0.475			
Benzo(k)fluoranthene	20/20	N	1700		0.318	0.450				N	1500		0.292	0.462				N	1200		0.252	0.475			
Bis(2-ethylhexyl) Phthalate	8/20	>50%ND	5600							>50%ND	3900							>50%ND	3500						
Butyl Benzyl Phthalate	7/20	>50%ND	1600							>50%ND	1200							>50%ND	505						
Carbazole	15/20	N	410		0.368	0.450				N	310		0.133	0.462				N	290		0.243	0.475			
Chrysene	20/20	N	3200		0.068	0.450				N	3100		0.281	0.462				N	3000		0.273	0.475			
Dibenz(a,h)anthracene	19/20	N	620		0.119	0.450				N	590		0.269	0.462				N	550		0.328	0.475			
Dibenzofuran	1/20	ND-NA	660							ND-NA	460							>50%ND	230						
Fluoranthene	20/20	N	4600		0.117	0.450				N	4500		0.264	0.462				N	4100		0.293	0.475			
Fluorene	16/20	N	250				Not norm;?Log	0.960	0.901	Y	160	DABK-S-SD08-000.5	0.527	0.462	Norm over log	0.948	0.897	N	100		0.250	0.475			
Hexachlorobenzene	1/20	ND-NA	73							ND-NA	34							ND-NA	27						
Indeno(1,2,3-cd)pyrene	20/20	N	2100		0.052	0.450				N	2000		0.299	0.462				N	2000		0.380	0.475			
Naphthalene	10/20	N	360				Nonparametric	0.607	0.901	N	91				Nonparametric	0.667	0.897	N	54				Nonparametric	0.705	0.892
Phenanthrene	20/20	N	2900		0.448	0.450				N	1800		0.063	0.462				N	1700		0.135	0.475			
Phenol	10/20	N	88				Not norm;?Log	0.930	0.901	N	47				Not norm;?Log	0.949	0.897	N	24		0.188	0.475			
Pyrene	20/20	N	4600		0.072	0.450				N	4300		0.077	0.462				N	4300		0.206	0.475			

Notes:
Outlier test results shown in this table are meant to identify possible outliers for further investigation. A final decision to discard or retain any data point should also consider scientific or judgmental reasoning as well as the results of statistical outlier testing.
The columns titled, "1st Test Y/N", "2nd Test Y/N", answer the question, "Is the Nth largest value in the data set a possible outlier, if it can be assumed that data are normally distributed?"
The columns titled, "Largest Value", "Second Value", and "Third Value" list the sample concentration that is the Nth largest in the data set in units of MG/KG inorganics, UG/KG organics.
Dixon's Outlier Test compares the largest concentration value in a data set to the remaining values. The test is not applicable if the remaining values do not pass the Shapiro Wilke W-test for normality, if there are greater than 50 percent non-detects, or if the value in question is a non-detect.
Dixon's Test is performed three times, in case the second or third largest values are actually outliers and mask detection of the larger values as outliers.
Interpreting Dixon's Test: If the value shown for "C-Calculated" exceeds the lookup value shown for "Dixon Table", and the distribution matches a normal distribution, then a candidate outlier exists and requires further scientific and judgmental evaluation to decide whether to retain or discard the data point.
If the third largest value is a potential outlier compared to the remaining data points spanning the 4th largest to the smallest value, then the largest and second largest values may be considered potential outliers as well.
If the second largest value is a potential outlier compared to the remaining data points spanning the 3rd largest to the smallest value, then the largest value may be considered a potential outlier as well.
The columns titled, "Shape of Distribution" present the results of the Shapiro Wilke W-Test for normality. The test is run once on the raw data and once after data are converted to logarithms, but results for Dixon's Outlier Test are used if the raw data match the shape of normal distribution.

Abbreviations for "Test Y/N":
ND-NA --- Dixon's Test is not applicable because the Nth largest value in the data set is non-detected. The value listed is the detection limit.
>50%ND --- Dixon's Test is not applicable because the data sets consists of 50% or more non-detected values, which makes testing distributional shape and quantitative outlier calculations uncertain.

Interpreting the shape of distribution: If the value shown for "W-test calculated" exceeds the "W-test Table" value, then it can be concluded that the data fit a normal distribution if the candidate outlier is first eliminated.
Abbreviations for "Shape of Distribution":
Normal --- The W-Test indicates the data minus the test point matches a normal distribution.
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Not norm; ?Log --- The W-Test indicates the data minus the test point does not match a normal distribution, but a lognormal distribution is a match, but should not be used for outlier testing because of uncertainties with matching a possible lognormal distribution.
Nonparametric --- The W-Test indicates the data minus the test point does not match a normal distribution, nor a lognormal distribution.

TABLE 4-14

DIXON'S OUTLIER TEST FOR BACKGROUND DATA - NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Detection Frequency	1st Test Y/N ?	Largest Value	Largest Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table	2nd Test Y/N ?	Second Value	Second Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table	3rd Test Y/N ?	Third Value	Third Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table
Aluminum	20/20	N	16700		0.251	0.450				N	15200		0.149	0.462				N	14800		0.292	0.475			
Arsenic	20/20	Y	71.7	DABK-S-SO06-0001	0.841	0.450	Log over norm	0.963	0.901	Y	23.5	DABK-S-SO20-0001	0.582	0.462	Norm over log	0.989	0.897	N	16.3		0.352	0.475			
Barium	20/20	N	60.6		0.359	0.450				N	48.5		0.064	0.462				N	47.3		0.063	0.475			
Beryllium	1/20	ND-NA	0.815							ND-NA	0.81							ND-NA	0.78						
Chromium	20/20	Y	28.2	DABK-S-SO02-0001	0.649	0.450	Norm over log	0.968	0.901	N	16		0.232	0.462				N	15.8		0.254	0.475			
Cobalt	20/20	N	11.9				Nonparametric	0.737	0.901	N	11.4				Not norm;?Log	0.934	0.897	N	7.5		0.368	0.475			
Iron	20/20	Y	53900	DABK-S-SO06-0001	0.738	0.450	Normal	0.940	0.901	N	24100		0.055	0.462				N	23800		0.075	0.475			
Lead	20/20	N	38		0.221	0.450				N	33.6		0.275	0.462				N	33.1		0.347	0.475			
Magnesium	15/20	N	2930		0.202	0.450				N	2780		0.184	0.462				N	2460		0.065	0.475			
Manganese	20/20	N	373		0.410	0.450				N	296		0.395	0.462				N	248		0.356	0.475			
Mercury	2/20	>50%ND	0.12							ND-NA	0.22							ND-NA	0.21						
Nickel	20/20	N	19.1		0.367	0.450				N	14.8		0.058	0.462				N	14.7		0.105	0.475			
Vanadium	20/20	N	34.2		0.222	0.450				N	34		0.225	0.462				N	30.8		0.034	0.475			
Zinc	20/20	Y	81.7	DABK-S-SO02-0001	0.493	0.450	Norm over log	0.969	0.901	N	60.9		0.190	0.462				N	54.9		0.080	0.475			
4,4'-DDE	3/20	>50%ND	43							>50%ND	31							>50%ND	5.4						
4,4'-DDT	3/20	>50%ND	23							>50%ND	16							>50%ND	3.6						
Alpha-Chlordane	2/20	>50%ND	7							>50%ND	6.6							ND-NA	2.8						
Aroclor-1254	1/20	ND-NA	55							ND-NA	54							ND-NA	53.5						
Aroclor-1260	1/20	>50%ND	34							ND-NA	55							ND-NA	54						
Dieldrin	2/20	>50%ND	26							>50%ND	13							ND-NA	5.5						
Gamma-Chlordane	1/20	>50%ND	4.2							ND-NA	2.8							ND-NA	2.75						
Benz(a)anthracene	3/20	ND-NA	270							ND-NA	270							ND-NA	260						
Benzaldehyde	9/20	>50%ND	150							ND-NA	270							ND-NA	260						
Benzo(a)pyrene	2/20	ND-NA	270							ND-NA	270							ND-NA	260						
Benzo(b)fluoranthene	3/20	ND-NA	270							>50%ND	130							ND-NA	260						
Benzo(g,h,i)perylene	1/20	ND-NA	270							ND-NA	270							ND-NA	260						
Benzo(k)fluoranthene	1/20	ND-NA	270							ND-NA	270							ND-NA	260						
Bis(2-ethylhexyl) Phthalate	2/20	>50%ND	160							ND-NA	270							ND-NA	270						
Chrysene	3/20	>50%ND	140							ND-NA	270							ND-NA	270						
Fluoranthene	13/20	N	230				Nonparametric	0.863	0.901	N	130		0.000	0.462				ND-NA	260						
Indeno(1,2,3-cd)pyrene	1/20	ND-NA	270							ND-NA	270							ND-NA	260						
Phenanthrene	4/20	ND-NA	270							ND-NA	260							ND-NA	260						
Pyrene	15/20	Y	190	DABK-S-SO20-0001	0.451	0.450	Norm over log	0.953	0.901	N	140		0.120	0.462				ND-NA	260						

Notes:
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The columns titled, "1st Test Y/N", "2nd Test Y/N", answer the question, "Is the Nth largest value in the data set a possible outlier, if it can be assumed that data are normally distributed?"
The columns titled, "Largest Value", "Second Value", and "Third Value" list the sample concentration that is the Nth largest in the data set in units of MG/KG inorganics, UG/KG organics.
Dixon's Outlier Test compares the largest concentration value in a data set to the remaining values. The test is not applicable if the remaining values do not pass the Shapiro Wilke W-test for normality, if there are greater than 50 percent non-detects, or if the value in question is a non-detect.
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Interpreting Dixon's Test: If the value shown for "C-Calculated" exceeds the lookup value shown for "Dixon Table", and the distribution matches a normal distribution, then a candidate outlier exists and requires further scientific and judgmental evaluation to decide whether to retain or discard the data point.
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The columns titled, "Shape of Distribution" present the results of the Shapiro Wilke W-Test for normality. The test is run once on the raw data and once after data are converted to logarithms, but results for Dixon's Outlier Test are used if the raw data match the shape of normal distribution.

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Nonparametric --- The W-Test indicates the data minus the test point does not match a normal distribution, nor a lognormal distribution.

TABLE 4-15

DIXON'S OUTLIER TEST FOR BACKGROUND DATA - NON-HYDRIC SOIL TYPE PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Detection Frequency	1st Test Y/N ?	Largest Value	Largest Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table	2nd Test Y/N ?	Second Value	Second Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table	3rd Test Y/N ?	Third Value	Third Sample	"C" Calc.	Dixon Table	Shape of Distribution	W-Test Calc.	W-Test Table
Aluminum	20/20	N	14600		0.300	0.450				N	14000		0.350	0.462				N	13050		0.262	0.475			
Arsenic	20/20	Y	21.3	DABK-S-SO25-0001	0.513	0.450	Log over norm	0.951	0.901	N	15		0.215	0.462				N	13.3		0.053	0.475			
Barium	20/20	N	53.1		0.219	0.450				N	48.7		0.018	0.462				N	48.5		0.195	0.475			
Beryllium	1/20	ND-NA	0.77							>50%ND	0.3525							ND-NA	0.7						
Chromium	20/20	N	16		0.200	0.450				N	15.2		0.031	0.462				N	15.2		0.063	0.475			
Cobalt	20/20	Y	13.8	DABK-S-SO32-0001	0.684	0.450	Log over norm	0.976	0.901	N	9.8		0.436	0.462				N	8.4		0.240	0.475			
Iron	20/20	Y	43300	DABK-S-SO25-0001	0.643	0.450	Log over norm	0.970	0.901	N	25700		0.191	0.462				N	24600		0.135	0.475			
Lead	20/20	N	49.5		0.197	0.450				N	44.5		0.096	0.462				N	43.6		0.296	0.475			
Magnesium	20/20	N	1960		0.263	0.450				N	1960		0.298	0.462				N	1810		0.298	0.475			
Manganese	20/20	N	477		0.131	0.450				N	453.5		0.110	0.462				N	433		0.106	0.475			
Mercury	4/20	>50%ND	0.68							>50%ND	0.26							>50%ND	0.14						
Nickel	20/20	N	14.4		0.344	0.450				N	13.6		0.357	0.462				N	12.2		0.167	0.475			
Vanadium	20/20	N	35.8		0.102	0.450				N	35.2		0.134	0.462				N	34.9		0.139	0.475			
Zinc	20/20	N	93.7		0.340	0.450				N	84.4		0.250	0.462				N	71.6		0.154	0.475			
4,4'-DDE	3/20	>50%ND	20							>50%ND	13							>50%ND	11						
4,4'-DDT	2/20	>50%ND	8.5							>50%ND	5.6							ND-NA	6.2						
Alpha-Chlordane	1/20	>50%ND	3.8							ND-NA	3.2							ND-NA	2.9						
Aroclor-1260	5/20	>50%ND	86							>50%ND	61							>50%ND	58						
Gamma-Chlordane	2/20	>50%ND	7.2							>50%ND	2.8							ND-NA	3.2						
Benz(a)anthracene	3/20	ND-NA	310							ND-NA	260							ND-NA	260						
Benzaldehyde	2/20	ND-NA	310							ND-NA	260							>50%ND	130						
Benzo(a)pyrene	9/20	ND-NA	310							ND-NA	260							ND-NA	250						
Benzo(b)fluoranthene	10/20	ND-NA	310							ND-NA	260							ND-NA	250						
Benzo(g,h,i)perylene	4/20	ND-NA	310							ND-NA	280							ND-NA	260						
Benzo(k)fluoranthene	6/20	ND-NA	310							ND-NA	280							ND-NA	260						
Chrysene	10/20	ND-NA	310							ND-NA	260							ND-NA	250						
Fluoranthene	18/20	N	170		0.377	0.450				N	140		0.132	0.462				ND-NA	260						
Indeno(1,2,3-cd)pyrene	1/20	ND-NA	310							ND-NA	280							ND-NA	260						
N-Nitroso-di-n-propylamine	1/20	>50%ND	310							ND-NA	310							ND-NA	280						
Phenanthrene	13/20	ND-NA	310							ND-NA	260							ND-NA	250						
Pyrene	19/20	N	150		0.323	0.450				N	120		0.079	0.462				N	120		0.159	0.475			

Notes:
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The columns titled, "Shape of Distribution" present the results of the Shapiro Wilke W-Test for normality. The test is run once on the raw data and once after data are converted to logarithms, but results for Dixon's Outlier Test are used if the raw data match the shape of normal distribution.

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Nonparametric --- The W-Test indicates the data minus the test point does not match a normal distribution, nor a lognormal distribution.

TABLE 4-16

STATISTICAL COMPARISON OF BACKGROUND HYDRIC SOIL TYPE Se TO NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Name of Test:		Detection Freq: Z or Fisher				Upper Ranks				Mann-Whitney/Gehan				Student's or Satterthwaite T-test					Bartlett's Test for Equal Standard Deviations						
Question Posed:		Hydric Se Freq. > Non-Hydric Se Freq.?				Majority are Hydric Se?				Ranks of Hydric Se > Non-Hydric Se?				Hydric Se Mean > Non-Hydric Se Mean ?					Hydric Se Standard Deviation =Non-Hydric Se Std.Dev.?						
Assumptions Valid:		#ND & Pos.>=5 or use Fisher				# Hydric Se (s) in Top r				<40% ND or use Gehan				#s>2,#b>2,>=85% Pos; both norm/log					#s>2,#b>2, Hydric Se & Non-Hydric Se both normal or both lognorm.						
Test Criterion:		P value <= 0.025 ?				P<=0.025 that #s>=k				P value <=0.025 ?				t-Value > t-Table					F-Value<=F-Table (Students T). If not, Satterthwaite						
Conclusion: Hydric Se > Non-Hydric Se?	YN	Non-Hydric Se	Hydric Se	P	YN	r	k	P	YN	P	Test	Used	YN	Non-Hydric Se	Hydric Se	t	t	YN	Non-Hydric Se	Hydric Se	Std.Dev.	Std.Dev.	F	F	YN
Substance		Freq.	Freq.	Value				Value		Value				Mean$^{w/}$	Mean$^{w/}$	Value	Table		Distrib.	Distrib.	Non-Hydric Se@	Hydric Se@	Value	Table	
SEM-Cadmium	NA	0/0	8/10		NA				NA				NA		0.00245			NA							NA
SEM-Copper	NA	0/0	10/10		NA				NA				NA		0.334			NA							NA
SEM-Lead	NA	0/0	10/10		NA				NA				NA		0.316			NA							NA
SEM-Nickel	NA	0/0	10/10		NA				NA				NA		0.101			NA							NA
SEM-Zinc	NA	0/0	10/10		NA				NA				NA		1.66			NA							NA
SEM	NA	0/0	10/10		NA				NA				NA		2.41			NA							NA
Aluminum	**Y**	20/20	20/20		NA	17	13	0.0048	Y	0.0428			N	12100	13300			NA	normal	nonpar.					NA
Antimony	NA	0/0	1/5		NA				NA				NA		3.86			NA							NA
Arsenic	**Y**	20/20	20/20		NA	26	17	0.0094	Y	0.0006			Y	13	17.8			NA	lognor.	normal					NA
Barium	**Y**	20/20	20/20		NA	27	18	0.0029	Y	<.0001			Y	35	83.4			NA	lognor.	lognor.					NA
Cadmium	N	0/20	1/20	0.5000	N				NA				NA		0.394			NA							NA
Chromium	**Y**	20/20	20/20		NA	30	19	0.0042	Y	<.0001			Y	12.7	23.7			NA	nonpar.	nonpar.					NA
Cobalt	**Y**	20/20	20/20		NA	25	20	<.0001	Y	<.0001			Y	5.52	17.4			NA	nonpar.	normal					NA
Iron	**Y**	20/20	20/20		NA	24	19	<.0001	Y	<.0001			Y	19600	29500			NA	nonpar.	normal					NA
Lead	**Y**	20/20	20/20		NA	20	19	<.0001	Y	<.0001			Y	23.2	91.9			NA	lognor.	lognor.					NA
Magnesium	**Y**	15/20	20/20	0.0236	Y	25	19	<.0001	Y	<.0001	Gehan	Test	Y	1660	2910			NA	normal	nonpar.					NA
Manganese	**Y**	20/20	20/20		NA	21	20	<.0001	Y	<.0001			Y	130	3020			NA	lognor.	lognor.					NA
Nickel	**Y**	20/20	20/20		NA	28	20	<.0001	Y	<.0001			Y	11	24			NA	normal	lognor.					NA
Vanadium	**Y**	20/20	20/20		NA	23	16	0.0048	Y	0.0360			N	25.1	28.6	1.5883	2.0244	N	normal	normal	5.41	8.26	3.2410	3.8422	Y
Zinc	**Y**	20/20	20/20		NA	21	20	<.0001	Y	<.0001			Y	43.3	193			NA	lognor.	lognor.					NA
TOC	NA	0/0	10/10		NA				NA				NA		37800			NA							NA
4,4'-DDD	**Y**	0/20	19/20	<.0001	Y	19	19	<.0001	Y				NA		22.6			NA							NA
4,4'-DDE	**Y**	3/20	20/20	<.0001	Y	22	20	<.0001	Y	<.0001	Gehan	Test	Y	6.09	89			NA	nonpar.	normal					NA
4,4'-DDT	**Y**	3/20	19/20	<.0001	Y	21	19	<.0001	Y	<.0001	Gehan	Test	Y	4.29	63.7			NA	nonpar.	normal					NA
Aldrin	N	0/20	1/20	0.5000	N	1	1	0.5000	N				NA		3.06			NA							NA
Alpha-Chlordane	**Y**	2/20	20/20	<.0001	Y	22	20	<.0001	Y	<.0001	Gehan	Test	Y	1.83	40.2			NA	nonpar.	lognor.					NA
Aroclor-1260	**Y**	1/20	16/20	<.0001	Y	13	13	<.0001	Y	<.0001	Gehan	Test	Y	25.5	51.2			NA	nonpar.	normal					NA
Dieldrin	**Y**	2/20	20/20	<.0001	Y	22	20	<.0001	Y	<.0001	Gehan	Test	Y	4.2	87.4			NA	nonpar.	normal					NA
Endosulfan Sulfate	N	0/20	4/20	0.0530	N	4	4	0.0530	N				NA		4.53			NA							NA
Endrin Ketone	N	0/20	4/20	0.0530	N	4	4	0.0530	N				NA		3.75			NA							NA
Gamma-BHC (Lindane)	N	0/20	1/20	0.5000	N	1	1	0.5000	N				NA		1.7			NA							NA
Gamma-Chlordane	**Y**	1/20	20/20	<.0001	Y	21	20	<.0001	Y	<.0001	Gehan	Test	Y	1.42	27.9			NA	nonpar.	lognor.					NA
2-Methylnaphthalene	NA	0/20	7/20		NA				NA				NA		15.4			NA							NA
Acenaphthene	NA	0/20	15/20		NA	1	1	0.5000	NA				NA		37.5			NA							NA
Acenaphthylene	NA	0/20	16/20		NA	1	1	0.5000	NA				NA		34			NA							NA
Anthracene	**Y**	0/20	19/20	<.0001	Y	12	12	<.0001	Y				NA		153			NA							NA
Benz(a)anthracene	**Y**	3/20	20/20	<.0001	Y	20	20	<.0001	Y	<.0001	Gehan	Test	Y	114	785			NA	nonpar.	lognor.					NA
Benzaldehyde	**Y**	9/20	14/20		NA	5	5	0.0236	Y	0.0002	Gehan	Test	Y	107	201			NA	nonpar.	nonpar.					NA
Benzo(a)pyrene	**Y**	2/20	20/20	<.0001	Y	20	20	<.0001	Y	<.0001	Gehan	Test	Y	119	995			NA	nonpar.	lognor.					NA
Benzo(b)fluoranthene	**Y**	3/20	20/20	<.0001	Y	20	20	<.0001	Y	<.0001	Gehan	Test	Y	120	1740			NA	nonpar.	lognor.					NA
Benzo(g,h,i)perylene	**Y**	1/20	20/20	<.0001	Y	19	19	<.0001	Y	<.0001	Gehan	Test	Y	123	1090			NA	nonpar.	lognor.					NA
Benzo(k)fluoranthene	**Y**	1/20	20/20	<.0001	Y	18	18	<.0001	Y	<.0001	Gehan	Test	Y	123	606			NA	nonpar.	normal					NA
Bis(2-ethylhexyl) Phthalate	**Y**	2/20	8/20		NA	8	8	0.0016	Y	0.0017	Gehan	Test	Y	128	1260			NA	nonpar.	nonpar.					NA
Butyl Benzyl Phthalate	**Y**	0/20	7/20	0.0042	Y	5	5	0.0236	Y				NA		300			NA							NA
Carbazole	**Y**	0/20	15/20	<.0001	Y	11	11	0.0001	Y				NA		164			NA							NA
Chrysene	**Y**	3/20	20/20	<.0001	Y	21	20	<.0001	Y	<.0001	Gehan	Test	Y	119	1330			NA	nonpar.	lognor.					NA
Dibenz(a,h)anthracene	**Y**	0/20	19/20		NA	12	12	<.0001	Y				NA		212			NA							NA
Dibenzofuran	NA	0/20	1/20		NA	1	1	0.5000	NA				NA		166			NA							NA
Fluoranthene	**Y**	13/20	20/20	0.0042	Y	20	20	<.0001	Y	<.0001	Gehan	Test	Y	98.8	1870			NA	lognor.	lognor.					NA
Fluorene	NA**	0/20	16/20		NA**	3	3	0.1154	NA**				NA**		59.2			NA							NA
Hexachlorobenzene	NA**	0/20	1/20		NA**				NA**				NA**		10.8			NA							NA
Indeno(1,2,3-cd)pyrene	**Y**	1/20	20/20	<.0001	Y	18	18	<.0001	Y	<.0001	Gehan	Test	Y	123	822			NA	nonpar.	lognor.					NA
Naphthalene	NA**	0/20	10/20		NA**	2	2	0.2436	NA**				NA**		37.3			NA							NA
Phenanthrene	**Y**	4/20	20/20	<.0001	Y	20	20	<.0001	Y	<.0001	Gehan	Test	Y	112	854			NA	nonpar.	lognor.					NA
Phenol	NA**	0/20	10/20		NA**				NA**				NA**		18.4			NA							NA
Pyrene	**Y**	15/20	20/20	0.0236	Y	24	20	<.0001	Y	<.0001			Y	97.7	2020			NA	lognor.	lognor.					NA

Notes: Units are mg/kg for inorganics, ug/kg for organics.
Interpretation of Z-Test or Fisher's Exact Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different detection frequencies that suggest the data belong to two different populations.
Interpretation of Upper Ranks Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of upper rank values. Since "k" samples from the top "r" ranks of the combined data set belonged to the first soil subgroup, this would be unlikely if the data sets came from the same population.
Interpretation of Mann Whitney / Gehan Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of ranked values, based on combining the data together and comparing the rank sums belonging to each group. This indicates the data belong to two populations having different medians.
Interpretation of Student's t- / Satterthwaite's t-Test: If the "t-Value" exceeds the lookup "t-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different means.
Interpretation of Bartlett's Test: If the "F-Value" exceeds the lookup "F-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different standard deviations. In this case, the Satterthwaite t-Test must be used rather than the Student's t-Test.
A statistical significance level (P value) of 0.025 is used for all tests that directly compare Hydric Se to Non-Hydric Se Soil. A two-sided significance level of 0.1 is used for Bartlett's test for equal variance.
For each test, a YES or NO decision is presented only if all assumptions are met. The overall decision (is Hydric Se > Non-Hydric Se) for each chemical appears at the left and is based on four criteria:
(1) Overall decision is YES if any one of the Mann-Whitney/Gehan, Upper Ranks Test, or T-Test is YES, regardless of other test results.
(2) Overall decision is NO if at least one of Mann-Whitney/Gehan, Upper Ranks Test, or T-Test is NO, and none of the aforementioned tests are YES.
(3) Overall decision is YES/NO if Z/Fisher Test is YES/NO, respectively, and other tests are NA. Z-test is treated as lowest priority since it relies on detection frequency, not magnitude of results.
(4) Overall decision is NA if all tests are NA. (Might occur if too few detections to be capable of detecting a statistically significant difference even if one exists.)
** Most detected values were near or below one-half the quantitation limit, which interferes with the power of statistical tests to detect a significant difference between two groups.

Abbreviations:

# NDs or # Pos.	Number of non-detected (ND) or positive (Pos.) results in data set, not including rejected data or blank-qualified data.
# s or # b	Number of Hydric Se (s) or Non-Hydric Se (b) samples, not including rejected data or blank-qualified data.
s = b	Standard deviation of Hydric Se results must not be different from the standard deviation of Non-Hydric Se results.
P value	Probability or significance level is defined as the chance of a false positive. If P <= 0.025 then test determines Hydric Se > Non-Hydric Se with 95 % confidence.
% ND	Mann-Whitney test used if < 40% of data Non-Detected and detect. limits uniformly below the range of positive values. If not, the Gehan Test is used.
@	For the t-test, the arithmetic mean and standard deviation of un-transformed data are shown in every case, since the t-test cannot be run if site and background do not both match a normal distribution.
r,k	The upper ranks test calculates the probability that k or more samples from the top r ranks of the combined Hydric Se and Non-Hydric Se data set are comprised of Hydric Se data if both populations are in fact equal.

TABLE 4-17

STATISTICAL COMPARISON OF BACKGROUND NON-HYDRIC SOIL TYPE Se TO HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Name of Test:		Detection Freq: Z or Fisher				Upper Ranks				Mann-Whitney/Gehan				Student's or Satterthwaite T-test					Bartlett's Test for Equal Standard Deviations						
Question Posed:		Non-Hydric Se Freq. > Hydric Se Freq.?				Majority are Non-Hydric Se?				Ranks of Non-Hydric Se > Hydric Se?				Non-Hydric Se Mean > Hydric Se Mean ?					Non-Hydric Se Standard Deviation =Hydric Se Std.Dev.?						
Assumptions Valid:		#ND & Pos.>=5 or use Fisher				# Non-Hydric Se (s) in Top r				<40% ND or use Gehan				#s>2,#b>2,>=85% Pos; both norm/log					#s>2,#b>2, Non-Hydric Se & Hydric Se both normal or both lognorm.						
Test Criterion:		P value <= 0.025 ?				P<=0.025 that #s>=k				P value <=0.025 ?				t-Value > t-Table					F-Value<=F-Table (Students T). If not, Satterthwaite						
Conclusion: Non-Hydric Se > Hydric Se?		Hydric Se	Non-Hydric Se	P	YN	r	k	P	YN	P	Test	Used	YN	Hydric Se	Non-Hydric Se	t	t	YN	Hydric Se	Non-Hydric Se	Std.Dev.	Std.Dev.	F	F	YN
Substance		Freq.	Freq.	Value				Value		Value				Mean@	Mean@	Value	Table		Distrib.	Distrib.	Hydric Se@	Non-Hydric Se@	Value	Table	
Aluminum	N	20/20	20/20		NA	2	1	0.7564	N	0.9595			N	13300	12100			NA	nonpar.	normal					NA
Arsenic	N	20/20	20/20		NA	1	1	0.5000	N	0.9994			N	17.8	13			NA	normal	lognor.					NA
Barium	N	20/20	20/20		NA	23	8	0.9952	N	1.0000			N	83.4	35			NA	lognor.	normal					NA
Beryllium	NA*	0/20	1/20	0.5000	NA*				NA*				NA*		0.35			NA							NA
Chromium	N	20/20	20/20		NA	3	1	0.8846	N	1.0000			N	23.7	12.7			NA	nonpar.	nonpar.					NA
Cobalt	N	20/20	20/20		NA	17	2	1.0000	N	1.0000			N	17.4	5.52			NA	lognor.	nonpar.					NA
Iron	N	20/20	20/20		NA	1	1	0.5000	N	1.0000			N	29500	19600			NA	normal	nonpar.					NA
Lead	N	20/20	20/20		NA	28	9	1.0000	N	1.0000			N	91.9	23.2			NA	lognor.	normal					NA
Magnesium	N	20/20	15/20	1.0000	N	28	9	1.0000	N	1.0000	Gehan	Test	N	2910	1660			NA	nonpar.	normal					NA
Manganese	N	20/20	20/20		NA	20	1	1.0000	N	1.0000			N	3020	130			NA	lognor.	lognor.					NA
Mercury	NA*	0/20	2/20		NA*				NA*				NA*		0.0559			NA							NA
Nickel	N	20/20	20/20		NA	26	8	0.9999	N	1.0000			N	24	11			NA	lognor.	normal					NA
Vanadium	N	20/20	20/20		NA	17	7	0.8999	N	0.9661			N	28.6	25.1	-1.5883	2.0244	N	normal	normal	8.26	5.41	3.2410	3.8422	Y
Zinc	N	20/20	20/20		NA	20	1	1.0000	N	1.0000			N	193	43.3			NA	lognor.	normal					NA
4,4'-DDE	N	20/20	3/20	1.0000	N	16	1	1.0000	N	1.0000	Gehan	Test	N	89	6.09			NA	normal	nonpar.					NA
4,4'-DDT	N	19/20	3/20	1.0000	N	18	1	1.0000	N	1.0000	Gehan	Test	N	63.7	4.29			NA	normal	nonpar.					NA
Alpha-Chlordane	N	20/20	2/20	1.0000	N	21	2	1.0000	N	1.0000	Gehan	Test	N	40.2	1.83			NA	lognor.	nonpar.					NA
Aroclor-1254	NA**	0/20	1/20	0.5000	NA**				NA**				NA**		25.4			NA							NA
Aroclor-1260	NA**	16/20	1/20	1.0000	NA**	14	1	1.0000	NA**	1.0000	Gehan	Test	NA**	51.2	25.5			NA	normal	nonpar.					NA
Dieldrin	N	20/20	2/20	1.0000	N	16	1	1.0000	N	1.0000	Gehan	Test	N	87.4	4.2			NA	normal	nonpar.					NA
Gamma-Chlordane	N	20/20	1/20	1.0000	N	20	1	1.0000	N	1.0000	Gehan	Test	N	27.9	1.42			NA	lognor.	nonpar.					NA
Benz(a)anthracene	N	20/20	3/20	1.0000	N	20		1.0000	N	1.0000	Gehan	Test	N	785	114			NA	lognor.	nonpar.					NA
Benzaldehyde	N	14/20	9/20		NA				NA	0.9998	Gehan	Test	N	201	107			NA	nonpar.	nonpar.					NA
Benzo(a)pyrene	N	20/20	2/20	1.0000	N	20		1.0000	N	1.0000	Gehan	Test	N	995	119			NA	lognor.	nonpar.					NA
Benzo(b)fluoranthene	N	20/20	3/20	1.0000	N	21	1	1.0000	N	1.0000	Gehan	Test	N	1740	120			NA	lognor.	nonpar.					NA
Benzo(g,h,i)perylene	N	20/20	1/20	1.0000	N	20	1	1.0000	N	1.0000	Gehan	Test	N	1090	123			NA	lognor.	nonpar.					NA
Benzo(k)fluoranthene	N	20/20	1/20	1.0000	N	19	1	1.0000	N	1.0000	Gehan	Test	N	606	123			NA	lognor.	nonpar.					NA
Bis(2-ethylhexyl) Phthalate	N	8/20	2/20		NA				NA	0.9984	Gehan	Test	N	1260	128			NA	nonpar.	nonpar.					NA
Chrysene	N	20/20	3/20	1.0000	N	20	1	1.0000	N	1.0000	Gehan	Test	N	1330	119			NA	lognor.	nonpar.					NA
Fluoranthene	N	20/20	13/20	1.0000	N	20		1.0000	N	1.0000	Gehan	Test	N	1870	98.8			NA	lognor.	lognor.					NA
Indeno(1,2,3-cd)pyrene	N	20/20	1/20	1.0000	N	19	1	1.0000	N	1.0000	Gehan	Test	N	822	123			NA	lognor.	nonpar.					NA
Phenanthrene	N	20/20	4/20	1.0000	N	17		1.0000	N	1.0000	Gehan	Test	N	854	112			NA	lognor.	nonpar.					NA
Pyrene	N	20/20	15/20	1.0000	N	21	1	1.0000	N	1.0000			N	2020	97.7			NA	lognor.	normal					NA

Notes: Units are mg/kg for inorganics, ug/kg for organics.
Interpretation of Z-Test or Fisher's Exact Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different detection frequencies that suggest the data belong to two different populations.
Interpretation of Upper Ranks Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of upper rank values. Since "k" samples from the top "r" ranks of the combined data set belonged to the first soil subgroup, this would be unlikely if the data sets came from the same population.
Interpretation of Mann Whitney / Gehan Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of ranked values, based on combining the data together and comparing the rank sums belonging to each group. This indicates the data belong to two populations having different medians.
Interpretation of Student's t- / Satterthwaite's t-Test: If the "t-Value" exceeds the lookup "t-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different means.
Interpretation of Bartlett's Test: If the "F-Value" exceeds the lookup "F-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different standard deviations. In this case, the Satterthwaite t-Test must be used rather than the Student's t-Test.
A statistical significance level (P value) of 0.025 is used for all tests that directly compare Non-Hydric Se to Hydric Se Soil. A two-sided significance level of 0.1 is used for Bartlett's test for equal variance.
For each test, a YES or NO decision is presented only if all assumptions are met. The overall decision (is Non-Hydric Se > Hydric Se) for each chemical appears at the left and is based on four criteria:
(1) Overall decision is YES if any one of the Mann-Whitney/Gehan, Upper Ranks Test, or T-Test is YES, regardless of other test results.
(2) Overall decision is NO if at least one of Mann-Whitney/Gehan, Upper Ranks Test, or T-Test is NO, and none of the aforementioned tests are YES.
(3) Overall decision is YES/NO if Z/Fisher Test is YES/NO, respectively, and other tests are NA. Z-test is treated as lowest priority since it relies on detection frequency, not magnitude of results.
(4) Overall decision is NA if all tests are NA. (Might occur if too few detections to be capable of detecting a statistically significant difference even if one exists.)
* Very low frequency of detected values and all were just above the detection and reporting limits, which interferes with the power of statistical tests to detect a significant difference between groups.

Abbreviations:

# NDs or # Pos.	Number of non-detected (ND) or positive (Pos.) results in data set, not including rejected data or blank-qualified data.
# s or # b	Number of Non-Hydric Se (s) or Hydric Se (b) samples, not including rejected data or blank-qualified data.
s = b	Standard deviation of Non-Hydric Se results must not be different from the standard deviation of Hydric Se results.
P value	Probability or significance level is defined as the chance of a false positive. If P <= 0.025 then test determines Non-Hydric Se > Hydric Se with 95 % confidence.
% ND	Mann-Whitney test used if < 40% of data Non-Detected and detect. limits uniformly below the range of positive values. If not, the Gehan Test is used.
@	For the t-test, the arithmetic mean and standard deviation of un-transformed data are shown in every case, since the t-test cannot be run if site and background do not both match a normal distribution.
r,k	The upper ranks test calculates the probability that k or more samples from the top r ranks of the combined Non-Hydric Se and Hydric Se data set are comprised of Non-Hydric Se data if both populations are in fact equal.

TABLE 4-18

STATISTICAL COMPARISON OF BACKGROUND NON-HYDRIC SOIL TYPE Se TO NON-HYDRIC SOIL TYPE PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Name of Test:		Detection Freq: Z or Fisher				Upper Ranks				Mann-Whitney/Gehan				Student's or Satterthwaite T-test					Bartlett's Test for Equal Standard Deviations						
Question Posed:		Non-Hydric Se Freq. > Non-Hydric PmB Freq.?				Majority are Non-Hydric Se?				Ranks of Non-Hydric Se > Non-Hydric PmB?				Non-Hydric Se Mean > Non-Hydric PmB Mean ?					Non-Hydric Se Standard Deviation =Non-Hydric PmB Std.Dev.?						
Assumptions Valid:		#ND & Pos.>=5 or use Fisher				# Non-Hydric Se (s) in Top r				<40% ND or use Gehan				#s>2,#b>2,>=85% Pos; both norm/log					#s>2,#b>2, Non-Hydric Se & Non-Hydric PmB both normal or both lognorm.						
Test Criterion:		P value <= 0.025 ?				P<=0.025 that #s>=k				P value <=0.025 ?				t-Value > t-Table					F-Value<=F-Table (Students T). If not, Satterthwaite						
Conclusion: Non-Hydric Se > Non-Hydric PmB?		Non-Hydric PmB	Non-Hydric Se	P	YN	r	k	P	YN	P	Test	Used	YN	Non-Hydric PmB	Non-Hydric Se	t	t	YN	Non-Hydric PmB	Non-Hydric Se	Std.Dev.	Std.Dev.	F	F	YN
Substance		Freq.	Freq.	Value				Value		Value				Mean@	Mean@	Value	Table		Distrib.	Distrib.	Non-Hydric PmB@	Non-Hydric Se@	Value	Table	
Aluminum	**Y**	20/20	20/20		NA	15	11	0.0242	Y	0.3485			N	11200	12100	1.3919	2.0244	N	normal	normal	1530	2230	2.5805	3.8422	Y
Arsenic	N	20/20	20/20		NA	2	2	0.2436	N	0.2849			N	9.59	13			NA	lognor.	lognor.					NA
Barium	N	20/20	20/20		NA	14	8	0.3705	N	0.9417			N	39.7	35	-1.5636	2.0423	N	normal	normal	6.86	11.7	5.0531	3.8422	N
Beryllium	N	1/20	1/20	0.7564	N				NA	0.5000	Gehan	Test	NA	0.33	0.35			NA	lognor.	normal					NA
Chromium	N	20/20	20/20		NA	4	3	0.3025	N	0.9788			N	13.5	12.7			NA	lognor.	nonpar.					NA
Cobalt	N	20/20	20/20		NA	3	2	0.5000	N	0.9997			N	7.25	5.52			NA	lognor.	nonpar.					NA
Iron	N	20/20	20/20		NA	20	11	0.3762	N	0.5804			N	19800	19600			NA	lognor.	nonpar.					NA
Lead	N	20/20	20/20		NA	28	12	0.9588	N	0.9966			N	31.2	23.2	-3.1755	2.0244	N	normal	normal	9.17	6.59	1.9882	3.8422	Y
Magnesium	**Y**	20/20	15/20	1.0000	N	6	6	0.0101	Y	0.1204	Gehan	Test	N	1610	1660			NA	lognor.	normal					NA
Manganese	N	20/20	20/20		NA	7	1	0.9958	N	1.0000			N	289	130			NA	normal	lognor.					NA
Mercury	NA*	4/20	2/20		NA*				NA*	0.8006	Gehan	Test	NA*	0.0848	0.0559			NA	nonpar.	lognor.					NA
Nickel	**Y**	20/20	20/20		NA	10	8	0.0324	Y	0.2537			N	10.3	11	0.8603	2.0423	N	normal	normal	1.95	3.39	5.4543	3.8422	N
Vanadium	N	20/20	20/20		NA	6	2	0.9091	N	0.9993			N	30.5	25.1	-3.9438	2.0452	N	normal	normal	2.95	5.41	6.4029	3.8422	N
Zinc	N	20/20	20/20		NA	24	12	0.6262	N	0.8448			N	50.2	43.3	-1.2789	2.0244	N	normal	normal	19.7	14.2	1.8961	3.8422	Y
4,4'-DDE	N	3/20	3/20	0.6693	N	2	2	0.2436	N	0.4826	Gehan	Test	N	4.33	6.09			NA	nonpar.	nonpar.					NA
4,4'-DDT	N	2/20	3/20	0.5000	N	2	2	0.2436	N	0.3106	Gehan	Test	N	2.96	4.29			NA	nonpar.	nonpar.					NA
Alpha-Chlordane	N	1/20	2/20	0.5000	N	2	2	0.2436	N	0.2670	Gehan	Test	N	1.41	1.83			NA	nonpar.	nonpar.					NA
Aroclor-1254	N	0/20	1/20	0.5000	N	1	1	0.5000	N				NA		25.4			NA							NA
Aroclor-1260	N	5/20	1/20	0.9899	N	6	1	0.9899	N	0.9694	Gehan	Test	N*	34	25.5			NA	nonpar.	nonpar.					NA
Dieldrin	N	0/20	2/20	0.2436	N	2	2	0.2436	N				NA		4.2			NA							NA
Gamma-Chlordane	N	2/20	1/20	0.8846	N	2	1	0.7564	N	0.7330	Gehan	Test	N	1.66	1.42			NA	nonpar.	nonpar.					NA
Benz(a)anthracene	NA**	3/20	3/20	0.6693	N**				NA**	0.3936	Gehan	Test	N**	113	114			NA	nonpar.	nonpar.					NA
Benzaldehyde	**Y**	2/20	9/20	0.0155	Y	4	3	0.3025	N**	0.0828	Gehan	Test	N**	121	107			NA	nonpar.	nonpar.					NA
Benzo(a)pyrene	NA**	9/20	2/20	0.9983	N**				NA	0.2847	Gehan	Test	N**	95.2	119			NA	nonpar.	nonpar.					NA
Benzo(b)fluoranthene	NA**	10/20	3/20	0.9971	N**	1	1	0.5000	N**	0.4119	Gehan	Test	N**	97.8	120			NA	nonpar.	nonpar.					NA
Benzo(g,h,i)perylene	NA**	4/20	1/20	0.9764	N**				NA**	0.2237	Gehan	Test	N**	112	123			NA	nonpar.	nonpar.					NA
Benzo(k)fluoranthene	NA**	6/20	1/20	0.9958	N**	1	1	0.5000	N**	0.2339	Gehan	Test	N**	105	123			NA	nonpar.	nonpar.					NA
Bis(2-ethylhexyl) Phthalate	NA**	0/20	2/20	0.2436	N**	2	2	0.2436	N**				NA**		128			NA							NA
Chrysene	NA**	10/20	3/20	0.9971	N**	1	1	0.5000	N**	0.6133	Gehan	Test	N**	97	119			NA	nonpar.	nonpar.					NA
Fluoranthene	N	18/20	13/20	0.9902	N	1	1	0.5000	N	0.9888	Gehan	Test	N	101	98.8			NA	normal	lognor.					NA
Indeno(1,2,3-cd)pyrene	NA**	1/20	1/20	0.7564	N**				NA**	0.1918	Gehan	Test	N**	121	123			NA	nonpar.	nonpar.					NA
Phenanthrene	NA**	13/20	4/20	0.9995	N**				NA**	0.8936	Gehan	Test	N**	87.8	112			NA	lognor.	nonpar.					NA
Pyrene	N	19/20	15/20	0.9899	NA**	1	1	0.5000	N	0.8799	Gehan	Test	N	90.2	97.7			NA	normal	normal					NA

Notes: Units are mg/kg for inorganics, ug/kg for organics.
Interpretation of Z-Test or Fisher's Exact Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different detection frequencies that suggest the data belong to two different populations.
Interpretation of Upper Ranks Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of upper rank values. Since "k" samples from the top "r" ranks of the combined data set belonged to the first soil subgroup, this would be unlikely if the data sets came from the same population.
Interpretation of Mann Whitney / Gehan Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of ranked values, based on combining the data together and comparing the rank sums belonging to each group. This indicates the data belong to two populations having different medians.
Interpretation of Student's t- / Satterthwaite's t-Test: If the "t-Value" exceeds the lookup "t-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different means.
Interpretation of Bartlett's Test: If the "F-Value" exceeds the lookup "F-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different standard deviations. In this case, the Satterthwaite t-Test must be used rather than the Student's t-Test.
A statistical significance level (P value) of 0.025 is used for all tests that directly compare Non-Hydric Se to Non-Hydric PmB Soil. A two-sided significance level of 0.1 is used for Bartlett's test for equal variance.
For each test, a YES or NO decision is presented only if all assumptions are met. The overall decision (is Non-Hydric Se > Non-Hydric PmB) for each chemical appears at the left and is based on four criteria:
(1) Overall decision is YES if any one of the Mann-Whitney/Gehan, Upper Ranks Test, or T-Test is YES, regardless of other test results.
(2) Overall decision is NO if at least one of Mann-Whitney/Gehan, Upper Ranks Test, or T-Test is NO, and none of the aforementioned tests are YES.
(3) Overall decision is YES/NO if Z/Fisher Test is YES/NO, respectively, and other tests are NA. Z-test is treated as lowest priority since it relies on detection frequency, not magnitude of results.
(4) Overall decision is NA if all tests are NA. (Might occur if too few detections to be capable of detecting a statistically significant difference even if one exists.)
* Very low frequency of detected values and all were just above the detection and reporting limits, which interferes with the power of statistical tests to detect a significant difference between groups.
** Most detected values were near or below one-half the quantitation limit, which interferes with the power of statistical tests to detect a significant difference between two groups.
*** Test of proportions would have insufficient power to detect a significant difference between groups because given this many detects in the reference group, no number of detects in the comparison group could be judged to be significantly greater.

Abbreviations:

# NDs or # Pos.	Number of non-detected (ND) or positive (Pos.) results in data set, not including rejected data or blank-qualified data.
# s or # b	Number of Non-Hydric Se (s) or Non-Hydric PmB (b) samples, not including rejected data or blank-qualified data.
s = b	Standard deviation of Non-Hydric Se results must not be different from the standard deviation of Non-Hydric PmB results.
P value	Probability or significance level is defined as the chance of a false positive. If P <= 0.025 then test determines Non-Hydric Se > Non-Hydric PmB with 95 % confidence.
% ND	Mann-Whitney test used if < 40% of data Non-Detected and detect. limits uniformly below the range of positive values. If not, the Gehan Test is used.
@	For the t-test, the arithmetic mean and standard deviation of un-transformed data are shown in every case, since the t-test cannot be run if site and background do not both match a normal distribution.
r,k	The upper ranks test calculates the probability that k or more samples from the top r ranks of the combined Non-Hydric Se and Non-Hydric PmB data set are comprised of Non-Hydric Se data if both populations are in fact equal.

TABLE 4-19

STATISTICAL COMPARISON OF BACKGROUND NON-HYDRIC SOIL TYPE PmB TO NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Name of Test:		Detection Freq: Z or Fisher				Upper Ranks				Mann-Whitney/Gehan				Student's or Satterthwaite T-test					Bartlett's Test for Equal Standard Deviations						
Question Posed:		Non-Hydric PmB Freq. > Non-Hydric Se Freq.?				Majority are Non-Hydric PmB?				Ranks of Non-Hydric PmB > Non-Hydric Se?				Non-Hydric PmB Mean > Non-Hydric Se Mean ?					Non-Hydric PmB Standard Deviation =Non-Hydric Se Std.Dev.?						
Assumptions Valid:		#ND & Pos.>=5 or use Fisher				# Non-Hydric PmB (s) in Top r				<40% ND or use Gehan				#s>2,#b>2,>=85% Pos; both norm/log					#s>2,#b>2, Non-Hydric PmB & Non-Hydric Se both normal or both lognorm.						
Test Criterion:		P value <= 0.025 ?				P<=0.025 that #s>=k				P value <=0.025 ?				t-Value > t-Table					F-Value<=F-Table (Students T). If not, Satterthwaite						
Conclusion: Non-Hydric PmB > Non-Hydric Se?		Non-Hydric Se	Non-Hydric PmB	P	YN	r	k	P	YN	P	Test	Used	YN	Non-Hydric Se	Non-Hydric PmB	t	t	YN	Non-Hydric Se	Non-Hydric PmB	Std.Dev.	Std.Dev.	F	F	YN
Substance		Freq.	Freq.	Value				Value		Value				Mean@	Mean@	Value	Table		Distrib.	Distrib.	Non-Hydric Se@	Non-Hydric PmB@	Value	Table	
Aluminum	N	20/20	20/20		NA	28	13	0.8496	N	0.9223			N	12100	11200	-1.3919	2.0244	N	normal	normal	2230	1530	2.5805	3.8422	Y
Arsenic	N	20/20	20/20		NA	9	5	0.5000	N	0.7241			N	13	9.59			NA	lognor.	lognor.					NA
Barium	**Y**	20/20	20/20		NA	28	18	0.0069	Y	0.0616			N	35	39.7	1.5636	2.0423	N	normal	normal	11.7	6.86	5.0531	3.8422	N
Beryllium	N	1/20	1/20	0.7564	N				NA	0.9974	Gehan	Test	N	0.35	0.33			NA	normal	normal					NA
Chromium	**Y**	20/20	20/20		NA	27	18	0.0029	Y	0.0227			Y	12.7	13.5			NA	nonpar.	normal					NA
Cobalt	**Y**	20/20	20/20		NA	25	19	<.0001	Y	0.0003			Y	5.52	7.25			NA	nonpar.	lognor.					NA
Iron	N	20/20	20/20		NA	4	3	0.3025	N	0.4302			N	19600	19800			NA	nonpar.	lognor.					NA
Lead	**Y**	20/20	20/20		NA	25	16	0.0242	Y	0.0036			Y	23.2	31.2	3.1755	2.0244	Y	normal	normal	6.59	9.17	1.9882	3.8422	Y
Magnesium	N	15/20	20/20	0.0236	Y	28	13	0.8496	N	0.8849	Gehan	Test	N	1660	1610			NA	normal	normal					NA
Manganese	**Y**	20/20	20/20		NA	28	20	<.0001	Y	<.0001			Y	130	289			NA	lognor.	normal					NA
Mercury	NA*	2/20	4/20		NA*	2	2	0.2436	N*	0.2146	Gehan	Test	N*	0.0559	0.0848			NA	lognor.	nonpar.					NA
Nickel	N	20/20	20/20		NA	17	9	0.5000	N	0.7549			N	11	10.3	-0.8603	2.0423	N	normal	normal	3.39	1.95	5.4543	3.8422	N
Vanadium	**Y**	20/20	20/20		NA	27	20	<.0001	Y	0.0007			Y	25.1	30.5	3.9438	2.0452	Y	normal	normal	5.41	2.95	6.4029	3.8422	N
Zinc	**Y**	20/20	20/20		NA	10	8	0.0324	Y	0.1617			N	43.3	50.2	1.2789	2.0244	N	normal	normal	14.2	19.7	1.8961	3.8422	Y
4,4'-DDE	N	3/20	3/20	0.6693	N	5	3	0.5000	N	0.5347	Gehan	Test	N	6.09	4.33			NA	nonpar.	nonpar.					NA
4,4'-DDT	N	3/20	2/20	0.8292	N	4	2	0.6975	N	0.7059	Gehan	Test	N	4.29	2.96			NA	nonpar.	nonpar.					NA
Alpha-Chlordane	N	2/20	1/20	0.8846	N	3	1	0.8846	N	0.7520	Gehan	Test	N	1.83	1.41			NA	nonpar.	nonpar.					NA
Aroclor-1260	**Y**	1/20	5/20	0.0909	N	5	5	0.0236	Y	0.0337	Gehan	Test	N*	25.5	34			NA	nonpar.	nonpar.					NA
Gamma-Chlordane	N	1/20	2/20	0.5000	N	1	1	0.5000	N	0.2868	Gehan	Test	N	1.42	1.66			NA	nonpar.	nonpar.					NA
Benz(a)anthracene	NA **	3/20	3/20	0.6693	N**				NA**	0.7054	Gehan	Test	N**	114	113			NA	nonpar.	nonpar.					NA
Benzaldehyde	NA **	9/20	2/20	0.9983	N**	2	1	0.7564	N**	0.9244	Gehan	Test	N**	107	121			NA	nonpar.	nonpar.					NA
Benzo(a)pyrene	NA**	2/20	9/20	0.0155	Y**				NA**	0.7442	Gehan	Test	N**	119	95.2			NA	nonpar.	nonpar.					NA
Benzo(b)fluoranthene	NA**	3/20	10/20	0.0204	Y**	2	1	0.7564	N**	0.6096	Gehan	Test	N**	120	97.8			NA	nonpar.	nonpar.					NA
Benzo(g,h,i)perylene	NA**	1/20	4/20	0.1708	NA**				NA**	0.8054	Gehan	Test	N**	123	112			NA	nonpar.	nonpar.					NA
Benzo(k)fluoranthene	NA**	1/20	6/20	0.0457	Y**				NA**	0.7947	Gehan	Test	N**	123	105			NA	nonpar.	nonpar.					NA
Chrysene	NA**	3/20	10/20	0.0204	Y**				NA**	0.6095	Gehan	Test	N**	119	97			NA	nonpar.	nonpar.					NA
Fluoranthene	**Y**	13/20	18/20	0.0637	N	13	10	0.0204	Y	0.0117	Gehan	Test	Y	98.8	101			NA	lognor.	normal					NA
Indeno(1,2,3-cd)pyrene	NA**	1/20	1/20	0.7564	NA**				NA**	0.8350	Gehan	Test	N**	123	121			NA	nonpar.	nonpar.					NA
N-Nitroso-di-n-propylamine	NA**	0/20	1/20	0.5000	NA**	1	1	0.5000	N**				NA**		134			NA							NA
Phenanthrene	NA**	4/20	13/20	0.0048	NA**				NA**	0.1167	Gehan	Test	N**	112	87.8			NA	nonpar.	lognor.					NA
Pyrene	N	15/20	19/20	0.0909	NA***	16	11	0.0527	N	0.1201	Gehan	Test	N	97.7	90.2			NA	lognor.	normal					NA

Notes: Units are mg/kg for inorganics, ug/kg for organics.
Interpretation of Z-Test or Fisher's Exact Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different detection frequencies that suggest the data belong to two different populations.
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Interpretation of Mann Whitney / Gehan Test: If the "P-Value" is less than 0.025, then it can be concluded that the two data sets have different a distribution of ranked values, based on combining the data together and comparing the rank sums belonging to each group. This indicates the data belong to two populations having different medians.
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Interpretation of Bartlett's Test: If the "F-Value" exceeds the lookup "F-Table" and both soil type distributions match a "normal" shape, then it can be concluded that the data sets belong to two populations having different standard deviations. In this case, the Satterthwaite t-Test must be used rather than the Student's t-Test.
A statistical significance level (P value) of 0.025 is used for all tests that directly compare Non-Hydric PmB to Non-Hydric Se Soil. A two-sided significance level of 0.1 is used for Bartlett's test for equal variance.
For each test, a YES or NO decision is presented only if all assumptions are met. The overall decision (is Non-Hydric PmB > Non-Hydric Se) for each chemical appears at the left and is based on four criteria:
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(3) Overall decision is YES/NO if Z/Fisher Test is YES/NO, respectively, and other tests are NA. Z-test is treated as lowest priority since it relies on detection frequency, not magnitude of results.
(4) Overall decision is NA if all tests are NA. (Might occur if too few detections to be capable of detecting a statistically significant difference even if one exists.)
* Very low frequency of detected values and all were just above the detection and reporting limits, which interferes with the power of statistical tests to detect a significant difference between groups.
** Most detected values were near or below one-half the quantitation limit, which interferes with the power of statistical tests to detect a significant difference between two groups.
*** Test of proportions would have insufficient power to detect a significant difference between groups because given this many detects in the reference group, no number of detects in the comparison group could be judged to be significantly greater.

Abbreviations:

# NDs or # Pos.	Number of non-detected (ND) or positive (Pos.) results in data set, not including rejected data or blank-qualified data.
# s or # b	Number of Non-Hydric PmB (s) or Non-Hydric Se (b) samples, not including rejected data or blank-qualified data.
s = b	Standard deviation of Non-Hydric PmB results must not be different from the standard deviation of Non-Hydric Se results.
P value	Probability or significance level is defined as the chance of a false positive. If P <= 0.025 then test determines Non-Hydric PmB > Non-Hydric Se with 95 % confidence.
% ND	Mann-Whitney test used if < 40% of data Non-Detected and detect. limits uniformly below the range of positive values. If not, the Gehan Test is used.
@	For the t-test, the arithmetic mean and standard deviation of un-transformed data are shown in every case, since the t-test cannot be run if site and background do not both match a normal distribution.
r,k	The upper ranks test calculates the probability that k or more samples from the top r ranks of the combined Non-Hydric PmB and Non-Hydric Se data set are comprised of Non-Hydric PmB data if both populations are in fact equal.

TABLE 4-20

SUMMARY OF STATISTICAL COMPARISONS BETWEEN BACKGROUND SOIL TYPES
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Pairwise Comparisons Between Soil Types and Hydric Versus Non-Hydric Significant difference? greater than (>), less (<), similar (S), inconclusive (NA)				
	Se: Hyd.>NonH.	Se: NonH.>Hyd.	Non-Hyd.: Se>PmB	Non-Hyd.: PmB>Se
Groups Compared:	Non-Hydric Se	Non-Hydric Se	Non-Hydric Se Non-Hydric PmB	Non-Hydric Se Non-Hydric PmB
Substance	Hydric Se	Hydric Se		
AVS/SEM-Cadmium	NA	NA	NA	NA
AVS/SEM-Copper	NA	NA	NA	NA
AVS/SEM-Lead	NA	NA	NA	NA
AVS/SEM-Nickel	NA	NA	NA	NA
AVS/SEM-Zinc	NA	NA	NA	NA
SEM	NA	NA	NA	NA
Aluminum	Y	N	Y	N
Antimony	NA	ND	ND	ND
Arsenic	Y	N	N	N
Barium	Y	N	N	Y
Beryllium	ND	NA	N	N
Cadmium	N	ND	ND	ND
Chromium	Y	N	N	Y
Cobalt	Y	N	N	Y
Iron	Y	N	N	N
Lead	Y	N	N	Y
Magnesium	Y	N	Y	N
Manganese	Y	N	N	Y
Mercury	ND	NA	NA	NA
Nickel	Y	N	Y	N
Vanadium	Y	N	N	Y
Zinc	Y	N	N	Y
TOC	NA	ND	ND	ND
4,4'-DDD	Y	ND	ND	ND
4,4'-DDE	Y	N	N	N
4,4'-DDT	Y	N	N	N
Aldrin	N	ND	ND	ND
Alpha-Chlordane	Y	N	N	N
Aroclor-1254	ND	NA	N	ND
Aroclor-1260	Y	NA	N	Y
Dieldrin	Y	N	N	ND
Endosulfan Sulfate	N	ND	ND	ND
Endrin Ketone	N	ND	ND	ND
Gamma-BHC (Lindane)	N	ND	ND	ND
Gamma-Chlordane	Y	N	N	N
2-Methylnaphthalene	NA	ND	ND	ND
Acenaphthene	NA	ND	ND	ND
Acenaphthylene	NA	ND	ND	ND
Anthracene	Y	ND	ND	ND
Benz(a)anthracene	Y	N	NA	NA
Benzaldehyde	Y	N	Y	NA
Benzo(a)pyrene	Y	N	NA	NA
Benzo(b)fluoranthene	Y	N	NA	NA
Benzo(g,h,i)perylene	Y	N	NA	NA
Benzo(k)fluoranthene	Y	N	NA	NA
Bis(2-ethylhexyl) Phthalate	Y	N	NA	ND
Butyl Benzyl Phthalate	Y	ND	ND	ND
Carbazole	Y	ND	ND	ND
Chrysene	Y	N	NA	NA
Dibenz(a,h)anthracene	Y	ND	ND	ND
Dibenzofuran	NA	ND	ND	ND
Fluoranthene	Y	N	N	Y
Fluorene	NA	ND	ND	ND
Hexachlorobenzene	NA	ND	ND	ND
Indeno(1,2,3-cd)pyrene	Y	N	NA	NA
N-Nitroso-di-n-propylamine	ND	ND	ND	NA
Naphthalene	NA	ND	ND	ND
Phenanthrene	Y	N	NA	NA
Phenol	NA	ND	ND	ND
Pyrene	Y	N	N	N

Note: No other organics were detected that were able to be shown to be statistically different between groups.

PmB = PmB soil type

Se = Se soil type

Hyd. = Hydric

NonH. = Non-Hydric

TABLE 4-21

DESCRIPTIVE STATISTICS FOR ORGANIC SUBSTANCES IN BACKGROUND NON-HYDRIC SOIL TYPES Se AND PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Freq. of Detection	Range of Positive Detection Min.		Max.	Mean of All Data	Location of Maximum	Interquartile Range (Detects)	Standard Deviation	Variance	Skewness	Kurtosis	Geometric Mean
4,4'-DDE	6/40	5.4	-	43	5.21	DABK-S-SO19-0001	24.4	8.25	66.4	3.567	13.093	3.3
4,4'-DDT	5/40	3.6	-	23	3.63	DABK-S-SO20-0001	14.9	3.92	15	4.138	17.632	3.0
Alpha-Chlordane	3/40	3.8	-	7	1.62	DABK-S-SO20-0001	3.2	1.27	1.58	3.769	13.596	1.4
Aroclor-1254	1/40	25 J	-	25 J	25.2	DABK-S-SO02-0001	12.5	1.58	2.43	1.348	3.615	25.16
Aroclor-1260	6/40	34 J	-	86	29.7	DABK-S-SO26-0001	22	13.1	167	2.900	8.921	28.0
Dieldrin	2/40	13	-	26	3.35	DABK-S-SO20-0001	16.25	4.04	15.9	5.129	27.408	2.7
Gamma-Chlordane	3/40	2.8	-	7.2	1.54	DABK-S-SO22-0001	4.4	1.06	1.09	4.597	22.608	1.4
Benz(a)anthracene	6/40	52 J	-	79 J	114	DABK-S-SO20-0001	16.5	25	608	-1.545	1.520	110.33
Benzaldehyde	11/40	59 J	-	150 J	114	DABK-S-SO14-0001	59	24.3	578	-1.163	0.523	110.82
Benzo(a)pyrene	11/40	51 J	-	95 J	107	DABK-S-SO20-0001	13	29.7	858	-0.866	-0.721	102.36
Benzo(b)fluoranthene	13/40	51 J	-	130 J	109	DABK-S-SO20-0001	31.5	27.1	717	-0.897	-0.492	104.9
Benzo(g,h,i)perylene	5/40	55 J	-	100 J	117	DABK-S-SO20-0001	30	22.1	474	-1.770	2.926	114.6
Benzo(k)fluoranthene	7/40	52 J	-	110 J	114	DABK-S-SO20-0001	16	26.1	664	-1.474	1.159	110.1
Bis(2-ethylhexyl) Phthalate	2/40	130 J	-	160 J	126	DABK-S-SO02-0001	62.5	9.54	88.8	1.761	4.444	125.9
Chrysene	13/40	54 J	-	140 J	108	DABK-S-SO20-0001	14.5	27.8	753	-0.665	-0.950	103.7
Fluoranthene	31/40	56 J	-	230 J	100	DABK-S-SO20-0001	44	35.7	1240	1.287	3.058	94.4
Indeno(1,2,3-cd)pyrene	2/40	60 J	-	98 J	122	DABK-S-SO20-0001	53	14.8	214	-2.097	8.179	120.8
N-Nitroso-di-n-propylamine	1/40	310	-	310	129	DABK-S-SO24-0001	155	31	939	5.255	31.357	127.0
Phenanthrene	17/40	51 J	-	95 J	100	DABK-S-SO23-0001	16.5	31	935	-0.280	-1.487	94
Pyrene	34/40	44 J	-	190 J	93.9	DABK-S-SO20-0001	49	31.2	948	0.692	0.812	89.0

Notes:

Units are ug/kg for organics.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two.
Frequency of detection refers to number of times compound was detected among all samples versus total number of samples.
Number of samples may vary based on the number of usable results.
Skewness = (n*SUM(x-xbar)3)/((n-1)(n-2)s3) = a measure of asymmetry of a distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis = ((n+1)*n*SUM(x-xbar)4)/((n-1)*(n-2)*(n-3)*s4) - (3*(n-1)2)/((n-2)(n-3)) = measures sharpness of the peak of a distribution (+ or -) relative to normal distribution.

TABLE 4-22

QUANTILE RANGE DISTRIBUTIONS OF BACKGROUND SOIL DATA FOR NON-HYDRIC SOIL TYPES Se AND PmE
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

		Percentile Distribution of Background Non-Hydric Soil Concentrations																				
		Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results									
		Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max		Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max	
Substance	Max. Conc.	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.
4,4'-DDE	43	3.4	8	4.78	9	5.05	9	5.2	7	5.83	1	6.2	1	9.6	2	16.5	2	34	1	43		43
4,4'-DDT	23	4.5	9	4.9	9	5.1	9	5.2	7	5.8	1	6.2	1	4.6	2	8.5	1	19.5	1	23		23
Alpha-Chlordane	7	1.8	9	2.5	10	2.6	9	2.7	8	2.93	1	3.2	1	3.8	1	6.6	1	7		7		7
Aroclor-1254	25	45	10	49	10	50	10	52	8	57	1	62		12.5	1	25		25		25		25
Aroclor-1260	86	34	8	47.8	9	50.5	9	52	7	58.3	1	62	1	45.3	2	54.5	2	67.3	1	86		86
Dieldrin	26	3.4	9	4.8	10	4.95	10	5.2	8	5.73	1	6.2		9.75	1	19.5	1	26		26		26
Gamma-Chlordane	7.2	1.8	9	2.5	10	2.6	9	2.7	8	2.93	1	3.2	1	2.8	1	4.2	1	7.2		7.2		7.2
Benz(a)anthracene	79	170	8	240	9	248	9	260	7	280	1	310	1	52.8	2	56.5	2	69.3	1	79		79
Benzaldehyde	150	170	7	240	8	250	7	260	6	290	1	310	3	61	3	72	3	120	2	150		150
Benzo(a)pyrene	95	170	7	238	8	250	7	260	6	290	1	310	3	55	3	60	3	68	2	95		95
Benzo(b)fluoranthene	130	170	7	235	7	250	7	260	5	294	1	310	3	63	4	71	3	94.5	3	130		130
Benzo(g,h,i)perylene	100	170	9	240	9	250	9	260	7	286	1	310	1	56	2	58	1	86	1	100		100
Benzo(k)fluoranthene	110	170	8	240	9	250	8	260	7	289	1	310	2	53	2	58	2	69	1	110		110
Bis(2-ethylhexyl) Phthalate	160	230	9	240	10	250	10	260	8	282	1	310		97.5	1	145	1	160		160		160
Chrysene	140	170	7	235	7	250	7	260	5	294	1	310	3	63.5	4	68	3	78	3	140		140
Fluoranthene	230	170	2	230	3	250	2	260	2	260		260	8	66	8	83	8	110	6	194	1	230
Indeno(1,2,3-cd)pyrene	98	170	9	240	10	250	10	260	8	282	1	310		45	1	79	1	98		98		98
N-Nitroso-di-n-propylamine	310	170	10	240	10	250	10	260	8	280	1	310		155	1	310		310		310		310
Phenanthrene	95	170	6	230	6	250	6	260	4	302	1	310	4	57	5	65	4	73.5	4	95		95
Pyrene	190	230	1	230	2	240	2	260	1	260		260	8	61	9	85.5	9	110	7	160	1	190

Notes:
Units are ug/kg for organics.
Potential outliers are shown in bold for positives greater than 4 times 75th quantile.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

TABLE 4-23

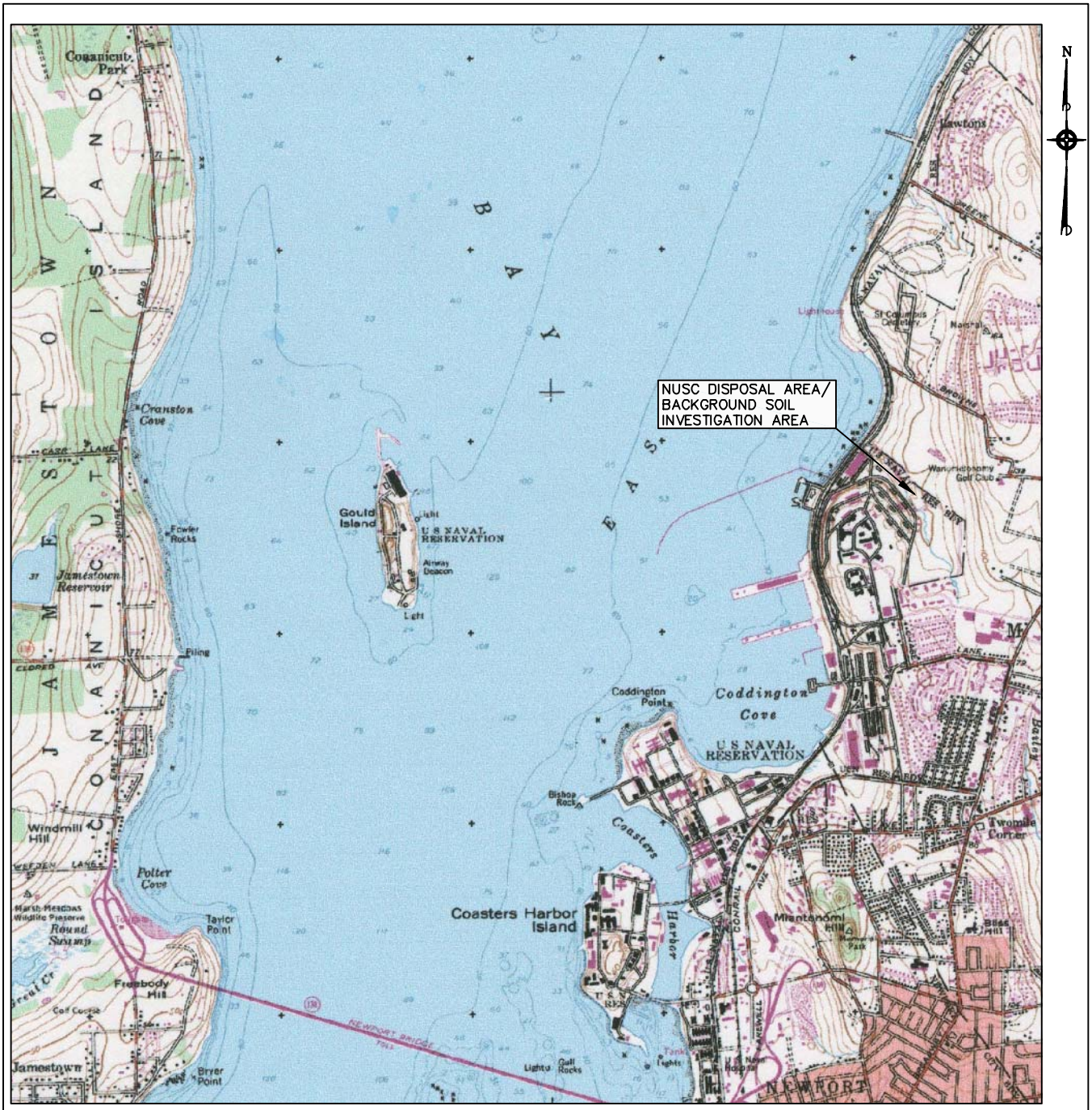
STATISTICAL DISTRIBUTION OF ORGANICS IN BACKGROUND NON-HYDRIC SOIL
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Substance	Number of Sample Results	Statistical Distribution of Site Data	Results of Shapiro-Wilk or Shapiro-Francia Distribution Tests		
			W-norm.	W-lognorm.	W-Table
4,4'-DDE	40	nonparametric	0.4132	0.5483	0.94
4,4'-DDT	40	nonparametric	0.3614	0.4839	0.94
Alpha-Chlordane	40	nonparametric	0.3652	0.4794	0.94
Aroclor-1254	40	nonparametric	0.9122	0.9357	0.94
Aroclor-1260	40	nonparametric	0.5714	0.6858	0.94
Dieldrin	40	nonparametric	0.2741	0.3998	0.94
Gamma-Chlordane	40	nonparametric	0.3649	0.5096	0.94
Benz(a)anthracene	40	nonparametric	0.7431	0.6686	0.94
Benzaldehyde	40	nonparametric	0.8044	0.7416	0.94
Benzo(a)pyrene	40	nonparametric	0.8085	0.7629	0.94
Benzo(b)fluoranthene	40	nonparametric	0.8251	0.7826	0.94
Benzo(g,h,i)perylene	40	nonparametric	0.7559	0.6651	0.94
Benzo(k)fluoranthene	40	nonparametric	0.7546	0.6785	0.94
Bis(2-ethylhexyl) Phthalate	40	nonparametric	0.8263	0.859	0.94
Chrysene	40	nonparametric	0.8571	0.8217	0.94
Fluoranthene	40	lognormal	0.8868	0.9423	0.94
Indeno(1,2,3-cd)pyrene	40	nonparametric	0.7892	0.6792	0.94
N-Nitroso-di-n-propylamine	40	nonparametric	0.4308	0.5929	0.94
Phenanthrene	40	nonparametric	0.864	0.8443	0.94
Pyrene	40	normal (skip log test)	0.9549	0.9725	0.94

Notes:

Number of sample results excludes rejected data or blank-qualified data. Duplicates are considered as one result. Non-detected results are treated as present at one-half the detection limit in all calculations.
Statistical distribution of data is determined using Shapiro-Wilk test for n <= 50, Shapiro-Francia test for n > 50. Statistical significance level is 0.05.
A normal distribution is assumed if the test statistic W-norm. is >= than the reference value (W-table), regardless of whether W-lognorm. is greater than the reference value.
A lognormal distribution is assumed if the test statistic W-lognorm. is >= the reference value (W-table), and the test statistic W-norm. is < than the reference value (W-table).
The decision scheme for when parametric versus nonparametric tests may be used is discussed in the text.

FIGURES



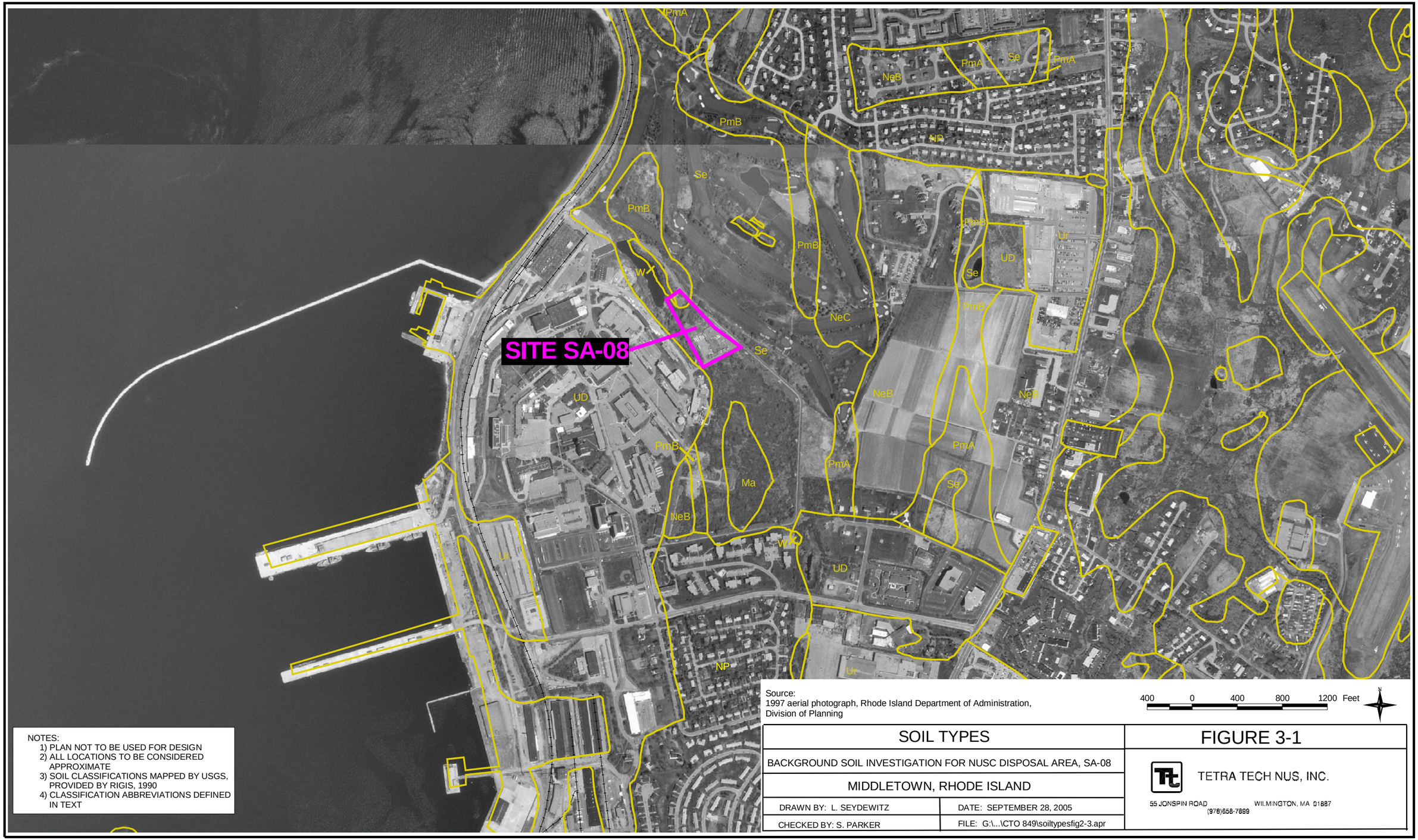
BASE MAP IS A PORTION OF THE FOLLOWING 7.5 X 15 MINUTE U.S.G.S. QUADRANGLE:
PRUDENCE ISLAND, RHODE ISLAND, 1955, PHOTOREVISED 1970 AND 1975

GRAPHIC SCALE
0 0.5 MILE 1 MILE

QUADRANGLE LOCATION

SITE LOCUS	FIGURE 2-1
BACKGROUND SOIL INVESTIGATION FOR NUSC DISPOSAL AREA, SA-08	TETRA TECH NUS, INC.
MIDDLETOWN, RHODE ISLAND	55 Jonspin Road Wilmington, MA 01887 (978)658-7899

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	L. SEYDEWITZ	DATE:	SEPTEMBER 28, 2005
SCALE:	AS NOTED	ACAD NAME:	DWG\5152\3591\FIG_2-1.DWG



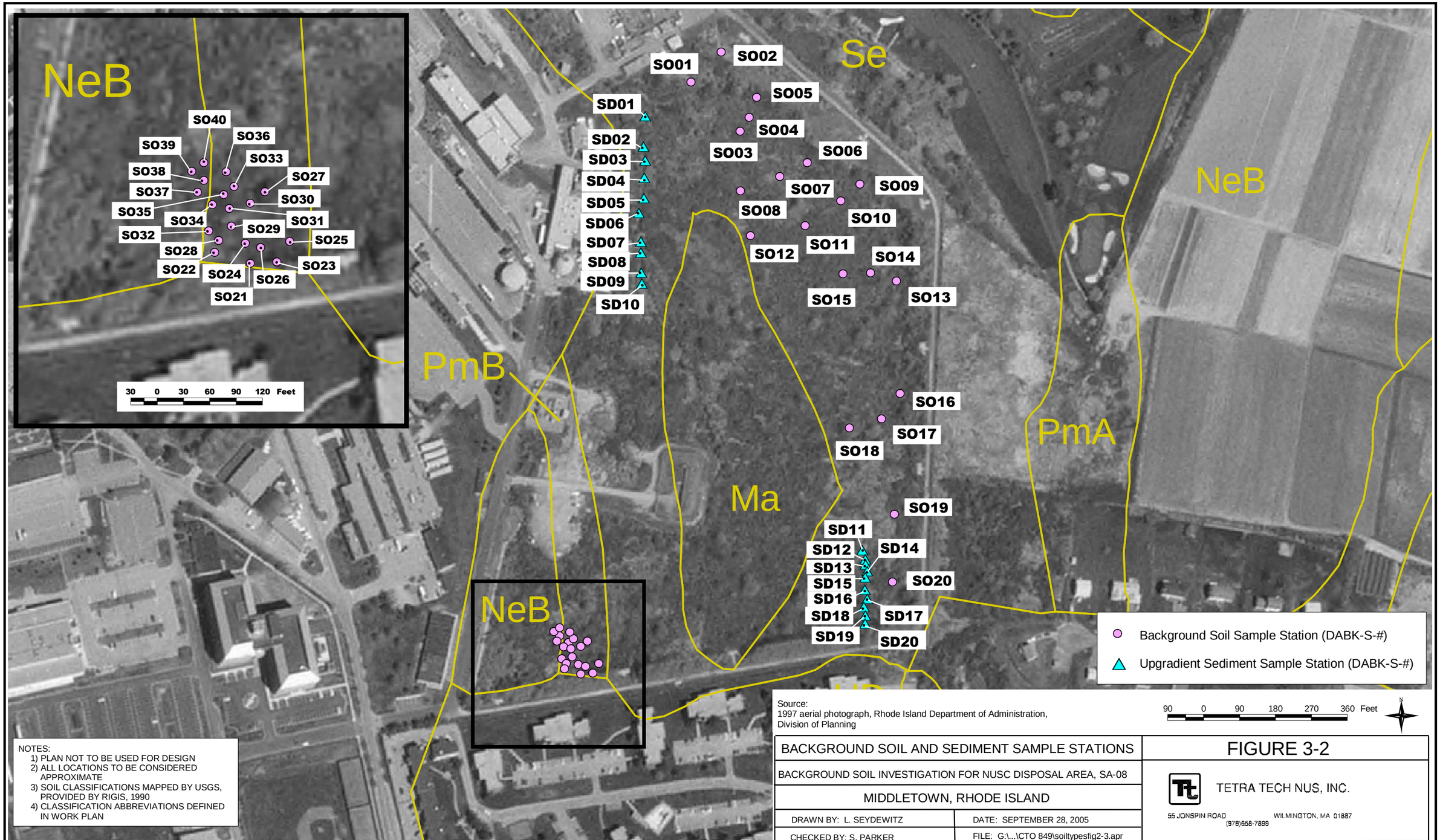
NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) SOIL CLASSIFICATIONS MAPPED BY USGS, PROVIDED BY RIGIS, 1990
4) CLASSIFICATION ABBREVIATIONS DEFINED IN TEXT

Source:
1997 aerial photograph, Rhode Island Department of Administration, Division of Planning

400 0 400 800 1200 Feet

N

SOIL TYPES		FIGURE 3-1
BACKGROUND SOIL INVESTIGATION FOR NUSC DISPOSAL AREA, SA-08		TETRA TECH NUS, INC.
MIDDLETOWN, RHODE ISLAND		55 JONSPIN ROAD WILMINGTON, MA 01887 (978)658-7899
DRAWN BY: L. SEYDEWITZ	DATE: SEPTEMBER 28, 2005	
CHECKED BY: S. PARKER	FILE: G:\...\CTO 849\soiltypesfig2-3.apr	



NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) SOIL CLASSIFICATIONS MAPPED BY USGS, PROVIDED BY RIGIS, 1990
4) CLASSIFICATION ABBREVIATIONS DEFINED IN WORK PLAN

Source:
1997 aerial photograph, Rhode Island Department of Administration, Division of Planning

BACKGROUND SOIL AND SEDIMENT SAMPLE STATIONS	FIGURE 3-2
BACKGROUND SOIL INVESTIGATION FOR NUSC DISPOSAL AREA, SA-08	TETRA TECH NUS, INC.
MIDDLETOWN, RHODE ISLAND	55 JONSPIN ROAD WILMINGTON, MA 01887 (978)658-7899
DRAWN BY: L. SEYDEWITZ / DATE: SEPTEMBER 28, 2005	
CHECKED BY: S. PARKER / FILE: G:\...\CTO 849\soiltypesfig2-3.apr	

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APPENDIX A

FIELD DOCUMENTATION

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S001 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. Spatula / SS bowl / ~~SS~~ trowel
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1320 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~, L. Seydewitz D Hartgan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Sandy Silt; moist; brown
Fine sand - poorly graded;
organic roots present

SAMPLE DATA/REMARKS: Approx 2" thick layer of leaf litter and root mat - removed prior to sampling underlying soil

ANALYSIS	BOTTLE ~~LOT No~~ TYPE.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 5002 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / ~~SS trowel~~ / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1330 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danielli~~, L. Seydewitz D Hartgan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SAND SOME SILT. TR f subround gravel to 1/2" 2x3 in subrnd cobbles, loose, moist

SAMPLE DATA/REMARKS: Approx. 2 in thick layer of leaf litter, fine roots, tree roots to 3/4" diameter at surface. Collected soil beneath surface layer

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8 oz glass
Pest/TAL Metals	1x 8 oz glass

NOTES/SKETCH:
Photo ✓

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S003 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / SS trowel / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1410 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniell~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, ~~Peat~~ to wet Dry, Moist, Wet, Etc.)
Silt loam; damp to wet brown to gray brown; <5% sand (fine); 1-2 pieces coarse subrnd gravel to 1"; organic roots

SAMPLE DATA/REMARKS: Approx. 1" thick layer of leaf litter and root mat. Standing water on ground surface within 10' of sample location. Standing water in hole at 12" bgs.

ANALYSIS	BOTTLE ~~LOT NO.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S004 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / ~~SS trowel~~ / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1415 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Mostly silt loam - dk to brown at surface and yellow brown at 7-8" bgs
Damp - wet; organic roots

SAMPLE DATA/REMARKS: Approx. 1-2 in thick layer of leaf litter and fine root mat at surface
Standing water in hole at approximately 1.2 ft bgs

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 802 glass
Pest/TAL Metals	1x 802 glass

NOTES/SKETCH:
Photo ✓

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S005 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / ~~SS bowel~~ / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1430 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz K. Jalkut D. Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Mostly silt loam - dk brown to brn at surface and yellow brown approx 6" bgs wet @ 1.1 ft bgs; organic roots; ang. coarse gravel to 1" (chipped rock ??)

SAMPLE DATA/REMARKS: Approx. 1-2" thick layer of leaf litter and fine root mat w/ tree roots also. Location approx. 10' away from large mound of asphalt. Standing water in hole at 1.1 ft bgs. Rock chips - angular in hole - arrow head ???

ANALYSIS	BOTTLE ~~LOT~~ TYPE No.
SVOC	1x 802 glass
Pest/TAL Metals	1x 802 glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 5006 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / ~~ss trowel~~ / ss bowl / Disp. Spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1455 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Danieli~~, L. Seydewitz K Jalkut D. Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; gray brown; wet to saturated at 8 in bgs; organic roots at surface. Organic odor

SAMPLE DATA/REMARKS: Approx. 1-2 in thick layer of moss and fine root mat. Location surrounded by 5-10' tall scrub shrubs - wetland environment.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S007 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: DUP 05 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ / ss trowel / ss bowl / Disp. spatula (shovel)
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1500 hours Dup 1505 hours
Sampler(s): K. O'Neill, ~~J. Daniell~~, L. Seydewitz D. Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ✓ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; gray brown; wet to saturated at 8 in bgs; organic roots at surface

SAMPLE DATA/REMARKS: Approx. 2 in thick layer of moss and fine root mat. Location surrounded by 5-10' tall scrub shrubs. Organic odor from soil. Wetland environment.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S008 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / ~~SS trowel~~ / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1520 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniell~~, L. Seydewitz D. Hartigan K. Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- x Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt; gray brown; wet to saturated at 12 in bgs; organic roots near surface
No organic odor

SAMPLE DATA/REMARKS: Approx. 2" thick layer of leaf litter and fine root mat
Location darker than S006 + S007 - possibly out of wetland environment. Bayberry brush at location.

ANALYSIS	BOTTLE ~~LOT~~ TYPE No.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 09 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / SS trowel / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1550 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniell~~, L. Seydewitz D. Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Brn Silt loam - some f. sand, organic roots at surface grading into silt (gray-brn) below 4". ~~We~~ Moist to damp at 12in bgs. No organic odor

SAMPLE DATA/REMARKS: Approximately 2in thick layer of leaf litter and fine root mat at surface. No standing water in hole.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 5010 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ shovel | SS trowel | SS bowl | Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 27 / 04 1600 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniel~~, L. Seydewitz D. Hartigan K. Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-0.3' - Silt loam - loose, organic roots, brown - dk brown, damp, moist
0.3-1' - Silt, gray brn to yellow-brown - damp

SAMPLE DATA/REMARKS: Approx 2 in thick layer of leaf litter and fine root mat at surface
No standing water in hole

ANALYSIS	BOTTLE ~~LOT NO.~~ TYPE
SVOC	1 x 8oz glass
Pest/TAL Metals	1 x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO11 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: DUP06 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / SS bowl / Spatula (disp.)
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0820 hours Dup 0830 hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz D Hartgan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ✓ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-0.3 ft - Silt loam - gray brown - wet - fine roots
0.3-1 ft - Silt - all gray - saturated - no roots (muck-like) - clay sized particles too

SAMPLE DATA/REMARKS: Approx. 2in thick layer of leaf litter and fine root mat. Standing water in hole at approx. 8 in bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOCs	1x 8 oz glass
Pest/TAL Metals	1x 8 oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 12 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: Lab QC (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. spatula / SS bowl
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0845 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniell~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Damp Gray-brn 0-3in SILT & CLAY SIZED PARTICLES / LOAM AT SURFACE W/ FINE ROOTS + ROOTS TO 1/2 IN DIAM
3in - 12in = SILT & CLAY SIZED PARTICLES - ALL GRAY - SATURATED @ 12IN bgs. COBBLE at 8 in bgs (at least 4in diam - subrnd)

SAMPLE DATA/REMARKS: Approx. 2-3 in thick layer of leaf litter and fine root mat. Standing water in hole @ 12 in bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOCs	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH: Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 13 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. Spatula / SS bowl
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0905 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~i, L. Seydewitz D Hartgan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- x Soil
- ___ Sediment
- ___ Lagoon/Pond
- x Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-3in bgs - Silt & Clay mostly, some loam w/ fine roots at surface; wet; gray to gray-brn
3in-12in - Silt & Clay sized particles, saturated tr. f/m sand, tr. coarse gravel to 2in - subangular

SAMPLE DATA/REMARKS: Approx. 1-2 in thick layer of leaf litter and root mat. Standing water in hole in 0.4 ft bgs. Approx. 1/2 in diameter tree root across hole at 1in bgs

ANALYSIS	TYPE BOTTLE ~~LOT~~ No.
SVOCs	1x 8oz glass
Pest/ TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 5014 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. Spatula / SS bowl
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0912 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-3in" = Silt loam - gray brn - moist - organic roots, some clay sized particles
3"-12" - Silt & Clay sized particles mostly - gray - damp

SAMPLE DATA/REMARKS: Approx. 1-2 in thick layer of leaf litter and fine root mat at surface. No standing water in hole. Approx. 1/2 - 3/4 in diameter tree roots across hole 0-3in bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOCs	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 15 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. Spatula / SS bowl
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0925 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-3in - Silt loam - some clay sized particles - gray brn, moist, organic roots
3in-12in - Mostly silt & clay sized particles, gray, damp, tr. f. sand and gravel to 1/2 in

SAMPLE DATA/REMARKS: Approx 2in thick layer of leaf litter and fine root mat at surface. Shallow tree roots to 1/4 in diameter at surface. No standing water in hole

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest / TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓
End of Camera #3

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50 16 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. Spatula / SS bowl
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0938 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniel~~i, L. Seydewitz K Jalkut D. Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-3in - Silt loam - gray brn - organic roots, twigs Moist, loose
3in-12in - Silt & Clay sized particles, gray, dense, damp to saturated at 12in bgs

SAMPLE DATA/REMARKS: Approx. 2-3 in layer of leaf litter and fine root mat at surface. Standing water coming into hole at 12 in bgs.

ANALYSIS	BOTTLE ~~LOT No~~ TYPE.
SVOCs	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

Photo - Start camera 4

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - S017 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / Disp. Spatula / SS bowl
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 0950 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-2in Silt loam - gray brown - organic roots - wet
2in - 12in - Silt & Clay sized particles, gray, saturated, tr. coarse subrnd gravel to 2in (2 pieces) at bottom of hole

SAMPLE DATA/REMARKS: Approx. 2in thick layer of leaf litter and fine root mat at surface. Shallow tree roots to 1/2 in diameter across hole. Standing water at 8in bgs in hole. Scrub Shrub vegetation + standing water along pathway + nearby to location - wetland environment.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOCs	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓ Note - 3-4in subrnd cobbles at surface in pile

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 18 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 1000 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- x Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-3in Silt loam - gray brown - organic roots, moss, loose damp
3in - 10in - Silt & Clay sized particles, gray, dense, wet to saturated at 10 mbgs.

SAMPLE DATA/REMARKS: Approx 2in thick layer of leaf litter and fine root mat w/ moss at surface. Location under large maple tree w/ scrub shrubs surrounding area. Approx. 1in diameter tree root across hole at surface

ANALYSIS	BOTTLE ~~LOT NO~~ TYPE.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

10 in - 12 in - Coarse gravel layer, subrounded gravels to 2in

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 19 - 0001

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 1015 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-2in: Silt loam - gray brn - damp - organic roots, twigs moss
2in-12in: Silt & clay sized particle, gray, wet, tr. coarse gravel (2 pieces) to 1in - subrnd at bottom

SAMPLE DATA/REMARKS: Approx. 1-2in thick layer of leaf litter and fine root mat at surface. No standing water in hole. Standing surface water - small stream (?) within 7 feet of location.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest / TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO 20 - 0001

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel / SS bowl / Disp. spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 26 / 04 1030 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell,~~ L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
0-3in: Silt loam - gray brn - organic roots, moss, damp
3in-10in: Silt & Clay sized particles, gray, wet to saturated at very bottom of hole, dense
10in-12in: 3-4in cobbles - submd

SAMPLE DATA/REMARKS: Approx 1-2 in thick layer of leaf litter, moss, fine roots, decayed vegetation at surface. No standing water in hole. Water starting to enter hole at 12 in bgs depth.

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest / TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: ~~DABK-S-21 KO 10.25.04~~ DABK-S-50 21-0001
Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: shovel
Depth Sampled: 0-1.0 feet
Sample Date & Time: 10/25/04 1210 hours Dup N/A hours
Sampler(s): K.O'Neill K Jalkut

Data Recorded By: Kevin O'Neill
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.) Silty loam, dk grey brn < 5% Sand; damp

SAMPLE DATA/REMARKS: Standing water @ 0.8
No vegetation Removed leaves but no soil

ANALYSIS	BOTTLE ~~LOT NO.~~ Type	NOTES/SKETCH:
SVOC	1 x 8oz glass	photo ✓
Pest/TAL Metals	1 x 8oz glass	

Tt NUS Form 0005A

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK-S-50922-0001
25/11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: shovel / disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10/25/04 1225 hours Dup N/A hours
Sampler(s): K O'Neill K Jaikut S Parker

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.) Silt loam; dark gray brown <5% sand; small roots present; moist

SAMPLE DATA/REMARKS: 0.1' leaf litter on top (removed prior to sampling)
Standing water @ 1.0' bgs.

ANALYSIS	BOTTLE ~~LOT NO.~~ Type	NOTES/SKETCH:
SVOC	1 x 8oz glass	photo ✓
Pest/TAL Metals	1 x 8oz glass	

Tt NUS Form 0005A

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 507 23 - 0001
2/12/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1235 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~, L. Seydewitz K Jalkut S. Parker

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- Sediment
- Lagoon/Pond
- X Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Other (Specify):

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; <5% sand; fibrous roots present; moist-damp

SAMPLE DATA/REMARKS: Removed trace amt. leaf litter on top of soil. Approx. 1" root layer above soil. Standing water @ approx. 0.7 ft bgs

ANALYSIS	BOTTLE LOT No.
SVOC	1 x 8oz glass
Pest / TAL Metals	1 x 8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50524 - 0001
ZS 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1245 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniel~~, L. Seydewitz K Jaikut S Parker

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; roots to 1" bgs; <5% sand; moist; trace angular gravel (~2 pieces) to 1/2" (fine)

SAMPLE DATA/REMARKS: Fine roots to approx. 1" bgs. Standing water at approx. 0.9 ft bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1x 8oz glass
Peat/TAL Metals	1x 8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50425 - 0001
LS 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: DUP01 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1253 hours Dup 1258 hours
Sampler(s): K. O'Neill, ~~J. Daniell~~, L. Seydewitz S Parker

Data Recorded By: K Jankowt
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- X Field Duplicate collected
- ___ Other (Specify): DUP-1

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; <5% sand; 1-2 pieces coarse angular gravel; roots/twigs, Moist

SAMPLE DATA/REMARKS: Approx. 2 inches leaves + fine roots removed from top of soil prior to sampling. Standing water @ approx. 0.9 ft bgs.

ANALYSIS	BOTTLE ~~LOT~~ Type No.
JVOC	1x 8oz glass
Peat/TAL Metals	1x 8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO9526 - 0001
JS 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatulas
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1310 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danielli~~, L. Seydewitz S. Parker K Jaikut

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; damp <5% sand; several pieces coarse angular gravel

SAMPLE DATA/REMARKS: Approx. 3" of roots. Standing water at approx. 0.8-0.9 ft bgs

ANALYSIS	BOTTLE LOT No.
SVOC	1x8oz glass
Pest/TAL Metals	1x8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO827 - 0001
KS 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: ~~None~~ Lab QC (6 jars) (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable Spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1315 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz S. Parker K Jalbut

Data Recorded By: K Jalbut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt ~~loam~~ loam - w/ clay sized particles too
1x 3in cobble - subrounded; roots; wet

SAMPLE DATA/REMARKS: Approx 2" of leaf litter on surface. Standing water at approx 0.8' bgs

ANALYSIS	BOTTLE ~~LOT No.~~ Type	NOTES/SKETCH:
SVOC	3 x 8oz glass	photo ✓
Pest/TAL Metals	3 x 8oz glass	

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50928-0001
KJ 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1320 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~i, L. Seydewitz S. Parker K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dk gray brown. damp; roots; twigs; no visible gravel; ~~some~~ trace % sand
KJ 10/25/04

SAMPLE DATA/REMARKS: Approx 2" leaf litter + twigs on surface. Standing water at approx. 0.9 ft bgs

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO~~1~~29-0001
KS 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1330 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz D. Hastigan

Data Recorded By: K Jaulent
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- x Soil
- ___ Sediment
- ___ Lagoon/Pond
- x Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dk gray brown; trace sand; damp; fine roots!, no visible gravel

SAMPLE DATA/REMARKS: Approx 2 inches leaf litter on ground. Encountered cobble at approx. 1 ft bgs. Standing water at approx. 0.6 ft bgs.

ANALYSIS	BOTTLE ~~LOT~~ Type No.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO1 30 - 0001
KJ 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel, Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1340 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz S. Parker K Jaikut

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; gray brown; moist; fine roots; no visible gravel

SAMPLE DATA/REMARKS: Approx 2 inches leaf litter on surface Standing water at approx. 0.8 ft bgs.

ANALYSIS	BOTTLE ~~LOT~~ type No.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50831- 0001
KJ 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1345 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Danieli~~, L. Seydewitz K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dk gray brown - gray brn; damp; trace sand

SAMPLE DATA/REMARKS: Standing water at approx 0.85 ft bgs. Minimal leaf litter at surface - some mold. Approx. 2" thick fine root mat at top

ANALYSIS	BOTTLE ~~LOT~~ Type No.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - ~~SO~~ 32-0001
KS 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable Spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1355 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniel~~, L. Seydewitz D Hartigan K Jarkut

Data Recorded By: K Jarkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dk gray brown; wet
trace sand size particles - oxidized red
no visible gravel; fine roots + twigs

SAMPLE DATA/REMARKS: Approx. 2 inches leaf litter, fine root layer on surface; old twigs
Standing water at approx. 0.6 ft bgs

ANALYSIS	BOTTLE ~~LOT No.~~ Type	NOTES/SKETCH:
SVOC	1x 8oz glass	photo ✓
Pest/TAL Metals	1x 8oz glass	

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO# 33 - 0001
LS 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1430 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~i, L. Seydewitz D. Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam: dk gray brown; damp-wet trace sand; fine roots; no visible gravel

SAMPLE DATA/REMARKS: Approx. 2" of leaf litter and fine root mat. Standing water at approx. 0.3 ft bgs.

ANALYSIS	BOTTLE LOT No.
SVOC	1 x 8oz glass
Pest / TAL Metals	1 x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50F34-0001
KJ 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1435 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; trace sand size particles; damp; fine roots

SAMPLE DATA/REMARKS: Approx. 1" leaf litter on ground surface. Standing water at approx. 0.7 ft bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz. glass

NOTES/SKETCH:

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO735 - 0001
ZZ 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: ~~None~~ DUP02 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1450 hours Dup ~~N/A~~ 1455 hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz k Jalkut

Data Recorded By: k Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- X Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; trace sand; trace (2 pieces) coarse gravel - damp to wet gray-brown

SAMPLE DATA/REMARKS: Standing water at approx. 0.4 ft bgs
Approx. 1" of fine roots and leaves

ANALYSIS	BOTTLE ~~LOT~~ Type No.
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50936-0001
LS 11/2/04

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - Hand Auger
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1452 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Danieli~~, L. Seydewitz D. Hartyan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- Sediment
- Lagoon/Pond
- X Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Other (Specify):

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; trace sand; damp-wet fine roots, some fibrous mat material; 1 piece ~~no visible~~ coarse gravel; gray-brown

SAMPLE DATA/REMARKS: Approx. 2" thick leaf litter w/ fine root mat. Standing water at approx. 0.5 ft bgs

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - ~~50~~ 37 - 0001
KJ 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1505 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz K. Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- [x] Soil
- [ ] Sediment
- [ ] Lagoon/Pond
- [x] Grab
- [ ] Trip Blank*
- [ ] Rinsate Blank*
- [ ] Field Duplicate collected
- [ ] Other (Specify):

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dk gray brown; moist-damp; trace sand; fine roots, twigs
No visible gravel.

SAMPLE DATA/REMARKS: Approx. 2 inches of leaf litter + fine root mat. Standing water at approx. 1 ft bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1 x 8oz glass
Pest/TAL Metals	1 x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SO~~7~~38-0001
LG 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1500 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~i, L. Seydewitz D. Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dk gray brown; trace sand; 1 piece coarse subangular gravel; damp

SAMPLE DATA/REMARKS: Approx. 1 inch thick leaf litter + fine root mat. Standing water at approx. 1 ft bgs.

ANALYSIS	BOTTLE ~~LOT~~ Type No.
SVOC	1x8oz glass
Pest/TAL Metals	1x8oz glass

NOTES/SKETCH:
photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50739 - 0001
KS 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1520 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz K. Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- X Soil
- Sediment
- Lagoon/Pond
- X Grab
- Trip Blank*
- Rinsate Blank*
- Field Duplicate collected
- Other (Specify):

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; trace sand; no visible gravel; moist - damp; fine roots

SAMPLE DATA/REMARKS: Standing water at approx. 0.9 ft bgs. Approx. 1-2 in thick leaf litter + root mat. Location 5-10' south of drainage swale - (?) stagnant water. (?)

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 50740 - 0001
25 11/2/04

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Shovel; Disposable spatula
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 25 / 04 1525 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz D. Hartigan K. Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- x Soil
- ___ Sediment
- ___ Lagoon/Pond
- x Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt loam; dark gray brown; damp, wet trace sand; ~~no~~ visible gravel; fine roots + twigs DC piece - coarse sub rounded)

SAMPLE DATA/REMARKS: Approx. 1-2 in thick leaf litter and fine root mat. Standing water at approx. 0.7 ft bgs.

ANALYSIS	BOTTLE ~~LOT No.~~ Type
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD01 - 0005

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ S.S. trowel / S.S. bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1415 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danioli~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt, brown to gray-brown; ~~saturated~~ wet, some fine roots; spongy-like texture (organics?)

SAMPLE DATA/REMARKS: Collected at stream bank + water interface. No homogenization prior to collecting portion ~~aliquot~~ for AVS/SEM analysis. Homogenized sediment for all other analyses. Collected from SE side of stream bank

ANALYSIS	BOTTLE LOT No.
AVS/SEM	
TOC	
Grainsize	
SVOC	
Pest	
Metals	

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD02 - 000.5

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ S.S. trowel / S.S. bowl
Depth Sampled: 0-~~1~~/0.5 feet
Sample Date & Time: 10 / 26 / 04 1420 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt, some fine sand, trace fine subangular gravel, dk brown, saturated

SAMPLE DATA/REMARKS: Decanted liquid from SS bowl prior to transferring sample into jars. Collected on bank where soil meets stream, SE side - behind a ~~rock~~ boulder in stream (~~by rock~~)

ANALYSIS	BOTTLE LOT No.
SVOC	
Pest	
Metals	

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD03 - 000.5

Tetra Tech NUS Charge No. 8856-0560
QC Information: DUP03 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ S.S. trowel / SS bowl
Depth Sampled: 0.1/0.5 feet
Sample Date & Time: 10 / 26 / 04 1430 hours Dup 1435 hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- X Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt, spongy-like texture, fine roots, dk brown

SAMPLE DATA/REMARKS: Collected at interface btwn top of NW bank and water line. Gravelly bottom in stream bed

ANALYSIS	BOTTLE LOT No.
AVS/SEM	
TOC	
Grainsize	
SVOC	
Pest	
Metals	

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD04 - 000.5

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1435 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danielli,~~ L. Seydewitz K Jalkut D Hartgan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt; sponge-like texture. Fluffy, dk brown, saturated, trace fine sand, organic roots

SAMPLE DATA/REMARKS: Collected at interface of stream + streambank - NW side of stream

ANALYSIS	BOTTLE LOT No.
SVOC	
Pest	
Metals	

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD05- 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1445 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danielt~~, L. Seydewitz D Hartigan K Jaikut

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt, sponge-like + any texture, fine roots, saturated, dk brown

SAMPLE DATA/REMARKS: Collected approx. 5 ft downstream of a dam across the stream. Water flowing over the dam. Collected at interface of stream bank + top of stream on NW side of stream bank

ANALYSIS	BOTTLE LOT No.
AVS/SEM	
TOC	
Grainsize	
SVOC	
Pest	
Metals	

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD06 - 0005

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - Hand Auger
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1500 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt, sponge-like airy texture, dk brown, wet, trace sand (fine), organic roots

SAMPLE DATA/REMARKS: Collected at interface of stream bank (SE side) + stream - approx. 10-15' downstream of a monitoring well w/ 4' guard pipe stick-up. Observed a drive pt a. stream gauge adjacent to well.

ANALYSIS	BOTTLE LOT No.
SVOC	
Pest	
Metals	

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - 5007- 0005

Tetra Tech NUS Charge No. 8856- 0560
QC Information: ~~None~~ Lab QC (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1515 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~, L. Seydewitz D. Hartigan K Jaikut

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt; sponge-like + any texture; brown; trace fine sand; wet; organic roots (fine) throughout

SAMPLE DATA/REMARKS: Collected from depositional area in middle of stream - higher ground w/water on either side. Location downslope of a monitoring well at top of bank.

ANALYSIS	BOTTLE LOT No.
AVS/SEM	
TOC	
Grainsize	
SVOC	
Pest	
Metals	

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD08 - 000.5

Tetra Tech NUS Charge No. 8856-0560
QC Information: none (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1525 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt, saturated, trace f. sand, organic roots (fine) throughout

SAMPLE DATA/REMARKS: Collected on SE side of stream bank. Drive pt in immediate area of sample location. Decanted water out of bowl prior to transferring sample to jars.

ANALYSIS	BOTTLE LOT No.
SVOC	
Pest	
Metals	

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD09 - 00015

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1535 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Sandy SILT - mostly silt w/ f-medium sand, tr. coarse sand, brown; saturated

SAMPLE DATA/REMARKS: Collected at interface of stream and SE side of stream bank. Visible sandy bottom on streambed (center of stream). Decanted water from bowl prior to transferring sample into jars

ANALYSIS	BOTTLE LOT No.
AVS/SEM	
TOC	
Grainsize	
SVOC	
Pest	
Metals	

NOTES/SKETCH:

photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD10 - 000.5

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: ~~0-1~~ 0.5 feet
Sample Date & Time: 10 / 26 / 04 1545 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz K. Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Silt ~~loam~~ loam; brown; wet; not very sponge-like or airy as in other samples; trace fine sand, organic roots

SAMPLE DATA/REMARKS: Bypassed area of stagnant water to find area of active flowing stream. Collected sample from SE bank at interface of stream + streambank

ANALYSIS	BOTTLE LOT No.
SVOC	
Pest	
Metals	

NOTES/SKETCH:

photo

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD11- 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~0.5 feet
Sample Date & Time: 10 / 27 / 04 0955 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz D Hartigan K Talkut

Data Recorded By: K Jankut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

	Soil		Trip Blank*
X	Sediment		Rinsate Blank*
	Lagoon/Pond		Field Duplicate collected
X	Grab		Other (Specify):

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SILT- SOME FINE SAND; WET; BRN; FINE ROOTS THROUGHOUT

SAMPLE DATA/REMARKS: Collect sediment from W bank of streambed - at interface w/ stream
FIRM bottom to streambed

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
ARS/SEM	1x 8oz glass
TOC	1x 4oz glass
SVOC	1x 8oz glass
Grain Size	1x 8 oz glass
Pest/Metals (TAL)	1x 8oz glass

NOTES/SKETCH:
Photo - ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD12 - 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: DUP 04 (if applicable)

Sample Method: Grab - ~~Hand Auger~~
Depth Sampled: 0-~~1~~ 0.5 feet ✓
Sample Date & Time: 10 / 27 / 04 1000 hours Dup 1010 hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ✓ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SILT SIZED PARTICLES - SATURATED - FINE ROOTS THROUGHOUT - BROWN - DK BRN

SAMPLE DATA/REMARKS: Collect sediment from E bank of streambed - at interface w/ stream
LOCATION APPROX. 10-12 feet downstream of a dam - water pouring through tree debris in dam.
FIRM BOTTOM TO STREAMBED

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8 oz glass
Pest/TAL Metals	↓

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD13- 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 27 / 04 1015 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SILT - TR FINE SAND - BROWN - DK BRN
FINE ROOTS THROUGHOUT; SOME TWIGS; WET TO SATURATED

SAMPLE DATA/REMARKS: Collect sediment from W bank of streambed - at interface w/stream
SAMPLE LOCATION ABOVE OR UPSTREAM OF A DAM

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
AVS/SEM	1x 8oz glass
TOC	1x 4oz glass
Grain Size	1x 8oz glass
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD14 - 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 27 / 04 1020 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz D Hartigan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SILT SIZED PARTICLES - TR FINE SAND
SATURATED - ALMOST MUCK - LIKE - SOME
FINE ROOTS/TWIGS - BRN - DK GRAY BRN

SAMPLE DATA/REMARKS: Collect sediment from bank of streambed - at interface w/stream

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD15 - 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~0.5 feet
Sample Date & Time: 10 / 27 / 04 1030 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Danielt~~, L. Seydewitz K Jaikut D Hartigan

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
MOSTLY SILT SIZED PARTICLES - SOME FINE SAND - SATURATED - GRAY BRN

SAMPLE DATA/REMARKS: Collect sediment from Center bank of streambed - at interface w/ stream - Depositional area in middle of stream - quiet water

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
AVS/SEM	1x 8oz glass
TOC	1x 4oz glass
Grain Size	1x 8oz glass
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD16 - 000.5

Tetra Tech NUS Charge No. 8856-0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 27 / 04 1040 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz D Hartgan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
Mostly silt sized particles - trace f-m sand; saturated; brown to gray brown; organic roots present - somewhat muck-like

SAMPLE DATA/REMARKS: Collect sediment from E bank of streambed - at interface w/stream
LOCATION approx 15-20 feet downstream of a dam - water pouring over + through tree debris in stream

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD17 - 0005

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~0.5 feet
Sample Date & Time: 10 / 27 / 04 1050 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniel~~i, L. Seydewitz D Hartgan K Jalkut

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

	Soil		Trip Blank*
x	Sediment		Rinsate Blank*
	Lagoon/Pond		Field Duplicate collected
x	Grab		Other (Specify):

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
MOSTLY SILT SIZED PARTICLES - SOME F-M SAND. SATURATED; DK GRAY BRN; ORGANIC ROOTS / TWIGS PRESENT - MUCK LIKE

SAMPLE DATA/REMARKS: Collect sediment from W bank of streambed - at ~~interface w/ stream~~ under water. No good sediment exposed on bank of stream. Location in quiet water above a dam. KJ 10/27/04

ANALYSIS	BOTTLE ~~LOT~~ TYPE No.
AVS/SEM	1x 8oz glass
TOC	1x 4oz glass
Grain Size	1x 8oz glass
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD18 - 000.5

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 27 / 04 1100 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniel~~, L. Seydewitz D Hartigan K Jaikut

Data Recorded By: K Jaikut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SILT AND F-M SAND MIXTURE - COARSER THAN PREVIOUS SAMPLES; SATURATED; DK GRAY BRN; ORGANIC ROOTS / TWIGS - SOMEWHAT MUCK LIKE W/ SAND

SAMPLE DATA/REMARKS: Collect sediment from center bank of streambed - at interface w/stream - depositional area in mid stream - quiet water. Firm bottom

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD19- 0005

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel | SS bowl
Depth Sampled: 0-~~1~~ 0.5 feet
Sample Date & Time: 10 / 27 / 04 1110 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Danieli~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.) Mostly silt sized particles. trace f-m sand; saturated; gray brown; organic roots throughout - muck-like

SAMPLE DATA/REMARKS: Collect sediment from W bank of streambed - at interface w/stream location on a point in a back water area - quiet water

ANALYSIS	BOTTLE ~~LOT No.~~ TYPE
AVS/SEM	1x 8oz glass
TOC	1x 4oz glass
Grain Size	1x 8oz glass
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH: Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK - S - SD20 - 0605

Tetra Tech NUS Charge No. 8856- 0560
QC Information: None (if applicable)

Sample Method: Grab - ~~Hand Auger~~ SS trowel / SS bowl
Depth Sampled: 0-~~1~~0.5 feet
Sample Date & Time: 10 / 27 / 04 1120 hours Dup N/A hours
Sampler(s): K. O'Neill, J. ~~Daniell~~, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- X Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
SAND - Wellgraded f-c sand; saturated, loose, gray-brown; trace fine subrounded gravel

SAMPLE DATA/REMARKS: Collect sediment from W bank of streambed - at interface w/stream. Fast moving water around bend in stream. Visible coarse material deposited on bend - Only a few inches of water in stream at this location

ANALYSIS	BOTTLE ~~LOT NO.~~ TYPE
SVOC	1x 8oz glass
Pest/TAL Metals	1x 8oz glass

NOTES/SKETCH:
Photo ✓

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK-~~8~~ A - RB01

Tetra Tech NUS Charge No. 8856-0560
QC Information: Rinsate #1 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Direct pour using lab. supplied water
Depth Sampled: ~~0-1~~ N/A feet
Sample Date & Time: 10 / 27 / 04 0930 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Daniel~~i, L. Seydewitz K Jalkut D Hartigan

Data Recorded By: K Jalkut
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- ___ Sediment
- ___ Lagoon/Pond
- ___ Grab
- ___ Trip Blank*
- X Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
N/A

SAMPLE DATA/REMARKS: Collected rinsate off of a decontaminated stainless steel bowl. Decon process included potable water wash/rinse; DIUF rinse; 2-propanol rinse; 10% nitric soln rinse; DIUF rinse; laboratory supplied DI water rinse

ANALYSIS	BOTTLE ~~LOT~~ TYPE No.
SVOC	2x 1 liter glass
SVOC-SIM	1x 1 liter glass
Pesticides	2x 1 liter glass
TAL Metals	1x 500ml poly w/ HNO_3

NOTES/SKETCH:
~~Photo~~ KJ 10/27/04

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK-~~S~~-A-RB02

Tetra Tech NUS Charge No. 8856-0560
QC Information: Rinsate #2 (if applicable)

Sample Method: Grab - ~~Hand Auger~~ Direct Pour
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / ~~26~~ 28 / 04 1215 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Danieli~~, L. Seydewitz K. Jalkut, D. Hartigan

Data Recorded By: L. Seydewitz
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- X Rinsate Blank*
- ___ Field Duplicate collected
- ___ Other (Specify): ___

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)
N/A

SAMPLE DATA/REMARKS: Collected rinsate off of a decontaminated stainless steel ~~bowl~~ trowel. DIUF water supplied by Ceimic Laboratory was used. 10/28/04

ANALYSIS	BOTTLE LOT No.
5VOC	
5VOC-SIM	
Pesticides	
TAL Metals	

NOTES/SKETCH:

TtNUS Form 0005

TETRA TECH NUS, INC.

SAMPLE LOG SHEET - SOLID PHASE

Site Name: NUSC Disposal Area, Site SA-08 (Background Soil Investigation)
Sample ID: DABK-~~S~~-A-DIUF-FB01

Tetra Tech NUS Charge No. 8856-0560
QC Information: Field Blank (if applicable)

Sample Method: Grab ~~-Hand Auger~~ Direct Pour of Lab supplied DIUF
Depth Sampled: 0-1 feet
Sample Date & Time: 10 / 28 / 04 1220 hours Dup N/A hours
Sampler(s): K. O'Neill, ~~J. Danielli~~, L. Seydewitz, K. Jalkut, D. Hartigan

Data Recorded By: L. Seydewitz
Signature

PID/OVA Monitor Reading: N/A ppm

TYPE OF SAMPLE: (Check all that apply)

- ___ Soil
- ___ Sediment
- ___ Lagoon/Pond
- X Grab
- ___ Trip Blank*
- ___ Rinsate Blank*
- ___ Field Duplicate collected
- X Other (Specify): Field Blank

Description: (Sand, Clay, Muck, Peat, Dry, Moist, Wet, Etc.)

SAMPLE DATA/REMARKS: Collected fieldblank by pouring DIUF water used as part ~~of~~ the decon process, into sample containers.

ANALYSIS	BOTTLE LOT No.
SVOC	
SVOC - STM	
Pesticides	
TAL Metals	

NOTES/SKETCH:

TtNUS Form 0005

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Chain of Custody

Original Chain of Custc oes to Laboratory

Page 1 of

Project #	Project Name	Cooler Temp.
-0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Jalkut, D. Hartigan, S. Parker, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	SVOC	pH	Pest/Metals	pH		pH		pH		pH		pH		pH	Remarks
	10/25/04	1210	Grab	DABK-S-5021-0001	Soil	2	1		1												
		1225		DABK-S-5022-0001		2	1		1												
		1235		DABK-S-5023-0001		2	1		1												
		1245		DABK-S-5024-0001		2	1		1												
		1253		DABK-S-5025-0001		2	1		1												Dupl
		1258		DABK-S-DUP01		2	1		1												Dupl
		1310		DABK-S-5026-0001		2	1		1												
		1315		DABK-S-5027-0001		6	3		3												MS/MSD
		1320		DABK-S-5028-0001		2	1		1												
		1330		DABK-S-5029-0001		2	1		1												

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren O Jalkut	10/26/04 / 0900	[illegible]	10/26/04
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

= Lab Use Only

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Chain of Custody

Original Chain of Custody Goes to Laboratory

Page 2 of

Project #	Project Name	Cooler Temp.
8886-0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Oselli, K. Jalkut, D. Harrigan, J. Parker, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	SVOC	pH	Pest/Metals	pH		pH		pH		pH		pH		pH	Remarks
	10/26/04	1340	Grab	DABK-S-5030-0001	Soil	2	1		1												
		1345		DABK-S-5031-0001		2	1		1												
		1355		DABK-S-5032-0001		2	1		1												
		1430		DABK-S-5033-0001		2	1		1												
		1435		DABK-S-5034-0001		2	1		1												25-10/26/04
		1450		DABK-S-5035-0001		2	1		1												2
		1455		DABK-S-DUP02		2	1		1												Dup2
		1452		DABK-S-5036-0001		2	1		1												
		1505		DABK-S-5037-0001		2	1		1												
		1500		DABK-S-5038-0001		2	1		1												

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren J. Jalkut	10/26/04 / 0900	[illegible]	
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

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Chain of Custody

Original Chain of Custody Accompanies to Laboratory

Page 3 of 3

Project #	Project Name	Cooler Temp.
8856-0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Orrell, K. Talbot, D. Hartigan, S. Parker, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	SVOC	pH	Pest/Metals	pH		pH		pH		pH		pH		pH	Remarks
	10/26/04	1520	Grab	DABK-S-5039-0001	Soil	2	1		1												
	10/26/04	1525	Grab	DABK-S-5040-0001	Soil	2	1		1												

JG 10/26/04

JG 10/26/04

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren A. Symkul	10/26/04 / 0900	[illegible]	[illegible]
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/TIme	Received by Ceimic (signature)	Date/Time

Remarks:

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Chain of Custody

Original Chain of Custo oes to Laboratory

Page 1 of

Project #	Project Name	Cooler Temp.
45556-0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Jarvis, K. Jalkut, D. Hartigan, L. Seyderwitz

Cooler #:

Lab ID	Date	Time	Comp. Grab	Sample Identification	Sample Matrix	No. of Containers	(8 oz) SVOC	pH	(8 oz) Pest/Metals	pH	(8 oz) AVS/SEM	pH	(4 oz) TOC	pH	(8 oz) Grain-size	pH		pH		pH	Remarks
	10/26/04	1415	Grab	DABK-S-SD01-000.5	Sediment	5	1		1		1		1		1						
		1420		DABK-S-SD02-000.5		2	1		1												
		1430		DABK-S-SD03-000.5		5	1		1		1		1		1						Dup 3
		1435		DABK-S-DUP03		5	1		1		1		1		1						Dup 3
		1435		DABK-S-SD04-000.5		2	1		1												
		1445		DABK-S-SD05-000.5		5	1		1		1		1		1						
		1500		DABK-S-SD06-000.5		2	1		1												
		1515		DABK-S-SD07-000.5		15	3		3		3		3		3						MS/MSD
		1525		DABK-S-SD08-000.5		2	1		1												
		1535		DABK-S-SD09-000.5		5	1		1		1		1		1						

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Laurie A. Jalkut	10/28/04 0905	[illegible]	10/28/04 0905
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:
* Sediment samples may contain high water per sample, especially AVS/SEM and TOC.

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Chain of Custody

Original Chain of Custody Goes to Laboratory

Project #	Project Name	Cooler Temp.
5856-0560	NUSC Disposal Area, SA-04 (Background Soil Investigation)	

Samplers (please print): K. Gavill, K. Jalkut, D. Hartigan, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	(802) SVOC	pH	(802) Pest/Metals	pH	(802) AVS/SEM	pH	(402) TOC	pH	(802) Grain Size	pH		pH		pH	Remarks
	10/26/04	1545	Grab	DABK-S-SD10-000.5	Sediment	2	1		1												
	KG 10/27/04																				

KG 10/27/04

KG 10/27/04

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren A. Seydewitz	10/28/04 0905	[illegible]	10/28/04 [illegible]
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

* Sediment samples may contain water, especially AVS/SEM and TOC sample containers.

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Chain of Custody

Original Chain of Custc oes to Laboratory

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Project #	Project Name	Cooler Temp.
8456 - 0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Dinelli, K. Jalkut, D. Horrigan, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. Grab	Sample Identification	Sample Matrix	No. of Containers	(8021) SVOC	pH	(8021) Pest/Metals	pH	(8021) AVS/SEM	pH	(4021) TOC	pH	(8021) Grain-Size	pH		pH		pH	Remarks
	10/27/04	0955	Grab	DABK-S-SD11-000.5	Sediment	5	1		1		1		1		1						
		1000		DABK-S-SD12-000.5		2	1		1												DUP04
		1010		DABK-S-DUP04		2	1		1												DUP04
		1015		DABK-S-SD13-000.5		5	1		1		1		1		1						
		1020		DABK-S-SD14-000.5		2	1		1												
		1030		DABK-S-SD15-000.5		5	1		1		1		1		1						
		1040		DABK-S-SD16-000.5		2	1		1												
		1050		DABK-S-SD17-000.5		5	1		1		1		1		1						
		1100		DABK-S-SD18-000.5		2	1		1												
		1110		DABK-S-SD19-000.5		5	1		1		1		1		1						

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren A Seydewitz	10/28/04 0905	John Elam	10/28/04 [illegible]
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

* Sediment samples may have high water content, esp AVS/SEM and TOC samples.

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Chain of Custody

Original Chain of Custc ,oes to Laboratory

Page 4 of 4

Project #	Project Name	Cooler Temp.
4856-0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Gnall, K. Jalkut, D. Hartigan, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. Grab	Sample Identification	Sample Matrix	No. of Containers	(8oz) SVOC	pH	(8oz) Pest/Metals	pH	(1-l) SVOC SIM	pH	(1-l) Pesticides	pH	(1x500 mL) TAL Metals	pH	(1 l) SVOC	pH		pH	Remarks
	10/27/04	1120	Grab	DABK-S-SD20-000.5	Sediment	2	1		1												
	10/27/04	0930	Grab	DABK-A-RB01	Aqueous	6					1		2		1		2				Rinsate**
						2/2	10/27/04														

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren O Seydewitz	10/28/04 / 0905	[illegible]	10/28/04
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

* sediment samples may have high water content; ** rinsate collected by running DI water over decontaminated [illegible]

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Chain of Custody

Original Chain of Custo oes to Laboratory

Page 1 of

Project #	Project Name	Cooler Temp.
8856-0560	WUSC Disposal Area, SA-05 (Background Soil Investigation)	

Samplers (please print): K. Oneill, K. Jalkut, D. Hartigan, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	(8021) SVOC	pH	(8021) Pest/Metals	pH		pH		pH		pH		pH		pH	Remarks
	10/27/04	1320	Grab	DABK-S-5001-0001	Soil	2	1		1												
		1330		DABK-S-5002-0001		2	1		1												
		1410		DABK-S-5003-0001		2	1		1												
		1415		DABK-S-5004-0001		2	1		1												
		1430		DABK-S-5005-0001		2	1		1												
		1455		DABK-S-5006-0001		2	1		1												
		1500		DABK-S-5007-0001		2	1		1												Dup 05
		1505		DABK-S-DUP05		2	1		1												Dup 05
		1520		DABK-S-5008-0001		2	1		1												
		1550		DABK-S-5009-0001		2	1		1												

JB 10/28/04

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Lauren O. Seydewitz	10/28/04 1410	[illegible signature]	10/28/04 [illegible]
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

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Chain of Custody

Original Chain of Custc oes to Laboratory

Page 2 of

Project #	Project Name	Cooler Temp.
3856-0560	NUSC Disposal Area, SA-08 (Background Soil Investigation)	

Samplers (please print): K. Snell, K. Jalkut, D. Hartigan, L. Seydewitz

Cooler #:

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	(802) SVOC	pH	(802) Pest/Metals	pH		pH		pH		pH		pH		pH	Remarks
	10/27/04	1600	Grab	DABK-S-S010-0001	Soil	2	1		1												
	10/28/04	0820		DABK-S-S011-0001		2	1		1												DupO6
		0830		DABK-S-DUP06		2	1		1												DupO6
		0845		DABK-S-S012-0001		6	3		3												MS/MSD
		0905		DABK-S-S013-0001		2	1		1												
		0912		DABK-S-S014-0001		2	1		1												
		0925		DABK-S-S015-0001		2	1		1												
		0938		DABK-S-S016-0001		2	1		1												
		0950		DABK-S-S017-0001		2	1		1												
		1000		DABK-S-S018-0001		2	1		1												

Ceimic Project #	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Laura A. Seydewitz	10/28/04 1410	[illegible]	
Storage Location	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
	Relinquished by (signature)	Date/TIme	Received by Ceimic (signature)	Date/Time

Remarks:

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Chain of Custody

Original Chain of Custody Goes to Laboratory

Project # 8856-0560

Project Name: NUSC Disposal Area, SA-08 (Background Soil Sampling)

Cooler Temp.

Cooler #

Samplers (please print): K. Orrell, K. Jalkut, D. Harrigan, T. Sajdewitz

Lab ID	Date	Time	Comp. / Grab	Sample Identification	Sample Matrix	No. of Containers	(8oz) SVOC	pH	(8oz) Pest/ Metals	pH	(1-l) SVOC SIM	pH	(1-l) SVOC	pH	(1-l) Pesticides	pH	(1x500 mL) TAL Metals	pH		pH	Remarks
	10/25/04	1015	Grab	DABK-S-5019-0001	Soil	2	1		1												
	↓	1030	↓	DABK-S-5020-0001	Soil	2	1		1												
	↓	1215	↓	DABK-A-RB02	Aqueous	6					1		2		2		1				Rinsate blank
	↓	1220	↓	DABK-A-DIUF-FB01	Aqueous	6					1		2		2		1				Field Rinsate

10/25/04

Ceimic Project #

Storage Location

Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
Laura A. Sajdewitz	10/25/04 / 1410	[illegible]	10/25/04
Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
Relinquished by (signature)	Date/Time	Received by Ceimic (signature)	Date/Time

Remarks:

* Rinsate blank collected after running DIUF water over decontaminated trowel.

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TETRA TECH NUS INC.

FIELD MODIFICATION RECORD

Site Name: NUSC Disposal Area (SA-05) Location: NUWC, Middletown, RI

Project Number: N8856 Task Assignment: Soil/Sediment Sampling

To: Location: Date: 9/29/04

Description: Add 3 sediment sample analyses to be performed during the background soil investigation. Ten samples plus a duplicate will be collected & analyzed for each of the following: AVS/SEM, TOC, and grain size. A total of ~~35~~ 11 additional sediment samples will be collected.

Reason for Change: AVS/SEM, TOC and grain size were analyzed in the SASE investigation and will be done in the background soil investigation as well.

Recommended Action: Collect ~~35~~ 11 additional sediment samples and have the laboratory analyzed ~~pd~~ them for AVS/SEM, TOC and grain size.

Field Operations Leader (Signature): Lauren J Seydel Date: 9/29/04

Disposition/Action:

Collect ~~35~~ 11 additional sediment samples for AVS/SEM, TOC and grain size analysis.

Project Manager (Signature): [signature] Date: 9/29/04

Distribution:

		Others as Required:
Program Manager:	J. Trepanowski	
Project Manager:	J. Parker	
Quality Assurance Officer:		
Field Operations Leader:	L. Seydewitz	
Project File:	8856 - 2.5	

Tt NUS Form 0003

APPENDIX B

SAMPLE ANALYTICAL RESULTS

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO01-0001		DABK-S-SO02-0001		DABK-S-SO03-0001		DABK-S-SO04-0001		DABK-S-SO05-0001		DABK-S-SO06-0001		DABK-S-SO07-0001		DABK-S-DUP05	
Sample Location		DABK-S-SO01		DABK-S-SO02		DABK-S-SO03		DABK-S-SO04		DABK-S-SO05		DABK-S-SO06		DABK-S-SO07		DABK-S-SO07	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None		None		None		Field Dup. DABK-S-SO07-0001		Field Dup. DABK-S-SO07-0001	
Criteria	Soil Direct Exposure Residential																
Semivolatile Organic Analysis (UG/KG)																	
1,1'-Biphenyl		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2,2'-oxybis(1-Chloropropane)		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2,4,5-Trichlorophenol	330000	460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
2,4,6-Trichlorophenol	58000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2,4-Dichlorophenol	30000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2,4-Dimethylphenol	1400000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2,4-Dinitrophenol	160000	460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
2,4-Dinitrotoluene	900	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2,6-Dinitrotoluene		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2-Chloronaphthalene		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2-Chlorophenol	50000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2-Methylnaphthalene	123000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2-Methylphenol		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
2-Nitroaniline		460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
2-Nitrophenol		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
3,3'-Dichlorobenzidine	1400	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
3-Nitroaniline		460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
4,6-Dinitro-2-methylphenol		460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
4-Bromophenyl-phenylether		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
4-Chloro-3-methylphenol		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
4-Chloroaniline	310000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
4-Chlorophenyl-phenylether		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
4-Methylphenol		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
4-Nitroaniline		460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
4-Nitrophenol		460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
Acenaphthene	43000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Acenaphthylene	23000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Acetophenone		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Anthracene	35000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Atrazine		230	UJ	170	UJ	270	UJ	260	UJ	260	UJ	260	UJ	280	UJ	260	UJ
Benzaldehyde		120	J	170	U	84	J	260	U	68	J	260	U	280	U	260	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO01-0001		DABK-S-SO02-0001		DABK-S-SO03-0001		DABK-S-SO04-0001		DABK-S-SO05-0001		DABK-S-SO06-0001		DABK-S-SO07-0001		DABK-S-DUP05	
Sample Location		DABK-S-SO01		DABK-S-SO02		DABK-S-SO03		DABK-S-SO04		DABK-S-SO05		DABK-S-SO06		DABK-S-SO07		DABK-S-SO07	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None		None		None		Field Dup. DABK-S-SO07-0001		Field Dup. DABK-S-SO07-0001	
Criteria	Soil Direct Exposure Residential																
Benzo(a)anthracene	900	230	U	170	U	270	U	260	U	53	J	260	U	280	U	260	U
Benzo(a)pyrene	400	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Benzo(b)fluoranthene	900	230	U	170	U	64	J	260	U	260	U	260	U	280	U	260	U
Benzo(g,h,i)perylene	800	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Benzo(k)fluoranthene	900	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Bis(2-Chloroethoxy)methane		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Bis(2-Chloroethyl)ether	600	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
bis(2-Ethylhexyl)phthalate	46000	230	U	160	J	270	U	260	U	260	U	260	U	280	U	260	U
Butylbenzylphthalate		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Caprolactam		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Carbazole		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Chrysene	400	230	U	170	U	270	U	260	U	54	J	260	U	280	U	260	U
Dibenzo(a,h)anthracene	400	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Dibenzofuran		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Diethylphthalate	340000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Dimethylphthalate	1900000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Di-n-Butylphthalate		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Di-n-octylphthalate		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Fluoranthene	20000	230	U	170	U	90	J	69	J	100	J	58	J	69	J	79	J
Fluorene	28000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Hexachlorobenzene	400	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Hexachlorobutadiene	8200	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Hexachlorocyclopentadiene		460	UJ	340	UJ	550	UJ	530	UJ	520	UJ	510	UJ	550	UJ	520	UJ
Hexachloroethane	46000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Indeno(1,2,3-cd)pyrene	900	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Isophorone		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Naphthalene	54000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Nitrobenzene		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
N-Nitroso-di-n-propylamine		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
N-Nitroso-diphenylamine		230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Pentachlorophenol	5300	460	U	340	U	550	U	530	U	520	U	510	U	550	U	520	U
Phenanthrene	40000	230	U	170	U	58	J	260	U	59	J	260	U	280	U	260	U
Phenol	6000000	230	U	170	U	270	U	260	U	260	U	260	U	280	U	260	U
Pyrene	13000	230	U	44	J	110	J	77	J	110	J	63	J	76	J	82	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO01-0001		DABK-S-SO02-0001		DABK-S-SO03-0001		DABK-S-SO04-0001		DABK-S-SO05-0001		DABK-S-SO06-0001		DABK-S-SO07-0001		DABK-S-DUP05	
Sample Location		DABK-S-SO01		DABK-S-SO02		DABK-S-SO03		DABK-S-SO04		DABK-S-SO05		DABK-S-SO06		DABK-S-SO07		DABK-S-SO07	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None		None		None		Field Dup. DABK-S-SO07-0001		Field Dup. DABK-S-SO07-0001	
Criteria	Soil Direct Exposure Residential																
Pesticide/PCB Analysis (UG/KG)																	
4,4'-DDD		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
4,4'-DDE		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
4,4'-DDT		4.7	U	3.6		5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
Aldrin		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
alpha-BHC		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
alpha-Chlordane		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
Aroclor-1016		47	U	34	U	55	U	53	U	51	U	51	U	55	U	52	U
Aroclor-1221		96	U	70	U	110	U	110	U	100	U	100	U	110	U	100	U
Aroclor-1232		47	U	34	U	55	U	53	U	51	U	51	U	55	U	52	U
Aroclor-1242		47	U	34	U	55	U	53	U	51	U	51	U	55	U	52	U
Aroclor-1248		47	U	34	U	55	U	53	U	51	U	51	U	55	U	52	U
Aroclor-1254		47	U	25	J	55	U	53	U	51	U	51	U	55	U	52	U
Aroclor-1260		47	U	34	U	55	U	53	U	51	U	51	U	55	U	52	U
beta-BHC		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
delta-BHC		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
Dieldrin	40	4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
Endosulfan I		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
Endosulfan II		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
Endosulfan Sulfate		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
Endrin		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
Endrin Aldehyde		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
Endrin Ketone		4.7	U	3.4	U	5.5	U	5.3	U	5.1	U	5.1	U	5.5	U	5.2	U
gamma-BHC		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
gamma-Chlordane		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
Heptachlor		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
Heptachlor Epoxide		2.4	U	1.8	U	2.8	U	2.7	U	2.6	U	2.6	U	2.8	U	2.7	U
Methoxychlor		24	U	18	U	28	U	27	U	26	U	26	U	28	U	27	U
Toxaphene		240	U	180	U	280	U	270	U	260	U	260	U	280	U	270	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO01-0001		DABK-S-SO02-0001		DABK-S-SO03-0001		DABK-S-SO04-0001		DABK-S-SO05-0001		DABK-S-SO06-0001		DABK-S-SO07-0001		DABK-S-DUP05	
Sample Location		DABK-S-SO01		DABK-S-SO02		DABK-S-SO03		DABK-S-SO04		DABK-S-SO05		DABK-S-SO06		DABK-S-SO07		DABK-S-SO07	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None		None		None		Field Dup. DABK-S-SO07-0001		Field Dup. DABK-S-SO07-0001	
Criteria	Soil Direct Exposure Residential																
TAL Metal Analysis (MG/KG)																	
Aluminum		14300		12500		12300		16700		13100		14800		14400		11900	
Antimony	10		R		R		R		R		R		R		R		R
Arsenic	7	7.8	J	16.3	J	8.6	J	7.7	J	9.5	J	71.7	J	10.7	J	9.1	J
Barium	5500	21.1	J	60.6		28.4	J	32.7		23.8	J	48.5		51.1		42.7	
Beryllium	0.4	0.62	U	0.57	U	0.81	U	0.78	U	0.72	U	0.37	J	0.85	U	0.78	U
Cadmium	39	0.62	UJ	0.57	UJ	0.81	UJ	0.78	UJ	0.72	UJ	0.68	UJ	0.85	UJ	0.78	UJ
Calcium		291	UJ	1890	U	333	UJ	300	UJ	1680	U	1470	U	1870	U	1930	U
Chromium	1400	13.0		28.2		11.9		14.4		11.9		15.8		14.7		12.5	
Cobalt		4.7	J	11.4		3.7	J	5.2	J	4.3	J	11.9		6.2	J	5.4	J
Copper	3100	7.2	U	18.2	U	6.5	U	6.9	U	8.4	U	7.9	U	7.5	U	6.6	U
Iron		18600		24100		19100		18400		19300		53900		16900		15100	
Lead	150	15.8		33.6		28.7		22.3		25.8		25.6		24.9		21.7	
Magnesium		1770		2780		1730		1590		1570		2380		2460		2220	
Manganese	390	93.4		296		68.7		68.0		164		373		94.8		86.4	
Mercury	23	0.075	UJ	0.054	UJ	0.083	UJ	0.084	UJ	0.099	UJ	0.21	U	0.14	UJ	0.10	UJ
Nickel	1000	10.7		19.1		8.7		12.3		9.8		14.7		15.2		13.5	
Potassium		237	UJ	615	UJ	242	UJ	240	UJ	361	UJ	355	UJ	375	UJ	286	UJ
Selenium	390	4.4	UJ	4.0	UJ	5.7	UJ	5.5	UJ	5.0	UJ	4.8	UJ	6.0	UJ	5.4	UJ
Silver	200	1.2	U	1.1	U	1.6	U	1.6	U	1.4	U	1.4	U	1.7	U	1.6	U
Sodium			R	244	UJ	814	U		R		R		R		R		R
Thallium	5.5	3.1	UJ	2.8	UJ	4.1	UJ	3.9	UJ	3.6	UJ	3.4	U	4.3	U	3.9	U
Vanadium	550	23.5		18.9		34.2		30.4		29.5		34.0		25.6		22.7	
Zinc	6000	44.8		81.7		40.2		54.9		43.2		60.9		54.2		49.4	

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO08-0001		DABK-S-SO09-0001		DABK-S-SO10-0001		DABK-S-SO11-0001		DABK-S-DUP06		DABK-S-SO12-0001		DABK-S-SO13-0001		DABK-S-SO14-0001	
Sample Location		DABK-S-SO08		DABK-S-SO09		DABK-S-SO10		DABK-S-SO11		DABK-S-SO11		DABK-S-SO12		DABK-S-SO13		DABK-S-SO14	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-1.0	
QC Identifier		None		None		None		Field Dup. DABK-S-SO11-0001		Field Dup. DABK-S-SO11-0001		None		None		None	
Criteria	Soil Direct Exposure Residential																
Semivolatile Organic Analysis (UG/KG)																	
1,1'-Biphenyl		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2,2'-oxybis(1-Chloropropane)		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2,4,5-Trichlorophenol	330000	520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
2,4,6-Trichlorophenol	58000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2,4-Dichlorophenol	30000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2,4-Dimethylphenol	1400000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2,4-Dinitrophenol	160000	520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
2,4-Dinitrotoluene	900	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2,6-Dinitrotoluene		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2-Chloronaphthalene		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2-Chlorophenol	50000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2-Methylnaphthalene	123000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2-Methylphenol		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
2-Nitroaniline		520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
2-Nitrophenol		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
3,3'-Dichlorobenzidine	1400	260	U	250	U	250	U	250	U	240	U	260	UJ	260	U	240	U
3-Nitroaniline		520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
4,6-Dinitro-2-methylphenol		520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
4-Bromophenyl-phenylether		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
4-Chloro-3-methylphenol		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
4-Chloroaniline	310000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
4-Chlorophenyl-phenylether		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
4-Methylphenol		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
4-Nitroaniline		520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
4-Nitrophenol		520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
Acenaphthene	43000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Acenaphthylene	23000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Acetophenone		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Anthracene	35000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Atrazine		260	UJ	250	UJ	250	UJ	250	UJ	240	UJ	260	UJ	260	UJ	240	UJ
Benzaldehyde		61	J	110	J	250	U	67	J	240	U	260	U	260	U	150	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO08-0001		DABK-S-SO09-0001		DABK-S-SO10-0001		DABK-S-SO11-0001		DABK-S-DUP06		DABK-S-SO12-0001		DABK-S-SO13-0001		DABK-S-SO14-0001	
Sample Location		DABK-S-SO08		DABK-S-SO09		DABK-S-SO10		DABK-S-SO11		DABK-S-SO11		DABK-S-SO12		DABK-S-SO13		DABK-S-SO14	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-1.0	
QC Identifier		None		None		None		Field Dup. DABK-S-SO11-0001		Field Dup. DABK-S-SO11-0001		None		None		None	
Criteria	Soil Direct Exposure Residential																
Benzo(a)anthracene	900	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Benzo(a)pyrene	400	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Benzo(b)fluoranthene	900	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Benzo(g,h,i)perylene	800	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Benzo(k)fluoranthene	900	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Bis(2-Chloroethoxy)methane		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Bis(2-Chloroethyl)ether	600	260	U	250	U	250	U	250	U	240	U	260	UJ	260	U	240	U
bis(2-Ethylhexyl)phthalate	46000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Butylbenzylphthalate		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Caprolactam		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Carbazole		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Chrysene	400	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Dibenzo(a,h)anthracene	400	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Dibenzofuran		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Diethylphthalate	340000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Dimethylphthalate	1900000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Di-n-Butylphthalate		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Di-n-octylphthalate		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Fluoranthene	20000	71	J	75	J	250	U	72	J	64	J	260	U	260	U	59	J
Fluorene	28000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Hexachlorobenzene	400	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Hexachlorobutadiene	8200	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Hexachlorocyclopentadiene		520	UJ	500	UJ	500	UJ	500	UJ	480	UJ	520	UJ	530	UJ	490	U
Hexachloroethane	46000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Indeno(1,2,3-cd)pyrene	900	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Isophorone		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Naphthalene	54000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Nitrobenzene		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
N-Nitroso-di-n-propylamine		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
N-Nitroso-diphenylamine		260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Pentachlorophenol	5300	520	U	500	U	500	U	500	U	480	U	520	U	530	U	490	U
Phenanthrene	40000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Phenol	6000000	260	U	250	U	250	U	250	U	240	U	260	U	260	U	240	U
Pyrene	13000	78	J	93	J	250	U	91	J	83	J	260	U	260	U	72	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO08-0001		DABK-S-SO09-0001		DABK-S-SO10-0001		DABK-S-SO11-0001		DABK-S-DUP06		DABK-S-SO12-0001		DABK-S-SO13-0001		DABK-S-SO14-0001	
Sample Location		DABK-S-SO08		DABK-S-SO09		DABK-S-SO10		DABK-S-SO11		DABK-S-SO11		DABK-S-SO12		DABK-S-SO13		DABK-S-SO14	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-1.0	
QC Identifier		None		None		None		Field Dup. DABK-S-SO11-0001		Field Dup. DABK-S-SO11-0001		None		None		None	
Criteria	Soil Direct Exposure Residential																
Pesticide/PCB Analysis (UG/KG)																	
4,4'-DDD		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
4,4'-DDE		5.1	U	5.4		5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
4,4'-DDT		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
Aldrin		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
alpha-BHC		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
alpha-Chlordane		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
Aroclor-1016		51	U	51	U	51	U	51	U	47	U	52	U	52	U	49	U
Aroclor-1221		100	U	100	U	100	U	100	U	96	U	110	U	110	U	99	U
Aroclor-1232		51	U	51	U	51	U	51	U	47	U	52	U	52	U	49	U
Aroclor-1242		51	U	51	U	51	U	51	U	47	U	52	U	52	U	49	U
Aroclor-1248		51	U	51	U	51	U	51	U	47	U	52	U	52	U	49	U
Aroclor-1254		51	U	51	U	51	U	51	U	47	U	52	U	52	U	49	U
Aroclor-1260		51	U	51	U	51	U	51	U	47	U	52	U	52	U	34	J
beta-BHC		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
delta-BHC		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
Dieldrin	40	5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
Endosulfan I		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
Endosulfan II		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
Endosulfan Sulfate		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
Endrin		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
Endrin Aldehyde		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
Endrin Ketone		5.1	U	5.1	U	5.1	U	5.1	U	4.7	U	5.2	U	5.2	U	4.9	U
gamma-BHC		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
gamma-Chlordane		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
Heptachlor		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
Heptachlor Epoxide		2.6	U	2.6	U	2.6	U	2.6	U	2.4	U	2.7	U	2.7	U	2.5	U
Methoxychlor		26	U	26	U	26	U	26	U	24	U	27	U	27	U	25	U
Toxaphene		260	U	260	U	260	U	260	U	240	U	270	U	270	U	250	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO08-0001		DABK-S-SO09-0001		DABK-S-SO10-0001		DABK-S-SO11-0001		DABK-S-DUP06		DABK-S-SO12-0001		DABK-S-SO13-0001		DABK-S-SO14-0001	
Sample Location		DABK-S-SO08		DABK-S-SO09		DABK-S-SO10		DABK-S-SO11		DABK-S-SO11		DABK-S-SO12		DABK-S-SO13		DABK-S-SO14	
Date Sampled		10/27/2004		10/27/2004		10/27/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-1.0	
QC Identifier		None		None		None		Field Dup. DABK-S-SO11-0001		Field Dup. DABK-S-SO11-0001		None		None		None	
Criteria	Soil Direct Exposure Residential																
TAL Metal Analysis (MG/KG)																	
Aluminum		12300		11200		12500		7580		8900		11900		9840		9250	
Antimony	10		R		R		R		R		R		R		R		R
Arsenic	7	13.2	J	12.6	J	11.2	J	3.3	J	3.9	UJ	6.4	J	12.2	J	11.2	J
Barium	5500	42.2		23.6	J	27.7	J	28.9		34.2		42.9		26.8		15.1	J
Beryllium	0.4	0.63	U	0.75	U	0.76	U	0.58	U	0.73	U	0.71	U	0.65	U	0.70	U
Cadmium	39	0.63	UJ	0.75	UJ	0.76	UJ	0.58	UJ	0.73	UJ	0.71	UJ	0.65	UJ	0.70	UJ
Calcium		731	U	314	UJ	271	UJ	398	UJ	440	UJ	461	UJ	404	UJ	194	UJ
Chromium	1400	12.7		11.2		11.0		7.6		9.0		11.3		10.9		9.8	
Cobalt		6.1	J	4.2	J	3.9	J	3.3	J	4.1	J	4.6	J	4.5	J	4.2	J
Copper	3100	6.6	U	9.4	U	8.6	U	3.9	U	4.0	U	4.1	U	9.2	U	8.8	U
Iron		20500		23000		23800		8290		9390		14500		18700		18000	
Lead	150	27.1		24.1		19.7		15.7		17.9		18.3		13.8		20.5	
Magnesium		2090		1650		1380	U	1100	U	1310	U	1690		1670		1680	
Manganese	390	206		92.8		85.2		46.6		54.4		82.7		86.7		69.0	
Mercury	23	0.10	UJ	0.076	UJ	0.22	U	0.17	U	0.070	UJ	0.12	UJ	0.052	UJ	0.063	UJ
Nickel	1000	12.9		10.7		8.9		6.5		7.7		8.7		12.9		10.9	
Potassium		300	UJ	308	UJ	226	UJ	193	UJ	228	UJ	312	UJ	236	UJ	267	UJ
Selenium	390	4.4	UJ	5.2	UJ	5.3	UJ	4.1	UJ	5.1	UJ	5.0	UJ	4.5	UJ	4.9	U
Silver	200	1.3	U	1.5	U	1.5	U	1.2	U	1.5	U	1.4	U	1.3	U	1.4	U
Sodium			R		R	755	U	29.0	UJ		R		R		R		R
Thallium	5.5	3.2	U	3.7	U	3.8	U	2.9	U	3.6	U	3.6	U	3.2	U	3.5	U
Vanadium	550	25.2		30.8		23.1		16.1		19.8		22.2		20.7		24.3	
Zinc	6000	45.7		38.5		35.0		24.1		30.5		38.3		50.8		31.7	

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO15-0001		DABK-S-SO16-0001		DABK-S-SO17-0001		DABK-S-SO18-0001		DABK-S-SO19-0001		DABK-S-SO20-0001		DABK-S-SO21-0001		DABK-S-SO22-0001	
Sample Location		DABK-S-SO15		DABK-S-SO16		DABK-S-SO17		DABK-S-SO18		DABK-S-SO19		DABK-S-SO20		DABK-S-SO21		DABK-S-SO22	
Date Sampled		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
Semivolatile Organic Analysis (UG/KG)																	
1,1'-Biphenyl		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2,2'-oxybis(1-Chloropropane)		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2,4,5-Trichlorophenol	330000	490	U	470	U	520	U	510	U	490	U	550	U	480	U	490	U
2,4,6-Trichlorophenol	58000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2,4-Dichlorophenol	30000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2,4-Dimethylphenol	1400000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2,4-Dinitrophenol	160000	490	U	470	U	520	U	510	UJ	490	U	550	UJ	480	UJ	490	UJ
2,4-Dinitrotoluene	900	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2,6-Dinitrotoluene		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2-Chloronaphthalene		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2-Chlorophenol	50000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2-Methylnaphthalene	123000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2-Methylphenol		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
2-Nitroaniline		490	U	470	U	520	U	510	U	490	U	550	U	480	U	490	U
2-Nitrophenol		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
3,3'-Dichlorobenzidine	1400	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
3-Nitroaniline		490	U	470	U	520	U	510	U	490	U	550	U	480	U	490	U
4,6-Dinitro-2-methylphenol		490	U	470	U	520	U	510	UJ	490	U	550	UJ	480	UJ	490	UJ
4-Bromophenyl-phenylether		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
4-Chloro-3-methylphenol		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
4-Chloroaniline	310000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
4-Chlorophenyl-phenylether		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
4-Methylphenol		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
4-Nitroaniline		490	U	470	U	520	U	510	U	490	U	550	U	480	U	490	U
4-Nitrophenol		490	U	470	U	520	U	510	UJ	490	U	550	UJ	480	U	490	U
Acenaphthene	43000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Acenaphthylene	23000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Acetophenone		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Anthracene	35000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Atrazine		240	UJ	230	UJ	260	UJ	250	UJ	250	UJ	270	UJ	240	U	240	U
Benzaldehyde		240	U	230	U	61	J	250	U	250	U	72	J	59	J	240	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO15-0001		DABK-S-SO16-0001		DABK-S-SO17-0001		DABK-S-SO18-0001		DABK-S-SO19-0001		DABK-S-SO20-0001		DABK-S-SO21-0001		DABK-S-SO22-0001	
Sample Location		DABK-S-SO15		DABK-S-SO16		DABK-S-SO17		DABK-S-SO18		DABK-S-SO19		DABK-S-SO20		DABK-S-SO21		DABK-S-SO22	
Date Sampled		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
Benzo(a)anthracene	900	240	U	230	U	260	U	250	U	54	J	79	J	240	U	240	U
Benzo(a)pyrene	400	240	U	230	U	260	U	250	U	62	J	95	J	51	J	51	J
Benzo(b)fluoranthene	900	240	U	230	U	260	U	250	U	110	J	130	J	68	J	51	J
Benzo(g,h,i)perylene	800	240	U	230	U	260	U	250	U	250	U	100	J	57	J	240	U
Benzo(k)fluoranthene	900	240	U	230	U	260	U	250	U	250	U	110	J	240	U	58	J
Bis(2-Chloroethoxy)methane		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Bis(2-Chloroethyl)ether	600	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
bis(2-Ethylhexyl)phthalate	46000	240	U	230	U	260	U	250	U	250	U	130	J	240	U	240	U
Butylbenzylphthalate		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Caprolactam		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Carbazole		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Chrysene	400	240	U	230	U	260	U	250	U	77	J	140	J	66	J	62	J
Dibenzo(a,h)anthracene	400	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Dibenzofuran		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Diethylphthalate	340000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Dimethylphthalate	1900000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Di-n-Butylphthalate		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Di-n-octylphthalate		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Fluoranthene	20000	65	J	230	U	260	U	56	J	130	J	230	J	110	J	110	J
Fluorene	28000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Hexachlorobenzene	400	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Hexachlorobutadiene	8200	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Hexachlorocyclopentadiene		490	U	470	U	520	U	510	UJ	490	U	550	UJ	480	UJ	490	UJ
Hexachloroethane	46000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Indeno(1,2,3-cd)pyrene	900	240	U	230	U	260	U	250	U	250	U	98	J	240	U	240	U
Isophorone		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Naphthalene	54000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Nitrobenzene		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
N-Nitroso-di-n-propylamine		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
N-Nitroso-diphenylamine		240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Pentachlorophenol	5300	490	U	470	U	520	U	510	U	490	U	550	U	480	U	490	U
Phenanthrene	40000	240	U	230	U	260	U	250	U	54	J	92	J	58	J	55	J
Phenol	6000000	240	U	230	U	260	U	250	U	250	U	270	U	240	U	240	U
Pyrene	13000	82	J	230	U	57	J	56	J	140	J	190	J	97	J	97	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO15-0001		DABK-S-SO16-0001		DABK-S-SO17-0001		DABK-S-SO18-0001		DABK-S-SO19-0001		DABK-S-SO20-0001		DABK-S-SO21-0001		DABK-S-SO22-0001	
Sample Location		DABK-S-SO15		DABK-S-SO16		DABK-S-SO17		DABK-S-SO18		DABK-S-SO19		DABK-S-SO20		DABK-S-SO21		DABK-S-SO22	
Date Sampled		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
Pesticide/PCB Analysis (UG/KG)																	
4,4'-DDD		4.9	U	4.6	U	5.3	U	5.1	U	4.9	U	5.4	U	4.9	U	4.9	U
4,4'-DDE		4.9	U	4.6	U	5.3	U	5.1	U	43		31		13		4.9	U
4,4'-DDT		4.9	U	4.6	U	5.3	U	5.1	U	16		23		4.9	U	4.9	U
Aldrin		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
alpha-BHC		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
alpha-Chlordane		2.5	U	2.4	U	2.7	U	2.6	U	6.6		7.0		2.5	U	3.8	
Aroclor-1016		49	U	46	U	53	U	51	U	49	U	54	U	49	U	49	U
Aroclor-1221		100	U	94	U	110	U	100	U	100	U	110	U	100	U	99	U
Aroclor-1232		49	U	46	U	53	U	51	U	49	U	54	U	49	U	49	U
Aroclor-1242		49	U	46	U	53	U	51	U	49	U	54	U	49	U	49	U
Aroclor-1248		49	U	46	U	53	U	51	U	49	U	54	U	49	U	49	U
Aroclor-1254		49	U	46	U	53	U	51	U	49	U	54	U	49	U	49	U
Aroclor-1260		49	U	46	U	53	U	51	U	49	U	54	U	61		58	
beta-BHC		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
delta-BHC		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
Dieldrin	40	4.9	U	4.6	U	5.3	U	5.1	U	13		26		4.9	U	4.9	U
Endosulfan I		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
Endosulfan II		4.9	U	4.6	U	5.3	U	5.1	U	4.9	U	5.4	U	4.9	U	4.9	U
Endosulfan Sulfate		4.9	U	4.6	U	5.3	U	5.1	U	4.9	U	5.4	U	4.9	U	4.9	U
Endrin		4.9	U	4.6	U	5.3	U	5.1	U	4.9	U	5.4	U	4.9	U	4.9	U
Endrin Aldehyde		4.9	U	4.6	U	5.3	U	5.1	U	4.9	U	5.4	U	4.9	U	4.9	U
Endrin Ketone		4.9	U	4.6	U	5.3	U	5.1	U	4.9	U	5.4	U	4.9	U	4.9	U
gamma-BHC		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
gamma-Chlordane		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	4.2		2.5	U	7.2	
Heptachlor		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
Heptachlor Epoxide		2.5	U	2.4	U	2.7	U	2.6	U	2.5	U	2.8	U	2.5	U	2.5	U
Methoxychlor		25	U	24	U	27	U	26	U	25	U	28	U	25	U	25	U
Toxaphene		250	U	240	U	270	U	260	U	250	U	280	U	250	U	250	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO15-0001		DABK-S-SO16-0001		DABK-S-SO17-0001		DABK-S-SO18-0001		DABK-S-SO19-0001		DABK-S-SO20-0001		DABK-S-SO21-0001		DABK-S-SO22-0001	
Sample Location		DABK-S-SO15		DABK-S-SO16		DABK-S-SO17		DABK-S-SO18		DABK-S-SO19		DABK-S-SO20		DABK-S-SO21		DABK-S-SO22	
Date Sampled		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/28/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
TAL Metal Analysis (MG/KG)																	
Aluminum		11700		9020		11000		9140		13000		15200		9290		12100	
Antimony	10		R		R		R		R		R		R	7.8	UJ	8.1	UJ
Arsenic	7	11.0	J	3.9	J	5.8	J	5.8	J	9.2	J	23.5	J	13.3	J	12.9	J
Barium	5500	25.2	J	30.1		47.3		34.4		44.7		45.8		37.4		40.8	
Beryllium	0.4	0.69	U	0.66	U	0.71	U	0.65	U	0.69	U	0.70	U	0.65	U	0.68	U
Cadmium	39	0.69	UJ	0.66	UJ	0.71	UJ	0.65	UJ	0.69	UJ	0.70	UJ	0.65	UJ	0.68	UJ
Calcium		240	UJ	315	UJ	512	UJ	1270	U	1490	U	1470	U	631	UJ	836	U
Chromium	1400	12.8		8.3		9.1		9.9		14.1		16.0		12.5		15.0	
Cobalt		4.6	J	3.6	J	4.6	J	5.1	J	7.5		6.7	J	6.1	J	8.4	
Copper	3100	6.3	U	2.4	UJ	3.6	U	4.2	U	11.1	U	9.1	U	13.3	U	15.4	U
Iron		17500		9330		14800		13100		17300		23500		20400	J	23500	J
Lead	150	22.8		13.4		21.5		19.5		38.0		33.1		35.8	J	42.1	J
Magnesium		1330	U	1090	U	964	U	1910		2460		2930		1390		1540	
Manganese	390	110		50.0		115		73.7		248		184		197	J	300	J
Mercury	23	0.080	UJ	0.057	UJ	0.11	UJ	0.071	UJ	0.10	J	0.12	J	0.040	UJ	0.063	UJ
Nickel	1000	9.9		5.7		5.3	J	9.3		13.9		14.8		11.3		12.2	
Potassium		246	UJ	259	UJ	405	UJ	208	UJ	540	UJ	431	UJ	195	UJ	322	UJ
Selenium	390	4.8	U	4.6	U	5.0	U	4.5	U	4.8	U	4.9	U	4.5	U	4.7	U
Silver	200	1.4	U	1.3	U	1.4	U	1.3	U	1.4	U	1.4	U	1.3	UJ	1.4	UJ
Sodium			R		R	710	U		R	688	U		R		R		R
Thallium	5.5	3.5	U	3.3	U	3.5	U	3.2	U	3.4	U	3.5	U	3.2	U	3.4	U
Vanadium	550	29.4		14.0		22.4		22.4		23.9		30.6		27.6		34.9	
Zinc	6000	35.4		21.4		22.1		34.5		54.5		52.7		65.0		93.7	

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO23-0001		DABK-S-SO24-0001		DABK-S-SO25-0001		DABK-S-DUP01		DABK-S-SO26-0001		DABK-S-SO27-0001		DABK-S-SO28-0001		DABK-S-SO29-0001	
Sample Location		DABK-S-SO23		DABK-S-SO24		DABK-S-SO25		DABK-S-SO25		DABK-S-SO26		DABK-S-SO27		DABK-S-SO28		DABK-S-SO29	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		Field Dup. DABK-S-SO25-0001		Field Dup. DABK-S-SO25-0001		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
Semivolatile Organic Analysis (UG/KG)																	
1,1'-Biphenyl		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2,2'-oxybis(1-Chloropropane)		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2,4,5-Trichlorophenol	330000	490	U	470	U	460	U	470	U	490	U	480	U	520	U	510	U
2,4,6-Trichlorophenol	58000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2,4-Dichlorophenol	30000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2,4-Dimethylphenol	1400000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2,4-Dinitrophenol	160000	490	UJ	470	UJ	460	UJ	470	UJ	490	UJ	480	UJ	520	UJ	510	UJ
2,4-Dinitrotoluene	900	250	U	240	U	230	U	240	U	240	U	240	U	260	UJ	250	UJ
2,6-Dinitrotoluene		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2-Chloronaphthalene		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2-Chlorophenol	50000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2-Methylnaphthalene	123000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2-Methylphenol		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
2-Nitroaniline		490	U	470	U	460	U	470	U	490	U	480	U	520	U	510	U
2-Nitrophenol		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
3,3'-Dichlorobenzidine	1400	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
3-Nitroaniline		490	U	470	U	460	U	470	U	490	U	480	U	520	U	510	U
4,6-Dinitro-2-methylphenol		490	UJ	470	UJ	460	UJ	470	UJ	490	UJ	480	UJ	520	UJ	510	UJ
4-Bromophenyl-phenylether		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
4-Chloro-3-methylphenol		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
4-Chloroaniline	310000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
4-Chlorophenyl-phenylether		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
4-Methylphenol		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
4-Nitroaniline		490	U	470	U	460	U	470	U	490	U	480	U	520	U	510	U
4-Nitrophenol		490	U	470	U	460	U	470	U	490	U	480	U	520	U	510	U
Acenaphthene	43000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Acenaphthylene	23000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Acetophenone		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Anthracene	35000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Atrazine		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Benzaldehyde		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO23-0001		DABK-S-SO24-0001		DABK-S-SO25-0001		DABK-S-DUP01		DABK-S-SO26-0001		DABK-S-SO27-0001		DABK-S-SO28-0001		DABK-S-SO29-0001	
Sample Location		DABK-S-SO23		DABK-S-SO24		DABK-S-SO25		DABK-S-SO25		DABK-S-SO26		DABK-S-SO27		DABK-S-SO28		DABK-S-SO29	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		Field Dup. DABK-S-SO25-0001		Field Dup. DABK-S-SO25-0001		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
Benzo(a)anthracene	900	66	J	240	U	230	U	240	U	240	U	240	U	52	J	250	U
Benzo(a)pyrene	400	78	J	240	U	230	U	240	U	64	J	58	J	57	J	250	U
Benzo(b)fluoranthene	900	120	J	240	U	230	U	240	U	76	J	64	J	71	J	250	U
Benzo(g,h,i)perylene	800	72	J	240	U	230	U	240	U	55	J	240	U	58	J	250	U
Benzo(k)fluoranthene	900	53	J	240	U	230	U	240	U	69	J	52	J	58	J	57	J
Bis(2-Chloroethoxy)methane		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Bis(2-Chloroethyl)ether	600	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
bis(2-Ethylhexyl)phthalate	46000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Butylbenzylphthalate		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Caprolactam		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Carbazole		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Chrysene	400	90	J	240	U	230	U	240	U	77	J	68	J	73	J	55	J
Dibenzo(a,h)anthracene	400	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Dibenzofuran		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Diethylphthalate	340000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Dimethylphthalate	1900000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Di-n-Butylphthalate		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Di-n-octylphthalate		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Fluoranthene	20000	170	J	68	J	56	J	76	J	120	J	120	J	130	J	100	J
Fluorene	28000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Hexachlorobenzene	400	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Hexachlorobutadiene	8200	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Hexachlorocyclopentadiene		490	UJ	470	UJ	460	UJ	470	UJ	490	UJ	480	UJ	520	UJ	510	UJ
Hexachloroethane	46000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Indeno(1,2,3-cd)pyrene	900	60	J	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Isophorone		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Naphthalene	54000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Nitrobenzene		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
N-Nitroso-di-n-propylamine		250	U	310		230	U	240	U	240	U	240	U	260	U	250	U
N-Nitroso-diphenylamine		250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Pentachlorophenol	5300	490	U	470	U	460	U	470	U	490	U	480	U	520	U	510	U
Phenanthrene	40000	95	J	240	U	230	U	51	J	73	J	65	J	74	J	66	J
Phenol	6000000	250	U	240	U	230	U	240	U	240	U	240	U	260	U	250	U
Pyrene	13000	150	J	59	J	48	J	74	J	120	J	110	J	110	J	93	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO23-0001		DABK-S-SO24-0001		DABK-S-SO25-0001		DABK-S-DUP01		DABK-S-SO26-0001		DABK-S-SO27-0001		DABK-S-SO28-0001		DABK-S-SO29-0001	
Sample Location		DABK-S-SO23		DABK-S-SO24		DABK-S-SO25		DABK-S-SO25		DABK-S-SO26		DABK-S-SO27		DABK-S-SO28		DABK-S-SO29	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		Field Dup. DABK-S-SO25-0001		Field Dup. DABK-S-SO25-0001		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
Pesticide/PCB Analysis (UG/KG)																	
4,4'-DDD		4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
4,4'-DDE		20		4.8	U	4.6	U	4.8	U	11		4.9	U	5.2	U	5.1	U
4,4'-DDT		8.5		4.8	U	4.6	U	4.8	U	5.6		4.9	U	5.2	U	5.1	U
Aldrin		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
alpha-BHC		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
alpha-Chlordane		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
Aroclor-1016		49	U	48	U	46	U	48	U	48	U	49	U	52	U	51	U
Aroclor-1221		99	U	97	U	92	U	97	U	98	U	99	U	110	U	100	U
Aroclor-1232		49	U	48	U	46	U	48	U	48	U	49	U	52	U	51	U
Aroclor-1242		49	U	48	U	46	U	48	U	48	U	49	U	52	U	51	U
Aroclor-1248		49	U	48	U	46	U	48	U	48	U	49	U	52	U	51	U
Aroclor-1254		49	U	48	U	46	U	48	U	48	U	49	U	52	U	51	U
Aroclor-1260		49	U	48	U	46	U	48	U	86		49	U	51	J	51	U
beta-BHC		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
delta-BHC		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
Dieldrin	40	4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
Endosulfan I		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
Endosulfan II		4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
Endosulfan Sulfate		4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
Endrin		4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
Endrin Aldehyde		4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
Endrin Ketone		4.9	U	4.8	U	4.6	U	4.8	U	4.8	U	4.9	U	5.2	U	5.1	U
gamma-BHC		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
gamma-Chlordane		2.5	U	2.5	U	2.3	U	2.5	U	2.8		2.5	U	2.7	U	2.6	U
Heptachlor		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
Heptachlor Epoxide		2.5	U	2.5	U	2.3	U	2.5	U	2.5	U	2.5	U	2.7	U	2.6	U
Methoxychlor		25	U	25	U	23	U	25	U	25	U	25	U	27	U	26	U
Toxaphene		250	U	250	U	230	U	250	U	250	U	250	U	270	U	260	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO23-0001		DABK-S-SO24-0001		DABK-S-SO25-0001		DABK-S-DUP01		DABK-S-SO26-0001		DABK-S-SO27-0001		DABK-S-SO28-0001		DABK-S-SO29-0001	
Sample Location		DABK-S-SO23		DABK-S-SO24		DABK-S-SO25		DABK-S-SO25		DABK-S-SO26		DABK-S-SO27		DABK-S-SO28		DABK-S-SO29	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		Field Dup. DABK-S-SO25-0001		Field Dup. DABK-S-SO25-0001		None		None		None		None	
Criteria	Soil Direct Exposure Residential																
TAL Metal Analysis (MG/KG)																	
Aluminum		12100		11700		13700		12400		12400		11000		10800		14600	
Antimony	10	7.8	UJ	8.0	UJ	7.8	UJ	7.2	UJ	8.0	UJ	0.96	UJ	8.1	UJ	8.4	UJ
Arsenic	7	8.8	J	11.9	J	10.3	J	32.3	J	15.0	J	7.8	J	9.8	J	10.6	J
Barium	5500	39.4		41.9		37.1		44.7		45.3		37.9		43.9		48.5	
Beryllium	0.4	0.65	U	0.67	U	0.65	U	0.38	J	0.66	U	0.65	U	0.68	U	0.70	U
Cadmium	39	0.65	UJ	0.67	UJ	0.65	UJ	0.60	UJ	0.66	UJ	0.65	UJ	0.68	UJ	0.70	UJ
Calcium		709	U	646	UJ	381	UJ	496	UJ	824	U	633	UJ	816	U	693	UJ
Chromium	1400	13.6		14.2		15.1		14.1		15.2		12.0		14.0		16.0	
Cobalt		6.9		7.1		7.4		8.2		7.0		5.4	J	9.8		7.2	
Copper	3100	14.6	U	9.7	U	7.2	U	10.9	U	17.9	U	11.0	U	12.6	U	10.0	U
Iron		18200	J	25700	J	23300	J	63300	J*	24600	J	16000	J	18300	J	21800	J
Lead	150	32.3	J	27.8	J	19.7	J	44.8	J	44.5	J	43.6	J	36.5	J	32.8	J
Magnesium		1960		1360		1920		1450		1960		1680		1590		1810	
Manganese	390	197	J	252	J	292	J	615	J	253	J	159	J	319	J	141	J
Mercury	23	0.081	UJ	0.073	UJ	0.053	UJ	0.094	UJ	0.061	UJ	0.065	UJ	0.26		0.10	J
Nickel	1000	13.6		10.0		12.1		9.4		14.4		11.4		11.1		11.6	
Potassium		308	UJ	205	UJ	268	UJ	187	UJ	252	UJ	234	UJ	250	UJ	321	UJ
Selenium	390	4.6	U	4.7	U	4.5	U	4.2	U	4.6	U		R	4.7	U	4.9	U
Silver	200	1.3	UJ	1.3	UJ	1.3	UJ	1.2	UJ	1.3	UJ	1.3	UJ	1.4	UJ	1.4	UJ
Sodium			R		R		R		R		R	646	U	145	UJ		R
Thallium	5.5	3.3	U	3.3	U	3.2	U	3.0	U	3.3	U	3.2	U	3.4	U	3.5	U
Vanadium	550	30.4		30.9		29.0		42.6		35.2		30.3		31.5		33.8	
Zinc	6000	43.8		55.8		42.8		52.0		84.4		46.6		70.5		58.0	

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO30-0001		DABK-S-SO31-0001		DABK-S-SO32-0001		DABK-S-SO33-0001		DABK-S-SO34-0001		DABK-S-SO35-0001		DABK-S-DUP02		DABK-S-SO36-0001	
Sample Location		DABK-S-SO30		DABK-S-SO31		DABK-S-SO32		DABK-S-SO33		DABK-S-SO34		DABK-S-SO35		DABK-S-SO35		DABK-S-SO36	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		Field Dup. DABK-S-SO35-0001		Field Dup. DABK-S-SO35-0001		None	
Criteria	Soil Direct Exposure Residential																
Semivolatile Organic Analysis (UG/KG)																	
1,1'-Biphenyl		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2,2'-oxybis(1-Chloropropane)		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2,4,5-Trichlorophenol	330000	500	U	450	U	520	U	570	U	470	U	470	U	500	U	500	U
2,4,6-Trichlorophenol	58000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2,4-Dichlorophenol	30000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2,4-Dimethylphenol	1400000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2,4-Dinitrophenol	160000	500	UJ	450	UJ	520	UJ	570	UJ	470	UJ	470	UJ	500	UJ	500	UJ
2,4-Dinitrotoluene	900	250	UJ	230	UJ	260	UJ	280	UJ	230	UJ	230	UJ	250	UJ	250	UJ
2,6-Dinitrotoluene		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2-Chloronaphthalene		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2-Chlorophenol	50000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2-Methylnaphthalene	123000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2-Methylphenol		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
2-Nitroaniline		500	U	450	U	520	U	570	U	470	U	470	U	500	U	500	U
2-Nitrophenol		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
3,3'-Dichlorobenzidine	1400	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
3-Nitroaniline		500	U	450	U	520	U	570	U	470	U	470	U	500	U	500	U
4,6-Dinitro-2-methylphenol		500	UJ	450	UJ	520	UJ	570	UJ	470	UJ	470	UJ	500	UJ	500	UJ
4-Bromophenyl-phenylether		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
4-Chloro-3-methylphenol		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
4-Chloroaniline	310000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
4-Chlorophenyl-phenylether		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
4-Methylphenol		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
4-Nitroaniline		500	U	450	U	520	U	570	U	470	U	470	U	500	U	500	U
4-Nitrophenol		500	U	450	U	520	U	570	U	470	U	470	U	500	U	500	U
Acenaphthene	43000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Acenaphthylene	23000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Acetophenone		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Anthracene	35000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Atrazine		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Benzaldehyde		250	U	230	U	260	U	130	J	230	U	230	U	250	U	250	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO30-0001		DABK-S-SO31-0001		DABK-S-SO32-0001		DABK-S-SO33-0001		DABK-S-SO34-0001		DABK-S-SO35-0001		DABK-S-DUP02		DABK-S-SO36-0001	
Sample Location		DABK-S-SO30		DABK-S-SO31		DABK-S-SO32		DABK-S-SO33		DABK-S-SO34		DABK-S-SO35		DABK-S-SO35		DABK-S-SO36	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		Field Dup. DABK-S-SO35-0001		Field Dup. DABK-S-SO35-0001		None	
Criteria	Soil Direct Exposure Residential																
Benzo(a)anthracene	900	250	U	230	U	260	U	59	J	230	U	230	U	250	U	250	U
Benzo(a)pyrene	400	250	U	230	U	60	J	68	J	230	U	230	U	55	J	250	U
Benzo(b)fluoranthene	900	53	J	230	U	75	J	79	J	230	U	230	U	62	J	250	U
Benzo(g,h,i)perylene	800	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Benzo(k)fluoranthene	900	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Bis(2-Chloroethoxy)methane		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Bis(2-Chloroethyl)ether	600	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
bis(2-Ethylhexyl)phthalate	46000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Butylbenzylphthalate		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Caprolactam		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Carbazole		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Chrysene	400	250	U	230	U	65	J	79	J	230	U	230	U	68	J	250	U
Dibenzo(a,h)anthracene	400	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Dibenzofuran		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Diethylphthalate	340000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Dimethylphthalate	1900000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Di-n-Butylphthalate		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Di-n-octylphthalate		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Fluoranthene	20000	82	J	59	J	110	J	140	J	230	U	87	J	110	J	62	J
Fluorene	28000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Hexachlorobenzene	400	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Hexachlorobutadiene	8200	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Hexachlorocyclopentadiene		500	UJ	450	UJ	520	UJ	570	UJ	470	UJ	470	UJ	500	UJ	500	UJ
Hexachloroethane	46000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Indeno(1,2,3-cd)pyrene	900	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Isophorone		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Naphthalene	54000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Nitrobenzene		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
N-Nitroso-di-n-propylamine		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
N-Nitroso-diphenylamine		250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Pentachlorophenol	5300	500	U	450	U	520	U	570	U	470	U	470	U	500	U	500	U
Phenanthrene	40000	56	J	230	U	70	J	91	J	230	U	52	J	78	J	250	U
Phenol	6000000	250	U	230	U	260	U	280	U	230	U	230	U	250	U	250	U
Pyrene	13000	79	J	51	J	100	J	120	J	230	U	75	J	100	J	61	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO30-0001		DABK-S-SO31-0001		DABK-S-SO32-0001		DABK-S-SO33-0001		DABK-S-SO34-0001		DABK-S-SO35-0001		DABK-S-DUP02		DABK-S-SO36-0001	
Sample Location		DABK-S-SO30		DABK-S-SO31		DABK-S-SO32		DABK-S-SO33		DABK-S-SO34		DABK-S-SO35		DABK-S-SO35		DABK-S-SO36	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		Field Dup. DABK-S-SO35-0001		Field Dup. DABK-S-SO35-0001		None	
Criteria	Soil Direct Exposure Residential																
Pesticide/PCB Analysis (UG/KG)																	
4,4'-DDD		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
4,4'-DDE		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
4,4'-DDT		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
Aldrin		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
alpha-BHC		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
alpha-Chlordane		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
Aroclor-1016		49	U	45	U	52	U	57	U	47	U	47	U	51	U	50	U
Aroclor-1221		100	U	92	U	110	U	120	U	96	U	96	U	100	U	100	U
Aroclor-1232		49	U	45	U	52	U	57	U	47	U	47	U	51	U	50	U
Aroclor-1242		49	U	45	U	52	U	57	U	47	U	47	U	51	U	50	U
Aroclor-1248		49	U	45	U	52	U	57	U	47	U	47	U	51	U	50	U
Aroclor-1254		49	U	45	U	52	U	57	U	47	U	47	U	51	U	50	U
Aroclor-1260		49	U	45	U	49	J	57	U	47	U	47	U	51	U	50	U
beta-BHC		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
delta-BHC		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
Dieldrin	40	4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
Endosulfan I		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
Endosulfan II		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
Endosulfan Sulfate		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
Endrin		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
Endrin Aldehyde		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
Endrin Ketone		4.9	U	4.5	U	5.2	U	5.7	U	4.7	U	4.7	U	5.1	U	5.0	U
gamma-BHC		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
gamma-Chlordane		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
Heptachlor		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
Heptachlor Epoxide		2.5	U	2.3	U	2.7	U	2.9	U	2.4	U	2.4	U	2.6	U	2.6	U
Methoxychlor		25	U	23	U	27	U	29	U	24	U	24	U	26	U	26	U
Toxaphene		250	U	230	U	270	U	290	U	240	U	240	U	260	U	260	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO30-0001		DABK-S-SO31-0001		DABK-S-SO32-0001		DABK-S-SO33-0001		DABK-S-SO34-0001		DABK-S-SO35-0001		DABK-S-DUP02		DABK-S-SO36-0001	
Sample Location		DABK-S-SO30		DABK-S-SO31		DABK-S-SO32		DABK-S-SO33		DABK-S-SO34		DABK-S-SO35		DABK-S-SO35		DABK-S-SO36	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0		0.0-1.0	
QC Identifier		None		None		None		None		None		Field Dup. DABK-S-SO35-0001		Field Dup. DABK-S-SO35-0001		None	
Criteria	Soil Direct Exposure Residential																
TAL Metal Analysis (MG/KG)																	
Aluminum		14000		9780		11700		11200		9110		9710		9960		10600	
Antimony	10	8.0	UJ	7.1	UJ	8.1	UJ	9.2	UJ	7.3	UJ	0.95	UJ	7.5	UJ	0.72	UJ
Arsenic	7	8.4	J	5.7	J	13.0	J	4.7	J	5.9	J	7.5	J		R	5.8	J
Barium	5500	53.1		28.2		48.7		48.4		36.4		39.8		36.6		32.1	
Beryllium	0.4	0.67	U	0.59	U	0.67	U	0.77	U	0.61	U	0.65	U	0.62	U	0.66	U
Cadmium	39	0.67	UJ	0.59	UJ	0.67	UJ	0.77	UJ	0.61	UJ	0.65	UJ	0.62	UJ	0.66	UJ
Calcium		749	U	355	UJ	807	U	999	U	591	UJ	772	U	742	U	506	UJ
Chromium	1400	15.2		11.6		15.1		13.4		12.0		13.6		13.1		12.4	
Cobalt		8.1		6.6		13.8		6.7	J	7.7		7.4		6.7		4.5	J
Copper	3100	8.5	U	4.4	U	15.1	U	6.5	U	5.8	U	8.4	U	7.1	U	4.9	U
Iron		18000	J	16500	J	23200	J	12700	J	15400	J	16700	J	19000	J	14200	J
Lead	150	26.5	J	18.3	J	49.5	J	30.3	J	23.0	J	39.7	J	28.2	J	33.2	J
Magnesium		1590		1380		1660		1680		1410		1780		1800		1680	
Manganese	390	257	J	419	J	477	J	141	J	433	J	261	J	258	J	101	J
Mercury	23	0.14		0.041	UJ	0.68		0.073	UJ	0.036	UJ	0.045	UJ	0.045	UJ	0.062	UJ
Nickel	1000	11.1		7.5		11.5		9.5		8.4		9.9		10.0		8.0	
Potassium		338	UJ	204	UJ	293	UJ	255	UJ	211	UJ	235	UJ	245	UJ	260	UJ
Selenium	390	4.7	U	4.1	U	4.7	U		R	4.3	U	4.6	U	4.4	U	4.6	U
Silver	200	1.3	UJ	1.2	UJ	1.3	UJ	1.5	UJ	1.2	UJ	1.3	UJ	1.2	UJ	1.3	UJ
Sodium		146	UJ		R		R		R		R		R		R		R
Thallium	5.5	3.3	U	3.0	U	3.4	U	3.9	U	3.1	U	3.3	U	3.1	U	3.3	U
Vanadium	550	28.8		27.0		34.1		30.8		26.5		31.4		28.5		28.1	
Zinc	6000	63.3		35.5		71.6		50.4		30.4		41.3		35.5		27.2	

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO37-0001		DABK-S-SO38-0001		DABK-S-SO39-0001		DABK-S-SO40-0001	
Sample Location		DABK-S-SO37		DABK-S-SO38		DABK-S-SO39		DABK-S-SO40	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None	
Criteria	Soil Direct Exposure Residential								
Semivolatile Organic Analysis (UG/KG)									
1,1'-Biphenyl		230	U	240	U	310	U	260	U
2,2'-oxybis(1-Chloropropane)		230	U	240	U	310	U	260	U
2,4,5-Trichlorophenol	330000	470	U	470	U	620	U	520	U
2,4,6-Trichlorophenol	58000	230	U	240	U	310	U	260	U
2,4-Dichlorophenol	30000	230	U	240	U	310	U	260	U
2,4-Dimethylphenol	1400000	230	U	240	U	310	U	260	U
2,4-Dinitrophenol	160000	470	UJ	470	UJ	620	U	520	U
2,4-Dinitrotoluene	900	230	UJ	240	U	310	U	260	U
2,6-Dinitrotoluene		230	U	240	U	310	U	260	U
2-Chloronaphthalene		230	U	240	U	310	U	260	U
2-Chlorophenol	50000	230	U	240	U	310	U	260	U
2-Methylnaphthalene	123000	230	U	240	U	310	U	260	U
2-Methylphenol		230	U	240	U	310	U	260	U
2-Nitroaniline		470	U	470	U	620	U	520	U
2-Nitrophenol		230	U	240	U	310	U	260	U
3,3'-Dichlorobenzidine	1400	230	U	240	U	310	U	260	U
3-Nitroaniline		470	U	470	U	620	U	520	U
4,6-Dinitro-2-methylphenol		470	UJ	470	UJ	620	U	520	U
4-Bromophenyl-phenylether		230	U	240	U	310	U	260	U
4-Chloro-3-methylphenol		230	U	240	U	310	U	260	U
4-Chloroaniline	310000	230	U	240	U	310	U	260	U
4-Chlorophenyl-phenylether		230	U	240	U	310	U	260	U
4-Methylphenol		230	U	240	U	310	U	260	U
4-Nitroaniline		470	U	470	U	620	U	520	U
4-Nitrophenol		470	U	470	U	620	U	520	U
Acenaphthene	43000	230	U	240	U	310	U	260	U
Acenaphthylene	23000	230	U	240	U	310	U	260	U
Acetophenone		230	U	240	U	310	U	260	U
Anthracene	35000	230	U	240	U	310	U	260	U
Atrazine		230	U	240	U	310	UJ	260	UJ
Benzaldehyde		230	U	240	U	310	U	260	U

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TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO37-0001		DABK-S-SO38-0001		DABK-S-SO39-0001		DABK-S-SO40-0001	
Sample Location		DABK-S-SO37		DABK-S-SO38		DABK-S-SO39		DABK-S-SO40	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None	
Criteria	Soil Direct Exposure Residential								
Benzo(a)anthracene	900	230	U	240	U	310	U	260	U
Benzo(a)pyrene	400	230	U	240	U	310	U	260	U
Benzo(b)fluoranthene	900	230	U	240	U	310	U	260	U
Benzo(g,h,i)perylene	800	230	U	240	U	310	U	260	U
Benzo(k)fluoranthene	900	230	U	240	U	310	U	260	U
Bis(2-Chloroethoxy)methane		230	U	240	U	310	U	260	U
Bis(2-Chloroethyl)ether	600	230	U	240	U	310	U	260	U
bis(2-Ethylhexyl)phthalate	46000	230	U	240	U	310	U	260	U
Butylbenzylphthalate		230	U	240	U	310	U	260	U
Caprolactam		230	U	240	U	310	U	260	U
Carbazole		230	U	240	U	310	U	260	U
Chrysene	400	230	U	240	U	310	U	260	U
Dibenzo(a,h)anthracene	400	230	U	240	U	310	U	260	U
Dibenzofuran		230	U	240	U	310	U	260	U
Diethylphthalate	340000	230	U	240	U	310	U	260	U
Dimethylphthalate	1900000	230	U	240	U	310	U	260	U
Di-n-Butylphthalate		230	U	240	U	310	U	260	U
Di-n-octylphthalate		230	U	240	U	310	U	260	U
Fluoranthene	20000	64	J	84	J	83	J	260	U
Fluorene	28000	230	U	240	U	310	U	260	U
Hexachlorobenzene	400	230	U	240	U	310	U	260	U
Hexachlorobutadiene	8200	230	U	240	U	310	U	260	U
Hexachlorocyclopentadiene		470	UJ	470	UJ	620	U	520	U
Hexachloroethane	46000	230	U	240	U	310	U	260	U
Indeno(1,2,3-cd)pyrene	900	230	U	240	U	310	U	260	U
Isophorone		230	U	240	U	310	U	260	U
Naphthalene	54000	230	U	240	U	310	U	260	U
Nitrobenzene		230	U	240	U	310	U	260	U
N-Nitroso-di-n-propylamine		230	U	240	U	310	U	260	U
N-Nitroso-diphenylamine		230	U	240	U	310	U	260	U
Pentachlorophenol	5300	470	U	470	U	620	U	520	U
Phenanthrene	40000	230	U	61	J	310	U	260	U
Phenol	6000000	230	U	240	U	310	U	260	U
Pyrene	13000	57	J	84	J	97	J	56	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO37-0001		DABK-S-SO38-0001		DABK-S-SO39-0001		DABK-S-SO40-0001	
Sample Location		DABK-S-SO37		DABK-S-SO38		DABK-S-SO39		DABK-S-SO40	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None	
Criteria	Soil Direct Exposure Residential								
Pesticide/PCB Analysis (UG/KG)									
4,4'-DDD		4.7	U	4.7	U	6.2	U	5.2	U
4,4'-DDE		4.7	U	4.7	U	6.2	U	5.2	U
4,4'-DDT		4.7	U	4.7	U	6.2	U	5.2	U
Aldrin		2.4	U	2.4	U	3.2	U	2.7	U
alpha-BHC		2.4	U	2.4	U	3.2	U	2.7	U
alpha-Chlordane		2.4	U	2.4	U	3.2	U	2.7	U
Aroclor-1016		47	U	47	U	62	U	52	U
Aroclor-1221		95	U	95	U	130	U	100	U
Aroclor-1232		47	U	47	U	62	U	52	U
Aroclor-1242		47	U	47	U	62	U	52	U
Aroclor-1248		47	U	47	U	62	U	52	U
Aroclor-1254		47	U	47	U	62	U	52	U
Aroclor-1260		47	U	47	U	62	U	52	U
beta-BHC		2.4	U	2.4	U	3.2	U	2.7	U
delta-BHC		2.4	U	2.4	U	3.2	U	2.7	U
Dieldrin	40	4.7	U	4.7	U	6.2	U	5.2	U
Endosulfan I		2.4	U	2.4	U	3.2	U	2.7	U
Endosulfan II		4.7	U	4.7	U	6.2	U	5.2	U
Endosulfan Sulfate		4.7	U	4.7	U	6.2	U	5.2	U
Endrin		4.7	U	4.7	U	6.2	U	5.2	U
Endrin Aldehyde		4.7	U	4.7	U	6.2	U	5.2	U
Endrin Ketone		4.7	U	4.7	U	6.2	U	5.2	U
gamma-BHC		2.4	U	2.4	U	3.2	U	2.7	U
gamma-Chlordane		2.4	U	2.4	U	3.2	U	2.7	U
Heptachlor		2.4	U	2.4	U	3.2	U	2.7	U
Heptachlor Epoxide		2.4	U	2.4	U	3.2	U	2.7	U
Methoxychlor		24	U	24	U	32	U	27	U
Toxaphene		240	U	240	U	320	U	270	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 1
SOIL ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SO37-0001		DABK-S-SO38-0001		DABK-S-SO39-0001		DABK-S-SO40-0001	
Sample Location		DABK-S-SO37		DABK-S-SO38		DABK-S-SO39		DABK-S-SO40	
Date Sampled		10/25/2004		10/25/2004		10/25/2004		10/25/2004	
Interval		0.0-1.0		0.0-1.0		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None		None	
Criteria	Soil Direct Exposure Residential								
TAL Metal Analysis (MG/KG)									
Aluminum		11400		9430		9890		10300	
Antimony	10	0.75	UJ	7.8	UJ	7.5	U	7.6	U
Arsenic	7	10.6	J	5.4	J	7.0	J	6.3	J
Barium	5500	32.5		28.1		37.2	J	35.3	J
Beryllium	0.4	0.65	U	0.65	U	0.63	U	0.63	U
Cadmium	39	0.65	UJ	0.65	UJ	0.63	UJ	0.63	UJ
Calcium		582	UJ	453	UJ	704	U	483	UJ
Chromium	1400	13.9		11.2		12.3		12.2	
Cobalt		6.6		6.2	J	6.1	J	5.9	J
Copper	3100	5.5	U	5.1	U	5.4	U	6.5	U
Iron		20100	J	13700	J	18800		14500	
Lead	150	19.6	J	23.4	J	17.9		20.8	
Magnesium		1550		1430		1560		1540	
Manganese	390	311	J	342	J	373	J	402	J
Mercury	23	0.031	UJ	0.046	UJ	0.13	U	0.11	UJ
Nickel	1000	8.5		7.7		8.8		8.3	
Potassium		213	UJ	179	UJ	189	UJ	237	UJ
Selenium	390	4.6	U	4.6	U	4.4	U	4.4	U
Silver	200	1.3	UJ	1.3	UJ	1.3	U	1.3	U
Sodium			R	97.6	UJ	144	UJ	103	UJ
Thallium	5.5	3.3	U	3.3	U	3.1	U	3.2	U
Vanadium	550	30.9		28.6		26.1	J	29.0	J
Zinc	6000	36.2		25.9		28.7	J	31.5	J

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD01-000.5		DABK-S-SD02-000.5		DABK-S-SD03-000.5		DABK-S-DUP03		DABK-S-SD04-000.5		DABK-S-SD05-000.5		DABK-S-SD06-000.5		DABK-S-SD07-000.5		DABK-S-SD08-000.5		DABK-S-SD09-000.5	
Sample Location		DABK-S-SD01		DABK-S-SD02		DABK-S-SD03		DABK-S-SD03		DABK-S-SD04		DABK-S-SD05		DABK-S-SD06		DABK-S-SD07		DABK-S-SD08		DABK-S-SD09	
Date Sampled		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD03-000.5		Field Dup. DABK-S-SD03-000.5		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																				
Semivolatile Organic Analysis (UG/KG)																					
1,1'-Biphenyl		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2,2'-oxybis(1-Chloropropane)		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2,4,5-Trichlorophenol	330000	680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	U	840	U	460	U
2,4,6-Trichlorophenol	58000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2,4-Dichlorophenol	30000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2,4-Dimethylphenol	1400000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2,4-Dinitrophenol	160000	680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	U	840	U	460	U
2,4-Dinitrotoluene	900	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2,6-Dinitrotoluene		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2-Chloronaphthalene		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2-Chlorophenol	50000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2-Methylnaphthalene	123000	27	U*	19	U*	10	*	13	U*	27	U*	21	U*	35	*	23	*	40	*	18	U*
2-Methylphenol		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
2-Nitroaniline		680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	U	840	U	460	U
2-Nitrophenol		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
3,3'-Dichlorobenzidine	1400	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	UJ	420	U	230	U
3-Nitroaniline		680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	UJ	840	U	460	U
4,6-Dinitro-2-methylphenol		680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	U	840	U	460	U
4-Bromophenyl-phenylether		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
4-Chloro-3-methylphenol		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
4-Chloroaniline	310000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	UJ	420	U	230	U
4-Chlorophenyl-phenylether		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
4-Methylphenol		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
4-Nitroaniline		680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	U	840	U	460	U
4-Nitrophenol		680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	U	840	U	460	U
Acenaphthene	43000	65	*	19	U*	24	*	22	*	27	U*	29	*	83	*	61	J*	130	*	12	J*
Acenaphthylene	23000	27	U*	19	U*	17	*	15	*	27	U*	21	U*	18	*	26	*	24	J*	13	J*
Acetophenone		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Anthracene	35000	200	*	20	*	70	*	58	*	38	*	260	U	140	*	100	J	430		38	*
Atrazine		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Benzaldehyde		140	J	240	U	150	J	170	J	110	J	260	U	170	J	860		300	J	230	U
Benzo(a)anthracene	900	470		100	*	340		530		300	*	290	*	390		530		1500		210	*
Benzo(a)pyrene	400	520		120	*	450		670		420		300	*	490		700		1700		270	*
Benzo(b)fluoranthene	900	970		230	*	900		1300		870		360		1000		1300		2900		340	
Benzo(g,h,i)perylene	800	510		120	*	590		800		660		280		670		790		1600		190	*
Benzo(k)fluoranthene	900	490	*	62	*	330		430		270	*	150	*	330		430		860		170	*
Bis(2-Chloroethoxy)methane		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Bis(2-Chloroethyl)ether	600	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
bis(2-Ethylhexyl)phthalate	46000	370	U	240	U	370	U	460	U	580	U	260	U	410	U	910	U	750	U	390	U
Butylbenzylphthalate		340	U	240	U	850	J	320	UJ	340	U	260	U	310	U	360	U	420	U	230	U
Caprolactam		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD01-000.5		DABK-S-SD02-000.5		DABK-S-SD03-000.5		DABK-S-DUP03		DABK-S-SD04-000.5		DABK-S-SD05-000.5		DABK-S-SD06-000.5		DABK-S-SD07-000.5		DABK-S-SD08-000.5		DABK-S-SD09-000.5	
Sample Location		DABK-S-SD01		DABK-S-SD02		DABK-S-SD03		DABK-S-SD03		DABK-S-SD04		DABK-S-SD05		DABK-S-SD06		DABK-S-SD07		DABK-S-SD08		DABK-S-SD09	
Date Sampled		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD03-000.5		Field Dup. DABK-S-SD03-000.5		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																				
Carbazole		95	J	240	U	330	U	100	J	71	J	260	U	84	J	110	J	410	J	230	U
Chrysene	400	750		140	J	650		990		610		260		740		1000		2300		250	
Dibenzo(a,h)anthracene	400	110	*	19	U*	94	*	82	*	71	*	43	*	99	*	140	*	200	*	41	*
Dibenzofuran		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	230	J	230	U
Diethylphthalate	340000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Dimethylphthalate	1900000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Di-n-Butylphthalate		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Di-n-octylphthalate		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Fluoranthene	20000	1300		280	*	950		1400		850		430		970		1300		3400		340	
Fluorene	28000	82	*	19	U*	28	*	25	*	27	U*	35	*	100	*	78	J*	160	*	16	J*
Hexachlorobenzene	400	27	U*	19	U*	7	U*	13	U*	27	U*	21	U*	12	U*	15	U*	34	U*	18	U*
Hexachlorobutadiene	8200	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Hexachlorocyclopentadiene		680	U	480	U	660	U	640	U	680	U	520	U	610	U	720	UJ	840	U	460	U
Hexachloroethane	46000	340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Indeno(1,2,3-cd)pyrene	900	390		81	*	410		600		390		160	J	460		610		1200		170	*
Isophorone		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Naphthalene	54000	30	*	19	U*	12	J*	13	U*	27	U*	21	U*	91	*	54	J*	360	J	18	UJ*
Nitrobenzene		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
N-Nitroso-di-n-propylamine		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
N-Nitroso-diphenylamine		340	U	240	U	330	U	320	U	340	U	260	U	310	U	360	U	420	U	230	U
Pentachlorophenol	5300	27	U*	19	U*	7	UJ*	13	U*	27	U*	21	U*	12	U*	15	U*	56	UJ*	18	UJ*
Phenanthrene	40000	600		100	J	330	J	550	J	360		280	*	400		660		2900		280	*
Phenol	6000000	27	U*	19	U*	9	*	13	U*	27	U*	21	U*	12	U*	24		88	J	18	U*
Pyrene	13000	1200	J	190	*	980	J	1500	J	940	J	520	J	1100	J	1500	J	4000	J	420	J
Low Concentration PAH (SIM) Analysis (UG/KG)																					
2-Methylnaphthalene	123000	27	U	19	U	10		13	U	27	U	21	U	35		23		40		18	U
Acenaphthene	43000	65		19	U	24		22		27	U	29		83		61		130		12	J
Acenaphthylene	23000	27	U	19	U	17		15		27	U	21	U	18		26		24	J	13	J
Anthracene	35000	200		20		70		58		38		73		140		140		260		38	
Benzo(a)anthracene	900	860	E	100		390	E	340	E	300		290		550	E	640	E	1000	E	210	
Benzo(a)pyrene	400	830	E	120		520	E	490	E	420		300		590	E	830	E	1300	E	270	
Benzo(b)fluoranthene	900	1200	E	230		1100	E	1100	E	830	E	450	E	1100	E	1500	E	2200	E	460	E
Benzo(g,h,i)perylene	800	520		120		480	E	440	E	400		240		490	E	630	E	870	E	190	
Benzo(k)fluoranthene	900	490		62		290	E	270	E	270		150		380	E	570	E	880	E	170	
Chrysene	400	920	E	140		700	E	640	E	520		300		720	E	1100	E	1600	E	310	
Dibenzo(a,h)anthracene	400	110		19	U	94		82		71		43		99		140		200		41	
Fluoranthene	20000	1900	E	280		1400	E	1200	E	900	E	720	E	1500	E	2000	E	3700	E	700	E
Fluorene	28000	82		19	U	28		25		27	U	35		100		78		160		16	J
Hexachlorobenzene	400	27	U	19	U	7.0	U	13	U	27	U	21	U	12	U	15	U	34	U	18	U
Indeno(1,2,3-cd)pyrene	900	440		81		410	E	370	E	320		160		420	E	570	E	800	E	170	
Naphthalene	54000	30		19	U	12		13	U	27	U	21	U	91		54		69		18	U
Pentachlorophenol	5300	27	U	19	U	6.0	J	13	U	27	U	21	U	12	U	15	U	56		18	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD01-000.5		DABK-S-SD02-000.5		DABK-S-SD03-000.5		DABK-S-DUP03		DABK-S-SD04-000.5		DABK-S-SD05-000.5		DABK-S-SD06-000.5		DABK-S-SD07-000.5		DABK-S-SD08-000.5		DABK-S-SD09-000.5	
Sample Location		DABK-S-SD01		DABK-S-SD02		DABK-S-SD03		DABK-S-SD03		DABK-S-SD04		DABK-S-SD05		DABK-S-SD06		DABK-S-SD07		DABK-S-SD08		DABK-S-SD09	
Date Sampled		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD03-000.5		Field Dup. DABK-S-SD03-000.5		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																				
Phenanthrene	40000	680	E	87		470	E	340	E	250		280		620	E	730	E	1800	E	280	
Phenol	6000000	27	U	19	U	9.0		13	U	27	U	21	U	12	U	24		29	J	18	U
Pyrene	13000	1400	E	190		980	E	820	E	670	E	510	E	1100	E	1400	E	2100	E	410	E
Pesticide/PCB Analysis (UG/KG)																					
4,4'-DDD		20		6.5		26		13		15		11		13		55		27		9.1	
4,4'-DDE		100		23		170	*	110	*	96		38		77		190	*	120		37	
4,4'-DDT		98		16		140	*	110	*	95		29		83		99		82		27	
Aldrin		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	31	J	4.3	U	2.3	U
alpha-BHC		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
alpha-Chlordane		33		8.9		50		38		34		16		30		69	*	41		12	
Aroclor-1016		68	U	48	U	66	U	64	U	68	U	52	U	61	U	73	U	84	U	45	U
Aroclor-1221		140	U	96	U	130	U	130	U	140	U	110	U	120	U	150	U	170	U	92	U
Aroclor-1232		68	U	48	U	66	U	64	U	68	U	52	U	61	U	73	U	84	U	45	U
Aroclor-1242		68	U	48	U	66	U	64	U	68	U	52	U	61	U	73	U	84	U	45	U
Aroclor-1248		68	U	48	U	66	U	64	U	68	U	52	U	61	U	73	U	84	U	45	U
Aroclor-1254		68	U	48	U	66	U	64	U	68	U	52	U	61	U	73	U	84	U	45	U
Aroclor-1260		71		26	J	69		52	J	49	J	60		49	J	78		58	J	26	J
beta-BHC		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
delta-BHC		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
Dieldrin	40	77		15		170	*	120	*	92		20		86		96	J	110		25	
Endosulfan I		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
Endosulfan II		6.8	U	4.8	U	6.6	U	6.4	U	6.8	U	5.2	U	6.1	U	7.3	U	8.4	U	4.5	U
Endosulfan Sulfate		6.8	U	4.8	U	6.6	U	6.4	U	6.8	U	5.2	U	6.1	U	7.3	U	8.4	U	4.5	U
Endrin		6.8	U	4.8	U	6.6	U	6.4	U	6.8	U	5.2	U	6.1	U	7.3	U	8.4	U	4.5	U
Endrin Aldehyde		6.8	U	4.8	U	6.6	U	6.4	U	6.8	U	5.2	U	6.1	U	7.3	U	8.4	U	4.5	U
Endrin Ketone		6.9		4.8	U	7.2		6.4	U	6.8	U	5.2	U	6.1	U	7.3	U	8.4	U	4.5	U
gamma-BHC		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
gamma-Chlordane		24		7.4		35		26		26		14		22		48		32		9.1	
Heptachlor		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
Heptachlor Epoxide		3.5	U	2.4	U	3.4	U	3.3	U	3.5	U	2.7	U	3.1	U	3.8	U	4.3	U	2.3	U
Methoxychlor		35	U	24	U	34	U	33	U	35	U	27	U	31	U	38	U	43	U	23	U
Toxaphene		350	U	240	U	340	U	330	U	350	U	270	U	310	U	380	U	430	U	230	U
TAL Metal Analysis (MG/KG)																					
Aluminum		14200		8020		15600		16400		13800		12400		14800		19400		15400		7080	
Antimony	10		R		R		R		R		R		R		R		R		R		R
Arsenic	7	14.2	J	7.9	J	18.8	J	20.4	J	16.5	J	16.0	J	17.7	J	16.6	J	24.6	J	8.1	J
Barium	5500	62.9	J	35.8	J	82.2	J	98.0	J	95.0	J	36.2	J	83.0	J	72.4	J	96.7	J	30.8	J
Beryllium	0.4	0.80	U	0.66	U	0.88	U	0.81	U	0.88	U	0.72	U	0.91	U	0.92	U	1.0	U	0.60	U
Cadmium	39	0.80	UJ	0.66	UJ	0.88	UJ	0.81	UJ	0.88	UJ	0.72	UJ	0.91	UJ	0.92	UJ	1.0	UJ	0.60	UJ
Calcium		1870	U	1660	U	2430	U	2730	U	2900	U	1420	U	3640	U	2720	U	2260	U	1250	U
Chromium	1400	17.7		12.5		23.8		25.4		21.4		16.3		22.8		23.2		24.8		10.5	
Cobalt		13.5		9.5		20.1		21.4		19.1		12.1		16.2		14.8		20.9		7.9	
Copper	3100	19.6	U	16.8	U	35.0	U	38.7	U	29.9	U	23.4	U	33.5	U	36.5	U	42.6	U	15.5	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD01-000.5		DABK-S-SD02-000.5		DABK-S-SD03-000.5		DABK-S-DUP03		DABK-S-SD04-000.5		DABK-S-SD05-000.5		DABK-S-SD06-000.5		DABK-S-SD07-000.5		DABK-S-SD08-000.5		DABK-S-SD09-000.5	
Sample Location		DABK-S-SD01		DABK-S-SD02		DABK-S-SD03		DABK-S-SD03		DABK-S-SD04		DABK-S-SD05		DABK-S-SD06		DABK-S-SD07		DABK-S-SD08		DABK-S-SD09	
Date Sampled		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004		10/26/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD03-000.5		Field Dup. DABK-S-SD03-000.5		None		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																				
Iron		24700		20900		33700		34300		31300		27100		30900		29100		42700		15700	
Lead	150	42.1		35.3		69.7		77.5		55.9		72.2		63.9		76.3		68.4		36.8	
Magnesium		3050		2240		3490		3390		3220		3200		3130		3630		3100		1540	
Manganese	390	1870	J	1610	J	4330	J	5890	J*	4700	J	754	J	3610	J	593	J	3700	J	1010	J
Mercury	23	0.18	U	0.18	U	0.24	U	0.39	U	0.18	U	0.20	U	0.22	U	0.28	U	0.20	U	0.20	U
Nickel	1000	21.4		16.9		28.6		29.6		25.6		20.7		23.1		26.2		26.2		11.0	
Potassium		367	UJ	237	UJ	509	UJ	593	UJ	600	UJ	287	UJ	651	UJ	666	UJ	708	UJ	346	UJ
Selenium	390	5.6	U	4.6	U		R		R		R	5.0	U		R	6.5	U		R	4.2	U
Silver	200	1.6	U	1.3	U	1.8	U	1.6	U	1.8	U	1.4	U	1.8	U	1.8	U	2.0	U	1.2	U
Sodium			R		R		R		R		R		R	224	UJ		R		R	109	UJ
Thallium	5.5	4.0	U	3.3	U	4.4	U	4.0	U	4.4	U	3.6	U	4.6	U	4.6	U	5.1	U	3.0	U
Vanadium	550	29.9	J	18.3	J	32.5	J	34.1	J	28.2	J	26.6	J	31.6	J	38.9	J	32.9	J	15.7	J
Zinc	6000	108	J	113	J	199	J	222	J	203	J	109	J	198	J	164	J	226	J	77.3	J
Acid Volatile Sulfides/Simultaneously Extracted Metals Analysis (UMOL/G)																					
Acid Volatile Sulfide			R		NA		R		R		NA		R		NA		R		NA		R
Cadmium		0.002000			NA	0.003000		0.003000			NA	0.003000			NA	0.004000			NA	0.001000	U
Copper		0.2000			NA	0.4200		0.3600			NA	0.1700			NA	0.3200			NA	0.1400	
Lead		0.1440			NA	0.2670		0.2520			NA	0.2730			NA	0.2470			NA	0.1200	
Mercury		0.00004000	U		NA	0.00004000	U	0.00004000	U		NA	0.00004000	U		NA	0.00005000	U		NA	0.00003000	U
Nickel		0.08000			NA	0.1500		0.1100			NA	0.04000			NA	0.08000			NA	0.04000	
SEM/AVS			R		NA		R		R		NA		R		NA		R		NA		R
Simultaneously Extracted Metal		1.380			NA	2.600		2.190			NA	1.0200			NA	1.720			NA	0.8400	
Zinc		0.9600			NA	1.760		1.470			NA	0.5300			NA	1.0700			NA	0.5400	
Wet Chemistry Analysis																					
Total Organic Carbon		41400			NA	43800		36200			NA	26000			NA	50500			NA	26300	

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD10-000.5		DABK-S-SD11-000.5		DABK-S-SD12-000.5		DABK-S-DUP04		DABK-S-SD13-000.5		DABK-S-SD14-000.5		DABK-S-SD15-000.5		DABK-S-SD16-000.5		DABK-S-SD17-000.5	
Sample Location		DABK-S-SD10		DABK-S-SD11		DABK-S-SD12		DABK-S-SD12		DABK-S-SD13		DABK-S-SD14		DABK-S-SD15		DABK-S-SD16		DABK-S-SD17	
Date Sampled		10/26/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD12-000.5		Field Dup. DABK-S-SD12-000.5		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																		
Semivolatile Organic Analysis (UG/KG)																			
1,1'-Biphenyl		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2,2'-oxybis(1-Chloropropane)		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2,4,5-Trichlorophenol	330000	590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
2,4,6-Trichlorophenol	58000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2,4-Dichlorophenol	30000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2,4-Dimethylphenol	1400000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2,4-Dinitrophenol	160000	590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
2,4-Dinitrotoluene	900	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2,6-Dinitrotoluene		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2-Chloronaphthalene		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2-Chlorophenol	50000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2-Methylnaphthalene	123000	24	U*	10	J*	14	*	14	J*	13	*	24	U*	18	U*	26	U*	73	U*
2-Methylphenol		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
2-Nitroaniline		590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
2-Nitrophenol		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
3,3'-Dichlorobenzidine	1400	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
3-Nitroaniline		590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
4,6-Dinitro-2-methylphenol		590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
4-Bromophenyl-phenylether		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
4-Chloro-3-methylphenol		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
4-Chloroaniline	310000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
4-Chlorophenyl-phenylether		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
4-Methylphenol		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
4-Nitroaniline		590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
4-Nitrophenol		590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	U
Acenaphthene	43000	24	*	52	*	30	*	37	*	40	*	24	U*	28	*	30	*	48	J*
Acenaphthylene	23000	27	*	24	*	35	*	40	*	37	*	18	J*	27	*	37	*	230	*
Acetophenone		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Anthracene	35000	75	*	120	*	140	J	200	*	170	J	29	*	130	*	160	*	680	*
Atrazine		300	UJ	270	UJ	410	UJ	420	UJ	300	UJ	300	UJ	310	UJ	660	UJ	460	UJ
Benzaldehyde		110	J	220	J	220	J	240	J	200	J	300	U	110	J	660	UJ	240	J
Benzo(a)anthracene	900	330		600		1300		1300		1700		100	*	1300		1200	J	1700	
Benzo(a)pyrene	400	390		810		1700		1700		2200		120	*	1600		1600	J	2300	
Benzo(b)fluoranthene	900	750		1600		3100		2900		4300		210	*	2900		2700	J	3600	
Benzo(g,h,i)perylene	800	470		950		1800		1900		2700		89	*	1700		1500	J	2600	
Benzo(k)fluoranthene	900	220	*	580		1100		1100		1200		66	*	820		930	J	1700	
Bis(2-Chloroethoxy)methane		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Bis(2-Chloroethyl)ether	600	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
bis(2-Ethylhexyl)phthalate	46000	320	U	2000		2200		2100		2600		310	U	5600	*	1500	UJ	3900	
Butylbenzylphthalate		300	U	270	U	210	J	200	J	120	J	300	U	310	U	210	J	460	U
Caprolactam		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD10-000.5		DABK-S-SD11-000.5		DABK-S-SD12-000.5		DABK-S-DUP04		DABK-S-SD13-000.5		DABK-S-SD14-000.5		DABK-S-SD15-000.5		DABK-S-SD16-000.5		DABK-S-SD17-000.5	
Sample Location		DABK-S-SD10		DABK-S-SD11		DABK-S-SD12		DABK-S-SD12		DABK-S-SD13		DABK-S-SD14		DABK-S-SD15		DABK-S-SD16		DABK-S-SD17	
Date Sampled		10/26/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD12-000.5		Field Dup. DABK-S-SD12-000.5		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																		
Carbazole		60	J	110	J	180	J	190	J	280	J	300	U	240	J	160	J	310	J
Chrysene	400	580		1200		2300		2200		3100		130	*	2100		2100	J	3000	
Dibenzo(a,h)anthracene	400	71	*	170	*	420		460		550		20	J*	380		250	*	590	
Dibenzofuran		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Diethylphthalate	340000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Dimethylphthalate	1900000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Di-n-Butylphthalate		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Di-n-octylphthalate		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Fluoranthene	20000	760		1500		2900		3000		4500		280	*	3000		2800	J	4100	
Fluorene	28000	31	*	50	*	53	*	69	*	66	*	24	U*	46	*	42	*	250	*
Hexachlorobenzene	400	24	U*	17	U*	8	U*	17	U*	0.2	J*	24	U*	18	U*	26	U*	73	U*
Hexachlorobutadiene	8200	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Hexachlorocyclopentadiene		590	U	540	U	810	U	840	U	610	U	600	U	610	U	1300	UJ	920	UJ
Hexachloroethane	46000	300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Indeno(1,2,3-cd)pyrene	900	360		720		1400		1500		2000		89	*	1300		1200	J	2000	
Isophorone		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Naphthalene	54000	13	J*	18	J*	17	J*	15	J*	14	J*	24	UJ*	10	J*	26	UJ*	73	UJ*
Nitrobenzene		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
N-Nitroso-di-n-propylamine		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
N-Nitroso-diphenylamine		300	U	270	U	410	U	420	U	300	U	300	U	310	U	660	UJ	460	U
Pentachlorophenol	5300	24	U*	17	UJ*	8	UJ*	17	UJ*	12	UJ*	24	UJ*	10	UJ*	26	UJ*	73	U*
Phenanthrene	40000	350		620		1200		1200		1700		100	*	1500		930	J	1700	
Phenol	6000000	12	J*	20	*	24	*	18	*	12	J*	24	U*	22	*	13	J*	47	J*
Pyrene	13000	890	J	1800	J	3400	J	3100	J	4300	J	320	J	3500	J	3400	J	4300	
Low Concentration PAH (SIM) Analysis (UG/KG)																			
2-Methylnaphthalene	123000	24	U	10	J	14		14	J	13		24	U	18	U	26	U	73	U
Acenaphthene	43000	24		52		30		37		40		24	U	28		30		48	J
Acenaphthylene	23000	27		24		35		40		37		18	J	27		37		230	
Anthracene	35000	75		120		180	E	200		200		29		130		160		680	
Benzo(a)anthracene	900	330		960	E	1300	E	2300	E	2100	E	100		910	E	1300	E	3000	E
Benzo(a)pyrene	400	420		1100	E	1600	E	2300	E	2200	E	120		1200	E	1400	E	2900	E
Benzo(b)fluoranthene	900	780	E	2100	E	2800	E	3600	E	4200	E	210		2300	E	2700	E	4400	E
Benzo(g,h,i)perylene	800	320		780	E	1100	E	1400	E	1600	E	89		890	E	1100	E	1900	E
Benzo(k)fluoranthene	900	220		630	E	860	E	1400	E	1200	E	66		640	E	870	E	1700	E
Chrysene	400	550	E	1300	E	1700	E	2500	E	2700	E	130		1600	E	1900	E	3300	E
Dibenzo(a,h)anthracene	400	71		170		260	E	350	E	370	E	20	J	200		250		440	
Fluoranthene	20000	1100	E	3000	E	3700	E	5600	E	5700	E	280		3600	E	3600	E	6800	E
Fluorene	28000	31		50		53		69		66		24	U	46		42		250	
Hexachlorobenzene	400	24	U	17	U	8.0	U	17	U	0.20	J	24	U	18	U	26	U	73	U
Indeno(1,2,3-cd)pyrene	900	300		740	E	1100	E	1400	E	1600	E	89		860	E	1000	E	1800	E
Naphthalene	54000	13	J	18		17		15	J	14		24	U	10	J	26	U	73	U
Pentachlorophenol	5300	24	U	10	J	7.0	J	11	J	8.0	J	24	U	10	J	26	U	73	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD10-000.5		DABK-S-SD11-000.5		DABK-S-SD12-000.5		DABK-S-DUP04		DABK-S-SD13-000.5		DABK-S-SD14-000.5		DABK-S-SD15-000.5		DABK-S-SD16-000.5		DABK-S-SD17-000.5	
Sample Location		DABK-S-SD10		DABK-S-SD11		DABK-S-SD12		DABK-S-SD12		DABK-S-SD13		DABK-S-SD14		DABK-S-SD15		DABK-S-SD16		DABK-S-SD17	
Date Sampled		10/26/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD12-000.5		Field Dup. DABK-S-SD12-000.5		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																		
Phenanthrene	40000	360		960	E	910	E	1400	E	1500	E	100		1100	E	870	E	2400	E
Phenol	6000000	12	J	20		24		18		12	J	24	U	22		13	J	47	J
Pyrene	13000	760	E	1800	E	2600	E	3600	E	4200	E	190		2200	E	2700	E	5500	E
Pesticide/PCB Analysis (UG/KG)																			
4,4'-DDD		16		18		60		65		32		7.0		24		22		52	
4,4'-DDE		80		77		160	*	170	*	140	*	29		110	*	96		140	
4,4'-DDT		57		70		53		34		120	*	18		64		76		93	
Aldrin		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
alpha-BHC		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
alpha-Chlordane		21		39		100	*	110	*	89	*	8.1		41		37		110	*
Aroclor-1016		59	U	55	U	82	U	83	U	61	U	60	U	61	U	65	U	91	U
Aroclor-1221		120	U	110	U	170	U	170	U	120	U	120	U	120	U	130	U	180	U
Aroclor-1232		59	U	55	U	82	U	83	U	61	U	60	U	61	U	65	U	91	U
Aroclor-1242		59	U	55	U	82	U	83	U	61	U	60	U	61	U	65	U	91	U
Aroclor-1248		59	U	55	U	82	U	83	U	61	U	60	U	61	U	65	U	91	U
Aroclor-1254		59	U	55	U	82	U	83	U	61	U	60	U	61	U	65	U	91	U
Aroclor-1260		70		36	J	54	J	83	U	81		28	J	73		89		91	U
beta-BHC		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
delta-BHC		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
Dieldrin	40	44		120	*	170	*	180	*	180	*	16		120	*	110	*	190	*
Endosulfan I		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
Endosulfan II		5.9	U	5.5	U	8.2	U	8.3	U	6.1	U	6.0	U	6.1	U	6.5	U	9.1	U
Endosulfan Sulfate		5.9	U	5.5	U	16		18		9.2		6.0	U	6.1	U	7.3		9.6	
Endrin		5.9	U	5.5	U	8.2	U	8.3	U	6.1	U	6.0	U	6.1	U	6.5	U	9.1	U
Endrin Aldehyde		5.9	U	5.5	U	8.2	U	8.3	U	6.1	U	6.0	U	6.1	U	6.5	U	9.1	U
Endrin Ketone		5.9	U	7.6		8.6		8.3	U	6.1	U	6.0	U	6.1	U	6.5	U	9.1	U
gamma-BHC		3.1	U	3.3		4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
gamma-Chlordane		14		30		81	*	87	*	48		5.1		30		23		63	
Heptachlor		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
Heptachlor Epoxide		3.1	U	2.8	U	4.2	U	4.3	U	3.1	U	3.1	U	3.1	U	3.3	U	4.7	U
Methoxychlor		31	U	28	U	42	U	43	U	31	U	31	U	31	U	33	U	47	U
Toxaphene		310	U	280	U	420	U	430	U	310	U	310	U	310	U	330	U	470	U
TAL Metal Analysis (MG/KG)																			
Aluminum		16000		11900		15400		16700		15100		14400		16300		15400		12300	
Antimony	10		R		R		R		R	0.83	J		R		R		R	10.9	U
Arsenic	7	18.0	J	27.7	J	35.5	J	33.2	J	23.9	J	16.3	J	22.3	J	18.4	J	19.0	J
Barium	5500	64.0	J	231		198		221		119	J	52.0	J	83.5	J	68.3	J	98.7	
Beryllium	0.4	0.81	U	0.74	U	1.3	U	1.3	U	0.78	U	0.84	U	0.85	U	0.89	U	0.91	U
Cadmium	39	0.81	UJ	0.74	UJ	0.31	J	0.12	J	0.78	UJ	0.84	UJ	0.85	UJ	0.89	UJ	0.91	UJ
Calcium		3130	U	2260	U	2860	U	2990	U	2580	U	1410	U	2550	U	2920	U	2520	U
Chromium	1400	22.2		24.5		26.3		28.3		31.8		17.9		25.1		24.7		21.0	
Cobalt		17.6		33.1		34.7		38.0		23.6		9.7		20.0		17.8		19.5	
Copper	3100	35.1	U	37.2	U	84.9	U	91.8	U	52.6	U	14.5	U	39.9	U	43.9	U	37.6	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD10-000.5		DABK-S-SD11-000.5		DABK-S-SD12-000.5		DABK-S-DUP04		DABK-S-SD13-000.5		DABK-S-SD14-000.5		DABK-S-SD15-000.5		DABK-S-SD16-000.5		DABK-S-SD17-000.5	
Sample Location		DABK-S-SD10		DABK-S-SD11		DABK-S-SD12		DABK-S-SD12		DABK-S-SD13		DABK-S-SD14		DABK-S-SD15		DABK-S-SD16		DABK-S-SD17	
Date Sampled		10/26/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		Field Dup. DABK-S-SD12-000.5		Field Dup. DABK-S-SD12-000.5		None		None		None		None		None	
Criteria	Soil Direct Exposure Residential																		
Iron		31200		36200		40300		41400		33600		23900		34100		31000		28900	
Lead	150	106		108		175		191		157		46.5		120		156		81.8	
Magnesium		3340		2710		3000		3270		3220		2420		3410		3260		2610	
Manganese	390	2310	J	9740	J*	2970	J	2750	J	4280	J	1000	J	2610	J	2790	J	6160	*
Mercury	23	0.20	U	0.081	UJ	0.21	UJ	0.25	U	0.18	U	0.12	UJ	0.21	U	0.18	UJ	0.15	UJ
Nickel	1000	26.0		27.1		48.3		50.7		30.9		15.0		27.5		25.3		24.7	
Potassium		442	UJ	517	UJ	709	UJ	746	UJ	567	UJ	476	UJ	726	UJ	539	UJ	605	UJ
Selenium	390	5.7	U		R	9.4	U	9.4	U		R	5.9	U	6.0	U		R	6.4	UJ
Silver	200	1.6	U	1.5	U	2.7	U	2.7	U	1.6	U	1.7	U	1.7	U	1.8	U	1.8	U
Sodium			R		R		R		R		R		R		R		R	124	UJ
Thallium	5.5	4.1	U	3.7	U	6.7	U	6.7	U	3.9	U	4.2	U	4.3	U	4.4	U		R
Vanadium	550	35.7	J	26.7	J	40.8	J	43.7	J	33.8	J	27.7	J	35.4	J	33.6	J	26.8	
Zinc	6000	171	J	290	J	528	J	540	J	284	J	82.2	J	239	J	185	J	234	
Acid Volatile Sulfides/Simultaneously Extracted Metals Analysis (UMOL/G)																			
Acid Volatile Sulfide			NA		R		NA		NA		R		NA		R		NA		R
Cadmium			NA	0.003000			NA		NA	0.004000			NA	0.002000			NA	0.002000	
Copper			NA	0.3700			NA		NA	0.4800			NA	0.4000			NA	0.3600	
Lead			NA	0.3470			NA		NA	0.5580			NA	0.5750			NA	0.2890	
Mercury			NA	0.00005000	U		NA		NA	0.00004000	U		NA	0.00004000	U		NA	0.00004000	U
Nickel			NA	0.1300			NA		NA	0.1300			NA	0.1200			NA	0.1300	
SEM/AVS			NA		R		NA		NA		R		NA		R		NA		R
Simultaneously Extracted Metal			NA	3.370			NA		NA	3.590			NA	3.270			NA	3.130	
Zinc			NA	2.520			NA		NA	2.410			NA	2.170			NA	2.360	
Wet Chemistry Analysis																			
Total Organic Carbon			NA	46400			NA		NA	37400			NA	38300			NA	37400	

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R - Rejected; NA - Not Analyzed; * - From dilution analysis

TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD18-000.5		DABK-S-SD19-000.5		DABK-S-SD20-000.5	
Sample Location		DABK-S-SD18		DABK-S-SD19		DABK-S-SD20	
Date Sampled		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None	
Criteria	Soil Direct Exposure Residential						
Semivolatile Organic Analysis (UG/KG)							
1,1'-Biphenyl		250	U	300	U	200	U
2,2'-oxybis(1-Chloropropane)		250	U	300	U	200	U
2,4,5-Trichlorophenol	330000	500	U	610	U	410	U
2,4,6-Trichlorophenol	58000	250	U	300	U	200	U
2,4-Dichlorophenol	30000	250	U	300	U	200	U
2,4-Dimethylphenol	1400000	250	U	300	U	200	U
2,4-Dinitrophenol	160000	500	U	610	U	410	U
2,4-Dinitrotoluene	900	250	U	300	U	200	U
2,6-Dinitrotoluene		250	U	300	U	200	U
2-Chloronaphthalene		250	U	300	U	200	U
2-Chlorophenol	50000	250	U	300	U	200	U
2-Methylnaphthalene	123000	20	U*	18	U*	16	U*
2-Methylphenol		250	U	300	U	200	U
2-Nitroaniline		500	U	610	U	410	U
2-Nitrophenol		250	U	300	U	200	U
3,3'-Dichlorobenzidine	1400	250	U	300	U	200	U
3-Nitroaniline		500	U	610	U	410	U
4,6-Dinitro-2-methylphenol		500	U	610	U	410	U
4-Bromophenyl-phenylether		250	U	300	U	200	U
4-Chloro-3-methylphenol		250	U	300	U	200	U
4-Chloroaniline	310000	250	U	300	U	200	U
4-Chlorophenyl-phenylether		250	U	300	U	200	U
4-Methylphenol		250	U	300	U	200	U
4-Nitroaniline		500	U	610	U	410	U
4-Nitrophenol		500	U	610	U	410	U
Acenaphthene	43000	20	U*	39	*	16	U*
Acenaphthylene	23000	30	*	39	*	29	*
Acetophenone		250	U	300	U	200	U
Anthracene	35000	120	*	210	*	37	*
Atrazine		250	UJ	300	UJ	200	UJ
Benzaldehyde		74	J	160	J	200	U
Benzo(a)anthracene	900	960		1900		380	
Benzo(a)pyrene	400	1200		2500		390	
Benzo(b)fluoranthene	900	2000		4300		450	
Benzo(g,h,i)perylene	800	1200		2800		330	
Benzo(k)fluoranthene	900	730		1500		130	*
Bis(2-Chloroethoxy)methane		250	U	300	U	200	U
Bis(2-Chloroethyl)ether	600	250	U	300	U	200	U
bis(2-Ethylhexyl)phthalate	46000	970		3500		1300	
Butylbenzylphthalate		88	J	1600	J	1200	J
Caprolactam		250	U	300	U	200	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
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TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD18-000.5		DABK-S-SD19-000.5		DABK-S-SD20-000.5	
Sample Location		DABK-S-SD18		DABK-S-SD19		DABK-S-SD20	
Date Sampled		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None	
Criteria	Soil Direct Exposure Residential						
Carbazole		150	J	290	J	200	U
Chrysene	400	1600		3200		390	
Dibenzo(a,h)anthracene	400	310		620		32	*
Dibenzofuran		250	U	300	U	200	U
Diethylphthalate	340000	250	U	300	U	200	U
Dimethylphthalate	1900000	250	U	300	U	200	U
Di-n-Butylphthalate		250	U	300	U	200	U
Di-n-octylphthalate		250	U	300	U	200	U
Fluoranthene	20000	2200		4600		630	
Fluorene	28000	37	*	61	*	16	U*
Hexachlorobenzene	400	20	U*	18	U*	16	U*
Hexachlorobutadiene	8200	250	U	300	U	200	U
Hexachlorocyclopentadiene		500	UJ	610	UJ	410	UJ
Hexachloroethane	46000	250	U	300	U	200	U
Indeno(1,2,3-cd)pyrene	900	1000		2100		260	
Isophorone		250	U	300	U	200	U
Naphthalene	54000	20	U*	18	U*	16	U*
Nitrobenzene		250	U	300	U	200	U
N-Nitroso-di-n-propylamine		250	U	300	U	200	U
N-Nitroso-diphenylamine		250	U	300	U	200	U
Pentachlorophenol	5300	20	U*	18	U*	16	U*
Phenanthrene	40000	940		1800		220	
Phenol	6000000	20	U*	18	U*	16	U*
Pyrene	13000	2200		4600		820	
Low Concentration PAH (SIM) Analysis (UG/KG)							
2-Methylnaphthalene	123000	20	U	18	U	16	U
Acenaphthene	43000	20	U	39		16	U
Acenaphthylene	23000	30		39		29	
Anthracene	35000	120		210		37	
Benzo(a)anthracene	900	760	E	1500	E	200	
Benzo(a)pyrene	400	1000	E	2000	E	240	
Benzo(b)fluoranthene	900	1600	E	3200	E	300	
Benzo(g,h,i)perylene	800	680	E	1400	E	140	
Benzo(k)fluoranthene	900	710	E	1400	E	130	
Chrysene	400	1200	E	2300	E	210	
Dibenzo(a,h)anthracene	400	150		300		32	
Fluoranthene	20000	2800	E	5700	E	510	E
Fluorene	28000	37		61		16	U
Hexachlorobenzene	400	20	U	18	U	16	U
Indeno(1,2,3-cd)pyrene	900	620	E	1300	E	120	
Naphthalene	54000	20	U	18	U	16	U
Pentachlorophenol	5300	20	U	18	U	16	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
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TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD18-000.5		DABK-S-SD19-000.5		DABK-S-SD20-000.5	
Sample Location		DABK-S-SD18		DABK-S-SD19		DABK-S-SD20	
Date Sampled		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None	
Criteria	Soil Direct Exposure Residential						
Phenanthrene	40000	780	E	1700	E	160	
Phenol	6000000	20	U	18	U	16	U
Pyrene	13000	1600	E	3400	E	340	E
Pesticide/PCB Analysis (UG/KG)							
4,4'-DDD		24		17		4.1	U
4,4'-DDE		52		62		7.1	
4,4'-DDT		26		50		4.1	U
Aldrin		2.6	U	3.1	U	2.1	U
alpha-BHC		2.6	U	3.1	U	2.1	U
alpha-Chlordane		28		33		5.6	
Aroclor-1016		50	U	61	U	41	U
Aroclor-1221		100	U	120	U	83	U
Aroclor-1232		50	U	61	U	41	U
Aroclor-1242		50	U	61	U	41	U
Aroclor-1248		50	U	61	U	41	U
Aroclor-1254		50	U	61	U	41	U
Aroclor-1260		50	U	61	U	41	U
beta-BHC		2.6	U	3.1	U	2.1	U
delta-BHC		2.6	U	3.1	U	2.1	U
Dieldrin	40	48		71		8.6	
Endosulfan I		2.6	U	3.1	U	2.1	U
Endosulfan II		5.0	U	6.1	U	4.1	U
Endosulfan Sulfate		5.0	U	6.1	U	4.1	U
Endrin		5.0	U	6.1	U	4.1	U
Endrin Aldehyde		5.0	U	6.1	U	4.1	U
Endrin Ketone		5.0	U	6.1	U	4.1	U
gamma-BHC		2.6	U	3.1	U	2.1	U
gamma-Chlordane		21		24		3.6	
Heptachlor		2.6	U	3.1	U	2.1	U
Heptachlor Epoxide		2.6	U	3.1	U	2.1	U
Methoxychlor		26	U	31	U	21	U
Toxaphene		260	U	310	U	210	U
TAL Metal Analysis (MG/KG)							
Aluminum		8100		14000		6230	
Antimony	10	7.5	U	11.3	U	7.2	U
Arsenic	7	10.7	J	17.6	J	7.5	J
Barium	5500	33.2		88.8		17.9	J
Beryllium	0.4	0.63	U	0.94	U	0.60	U
Cadmium	39	0.63	UJ	0.94	UJ	0.60	UJ
Calcium		1260	U	2760	U	691	U
Chromium	1400	11.9		81.5		13.0	
Cobalt		9.4		19.1		6.1	
Copper	3100	15.8	U	43.6	U	10.5	U

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
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TABLE 2
SEDIMENT ANALYTICAL RESULTS
CTO-849, NUSC DISPOSAL AREA, SA-08, BACKGROUND SOIL INVESTIGATION
NEWPORT, RHODE ISLAND

Sample Number		DABK-S-SD18-000.5		DABK-S-SD19-000.5		DABK-S-SD20-000.5	
Sample Location		DABK-S-SD18		DABK-S-SD19		DABK-S-SD20	
Date Sampled		10/27/2004		10/27/2004		10/27/2004	
Interval		0.0-0.5		0.0-0.5		0.0-0.5	
QC Identifier		None		None		None	
Criteria	Soil Direct Exposure Residential						
Iron		23100		29900		21400	
Lead	150	36.3		297		22.5	
Magnesium		2370		3130		2070	
Manganese	390	1030		4390		326	
Mercury	23	0.066	UJ	0.092	UJ	0.12	U
Nickel	1000	15.2		26.7		12.2	
Potassium		233	UJ	705	UJ	199	UJ
Selenium	390	4.4	UJ	6.6	UJ	4.2	UJ
Silver	200	1.3	U	1.9	U	1.2	U
Sodium			R	129	UJ	600	U
Thallium	5.5	3.1	UJ	4.7	UJ	3.0	UJ
Vanadium	550	14.7		29.2		10.5	
Zinc	6000	117		242		82.9	
Acid Volatile Sulfides/Simultaneously Extracted Metals Analysis (UMOL/G)							
Acid Volatile Sulfide			NA		R		NA
Cadmium			NA	0.002000	U		NA
Copper			NA	0.5100			NA
Lead			NA	0.3500			NA
Mercury			NA	0.00004000	U		NA
Nickel			NA	0.1300			NA
SEM/AVS			NA		R		NA
Simultaneously Extracted Metal			NA	3.400			NA
Zinc			NA	2.410			NA
Wet Chemistry Analysis							
Total Organic Carbon			NA	34200			NA

Black Background - Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

APPENDIX C

REFERENCE STATISTICS AND CALCULATIONS

Appendix C, Table C-1
Candidate Outliers and Extreme Values for Background Data
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Aluminum	6230		Hydric Se	DABK-S-SD20-000.5	
	7080		Hydric Se	DABK-S-SD09-000.5	
	7580		Non-Hydric Se	DABK-S-SO11-0001	
	8020		Hydric Se	DABK-S-SD02-000.5	
	8100		Hydric Se	DABK-S-SD18-000.5	
	8900		Non-Hydric Se	DABK-S-SO11-0001-D	
	9020		Non-Hydric Se	DABK-S-SO16-0001	
	9110		Non-Hydric PmB	DABK-S-SO34-0001	
	9140		Non-Hydric Se	DABK-S-SO18-0001	
	9250		Non-Hydric Se	DABK-S-SO14-0001	
	9290		Non-Hydric PmB	DABK-S-SO21-0001	
	9430		Non-Hydric PmB	DABK-S-SO38-0001	
	9710		Non-Hydric PmB	DABK-S-SO35-0001	
	9780		Non-Hydric PmB	DABK-S-SO31-0001	
	9840		Non-Hydric Se	DABK-S-SO13-0001	
	9890		Non-Hydric PmB	DABK-S-SO39-0001	
	9960		Non-Hydric PmB	DABK-S-SO35-0001-D	
	10300		Non-Hydric PmB	DABK-S-SO40-0001	
	10600		Non-Hydric PmB	DABK-S-SO36-0001	
	10800		Non-Hydric PmB	DABK-S-SO28-0001	
	11000		Non-Hydric Se	DABK-S-SO17-0001	
	11000		Non-Hydric PmB	DABK-S-SO27-0001	
	11200		Non-Hydric Se	DABK-S-SO09-0001	
	11200		Non-Hydric PmB	DABK-S-SO33-0001	
	11400		Non-Hydric PmB	DABK-S-SO37-0001	
	11700		Non-Hydric Se	DABK-S-SO15-0001	
	11700		Non-Hydric PmB	DABK-S-SO24-0001	
	11700		Non-Hydric PmB	DABK-S-SO32-0001	
	11900		Hydric Se	DABK-S-SD11-000.5	
	11900		Non-Hydric Se	DABK-S-SO07-0001-D	
	11900		Non-Hydric Se	DABK-S-SO12-0001	
	12100		Non-Hydric PmB	DABK-S-SO22-0001	
	12100		Non-Hydric PmB	DABK-S-SO23-0001	
	12300		Hydric Se	DABK-S-SD17-000.5	
	12300		Non-Hydric Se	DABK-S-SO03-0001	
	12300		Non-Hydric Se	DABK-S-SO08-0001	
	12400		Hydric Se	DABK-S-SD05-000.5	
	12400		Non-Hydric PmB	DABK-S-SO25-0001-D	
	12400		Non-Hydric PmB	DABK-S-SO26-0001	
	12500		Non-Hydric Se	DABK-S-SO02-0001	
	12500		Non-Hydric Se	DABK-S-SO10-0001	
	13000		Non-Hydric Se	DABK-S-SO19-0001	
	13100		Non-Hydric Se	DABK-S-SO05-0001	
	13700		Non-Hydric PmB	DABK-S-SO25-0001	
	13800		Hydric Se	DABK-S-SD04-000.5	
	14000		Hydric Se	DABK-S-SD19-000.5	
	14000		Non-Hydric PmB	DABK-S-SO30-0001	
	14200		Hydric Se	DABK-S-SD01-000.5	
	14300		Non-Hydric Se	DABK-S-SO01-0001	
	14400		Hydric Se	DABK-S-SD14-000.5	
	14400		Non-Hydric Se	DABK-S-SO07-0001	
	14600		Non-Hydric PmB	DABK-S-SO29-0001	
	14800		Hydric Se	DABK-S-SD06-000.5	
	14800		Non-Hydric Se	DABK-S-SO06-0001	
	15100		Hydric Se	DABK-S-SD13-000.5	
	15200		Non-Hydric Se	DABK-S-SO20-0001	
	15400		Hydric Se	DABK-S-SD08-000.5	
	15400		Hydric Se	DABK-S-SD12-000.5	
	15400		Hydric Se	DABK-S-SD16-000.5	
	15600		Hydric Se	DABK-S-SD03-000.5	
	16000		Hydric Se	DABK-S-SD10-000.5	
	16300		Hydric Se	DABK-S-SD15-000.5	
	16400		Hydric Se	DABK-S-SD03-000.5-D	
	16700		Hydric Se	DABK-S-SD12-000.5-D	
	16700		Non-Hydric Se	DABK-S-SO04-0001	
	19400		Hydric Se	DABK-S-SD07-000.5	

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
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Appendix C, Table C-1
Candidate Outliers and Extreme Values for Background Data
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Antimony	0.72	UJ	Non-Hydric PmB	DABK-S-SO36-0001	
	0.75	UJ	Non-Hydric PmB	DABK-S-SO37-0001	
	0.83	J	Hydric Se	DABK-S-SD13-000.5	
	0.95	UJ	Non-Hydric PmB	DABK-S-SO35-0001	
	0.96	UJ	Non-Hydric PmB	DABK-S-SO27-0001	
	7.1	UJ	Non-Hydric PmB	DABK-S-SO31-0001	
	7.2	U	Hydric Se	DABK-S-SD20-000.5	
	7.2	UJ	Non-Hydric PmB	DABK-S-SO25-0001-D	
	7.3	UJ	Non-Hydric PmB	DABK-S-SO34-0001	
	7.5	U	Hydric Se	DABK-S-SD18-000.5	
	7.5	UJ	Non-Hydric PmB	DABK-S-SO35-0001-D	
	7.5	U	Non-Hydric PmB	DABK-S-SO39-0001	
	7.6	U	Non-Hydric PmB	DABK-S-SO40-0001	
	7.8	UJ	Non-Hydric PmB	DABK-S-SO21-0001	
	7.8	UJ	Non-Hydric PmB	DABK-S-SO23-0001	
	7.8	UJ	Non-Hydric PmB	DABK-S-SO25-0001	
	7.8	UJ	Non-Hydric PmB	DABK-S-SO38-0001	
	8	UJ	Non-Hydric PmB	DABK-S-SO24-0001	
	8	UJ	Non-Hydric PmB	DABK-S-SO26-0001	
	8	UJ	Non-Hydric PmB	DABK-S-SO30-0001	
	8.1	UJ	Non-Hydric PmB	DABK-S-SO22-0001	
	8.1	UJ	Non-Hydric PmB	DABK-S-SO28-0001	
	8.1	UJ	Non-Hydric PmB	DABK-S-SO32-0001	
	8.4	UJ	Non-Hydric PmB	DABK-S-SO29-0001	
	9.2	UJ	Non-Hydric PmB	DABK-S-SO33-0001	
	10.9	U	Hydric Se	DABK-S-SD17-000.5	
	11.3	U	Hydric Se	DABK-S-SD19-000.5	
Arsenic	3.3	J	Non-Hydric Se	DABK-S-SO11-0001	
	3.9	UJ	Non-Hydric Se	DABK-S-SO11-0001-D	
	3.9	J	Non-Hydric Se	DABK-S-SO16-0001	
	4.7	J	Non-Hydric PmB	DABK-S-SO33-0001	
	5.4	J	Non-Hydric PmB	DABK-S-SO38-0001	
	5.7	J	Non-Hydric PmB	DABK-S-SO31-0001	
	5.8	J	Non-Hydric Se	DABK-S-SO17-0001	
	5.8	J	Non-Hydric Se	DABK-S-SO18-0001	
	5.8	J	Non-Hydric PmB	DABK-S-SO36-0001	
	5.9	J	Non-Hydric PmB	DABK-S-SO34-0001	
	6.3	J	Non-Hydric PmB	DABK-S-SO40-0001	
	6.4	J	Non-Hydric Se	DABK-S-SO12-0001	
	7	J	Non-Hydric PmB	DABK-S-SO39-0001	
	7.5	J	Hydric Se	DABK-S-SD20-000.5	
	7.5	J	Non-Hydric PmB	DABK-S-SO35-0001	
	7.7	J	Non-Hydric Se	DABK-S-SO04-0001	
	7.8	J	Non-Hydric Se	DABK-S-SO01-0001	
	7.8	J	Non-Hydric PmB	DABK-S-SO27-0001	
	7.9	J	Hydric Se	DABK-S-SD02-000.5	
	8.1	J	Hydric Se	DABK-S-SD09-000.5	
	8.4	J	Non-Hydric PmB	DABK-S-SO30-0001	
	8.6	J	Non-Hydric Se	DABK-S-SO03-0001	
	8.8	J	Non-Hydric PmB	DABK-S-SO23-0001	
	9.1	J	Non-Hydric Se	DABK-S-SO07-0001-D	
	9.2	J	Non-Hydric Se	DABK-S-SO19-0001	
	9.5	J	Non-Hydric Se	DABK-S-SO05-0001	
	9.8	J	Non-Hydric PmB	DABK-S-SO28-0001	
	10.3	J	Non-Hydric PmB	DABK-S-SO25-0001	
	10.6	J	Non-Hydric PmB	DABK-S-SO29-0001	
	10.6	J	Non-Hydric PmB	DABK-S-SO37-0001	
	10.7	J	Hydric Se	DABK-S-SD18-000.5	
	10.7	J	Non-Hydric Se	DABK-S-SO07-0001	
	11	J	Non-Hydric Se	DABK-S-SO15-0001	
	11.2	J	Non-Hydric Se	DABK-S-SO10-0001	
	11.2	J	Non-Hydric Se	DABK-S-SO14-0001	
	11.9	J	Non-Hydric PmB	DABK-S-SO24-0001	
	12.2	J	Non-Hydric Se	DABK-S-SO13-0001	
	12.6	J	Non-Hydric Se	DABK-S-SO09-0001	
	12.9	J	Non-Hydric PmB	DABK-S-SO22-0001	

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
NDX = Dixon's Test is "no" (not outlier)
Q75 = value exceeds informal test versus 4 times 75th quantile

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Arsenic (continued)	13	J	Non-Hydric PmB	DABK-S-SO32-0001	
	13.2	J	Non-Hydric Se	DABK-S-SO08-0001	
	13.3	J	Non-Hydric PmB	DABK-S-SO21-0001	
	14.2	J	Hydric Se	DABK-S-SD01-000.5	
	15	J	Non-Hydric PmB	DABK-S-SO26-0001	
	16	J	Hydric Se	DABK-S-SD05-000.5	
	16.3	J	Hydric Se	DABK-S-SD14-000.5	
	16.3	J	Non-Hydric Se	DABK-S-SO02-0001	
	16.5	J	Hydric Se	DABK-S-SD04-000.5	
	16.6	J	Hydric Se	DABK-S-SD07-000.5	
	17.6	J	Hydric Se	DABK-S-SD19-000.5	
	17.7	J	Hydric Se	DABK-S-SD06-000.5	
	18	J	Hydric Se	DABK-S-SD10-000.5	
	18.4	J	Hydric Se	DABK-S-SD16-000.5	
	18.8	J	Hydric Se	DABK-S-SD03-000.5	
	19	J	Hydric Se	DABK-S-SD17-000.5	
	20.4	J	Hydric Se	DABK-S-SD03-000.5-D	
	22.3	J	Hydric Se	DABK-S-SD15-000.5	
	23.5	J	Non-Hydric Se	DABK-S-SO20-0001	YDX. No localized pattern of contam., no QC probs. Retain.
	23.9	J	Hydric Se	DABK-S-SD13-000.5	
	24.6	J	Hydric Se	DABK-S-SD08-000.5	
	27.7	J	Hydric Se	DABK-S-SD11-000.5	
	32.3	J	Non-Hydric PmB	DABK-S-SO25-0001-D	YDX. No localized pattern of contam., no QC probs. Retain.
	33.2	J	Hydric Se	DABK-S-SD12-000.5-D	
	35.5	J	Hydric Se	DABK-S-SD12-000.5	
	71.7	J	Non-Hydric Se	DABK-S-SO06-0001	YDX, Q75. No localized pattern of contam., no QC probs. Retain.
Barium	15.1	J	Non-Hydric Se	DABK-S-SO14-0001	
	17.9	J	Hydric Se	DABK-S-SD20-000.5	
	21.1	J	Non-Hydric Se	DABK-S-SO01-0001	
	23.6	J	Non-Hydric Se	DABK-S-SO09-0001	
	23.8	J	Non-Hydric Se	DABK-S-SO05-0001	
	25.2	J	Non-Hydric Se	DABK-S-SO15-0001	
	26.8		Non-Hydric Se	DABK-S-SO13-0001	
	27.7	J	Non-Hydric Se	DABK-S-SO10-0001	
	28.1		Non-Hydric PmB	DABK-S-SO38-0001	
	28.2		Non-Hydric PmB	DABK-S-SO31-0001	
	28.4	J	Non-Hydric Se	DABK-S-SO03-0001	
	28.9		Non-Hydric Se	DABK-S-SO11-0001	
	30.1		Non-Hydric Se	DABK-S-SO16-0001	
	30.8	J	Hydric Se	DABK-S-SD09-000.5	
	32.1		Non-Hydric PmB	DABK-S-SO36-0001	
	32.5		Non-Hydric PmB	DABK-S-SO37-0001	
	32.7		Non-Hydric Se	DABK-S-SO04-0001	
	33.2		Hydric Se	DABK-S-SD18-000.5	
	34.2		Non-Hydric Se	DABK-S-SO11-0001-D	
	34.4		Non-Hydric Se	DABK-S-SO18-0001	
	35.3	J	Non-Hydric PmB	DABK-S-SO40-0001	
	35.8	J	Hydric Se	DABK-S-SD02-000.5	
	36.2	J	Hydric Se	DABK-S-SD05-000.5	
	36.4		Non-Hydric PmB	DABK-S-SO34-0001	
	36.6		Non-Hydric PmB	DABK-S-SO35-0001-D	
	37.1		Non-Hydric PmB	DABK-S-SO25-0001	
	37.2	J	Non-Hydric PmB	DABK-S-SO39-0001	
	37.4		Non-Hydric PmB	DABK-S-SO21-0001	
	37.9		Non-Hydric PmB	DABK-S-SO27-0001	
	39.4		Non-Hydric PmB	DABK-S-SO23-0001	
	39.8		Non-Hydric PmB	DABK-S-SO35-0001	
	40.8		Non-Hydric PmB	DABK-S-SO22-0001	
	41.9		Non-Hydric PmB	DABK-S-SO24-0001	
	42.2		Non-Hydric Se	DABK-S-SO08-0001	
	42.7		Non-Hydric Se	DABK-S-SO07-0001-D	
	42.9		Non-Hydric Se	DABK-S-SO12-0001	
	43.9		Non-Hydric PmB	DABK-S-SO28-0001	
	44.7		Non-Hydric Se	DABK-S-SO19-0001	
	44.7		Non-Hydric PmB	DABK-S-SO25-0001-D	
	45.3		Non-Hydric PmB	DABK-S-SO26-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Barium (continued)	45.8		Non-Hydric Se	DABK-S-SO20-0001	
	47.3		Non-Hydric Se	DABK-S-SO17-0001	
	48.4		Non-Hydric PmB	DABK-S-SO33-0001	
	48.5		Non-Hydric Se	DABK-S-SO06-0001	
	48.5		Non-Hydric PmB	DABK-S-SO29-0001	
	48.7		Non-Hydric PmB	DABK-S-SO32-0001	
	51.1		Non-Hydric Se	DABK-S-SO07-0001	
	52	J	Hydric Se	DABK-S-SD14-000.5	
	53.1		Non-Hydric PmB	DABK-S-SO30-0001	
	60.6		Non-Hydric Se	DABK-S-SO02-0001	
	62.9	J	Hydric Se	DABK-S-SD01-000.5	
	64	J	Hydric Se	DABK-S-SD10-000.5	
	68.3	J	Hydric Se	DABK-S-SD16-000.5	
	72.4	J	Hydric Se	DABK-S-SD07-000.5	
	82.2	J	Hydric Se	DABK-S-SD03-000.5	
	83	J	Hydric Se	DABK-S-SD06-000.5	
	83.5	J	Hydric Se	DABK-S-SD15-000.5	
	88.8		Hydric Se	DABK-S-SD19-000.5	
	95	J	Hydric Se	DABK-S-SD04-000.5	
	96.7	J	Hydric Se	DABK-S-SD08-000.5	
	98	J	Hydric Se	DABK-S-SD03-000.5-D	
	98.7		Hydric Se	DABK-S-SD17-000.5	
	119	J	Hydric Se	DABK-S-SD13-000.5	
	198		Hydric Se	DABK-S-SD12-000.5	YDX. Localized contam. in creekbed. No QC probs. Retain.
	221		Hydric Se	DABK-S-SD12-000.5-D	YDX. Localized contam. in creekbed. No QC probs. Retain.
	231		Hydric Se	DABK-S-SD11-000.5	YDX. Localized contam. in creekbed. No QC probs. Retain.
Beryllium	0.37	J	Non-Hydric Se	DABK-S-SO06-0001	
	0.38	J	Non-Hydric PmB	DABK-S-SO25-0001-D	
	0.57	U	Non-Hydric Se	DABK-S-SO02-0001	
	0.58	U	Non-Hydric Se	DABK-S-SO11-0001	
	0.59	U	Non-Hydric PmB	DABK-S-SO31-0001	
	0.6	U	Hydric Se	DABK-S-SD09-000.5	
	0.6	U	Hydric Se	DABK-S-SD20-000.5	
	0.61	U	Non-Hydric PmB	DABK-S-SO34-0001	
	0.62	U	Non-Hydric Se	DABK-S-SO01-0001	
	0.62	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	0.63	U	Hydric Se	DABK-S-SD18-000.5	
	0.63	U	Non-Hydric Se	DABK-S-SO08-0001	
	0.63	U	Non-Hydric PmB	DABK-S-SO39-0001	
	0.63	U	Non-Hydric PmB	DABK-S-SO40-0001	
	0.65	U	Non-Hydric Se	DABK-S-SO13-0001	
	0.65	U	Non-Hydric Se	DABK-S-SO18-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO21-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO23-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO25-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO27-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO35-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO37-0001	
	0.65	U	Non-Hydric PmB	DABK-S-SO38-0001	
	0.66	U	Hydric Se	DABK-S-SD02-000.5	
	0.66	U	Non-Hydric Se	DABK-S-SO16-0001	
	0.66	U	Non-Hydric PmB	DABK-S-SO26-0001	
	0.66	U	Non-Hydric PmB	DABK-S-SO36-0001	
	0.67	U	Non-Hydric PmB	DABK-S-SO24-0001	
	0.67	U	Non-Hydric PmB	DABK-S-SO30-0001	
	0.67	U	Non-Hydric PmB	DABK-S-SO32-0001	
	0.68	U	Non-Hydric PmB	DABK-S-SO22-0001	
	0.68	U	Non-Hydric PmB	DABK-S-SO28-0001	
	0.69	U	Non-Hydric Se	DABK-S-SO15-0001	
	0.69	U	Non-Hydric Se	DABK-S-SO19-0001	
	0.7	U	Non-Hydric Se	DABK-S-SO14-0001	
	0.7	U	Non-Hydric Se	DABK-S-SO20-0001	
	0.7	U	Non-Hydric PmB	DABK-S-SO29-0001	
	0.71	U	Non-Hydric Se	DABK-S-SO12-0001	
	0.71	U	Non-Hydric Se	DABK-S-SO17-0001	
	0.72	U	Hydric Se	DABK-S-SD05-000.5	

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Q75 = value exceeds informal test versus 4 times 75th quantile

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Beryllium (continued)	0.72	U	Non-Hydric Se	DABK-S-SO05-0001	
	0.73	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	0.74	U	Hydric Se	DABK-S-SD11-000.5	
	0.75	U	Non-Hydric Se	DABK-S-SO09-0001	
	0.76	U	Non-Hydric Se	DABK-S-SO10-0001	
	0.77	U	Non-Hydric PmB	DABK-S-SO33-0001	
	0.78	U	Hydric Se	DABK-S-SD13-000.5	
	0.78	U	Non-Hydric Se	DABK-S-SO04-0001	
	0.78	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	0.8	U	Hydric Se	DABK-S-SD01-000.5	
	0.81	U	Hydric Se	DABK-S-SD03-000.5-D	
	0.81	U	Hydric Se	DABK-S-SD10-000.5	
	0.81	U	Non-Hydric Se	DABK-S-SO03-0001	
	0.84	U	Hydric Se	DABK-S-SD14-000.5	
	0.85	U	Hydric Se	DABK-S-SD15-000.5	
	0.85	U	Non-Hydric Se	DABK-S-SO07-0001	
	0.88	U	Hydric Se	DABK-S-SD03-000.5	
	0.88	U	Hydric Se	DABK-S-SD04-000.5	
	0.89	U	Hydric Se	DABK-S-SD16-000.5	
	0.91	U	Hydric Se	DABK-S-SD06-000.5	
	0.91	U	Hydric Se	DABK-S-SD17-000.5	
	0.92	U	Hydric Se	DABK-S-SD07-000.5	
	0.94	U	Hydric Se	DABK-S-SD19-000.5	
	1	U	Hydric Se	DABK-S-SD08-000.5	
	1.3	U	Hydric Se	DABK-S-SD12-000.5	
	1.3	U	Hydric Se	DABK-S-SD12-000.5-D	
Cadmium	0.12	J	Hydric Se	DABK-S-SD12-000.5-D	
	0.31	J	Hydric Se	DABK-S-SD12-000.5	
	0.57	UJ	Non-Hydric Se	DABK-S-SO02-0001	
	0.58	UJ	Non-Hydric Se	DABK-S-SO11-0001	
	0.59	UJ	Non-Hydric PmB	DABK-S-SO31-0001	
	0.6	UJ	Hydric Se	DABK-S-SD09-000.5	
	0.6	UJ	Hydric Se	DABK-S-SD20-000.5	
	0.6	UJ	Non-Hydric PmB	DABK-S-SO25-0001-D	
	0.61	UJ	Non-Hydric PmB	DABK-S-SO34-0001	
	0.62	UJ	Non-Hydric Se	DABK-S-SO01-0001	
	0.62	UJ	Non-Hydric PmB	DABK-S-SO35-0001-D	
	0.63	UJ	Hydric Se	DABK-S-SD18-000.5	
	0.63	UJ	Non-Hydric Se	DABK-S-SO08-0001	
	0.63	UJ	Non-Hydric PmB	DABK-S-SO39-0001	
	0.63	UJ	Non-Hydric PmB	DABK-S-SO40-0001	
	0.65	UJ	Non-Hydric Se	DABK-S-SO13-0001	
	0.65	UJ	Non-Hydric Se	DABK-S-SO18-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO21-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO23-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO25-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO27-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO35-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO37-0001	
	0.65	UJ	Non-Hydric PmB	DABK-S-SO38-0001	
	0.66	UJ	Hydric Se	DABK-S-SD02-000.5	
	0.66	UJ	Non-Hydric Se	DABK-S-SO16-0001	
	0.66	UJ	Non-Hydric PmB	DABK-S-SO26-0001	
	0.66	UJ	Non-Hydric PmB	DABK-S-SO36-0001	
	0.67	UJ	Non-Hydric PmB	DABK-S-SO24-0001	
	0.67	UJ	Non-Hydric PmB	DABK-S-SO30-0001	
	0.67	UJ	Non-Hydric PmB	DABK-S-SO32-0001	
	0.68	UJ	Non-Hydric Se	DABK-S-SO06-0001	
	0.68	UJ	Non-Hydric PmB	DABK-S-SO22-0001	
	0.68	UJ	Non-Hydric PmB	DABK-S-SO28-0001	
	0.69	UJ	Non-Hydric Se	DABK-S-SO15-0001	
	0.69	UJ	Non-Hydric Se	DABK-S-SO19-0001	
	0.7	UJ	Non-Hydric Se	DABK-S-SO14-0001	
	0.7	UJ	Non-Hydric Se	DABK-S-SO20-0001	
	0.7	UJ	Non-Hydric PmB	DABK-S-SO29-0001	
	0.71	UJ	Non-Hydric Se	DABK-S-SO12-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Cadmium (continued)	0.71	UJ	Non-Hydric Se	DABK-S-SO17-0001	
	0.72	UJ	Hydric Se	DABK-S-SD05-000.5	
	0.72	UJ	Non-Hydric Se	DABK-S-SO05-0001	
	0.73	UJ	Non-Hydric Se	DABK-S-SO11-0001-D	
	0.74	UJ	Hydric Se	DABK-S-SD11-000.5	
	0.75	UJ	Non-Hydric Se	DABK-S-SO09-0001	
	0.76	UJ	Non-Hydric Se	DABK-S-SO10-0001	
	0.77	UJ	Non-Hydric PmB	DABK-S-SO33-0001	
	0.78	UJ	Hydric Se	DABK-S-SD13-000.5	
	0.78	UJ	Non-Hydric Se	DABK-S-SO04-0001	
	0.78	UJ	Non-Hydric Se	DABK-S-SO07-0001-D	
	0.8	UJ	Hydric Se	DABK-S-SD01-000.5	
	0.81	UJ	Hydric Se	DABK-S-SD03-000.5-D	
	0.81	UJ	Hydric Se	DABK-S-SD10-000.5	
	0.81	UJ	Non-Hydric Se	DABK-S-SO03-0001	
	0.84	UJ	Hydric Se	DABK-S-SD14-000.5	
	0.85	UJ	Hydric Se	DABK-S-SD15-000.5	
	0.85	UJ	Non-Hydric Se	DABK-S-SO07-0001	
	0.88	UJ	Hydric Se	DABK-S-SD03-000.5	
	0.88	UJ	Hydric Se	DABK-S-SD04-000.5	
	0.89	UJ	Hydric Se	DABK-S-SD16-000.5	
	0.91	UJ	Hydric Se	DABK-S-SD06-000.5	
	0.91	UJ	Hydric Se	DABK-S-SD17-000.5	
	0.92	UJ	Hydric Se	DABK-S-SD07-000.5	
	0.94	UJ	Hydric Se	DABK-S-SD19-000.5	
	1	UJ	Hydric Se	DABK-S-SD08-000.5	
Chromium	7.6		Non-Hydric Se	DABK-S-SO11-0001	
	8.3		Non-Hydric Se	DABK-S-SO16-0001	
	9		Non-Hydric Se	DABK-S-SO11-0001-D	
	9.1		Non-Hydric Se	DABK-S-SO17-0001	
	9.8		Non-Hydric Se	DABK-S-SO14-0001	
	9.9		Non-Hydric Se	DABK-S-SO18-0001	
	10.5		Hydric Se	DABK-S-SD09-000.5	
	10.9		Non-Hydric Se	DABK-S-SO13-0001	
	11		Non-Hydric Se	DABK-S-SO10-0001	
	11.2		Non-Hydric Se	DABK-S-SO09-0001	
	11.2		Non-Hydric PmB	DABK-S-SO38-0001	
	11.3		Non-Hydric Se	DABK-S-SO12-0001	
	11.6		Non-Hydric PmB	DABK-S-SO31-0001	
	11.9		Hydric Se	DABK-S-SD18-000.5	
	11.9		Non-Hydric Se	DABK-S-SO03-0001	
	11.9		Non-Hydric Se	DABK-S-SO05-0001	
	12		Non-Hydric PmB	DABK-S-SO27-0001	
	12		Non-Hydric PmB	DABK-S-SO34-0001	
	12.2		Non-Hydric PmB	DABK-S-SO40-0001	
	12.3		Non-Hydric PmB	DABK-S-SO39-0001	
	12.4		Non-Hydric PmB	DABK-S-SO36-0001	
	12.5		Hydric Se	DABK-S-SD02-000.5	
	12.5		Non-Hydric Se	DABK-S-SO07-0001-D	
	12.5		Non-Hydric PmB	DABK-S-SO21-0001	
	12.7		Non-Hydric Se	DABK-S-SO08-0001	
	12.8		Non-Hydric Se	DABK-S-SO15-0001	
	13		Hydric Se	DABK-S-SD20-000.5	
	13		Non-Hydric Se	DABK-S-SO01-0001	
	13.1		Non-Hydric PmB	DABK-S-SO35-0001-D	
	13.4		Non-Hydric PmB	DABK-S-SO33-0001	
	13.6		Non-Hydric PmB	DABK-S-SO23-0001	
	13.6		Non-Hydric PmB	DABK-S-SO35-0001	
	13.9		Non-Hydric PmB	DABK-S-SO37-0001	
	14		Non-Hydric PmB	DABK-S-SO28-0001	
	14.1		Non-Hydric Se	DABK-S-SO19-0001	
	14.1		Non-Hydric PmB	DABK-S-SO25-0001-D	
	14.2		Non-Hydric PmB	DABK-S-SO24-0001	
	14.4		Non-Hydric Se	DABK-S-SO04-0001	
	14.7		Non-Hydric Se	DABK-S-SO07-0001	
	15		Non-Hydric PmB	DABK-S-SO22-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Chromium (continued)	15.1		Non-Hydric PmB	DABK-S-SO25-0001	
	15.1		Non-Hydric PmB	DABK-S-SO32-0001	
	15.2		Non-Hydric PmB	DABK-S-SO26-0001	
	15.2		Non-Hydric PmB	DABK-S-SO30-0001	
	15.8		Non-Hydric Se	DABK-S-SO06-0001	
	16		Non-Hydric Se	DABK-S-SO20-0001	
	16		Non-Hydric PmB	DABK-S-SO29-0001	
	16.3		Hydric Se	DABK-S-SD05-000.5	
	17.7		Hydric Se	DABK-S-SD01-000.5	
	17.9		Hydric Se	DABK-S-SD14-000.5	
	21		Hydric Se	DABK-S-SD17-000.5	
	21.4		Hydric Se	DABK-S-SD04-000.5	
	22.2		Hydric Se	DABK-S-SD10-000.5	
	22.8		Hydric Se	DABK-S-SD06-000.5	
	23.2		Hydric Se	DABK-S-SD07-000.5	
	23.8		Hydric Se	DABK-S-SD03-000.5	
	24.5		Hydric Se	DABK-S-SD11-000.5	
	24.7		Hydric Se	DABK-S-SD16-000.5	
	24.8		Hydric Se	DABK-S-SD08-000.5	
	25.1		Hydric Se	DABK-S-SD15-000.5	
	25.4		Hydric Se	DABK-S-SD03-000.5-D	
	26.3		Hydric Se	DABK-S-SD12-000.5	
	28.2		Non-Hydric Se	DABK-S-SO02-0001	YDX. No localized pattern of contam., no QC probs. Retain.
	28.3		Hydric Se	DABK-S-SD12-000.5-D	
	31.8		Hydric Se	DABK-S-SD13-000.5	
	81.5		Hydric Se	DABK-S-SD19-000.5	YDX, Q75. Localized contam. in creekbed. No QC probs. Retain.
Cobalt	3.3	J	Non-Hydric Se	DABK-S-SO11-0001	
	3.6	J	Non-Hydric Se	DABK-S-SO16-0001	
	3.7	J	Non-Hydric Se	DABK-S-SO03-0001	
	3.9	J	Non-Hydric Se	DABK-S-SO10-0001	
	4.1	J	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.2	J	Non-Hydric Se	DABK-S-SO09-0001	
	4.2	J	Non-Hydric Se	DABK-S-SO14-0001	
	4.3	J	Non-Hydric Se	DABK-S-SO05-0001	
	4.5	J	Non-Hydric Se	DABK-S-SO13-0001	
	4.5	J	Non-Hydric PmB	DABK-S-SO36-0001	
	4.6	J	Non-Hydric Se	DABK-S-SO12-0001	
	4.6	J	Non-Hydric Se	DABK-S-SO15-0001	
	4.6	J	Non-Hydric Se	DABK-S-SO17-0001	
	4.7	J	Non-Hydric Se	DABK-S-SO01-0001	
	5.1	J	Non-Hydric Se	DABK-S-SO18-0001	
	5.2	J	Non-Hydric Se	DABK-S-SO04-0001	
	5.4	J	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.4	J	Non-Hydric PmB	DABK-S-SO27-0001	
	5.9	J	Non-Hydric PmB	DABK-S-SO40-0001	
	6.1		Hydric Se	DABK-S-SD20-000.5	
	6.1	J	Non-Hydric Se	DABK-S-SO08-0001	
	6.1	J	Non-Hydric PmB	DABK-S-SO21-0001	
	6.1	J	Non-Hydric PmB	DABK-S-SO39-0001	
	6.2	J	Non-Hydric Se	DABK-S-SO07-0001	
	6.2	J	Non-Hydric PmB	DABK-S-SO38-0001	
	6.6		Non-Hydric PmB	DABK-S-SO31-0001	
	6.6		Non-Hydric PmB	DABK-S-SO37-0001	
	6.7	J	Non-Hydric Se	DABK-S-SO20-0001	
	6.7	J	Non-Hydric PmB	DABK-S-SO33-0001	
	6.7		Non-Hydric PmB	DABK-S-SO35-0001-D	
	6.9		Non-Hydric PmB	DABK-S-SO23-0001	
	7		Non-Hydric PmB	DABK-S-SO26-0001	
	7.1		Non-Hydric PmB	DABK-S-SO24-0001	
	7.2		Non-Hydric PmB	DABK-S-SO29-0001	
	7.4		Non-Hydric PmB	DABK-S-SO25-0001	
	7.4		Non-Hydric PmB	DABK-S-SO35-0001	
	7.5		Non-Hydric Se	DABK-S-SO19-0001	
	7.7		Non-Hydric PmB	DABK-S-SO34-0001	
	7.9		Hydric Se	DABK-S-SD09-000.5	
	8.1		Non-Hydric PmB	DABK-S-SO30-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Cobalt (continued)	8.2		Non-Hydric PmB	DABK-S-SO25-0001-D	
	8.4		Non-Hydric PmB	DABK-S-SO22-0001	
	9.4		Hydric Se	DABK-S-SD18-000.5	
	9.5		Hydric Se	DABK-S-SD02-000.5	
	9.7		Hydric Se	DABK-S-SD14-000.5	
	9.8		Non-Hydric PmB	DABK-S-SO28-0001	
	11.4		Non-Hydric Se	DABK-S-SO02-0001	
	11.9		Non-Hydric Se	DABK-S-SO06-0001	
	12.1		Hydric Se	DABK-S-SD05-000.5	
	13.5		Hydric Se	DABK-S-SD01-000.5	
	13.8		Non-Hydric PmB	DABK-S-SO32-0001	YDX. 50% of this soil type within factor of 2. No QC probs. Retain.
	14.8		Hydric Se	DABK-S-SD07-000.5	
	16.2		Hydric Se	DABK-S-SD06-000.5	
	17.6		Hydric Se	DABK-S-SD10-000.5	
	17.8		Hydric Se	DABK-S-SD16-000.5	
	19.1		Hydric Se	DABK-S-SD04-000.5	
	19.1		Hydric Se	DABK-S-SD19-000.5	
	19.5		Hydric Se	DABK-S-SD17-000.5	
	20		Hydric Se	DABK-S-SD15-000.5	
	20.1		Hydric Se	DABK-S-SD03-000.5	
	20.9		Hydric Se	DABK-S-SD08-000.5	
	21.4		Hydric Se	DABK-S-SD03-000.5-D	
	23.6		Hydric Se	DABK-S-SD13-000.5	
	33.1		Hydric Se	DABK-S-SD11-000.5	YDX. No localized pattern of contam., no QC probs. Retain.
	34.7		Hydric Se	DABK-S-SD12-000.5	YDX. No localized pattern of contam., no QC probs. Retain.
	38		Hydric Se	DABK-S-SD12-000.5-D	YDX. No localized pattern of contam., no QC probs. Retain.
Iron	8290		Non-Hydric Se	DABK-S-SO11-0001	
	9330		Non-Hydric Se	DABK-S-SO16-0001	
	9390		Non-Hydric Se	DABK-S-SO11-0001-D	
	12700	J	Non-Hydric PmB	DABK-S-SO33-0001	
	13100		Non-Hydric Se	DABK-S-SO18-0001	
	13700	J	Non-Hydric PmB	DABK-S-SO38-0001	
	14200	J	Non-Hydric PmB	DABK-S-SO36-0001	
	14500		Non-Hydric Se	DABK-S-SO12-0001	
	14500		Non-Hydric PmB	DABK-S-SO40-0001	
	14800		Non-Hydric Se	DABK-S-SO17-0001	
	15100		Non-Hydric Se	DABK-S-SO07-0001-D	
	15400	J	Non-Hydric PmB	DABK-S-SO34-0001	
	15700		Hydric Se	DABK-S-SD09-000.5	
	16000	J	Non-Hydric PmB	DABK-S-SO27-0001	
	16500	J	Non-Hydric PmB	DABK-S-SO31-0001	
	16700	J	Non-Hydric PmB	DABK-S-SO35-0001	
	16900		Non-Hydric Se	DABK-S-SO07-0001	
	17300		Non-Hydric Se	DABK-S-SO19-0001	
	17500		Non-Hydric Se	DABK-S-SO15-0001	
	18000		Non-Hydric Se	DABK-S-SO14-0001	
	18000	J	Non-Hydric PmB	DABK-S-SO30-0001	
	18200	J	Non-Hydric PmB	DABK-S-SO23-0001	
	18300	J	Non-Hydric PmB	DABK-S-SO28-0001	
	18400		Non-Hydric Se	DABK-S-SO04-0001	
	18600		Non-Hydric Se	DABK-S-SO01-0001	
	18700		Non-Hydric Se	DABK-S-SO13-0001	
	18800		Non-Hydric PmB	DABK-S-SO39-0001	
	19000	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	19100		Non-Hydric Se	DABK-S-SO03-0001	
	19300		Non-Hydric Se	DABK-S-SO05-0001	
	20100	J	Non-Hydric PmB	DABK-S-SO37-0001	
	20400	J	Non-Hydric PmB	DABK-S-SO21-0001	
	20500		Non-Hydric Se	DABK-S-SO08-0001	
	20900		Hydric Se	DABK-S-SD02-000.5	
	21400		Hydric Se	DABK-S-SD20-000.5	
	21800	J	Non-Hydric PmB	DABK-S-SO29-0001	
	23000		Non-Hydric Se	DABK-S-SO09-0001	
	23100		Hydric Se	DABK-S-SD18-000.5	
	23200	J	Non-Hydric PmB	DABK-S-SO32-0001	
	23300	J	Non-Hydric PmB	DABK-S-SO25-0001	YDX. 50% of this soil type within factor of 2. No QC probs. Retain.

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Iron (continued)	23500		Non-Hydric Se	DABK-S-SO20-0001	
	23500	J	Non-Hydric PmB	DABK-S-SO22-0001	
	23800		Non-Hydric Se	DABK-S-SO10-0001	
	23900		Hydric Se	DABK-S-SD14-000.5	
	24100		Non-Hydric Se	DABK-S-SO02-0001	
	24600	J	Non-Hydric PmB	DABK-S-SO26-0001	
	24700		Hydric Se	DABK-S-SD01-000.5	
	25700	J	Non-Hydric PmB	DABK-S-SO24-0001	
	27100		Hydric Se	DABK-S-SD05-000.5	
	28900		Hydric Se	DABK-S-SD17-000.5	
	29100		Hydric Se	DABK-S-SD07-000.5	
	29900		Hydric Se	DABK-S-SD19-000.5	
	30900		Hydric Se	DABK-S-SD06-000.5	
	31000		Hydric Se	DABK-S-SD16-000.5	
	31200		Hydric Se	DABK-S-SD10-000.5	
	31300		Hydric Se	DABK-S-SD04-000.5	
	33600		Hydric Se	DABK-S-SD13-000.5	
	33700		Hydric Se	DABK-S-SD03-000.5	
	34100		Hydric Se	DABK-S-SD15-000.5	
	34300		Hydric Se	DABK-S-SD03-000.5-D	
	36200		Hydric Se	DABK-S-SD11-000.5	
	40300		Hydric Se	DABK-S-SD12-000.5	
	41400		Hydric Se	DABK-S-SD12-000.5-D	
	42700		Hydric Se	DABK-S-SD08-000.5	
	53900		Non-Hydric Se	DABK-S-SO06-0001	YDX. No localized pattern of contam., no QC probs. Retain.
	63300	J	Non-Hydric PmB	DABK-S-SO25-0001-D	YDX. 50% of this soil type within factor of 2. No QC probs. Retain.
Lead	13.4		Non-Hydric Se	DABK-S-SO16-0001	
	13.8		Non-Hydric Se	DABK-S-SO13-0001	
	15.7		Non-Hydric Se	DABK-S-SO11-0001	
	15.8		Non-Hydric Se	DABK-S-SO01-0001	
	17.9		Non-Hydric Se	DABK-S-SO11-0001-D	
	17.9		Non-Hydric PmB	DABK-S-SO39-0001	
	18.3		Non-Hydric Se	DABK-S-SO12-0001	
	18.3	J	Non-Hydric PmB	DABK-S-SO31-0001	
	19.5		Non-Hydric Se	DABK-S-SO18-0001	
	19.6	J	Non-Hydric PmB	DABK-S-SO37-0001	
	19.7		Non-Hydric Se	DABK-S-SO10-0001	
	19.7	J	Non-Hydric PmB	DABK-S-SO25-0001	
	20.5		Non-Hydric Se	DABK-S-SO14-0001	
	20.8		Non-Hydric PmB	DABK-S-SO40-0001	
	21.5		Non-Hydric Se	DABK-S-SO17-0001	
	21.7		Non-Hydric Se	DABK-S-SO07-0001-D	
	22.3		Non-Hydric Se	DABK-S-SO04-0001	
	22.5		Hydric Se	DABK-S-SD20-000.5	
	22.8		Non-Hydric Se	DABK-S-SO15-0001	
	23	J	Non-Hydric PmB	DABK-S-SO34-0001	
	23.4	J	Non-Hydric PmB	DABK-S-SO38-0001	
	24.1		Non-Hydric Se	DABK-S-SO09-0001	
	24.9		Non-Hydric Se	DABK-S-SO07-0001	
	25.6		Non-Hydric Se	DABK-S-SO06-0001	
	25.8		Non-Hydric Se	DABK-S-SO05-0001	
	26.5	J	Non-Hydric PmB	DABK-S-SO30-0001	
	27.1		Non-Hydric Se	DABK-S-SO08-0001	
	27.8	J	Non-Hydric PmB	DABK-S-SO24-0001	
	28.2	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	28.7		Non-Hydric Se	DABK-S-SO03-0001	
	30.3	J	Non-Hydric PmB	DABK-S-SO33-0001	
	32.3	J	Non-Hydric PmB	DABK-S-SO23-0001	
	32.8	J	Non-Hydric PmB	DABK-S-SO29-0001	
	33.1		Non-Hydric Se	DABK-S-SO20-0001	
	33.2	J	Non-Hydric PmB	DABK-S-SO36-0001	
	33.6		Non-Hydric Se	DABK-S-SO02-0001	
	35.3		Hydric Se	DABK-S-SD02-000.5	
	35.8	J	Non-Hydric PmB	DABK-S-SO21-0001	
	36.3		Hydric Se	DABK-S-SD18-000.5	
	36.5	J	Non-Hydric PmB	DABK-S-SO28-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Lead (continued)	36.8		Hydric Se	DABK-S-SD09-000.5	
	38		Non-Hydric Se	DABK-S-SO19-0001	
	39.7	J	Non-Hydric PmB	DABK-S-SO35-0001	
	42.1		Hydric Se	DABK-S-SD01-000.5	
	42.1	J	Non-Hydric PmB	DABK-S-SO22-0001	
	43.6	J	Non-Hydric PmB	DABK-S-SO27-0001	
	44.5	J	Non-Hydric PmB	DABK-S-SO26-0001	
	44.8	J	Non-Hydric PmB	DABK-S-SO25-0001-D	
	46.5		Hydric Se	DABK-S-SD14-000.5	
	49.5	J	Non-Hydric PmB	DABK-S-SO32-0001	
	55.9		Hydric Se	DABK-S-SD04-000.5	
	63.9		Hydric Se	DABK-S-SD06-000.5	
	68.4		Hydric Se	DABK-S-SD08-000.5	
	69.7		Hydric Se	DABK-S-SD03-000.5	
	72.2		Hydric Se	DABK-S-SD05-000.5	
	76.3		Hydric Se	DABK-S-SD07-000.5	
	77.5		Hydric Se	DABK-S-SD03-000.5-D	
	81.8		Hydric Se	DABK-S-SD17-000.5	
	106		Hydric Se	DABK-S-SD10-000.5	
	108		Hydric Se	DABK-S-SD11-000.5	
	120		Hydric Se	DABK-S-SD15-000.5	
	156		Hydric Se	DABK-S-SD16-000.5	
	157		Hydric Se	DABK-S-SD13-000.5	
	175		Hydric Se	DABK-S-SD12-000.5	
	191		Hydric Se	DABK-S-SD12-000.5-D	
	297		Hydric Se	DABK-S-SD19-000.5	YDX, Q75. Localized contam. in creekbed. No QC probs. Retain.
Magnesium	964	U	Non-Hydric Se	DABK-S-SO17-0001	
	1090	U	Non-Hydric Se	DABK-S-SO16-0001	
	1100	U	Non-Hydric Se	DABK-S-SO11-0001	
	1310	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	1330	U	Non-Hydric Se	DABK-S-SO15-0001	
	1360		Non-Hydric PmB	DABK-S-SO24-0001	
	1380	U	Non-Hydric Se	DABK-S-SO10-0001	
	1380		Non-Hydric PmB	DABK-S-SO31-0001	
	1390		Non-Hydric PmB	DABK-S-SO21-0001	
	1410		Non-Hydric PmB	DABK-S-SO34-0001	
	1430		Non-Hydric PmB	DABK-S-SO38-0001	
	1450		Non-Hydric PmB	DABK-S-SO25-0001-D	
	1540		Hydric Se	DABK-S-SD09-000.5	
	1540		Non-Hydric PmB	DABK-S-SO22-0001	
	1540		Non-Hydric PmB	DABK-S-SO40-0001	
	1550		Non-Hydric PmB	DABK-S-SO37-0001	
	1560		Non-Hydric PmB	DABK-S-SO39-0001	
	1570		Non-Hydric Se	DABK-S-SO05-0001	
	1590		Non-Hydric Se	DABK-S-SO04-0001	
	1590		Non-Hydric PmB	DABK-S-SO28-0001	
	1590		Non-Hydric PmB	DABK-S-SO30-0001	
	1650		Non-Hydric Se	DABK-S-SO09-0001	
	1660		Non-Hydric PmB	DABK-S-SO32-0001	
	1670		Non-Hydric Se	DABK-S-SO13-0001	
	1680		Non-Hydric Se	DABK-S-SO14-0001	
	1680		Non-Hydric PmB	DABK-S-SO27-0001	
	1680		Non-Hydric PmB	DABK-S-SO33-0001	
	1680		Non-Hydric PmB	DABK-S-SO36-0001	
	1690		Non-Hydric Se	DABK-S-SO12-0001	
	1730		Non-Hydric Se	DABK-S-SO03-0001	
	1770		Non-Hydric Se	DABK-S-SO01-0001	
	1780		Non-Hydric PmB	DABK-S-SO35-0001	
	1800		Non-Hydric PmB	DABK-S-SO35-0001-D	
	1810		Non-Hydric PmB	DABK-S-SO29-0001	
	1910		Non-Hydric Se	DABK-S-SO18-0001	
	1920		Non-Hydric PmB	DABK-S-SO25-0001	
	1960		Non-Hydric PmB	DABK-S-SO23-0001	
	1960		Non-Hydric PmB	DABK-S-SO26-0001	
	2070		Hydric Se	DABK-S-SD20-000.5	
	2090		Non-Hydric Se	DABK-S-SO08-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Magnesium (continued)	2220		Non-Hydric Se	DABK-S-SO07-0001-D	
	2240		Hydric Se	DABK-S-SD02-000.5	
	2370		Hydric Se	DABK-S-SD18-000.5	
	2380		Non-Hydric Se	DABK-S-SO06-0001	
	2420		Hydric Se	DABK-S-SD14-000.5	
	2460		Non-Hydric Se	DABK-S-SO07-0001	
	2460		Non-Hydric Se	DABK-S-SO19-0001	
	2610		Hydric Se	DABK-S-SD17-000.5	
	2710		Hydric Se	DABK-S-SD11-000.5	
	2780		Non-Hydric Se	DABK-S-SO02-0001	
	2930		Non-Hydric Se	DABK-S-SO20-0001	
	3000		Hydric Se	DABK-S-SD12-000.5	
	3050		Hydric Se	DABK-S-SD01-000.5	
	3100		Hydric Se	DABK-S-SD08-000.5	
	3130		Hydric Se	DABK-S-SD06-000.5	
	3130		Hydric Se	DABK-S-SD19-000.5	
	3200		Hydric Se	DABK-S-SD05-000.5	
	3220		Hydric Se	DABK-S-SD04-000.5	
	3220		Hydric Se	DABK-S-SD13-000.5	
	3260		Hydric Se	DABK-S-SD16-000.5	
	3270		Hydric Se	DABK-S-SD12-000.5-D	
	3340		Hydric Se	DABK-S-SD10-000.5	
	3390		Hydric Se	DABK-S-SD03-000.5-D	
	3410		Hydric Se	DABK-S-SD15-000.5	
	3490		Hydric Se	DABK-S-SD03-000.5	
	3630		Hydric Se	DABK-S-SD07-000.5	
Manganese	46.6		Non-Hydric Se	DABK-S-SO11-0001	
	50		Non-Hydric Se	DABK-S-SO16-0001	
	54.4		Non-Hydric Se	DABK-S-SO11-0001-D	
	68		Non-Hydric Se	DABK-S-SO04-0001	
	68.7		Non-Hydric Se	DABK-S-SO03-0001	
	69		Non-Hydric Se	DABK-S-SO14-0001	
	73.7		Non-Hydric Se	DABK-S-SO18-0001	
	82.7		Non-Hydric Se	DABK-S-SO12-0001	
	85.2		Non-Hydric Se	DABK-S-SO10-0001	
	86.4		Non-Hydric Se	DABK-S-SO07-0001-D	
	86.7		Non-Hydric Se	DABK-S-SO13-0001	
	92.8		Non-Hydric Se	DABK-S-SO09-0001	
	93.4		Non-Hydric Se	DABK-S-SO01-0001	
	94.8		Non-Hydric Se	DABK-S-SO07-0001	
	101	J	Non-Hydric PmB	DABK-S-SO36-0001	
	110		Non-Hydric Se	DABK-S-SO15-0001	
	115		Non-Hydric Se	DABK-S-SO17-0001	
	141	J	Non-Hydric PmB	DABK-S-SO29-0001	
	141	J	Non-Hydric PmB	DABK-S-SO33-0001	
	159	J	Non-Hydric PmB	DABK-S-SO27-0001	
	164		Non-Hydric Se	DABK-S-SO05-0001	
	184		Non-Hydric Se	DABK-S-SO20-0001	
	197	J	Non-Hydric PmB	DABK-S-SO21-0001	
	197	J	Non-Hydric PmB	DABK-S-SO23-0001	
	206		Non-Hydric Se	DABK-S-SO08-0001	
	248		Non-Hydric Se	DABK-S-SO19-0001	
	252	J	Non-Hydric PmB	DABK-S-SO24-0001	
	253	J	Non-Hydric PmB	DABK-S-SO26-0001	
	257	J	Non-Hydric PmB	DABK-S-SO30-0001	
	258	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	261	J	Non-Hydric PmB	DABK-S-SO35-0001	
	292	J	Non-Hydric PmB	DABK-S-SO25-0001	
	296		Non-Hydric Se	DABK-S-SO02-0001	
	300	J	Non-Hydric PmB	DABK-S-SO22-0001	
	311	J	Non-Hydric PmB	DABK-S-SO37-0001	
	319	J	Non-Hydric PmB	DABK-S-SO28-0001	
	326		Hydric Se	DABK-S-SD20-000.5	
	342	J	Non-Hydric PmB	DABK-S-SO38-0001	
	373		Non-Hydric Se	DABK-S-SO06-0001	
	373	J	Non-Hydric PmB	DABK-S-SO39-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Manganese (continued)	402	J	Non-Hydric PmB	DABK-S-SO40-0001	
	419	J	Non-Hydric PmB	DABK-S-SO31-0001	
	433	J	Non-Hydric PmB	DABK-S-SO34-0001	
	477	J	Non-Hydric PmB	DABK-S-SO32-0001	
	593	J	Hydric Se	DABK-S-SD07-000.5	
	615	J	Non-Hydric PmB	DABK-S-SO25-0001-D	
	754	J	Hydric Se	DABK-S-SD05-000.5	
	1000	J	Hydric Se	DABK-S-SD14-000.5	
	1010	J	Hydric Se	DABK-S-SD09-000.5	
	1030		Hydric Se	DABK-S-SD18-000.5	
	1610	J	Hydric Se	DABK-S-SD02-000.5	
	1870	J	Hydric Se	DABK-S-SD01-000.5	
	2310	J	Hydric Se	DABK-S-SD10-000.5	
	2610	J	Hydric Se	DABK-S-SD15-000.5	
	2750	J	Hydric Se	DABK-S-SD12-000.5-D	
	2790	J	Hydric Se	DABK-S-SD16-000.5	
	2970	J	Hydric Se	DABK-S-SD12-000.5	
	3610	J	Hydric Se	DABK-S-SD06-000.5	
	3700	J	Hydric Se	DABK-S-SD08-000.5	
	4280	J	Hydric Se	DABK-S-SD13-000.5	Q75. No localized pattern of contam., no QC probs. Retain.
	4330	J	Hydric Se	DABK-S-SD03-000.5	Q75. NDX. No localized pattern of contam., no QC probs. Retain.
	4390		Hydric Se	DABK-S-SD19-000.5	Q75. No localized pattern of contam., no QC probs. Retain.
	4700	J	Hydric Se	DABK-S-SD04-000.5	Q75. No localized pattern of contam., no QC probs. Retain.
	5890	J	Hydric Se	DABK-S-SD03-000.5-D	Q75. NDX. No localized pattern of contam., no QC probs. Retain.
	6160		Hydric Se	DABK-S-SD17-000.5	Q75. NDX. No localized pattern of contam., no QC probs. Retain.
	9740	J	Hydric Se	DABK-S-SD11-000.5	Q75. YDX. No localized pattern of contam., no QC probs. Retain.
Mercury	0.031	UJ	Non-Hydric PmB	DABK-S-SO37-0001	
	0.036	UJ	Non-Hydric PmB	DABK-S-SO34-0001	
	0.04	UJ	Non-Hydric PmB	DABK-S-SO21-0001	
	0.041	UJ	Non-Hydric PmB	DABK-S-SO31-0001	
	0.045	UJ	Non-Hydric PmB	DABK-S-SO35-0001	
	0.045	UJ	Non-Hydric PmB	DABK-S-SO35-0001-D	
	0.046	UJ	Non-Hydric PmB	DABK-S-SO38-0001	
	0.052	UJ	Non-Hydric Se	DABK-S-SO13-0001	
	0.053	UJ	Non-Hydric PmB	DABK-S-SO25-0001	
	0.054	UJ	Non-Hydric Se	DABK-S-SO02-0001	
	0.057	UJ	Non-Hydric Se	DABK-S-SO16-0001	
	0.061	UJ	Non-Hydric PmB	DABK-S-SO26-0001	
	0.062	UJ	Non-Hydric PmB	DABK-S-SO36-0001	
	0.063	UJ	Non-Hydric Se	DABK-S-SO14-0001	
	0.063	UJ	Non-Hydric PmB	DABK-S-SO22-0001	
	0.065	UJ	Non-Hydric PmB	DABK-S-SO27-0001	
	0.066	UJ	Hydric Se	DABK-S-SD18-000.5	
	0.07	UJ	Non-Hydric Se	DABK-S-SO11-0001-D	
	0.071	UJ	Non-Hydric Se	DABK-S-SO18-0001	
	0.073	UJ	Non-Hydric PmB	DABK-S-SO24-0001	
	0.073	UJ	Non-Hydric PmB	DABK-S-SO33-0001	
	0.075	UJ	Non-Hydric Se	DABK-S-SO01-0001	
	0.076	UJ	Non-Hydric Se	DABK-S-SO09-0001	
	0.08	UJ	Non-Hydric Se	DABK-S-SO15-0001	
	0.081	UJ	Hydric Se	DABK-S-SD11-000.5	
	0.081	UJ	Non-Hydric PmB	DABK-S-SO23-0001	
	0.083	UJ	Non-Hydric Se	DABK-S-SO03-0001	
	0.084	UJ	Non-Hydric Se	DABK-S-SO04-0001	
	0.092	UJ	Hydric Se	DABK-S-SD19-000.5	
	0.094	UJ	Non-Hydric PmB	DABK-S-SO25-0001-D	
	0.099	UJ	Non-Hydric Se	DABK-S-SO05-0001	
	0.1	UJ	Non-Hydric Se	DABK-S-SO07-0001-D	
	0.1	UJ	Non-Hydric Se	DABK-S-SO08-0001	
	0.1	J	Non-Hydric Se	DABK-S-SO19-0001	
	0.1	J	Non-Hydric PmB	DABK-S-SO29-0001	
	0.11	UJ	Non-Hydric Se	DABK-S-SO17-0001	
	0.11	UJ	Non-Hydric PmB	DABK-S-SO40-0001	
	0.12	UJ	Hydric Se	DABK-S-SD14-000.5	
	0.12	U	Hydric Se	DABK-S-SD20-000.5	
	0.12	UJ	Non-Hydric Se	DABK-S-SO12-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Mercury (continued)	0.12	J	Non-Hydric Se	DABK-S-SO20-0001	
	0.13	U	Non-Hydric PmB	DABK-S-SO39-0001	
	0.14	UJ	Non-Hydric Se	DABK-S-SO07-0001	
	0.14		Non-Hydric PmB	DABK-S-SO30-0001	
	0.15	UJ	Hydric Se	DABK-S-SD17-000.5	
	0.17	U	Non-Hydric Se	DABK-S-SO11-0001	
	0.18	U	Hydric Se	DABK-S-SD01-000.5	
	0.18	U	Hydric Se	DABK-S-SD02-000.5	
	0.18	U	Hydric Se	DABK-S-SD04-000.5	
	0.18	U	Hydric Se	DABK-S-SD13-000.5	
	0.18	UJ	Hydric Se	DABK-S-SD16-000.5	
	0.2	U	Hydric Se	DABK-S-SD05-000.5	
	0.2	U	Hydric Se	DABK-S-SD08-000.5	
	0.2	U	Hydric Se	DABK-S-SD09-000.5	
	0.2	U	Hydric Se	DABK-S-SD10-000.5	
	0.21	UJ	Hydric Se	DABK-S-SD12-000.5	
	0.21	U	Hydric Se	DABK-S-SD15-000.5	
	0.21	U	Non-Hydric Se	DABK-S-SO06-0001	
	0.22	U	Hydric Se	DABK-S-SD06-000.5	
	0.22	U	Non-Hydric Se	DABK-S-SO10-0001	
	0.24	U	Hydric Se	DABK-S-SD03-000.5	
	0.25	U	Hydric Se	DABK-S-SD12-000.5-D	
	0.26		Non-Hydric PmB	DABK-S-SO28-0001	
	0.28	U	Hydric Se	DABK-S-SD07-000.5	
	0.39	U	Hydric Se	DABK-S-SD03-000.5-D	
	0.68		Non-Hydric PmB	DABK-S-SO32-0001	
Nickel	5.3	J	Non-Hydric Se	DABK-S-SO17-0001	
	5.7		Non-Hydric Se	DABK-S-SO16-0001	
	6.5		Non-Hydric Se	DABK-S-SO11-0001	
	7.5		Non-Hydric PmB	DABK-S-SO31-0001	
	7.7		Non-Hydric Se	DABK-S-SO11-0001-D	
	7.7		Non-Hydric PmB	DABK-S-SO38-0001	
	8		Non-Hydric PmB	DABK-S-SO36-0001	
	8.3		Non-Hydric PmB	DABK-S-SO40-0001	
	8.4		Non-Hydric PmB	DABK-S-SO34-0001	
	8.5		Non-Hydric PmB	DABK-S-SO37-0001	
	8.7		Non-Hydric Se	DABK-S-SO03-0001	
	8.7		Non-Hydric Se	DABK-S-SO12-0001	
	8.8		Non-Hydric PmB	DABK-S-SO39-0001	
	8.9		Non-Hydric Se	DABK-S-SO10-0001	
	9.3		Non-Hydric Se	DABK-S-SO18-0001	
	9.4		Non-Hydric PmB	DABK-S-SO25-0001-D	
	9.5		Non-Hydric PmB	DABK-S-SO33-0001	
	9.8		Non-Hydric Se	DABK-S-SO05-0001	
	9.9		Non-Hydric Se	DABK-S-SO15-0001	
	9.9		Non-Hydric PmB	DABK-S-SO35-0001	
	10		Non-Hydric PmB	DABK-S-SO24-0001	
	10		Non-Hydric PmB	DABK-S-SO35-0001-D	
	10.7		Non-Hydric Se	DABK-S-SO01-0001	
	10.7		Non-Hydric Se	DABK-S-SO09-0001	
	10.9		Non-Hydric Se	DABK-S-SO14-0001	
	11		Hydric Se	DABK-S-SD09-000.5	
	11.1		Non-Hydric PmB	DABK-S-SO28-0001	
	11.1		Non-Hydric PmB	DABK-S-SO30-0001	
	11.3		Non-Hydric PmB	DABK-S-SO21-0001	
	11.4		Non-Hydric PmB	DABK-S-SO27-0001	
	11.5		Non-Hydric PmB	DABK-S-SO32-0001	
	11.6		Non-Hydric PmB	DABK-S-SO29-0001	
	12.1		Non-Hydric PmB	DABK-S-SO25-0001	
	12.2		Hydric Se	DABK-S-SD20-000.5	
	12.2		Non-Hydric PmB	DABK-S-SO22-0001	
	12.3		Non-Hydric Se	DABK-S-SO04-0001	
	12.9		Non-Hydric Se	DABK-S-SO08-0001	
	12.9		Non-Hydric Se	DABK-S-SO13-0001	
	13.5		Non-Hydric Se	DABK-S-SO07-0001-D	
	13.6		Non-Hydric PmB	DABK-S-SO23-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Nickel (continued)	13.9		Non-Hydric Se	DABK-S-SO19-0001	
	14.4		Non-Hydric PmB	DABK-S-SO26-0001	
	14.7		Non-Hydric Se	DABK-S-SO06-0001	
	14.8		Non-Hydric Se	DABK-S-SO20-0001	
	15		Hydric Se	DABK-S-SD14-000.5	
	15.2		Hydric Se	DABK-S-SD18-000.5	
	15.2		Non-Hydric Se	DABK-S-SO07-0001	
	16.9		Hydric Se	DABK-S-SD02-000.5	
	19.1		Non-Hydric Se	DABK-S-SO02-0001	
	20.7		Hydric Se	DABK-S-SD05-000.5	
	21.4		Hydric Se	DABK-S-SD01-000.5	
	23.1		Hydric Se	DABK-S-SD06-000.5	
	24.7		Hydric Se	DABK-S-SD17-000.5	
	25.3		Hydric Se	DABK-S-SD16-000.5	
	25.6		Hydric Se	DABK-S-SD04-000.5	
	26		Hydric Se	DABK-S-SD10-000.5	
	26.2		Hydric Se	DABK-S-SD07-000.5	
	26.2		Hydric Se	DABK-S-SD08-000.5	
	26.7		Hydric Se	DABK-S-SD19-000.5	
	27.1		Hydric Se	DABK-S-SD11-000.5	
	27.5		Hydric Se	DABK-S-SD15-000.5	
	28.6		Hydric Se	DABK-S-SD03-000.5	
	29.6		Hydric Se	DABK-S-SD03-000.5-D	
	30.9		Hydric Se	DABK-S-SD13-000.5	
	48.3		Hydric Se	DABK-S-SD12-000.5	
	50.7		Hydric Se	DABK-S-SD12-000.5-D	
Vanadium	10.5		Hydric Se	DABK-S-SD20-000.5	
	14		Non-Hydric Se	DABK-S-SO16-0001	
	14.7		Hydric Se	DABK-S-SD18-000.5	
	15.7	J	Hydric Se	DABK-S-SD09-000.5	
	16.1		Non-Hydric Se	DABK-S-SO11-0001	
	18.3	J	Hydric Se	DABK-S-SD02-000.5	
	18.9		Non-Hydric Se	DABK-S-SO02-0001	
	19.8		Non-Hydric Se	DABK-S-SO11-0001-D	
	20.7		Non-Hydric Se	DABK-S-SO13-0001	
	22.2		Non-Hydric Se	DABK-S-SO12-0001	
	22.4		Non-Hydric Se	DABK-S-SO17-0001	
	22.4		Non-Hydric Se	DABK-S-SO18-0001	
	22.7		Non-Hydric Se	DABK-S-SO07-0001-D	
	23.1		Non-Hydric Se	DABK-S-SO10-0001	
	23.5		Non-Hydric Se	DABK-S-SO01-0001	
	23.9		Non-Hydric Se	DABK-S-SO19-0001	
	24.3		Non-Hydric Se	DABK-S-SO14-0001	
	25.2		Non-Hydric Se	DABK-S-SO08-0001	
	25.6		Non-Hydric Se	DABK-S-SO07-0001	
	26.1	J	Non-Hydric PmB	DABK-S-SO39-0001	
	26.5		Non-Hydric PmB	DABK-S-SO34-0001	
	26.6	J	Hydric Se	DABK-S-SD05-000.5	
	26.7	J	Hydric Se	DABK-S-SD11-000.5	
	26.8		Hydric Se	DABK-S-SD17-000.5	
	27		Non-Hydric PmB	DABK-S-SO31-0001	
	27.6		Non-Hydric PmB	DABK-S-SO21-0001	
	27.7	J	Hydric Se	DABK-S-SD14-000.5	
	28.1		Non-Hydric PmB	DABK-S-SO36-0001	
	28.2	J	Hydric Se	DABK-S-SD04-000.5	
	28.5		Non-Hydric PmB	DABK-S-SO35-0001-D	
	28.6		Non-Hydric PmB	DABK-S-SO38-0001	
	28.8		Non-Hydric PmB	DABK-S-SO30-0001	
	29		Non-Hydric PmB	DABK-S-SO25-0001	
	29	J	Non-Hydric PmB	DABK-S-SO40-0001	
	29.2		Hydric Se	DABK-S-SD19-000.5	
	29.4		Non-Hydric Se	DABK-S-SO15-0001	
	29.5		Non-Hydric Se	DABK-S-SO05-0001	
	29.9	J	Hydric Se	DABK-S-SD01-000.5	
	30.3		Non-Hydric PmB	DABK-S-SO27-0001	
	30.4		Non-Hydric Se	DABK-S-SO04-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Vanadium (continued)	30.4		Non-Hydric PmB	DABK-S-SO23-0001	
	30.6		Non-Hydric Se	DABK-S-SO20-0001	
	30.8		Non-Hydric Se	DABK-S-SO09-0001	
	30.8		Non-Hydric PmB	DABK-S-SO33-0001	
	30.9		Non-Hydric PmB	DABK-S-SO24-0001	
	30.9		Non-Hydric PmB	DABK-S-SO37-0001	
	31.4		Non-Hydric PmB	DABK-S-SO35-0001	
	31.5		Non-Hydric PmB	DABK-S-SO28-0001	
	31.6	J	Hydric Se	DABK-S-SD06-000.5	
	32.5	J	Hydric Se	DABK-S-SD03-000.5	
	32.9	J	Hydric Se	DABK-S-SD08-000.5	
	33.6	J	Hydric Se	DABK-S-SD16-000.5	
	33.8	J	Hydric Se	DABK-S-SD13-000.5	
	33.8		Non-Hydric PmB	DABK-S-SO29-0001	
	34		Non-Hydric Se	DABK-S-SO06-0001	
	34.1	J	Hydric Se	DABK-S-SD03-000.5-D	
	34.1		Non-Hydric PmB	DABK-S-SO32-0001	
	34.2		Non-Hydric Se	DABK-S-SO03-0001	
	34.9		Non-Hydric PmB	DABK-S-SO22-0001	
	35.2		Non-Hydric PmB	DABK-S-SO26-0001	
	35.4	J	Hydric Se	DABK-S-SD15-000.5	
	35.7	J	Hydric Se	DABK-S-SD10-000.5	
	38.9	J	Hydric Se	DABK-S-SD07-000.5	
	40.8	J	Hydric Se	DABK-S-SD12-000.5	
	42.6		Non-Hydric PmB	DABK-S-SO25-0001-D	
	43.7	J	Hydric Se	DABK-S-SD12-000.5-D	
Zinc	21.4		Non-Hydric Se	DABK-S-SO16-0001	
	22.1		Non-Hydric Se	DABK-S-SO17-0001	
	24.1		Non-Hydric Se	DABK-S-SO11-0001	
	25.9		Non-Hydric PmB	DABK-S-SO38-0001	
	27.2		Non-Hydric PmB	DABK-S-SO36-0001	
	28.7	J	Non-Hydric PmB	DABK-S-SO39-0001	
	30.4		Non-Hydric PmB	DABK-S-SO34-0001	
	30.5		Non-Hydric Se	DABK-S-SO11-0001-D	
	31.5	J	Non-Hydric PmB	DABK-S-SO40-0001	
	31.7		Non-Hydric Se	DABK-S-SO14-0001	
	34.5		Non-Hydric Se	DABK-S-SO18-0001	
	35		Non-Hydric Se	DABK-S-SO10-0001	
	35.4		Non-Hydric Se	DABK-S-SO15-0001	
	35.5		Non-Hydric PmB	DABK-S-SO31-0001	
	35.5		Non-Hydric PmB	DABK-S-SO35-0001-D	
	36.2		Non-Hydric PmB	DABK-S-SO37-0001	
	38.3		Non-Hydric Se	DABK-S-SO12-0001	
	38.5		Non-Hydric Se	DABK-S-SO09-0001	
	40.2		Non-Hydric Se	DABK-S-SO03-0001	
	41.3		Non-Hydric PmB	DABK-S-SO35-0001	
	42.8		Non-Hydric PmB	DABK-S-SO25-0001	
	43.2		Non-Hydric Se	DABK-S-SO05-0001	
	43.8		Non-Hydric PmB	DABK-S-SO23-0001	
	44.8		Non-Hydric Se	DABK-S-SO01-0001	
	45.7		Non-Hydric Se	DABK-S-SO08-0001	
	46.6		Non-Hydric PmB	DABK-S-SO27-0001	
	49.4		Non-Hydric Se	DABK-S-SO07-0001-D	
	50.4		Non-Hydric PmB	DABK-S-SO33-0001	
	50.8		Non-Hydric Se	DABK-S-SO13-0001	
	52		Non-Hydric PmB	DABK-S-SO25-0001-D	
	52.7		Non-Hydric Se	DABK-S-SO20-0001	
	54.2		Non-Hydric Se	DABK-S-SO07-0001	
	54.5		Non-Hydric Se	DABK-S-SO19-0001	
	54.9		Non-Hydric Se	DABK-S-SO04-0001	
	55.8		Non-Hydric PmB	DABK-S-SO24-0001	
	58		Non-Hydric PmB	DABK-S-SO29-0001	
	60.9		Non-Hydric Se	DABK-S-SO06-0001	
	63.3		Non-Hydric PmB	DABK-S-SO30-0001	
	65		Non-Hydric PmB	DABK-S-SO21-0001	
	70.5		Non-Hydric PmB	DABK-S-SO28-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Zinc (continued)	71.6		Non-Hydric PmB	DABK-S-SO32-0001	
	77.3	J	Hydric Se	DABK-S-SD09-000.5	
	81.7		Non-Hydric Se	DABK-S-SO02-0001	YDX. 50% of this soil type within factor of 2. No QC probs. Retain.
	82.2	J	Hydric Se	DABK-S-SD14-000.5	
	82.9		Hydric Se	DABK-S-SD20-000.5	
	84.4		Non-Hydric PmB	DABK-S-SO26-0001	
	93.7		Non-Hydric PmB	DABK-S-SO22-0001	
	108	J	Hydric Se	DABK-S-SD01-000.5	
	109	J	Hydric Se	DABK-S-SD05-000.5	
	113	J	Hydric Se	DABK-S-SD02-000.5	
	117		Hydric Se	DABK-S-SD18-000.5	
	164	J	Hydric Se	DABK-S-SD07-000.5	
	171	J	Hydric Se	DABK-S-SD10-000.5	
	185	J	Hydric Se	DABK-S-SD16-000.5	
	198	J	Hydric Se	DABK-S-SD06-000.5	
	199	J	Hydric Se	DABK-S-SD03-000.5	
	203	J	Hydric Se	DABK-S-SD04-000.5	
	222	J	Hydric Se	DABK-S-SD03-000.5-D	
	226	J	Hydric Se	DABK-S-SD08-000.5	
	234		Hydric Se	DABK-S-SD17-000.5	
	239	J	Hydric Se	DABK-S-SD15-000.5	
	242		Hydric Se	DABK-S-SD19-000.5	
	284	J	Hydric Se	DABK-S-SD13-000.5	
	290	J	Hydric Se	DABK-S-SD11-000.5	
	528	J	Hydric Se	DABK-S-SD12-000.5	YDX, Q75. Localized contam. in creekbed. No QC probs. Retain.
	540	J	Hydric Se	DABK-S-SD12-000.5-D	YDX, Q75. Localized contam. in creekbed. No QC probs. Retain.
TOC	26000		Hydric Se	DABK-S-SD05-000.5	
	26300		Hydric Se	DABK-S-SD09-000.5	
	34200		Hydric Se	DABK-S-SD19-000.5	
	36200		Hydric Se	DABK-S-SD03-000.5-D	
	37400		Hydric Se	DABK-S-SD13-000.5	
	37400		Hydric Se	DABK-S-SD17-000.5	
	38300		Hydric Se	DABK-S-SD15-000.5	
	41400		Hydric Se	DABK-S-SD01-000.5	
	43800		Hydric Se	DABK-S-SD03-000.5	
	46400		Hydric Se	DABK-S-SD11-000.5	
	50500		Hydric Se	DABK-S-SD07-000.5	
2-Methylnaphthalene	10		Hydric Se	DABK-S-SD03-000.5	
	10	J	Hydric Se	DABK-S-SD11-000.5	
	13	U	Hydric Se	DABK-S-SD03-000.5-D	
	13		Hydric Se	DABK-S-SD13-000.5	
	14		Hydric Se	DABK-S-SD12-000.5	
	14	J	Hydric Se	DABK-S-SD12-000.5-D	
	16	U	Hydric Se	DABK-S-SD20-000.5	
	18	U	Hydric Se	DABK-S-SD09-000.5	
	18	U	Hydric Se	DABK-S-SD15-000.5	
	18	U	Hydric Se	DABK-S-SD19-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	20	U	Hydric Se	DABK-S-SD18-000.5	
	21	U	Hydric Se	DABK-S-SD05-000.5	
	23		Hydric Se	DABK-S-SD07-000.5	
	24	U	Hydric Se	DABK-S-SD10-000.5	
	24	U	Hydric Se	DABK-S-SD14-000.5	
	26	U	Hydric Se	DABK-S-SD16-000.5	
	27	U	Hydric Se	DABK-S-SD01-000.5	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	35		Hydric Se	DABK-S-SD06-000.5	
	40		Hydric Se	DABK-S-SD08-000.5	
	73	U	Hydric Se	DABK-S-SD17-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
2-Methylnaphthalene (cont.)	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
Acenaphthene	12	J	Hydric Se	DABK-S-SD09-000.5	
	16	U	Hydric Se	DABK-S-SD20-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	20	U	Hydric Se	DABK-S-SD18-000.5	
	22		Hydric Se	DABK-S-SD03-000.5-D	
	24		Hydric Se	DABK-S-SD03-000.5	
	24		Hydric Se	DABK-S-SD10-000.5	
	24	U	Hydric Se	DABK-S-SD14-000.5	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	28		Hydric Se	DABK-S-SD15-000.5	
	29		Hydric Se	DABK-S-SD05-000.5	
	30		Hydric Se	DABK-S-SD12-000.5	
	30		Hydric Se	DABK-S-SD16-000.5	
	37		Hydric Se	DABK-S-SD12-000.5-D	
	39		Hydric Se	DABK-S-SD19-000.5	
	40		Hydric Se	DABK-S-SD13-000.5	
	48	J	Hydric Se	DABK-S-SD17-000.5	
	52		Hydric Se	DABK-S-SD11-000.5	
	61	J	Hydric Se	DABK-S-SD07-000.5	
	65		Hydric Se	DABK-S-SD01-000.5	
	83		Hydric Se	DABK-S-SD06-000.5	
	130		Hydric Se	DABK-S-SD08-000.5	YDX. No localized pattern of contam., no QC probs. Retain.
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Acenaphthene (cont.)	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
Acenaphthylene	13	J	Hydric Se	DABK-S-SD09-000.5	
	15		Hydric Se	DABK-S-SD03-000.5-D	
	17		Hydric Se	DABK-S-SD03-000.5	
	18		Hydric Se	DABK-S-SD06-000.5	
	18	J	Hydric Se	DABK-S-SD14-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	21	U	Hydric Se	DABK-S-SD05-000.5	
	24	J	Hydric Se	DABK-S-SD08-000.5	
	24		Hydric Se	DABK-S-SD11-000.5	
	26		Hydric Se	DABK-S-SD07-000.5	
	27	U	Hydric Se	DABK-S-SD01-000.5	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	27		Hydric Se	DABK-S-SD10-000.5	
	27		Hydric Se	DABK-S-SD15-000.5	
	29		Hydric Se	DABK-S-SD20-000.5	
	30		Hydric Se	DABK-S-SD18-000.5	
	35		Hydric Se	DABK-S-SD12-000.5	
	37		Hydric Se	DABK-S-SD13-000.5	
	37		Hydric Se	DABK-S-SD16-000.5	
	39		Hydric Se	DABK-S-SD19-000.5	
	40		Hydric Se	DABK-S-SD12-000.5-D	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230		Hydric Se	DABK-S-SD17-000.5	YDX, Q75. No localized pattern of contam., no QC probs. Retain.
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Acenaphthylene (cont.)	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
Anthracene	20		Hydric Se	DABK-S-SD02-000.5	
	29		Hydric Se	DABK-S-SD14-000.5	
	37		Hydric Se	DABK-S-SD20-000.5	
	38		Hydric Se	DABK-S-SD04-000.5	
	38		Hydric Se	DABK-S-SD09-000.5	
	58		Hydric Se	DABK-S-SD03-000.5-D	
	70		Hydric Se	DABK-S-SD03-000.5	
	75		Hydric Se	DABK-S-SD10-000.5	
	100	J	Hydric Se	DABK-S-SD07-000.5	
	120		Hydric Se	DABK-S-SD11-000.5	
	120		Hydric Se	DABK-S-SD18-000.5	
	130		Hydric Se	DABK-S-SD15-000.5	
	140		Hydric Se	DABK-S-SD06-000.5	
	140	J	Hydric Se	DABK-S-SD12-000.5	
	160		Hydric Se	DABK-S-SD16-000.5	
	170	J	Hydric Se	DABK-S-SD13-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	200		Hydric Se	DABK-S-SD01-000.5	
	200		Hydric Se	DABK-S-SD12-000.5-D	
	210		Hydric Se	DABK-S-SD19-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Anthracene (cont.)	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	430		Hydric Se	DABK-S-SD08-000.5	YDX. No localized pattern of contam., no QC probs. Retain.
	680		Hydric Se	DABK-S-SD17-000.5	YDX, Q75. No localized pattern of contam., no QC probs. Retain.
Benzaldehyde	59	J	Non-Hydric PmB	DABK-S-SO21-0001	
	61	J	Non-Hydric Se	DABK-S-SO08-0001	
	61	J	Non-Hydric Se	DABK-S-SO17-0001	
	67	J	Non-Hydric Se	DABK-S-SO11-0001	
	68	J	Non-Hydric Se	DABK-S-SO05-0001	
	72	J	Non-Hydric Se	DABK-S-SO20-0001	
	74	J	Hydric Se	DABK-S-SD18-000.5	
	84	J	Non-Hydric Se	DABK-S-SO03-0001	
	110	J	Hydric Se	DABK-S-SD04-000.5	
	110	J	Hydric Se	DABK-S-SD10-000.5	
	110	J	Hydric Se	DABK-S-SD15-000.5	
	110	J	Non-Hydric Se	DABK-S-SO09-0001	
	120	J	Non-Hydric Se	DABK-S-SO01-0001	
	130	J	Non-Hydric PmB	DABK-S-SO33-0001	
	140	J	Hydric Se	DABK-S-SD01-000.5	
	150	J	Hydric Se	DABK-S-SD03-000.5	
	150	J	Non-Hydric Se	DABK-S-SO14-0001	
	160	J	Hydric Se	DABK-S-SD19-000.5	
	170	J	Hydric Se	DABK-S-SD03-000.5-D	
	170	J	Hydric Se	DABK-S-SD06-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	200	J	Hydric Se	DABK-S-SD13-000.5	
	200	U	Hydric Se	DABK-S-SD20-000.5	
	220	J	Hydric Se	DABK-S-SD11-000.5	
	220	J	Hydric Se	DABK-S-SD12-000.5	
	230	U	Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Benzaldehyde (cont.)	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Hydric Se	DABK-S-SD02-000.5	
	240	J	Hydric Se	DABK-S-SD12-000.5-D	
	240	J	Hydric Se	DABK-S-SD17-000.5	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	300	J	Hydric Se	DABK-S-SD08-000.5	
	300	U	Hydric Se	DABK-S-SD14-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	660	UJ	Hydric Se	DABK-S-SD16-000.5	
	860		Hydric Se	DABK-S-SD07-000.5	YDX, Q75. No localized pattern of contam., no QC probs. Retain.
Benzo(a)anthracene	52	J	Non-Hydric PmB	DABK-S-SO28-0001	
	53	J	Non-Hydric Se	DABK-S-SO05-0001	
	54	J	Non-Hydric Se	DABK-S-SO19-0001	
	59	J	Non-Hydric PmB	DABK-S-SO33-0001	
	66	J	Non-Hydric PmB	DABK-S-SO23-0001	
	79	J	Non-Hydric Se	DABK-S-SO20-0001	
	100		Hydric Se	DABK-S-SD02-000.5	
	100		Hydric Se	DABK-S-SD14-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	210		Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Benzo(a)anthracene (cont.)	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	290		Hydric Se	DABK-S-SD05-000.5	
	300		Hydric Se	DABK-S-SD04-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	330		Hydric Se	DABK-S-SD10-000.5	
	340		Hydric Se	DABK-S-SD03-000.5	
	380		Hydric Se	DABK-S-SD20-000.5	
	390		Hydric Se	DABK-S-SD06-000.5	
	470		Hydric Se	DABK-S-SD01-000.5	
	530		Hydric Se	DABK-S-SD03-000.5-D	
	530		Hydric Se	DABK-S-SD07-000.5	
	600		Hydric Se	DABK-S-SD11-000.5	
	960		Hydric Se	DABK-S-SD18-000.5	
	1200	J	Hydric Se	DABK-S-SD16-000.5	
	1300		Hydric Se	DABK-S-SD12-000.5	
	1300		Hydric Se	DABK-S-SD12-000.5-D	
	1300		Hydric Se	DABK-S-SD15-000.5	
	1500		Hydric Se	DABK-S-SD08-000.5	
	1700		Hydric Se	DABK-S-SD13-000.5	
	1700		Hydric Se	DABK-S-SD17-000.5	
	1900		Hydric Se	DABK-S-SD19-000.5	
Benzo(a)pyrene	51	J	Non-Hydric PmB	DABK-S-SO21-0001	
	51	J	Non-Hydric PmB	DABK-S-SO22-0001	
	55	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	57	J	Non-Hydric PmB	DABK-S-SO28-0001	
	58	J	Non-Hydric PmB	DABK-S-SO27-0001	
	60	J	Non-Hydric PmB	DABK-S-SO32-0001	
	62	J	Non-Hydric Se	DABK-S-SO19-0001	
	64	J	Non-Hydric PmB	DABK-S-SO26-0001	
	68	J	Non-Hydric PmB	DABK-S-SO33-0001	
	78	J	Non-Hydric PmB	DABK-S-SO23-0001	
	95	J	Non-Hydric Se	DABK-S-SO20-0001	
	120		Hydric Se	DABK-S-SD02-000.5	
	120		Hydric Se	DABK-S-SD14-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Benzo(a)pyrene (cont.)	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270		Hydric Se	DABK-S-SD09-000.5	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	300		Hydric Se	DABK-S-SD05-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	390		Hydric Se	DABK-S-SD10-000.5	
	390		Hydric Se	DABK-S-SD20-000.5	
	420		Hydric Se	DABK-S-SD04-000.5	
	450		Hydric Se	DABK-S-SD03-000.5	
	490		Hydric Se	DABK-S-SD06-000.5	
	520		Hydric Se	DABK-S-SD01-000.5	
	670		Hydric Se	DABK-S-SD03-000.5-D	
	700		Hydric Se	DABK-S-SD07-000.5	
	810		Hydric Se	DABK-S-SD11-000.5	
	1200		Hydric Se	DABK-S-SD18-000.5	
	1600		Hydric Se	DABK-S-SD15-000.5	
	1600	J	Hydric Se	DABK-S-SD16-000.5	
	1700		Hydric Se	DABK-S-SD08-000.5	
	1700		Hydric Se	DABK-S-SD12-000.5	
	1700		Hydric Se	DABK-S-SD12-000.5-D	
	2200		Hydric Se	DABK-S-SD13-000.5	
	2300		Hydric Se	DABK-S-SD17-000.5	
	2500		Hydric Se	DABK-S-SD19-000.5	
Benzo(b)fluoranthene	51	J	Non-Hydric PmB	DABK-S-SO22-0001	
	53	J	Non-Hydric PmB	DABK-S-SO30-0001	
	62	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	64	J	Non-Hydric Se	DABK-S-SO03-0001	
	64	J	Non-Hydric PmB	DABK-S-SO27-0001	
	68	J	Non-Hydric PmB	DABK-S-SO21-0001	
	71	J	Non-Hydric PmB	DABK-S-SO28-0001	
	75	J	Non-Hydric PmB	DABK-S-SO32-0001	
	76	J	Non-Hydric PmB	DABK-S-SO26-0001	
	79	J	Non-Hydric PmB	DABK-S-SO33-0001	
	110	J	Non-Hydric Se	DABK-S-SO19-0001	
	120	J	Non-Hydric PmB	DABK-S-SO23-0001	
	130	J	Non-Hydric Se	DABK-S-SO20-0001	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	210		Hydric Se	DABK-S-SD14-000.5	
	230		Hydric Se	DABK-S-SD02-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Benzo(b)fluoranthene (cont.)	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	340		Hydric Se	DABK-S-SD09-000.5	
	360		Hydric Se	DABK-S-SD05-000.5	
	450		Hydric Se	DABK-S-SD20-000.5	
	750		Hydric Se	DABK-S-SD10-000.5	
	870		Hydric Se	DABK-S-SD04-000.5	
	900		Hydric Se	DABK-S-SD03-000.5	
	970		Hydric Se	DABK-S-SD01-000.5	
	1000		Hydric Se	DABK-S-SD06-000.5	
	1300		Hydric Se	DABK-S-SD03-000.5-D	
	1300		Hydric Se	DABK-S-SD07-000.5	
	1600		Hydric Se	DABK-S-SD11-000.5	
	2000		Hydric Se	DABK-S-SD18-000.5	
	2700	J	Hydric Se	DABK-S-SD16-000.5	
	2900		Hydric Se	DABK-S-SD08-000.5	
	2900		Hydric Se	DABK-S-SD12-000.5-D	
	2900		Hydric Se	DABK-S-SD15-000.5	
	3100		Hydric Se	DABK-S-SD12-000.5	
	3600		Hydric Se	DABK-S-SD17-000.5	
	4300		Hydric Se	DABK-S-SD13-000.5	
	4300		Hydric Se	DABK-S-SD19-000.5	
Benzo(g,h,i)perylene	55	J	Non-Hydric PmB	DABK-S-SO26-0001	
	57	J	Non-Hydric PmB	DABK-S-SO21-0001	
	58	J	Non-Hydric PmB	DABK-S-SO28-0001	
	72	J	Non-Hydric PmB	DABK-S-SO23-0001	
	89		Hydric Se	DABK-S-SD14-000.5	
	100	J	Non-Hydric Se	DABK-S-SO20-0001	
	120		Hydric Se	DABK-S-SD02-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	190		Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Benzo(g,h,i)perylene (cont.)	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280		Hydric Se	DABK-S-SD05-000.5	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	330		Hydric Se	DABK-S-SD20-000.5	
	470		Hydric Se	DABK-S-SD10-000.5	
	510		Hydric Se	DABK-S-SD01-000.5	
	590		Hydric Se	DABK-S-SD03-000.5	
	660		Hydric Se	DABK-S-SD04-000.5	
	670		Hydric Se	DABK-S-SD06-000.5	
	790		Hydric Se	DABK-S-SD07-000.5	
	800		Hydric Se	DABK-S-SD03-000.5-D	
	950		Hydric Se	DABK-S-SD11-000.5	
	1200		Hydric Se	DABK-S-SD18-000.5	
	1500	J	Hydric Se	DABK-S-SD16-000.5	
	1600		Hydric Se	DABK-S-SD08-000.5	
	1700		Hydric Se	DABK-S-SD15-000.5	
	1800		Hydric Se	DABK-S-SD12-000.5	
	1900		Hydric Se	DABK-S-SD12-000.5-D	
	2600		Hydric Se	DABK-S-SD17-000.5	
	2700		Hydric Se	DABK-S-SD13-000.5	
	2800		Hydric Se	DABK-S-SD19-000.5	
Benzo(k)fluoranthene	52	J	Non-Hydric PmB	DABK-S-SO27-0001	
	53	J	Non-Hydric PmB	DABK-S-SO23-0001	
	57	J	Non-Hydric PmB	DABK-S-SO29-0001	
	58	J	Non-Hydric PmB	DABK-S-SO22-0001	
	58	J	Non-Hydric PmB	DABK-S-SO28-0001	
	62		Hydric Se	DABK-S-SD02-000.5	
	66		Hydric Se	DABK-S-SD14-000.5	
	69	J	Non-Hydric PmB	DABK-S-SO26-0001	
	110	J	Non-Hydric Se	DABK-S-SO20-0001	
	130		Hydric Se	DABK-S-SD20-000.5	
	150		Hydric Se	DABK-S-SD05-000.5	
	170		Hydric Se	DABK-S-SD09-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	220		Hydric Se	DABK-S-SD10-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Benzo(k)fluoranthene (cont.)	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270		Hydric Se	DABK-S-SD04-000.5	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	330		Hydric Se	DABK-S-SD03-000.5	
	330		Hydric Se	DABK-S-SD06-000.5	
	430		Hydric Se	DABK-S-SD03-000.5-D	
	430		Hydric Se	DABK-S-SD07-000.5	
	490		Hydric Se	DABK-S-SD01-000.5	
	580		Hydric Se	DABK-S-SD11-000.5	
	730		Hydric Se	DABK-S-SD18-000.5	
	820		Hydric Se	DABK-S-SD15-000.5	
	860		Hydric Se	DABK-S-SD08-000.5	
	930	J	Hydric Se	DABK-S-SD16-000.5	
	1100		Hydric Se	DABK-S-SD12-000.5	
	1100		Hydric Se	DABK-S-SD12-000.5-D	
	1200		Hydric Se	DABK-S-SD13-000.5	
	1500		Hydric Se	DABK-S-SD19-000.5	
	1700		Hydric Se	DABK-S-SD17-000.5	
Bis(2-ethylhexyl) Phthalate	130	J	Non-Hydric Se	DABK-S-SO20-0001	
	160	J	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Hydric Se	DABK-S-SD02-000.5	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Bis(2-ethylhexyl) Phthalate (cont.)	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Hydric Se	DABK-S-SD14-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	320	U	Hydric Se	DABK-S-SD10-000.5	
	370	U	Hydric Se	DABK-S-SD01-000.5	
	370	U	Hydric Se	DABK-S-SD03-000.5	
	390	U	Hydric Se	DABK-S-SD09-000.5	
	410	U	Hydric Se	DABK-S-SD06-000.5	
	460	U	Hydric Se	DABK-S-SD03-000.5-D	
	580	U	Hydric Se	DABK-S-SD04-000.5	
	750	U	Hydric Se	DABK-S-SD08-000.5	
	910	U	Hydric Se	DABK-S-SD07-000.5	
	970		Hydric Se	DABK-S-SD18-000.5	
	1300		Hydric Se	DABK-S-SD20-000.5	
	1500	UJ	Hydric Se	DABK-S-SD16-000.5	
	2000		Hydric Se	DABK-S-SD11-000.5	
	2100		Hydric Se	DABK-S-SD12-000.5-D	
	2200		Hydric Se	DABK-S-SD12-000.5	
	2600		Hydric Se	DABK-S-SD13-000.5	
	3500		Hydric Se	DABK-S-SD19-000.5	
	3900		Hydric Se	DABK-S-SD17-000.5	
	5600		Hydric Se	DABK-S-SD15-000.5	
Butyl Benzyl Phthalate	88	J	Hydric Se	DABK-S-SD18-000.5	
	120	J	Hydric Se	DABK-S-SD13-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	200	J	Hydric Se	DABK-S-SD12-000.5-D	
	210	J	Hydric Se	DABK-S-SD12-000.5	
	210	J	Hydric Se	DABK-S-SD16-000.5	
	230	U	Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Hydric Se	DABK-S-SD02-000.5	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Butyl Benzyl Phthalate (cont.)	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Hydric Se	DABK-S-SD11-000.5	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	300	U	Hydric Se	DABK-S-SD10-000.5	
	300	U	Hydric Se	DABK-S-SD14-000.5	
	310	U	Hydric Se	DABK-S-SD06-000.5	
	310	U	Hydric Se	DABK-S-SD15-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	320	UJ	Hydric Se	DABK-S-SD03-000.5-D	
	340	U	Hydric Se	DABK-S-SD01-000.5	
	340	U	Hydric Se	DABK-S-SD04-000.5	
	360	U	Hydric Se	DABK-S-SD07-000.5	
	420	U	Hydric Se	DABK-S-SD08-000.5	
	460	U	Hydric Se	DABK-S-SD17-000.5	
	850	J	Hydric Se	DABK-S-SD03-000.5	
	1200	J	Hydric Se	DABK-S-SD20-000.5	
	1600	J	Hydric Se	DABK-S-SD19-000.5	
Carbazole	60	J	Hydric Se	DABK-S-SD10-000.5	
	71	J	Hydric Se	DABK-S-SD04-000.5	
	84	J	Hydric Se	DABK-S-SD06-000.5	
	95	J	Hydric Se	DABK-S-SD01-000.5	
	100	J	Hydric Se	DABK-S-SD03-000.5-D	
	110	J	Hydric Se	DABK-S-SD07-000.5	
	110	J	Hydric Se	DABK-S-SD11-000.5	
	150	J	Hydric Se	DABK-S-SD18-000.5	
	160	J	Hydric Se	DABK-S-SD16-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	180	J	Hydric Se	DABK-S-SD12-000.5	
	190	J	Hydric Se	DABK-S-SD12-000.5-D	
	200	U	Hydric Se	DABK-S-SD20-000.5	
	230	U	Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Hydric Se	DABK-S-SD02-000.5	
	240	J	Hydric Se	DABK-S-SD15-000.5	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Carbazole (cont.)	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	J	Hydric Se	DABK-S-SD13-000.5	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	290	J	Hydric Se	DABK-S-SD19-000.5	
	300	U	Hydric Se	DABK-S-SD14-000.5	
	310	J	Hydric Se	DABK-S-SD17-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	330	U	Hydric Se	DABK-S-SD03-000.5	
	410	J	Hydric Se	DABK-S-SD08-000.5	
Chrysene	54	J	Non-Hydric Se	DABK-S-SO05-0001	
	55	J	Non-Hydric PmB	DABK-S-SO29-0001	
	62	J	Non-Hydric PmB	DABK-S-SO22-0001	
	65	J	Non-Hydric PmB	DABK-S-SO32-0001	
	66	J	Non-Hydric PmB	DABK-S-SO21-0001	
	68	J	Non-Hydric PmB	DABK-S-SO27-0001	
	68	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	73	J	Non-Hydric PmB	DABK-S-SO28-0001	
	77	J	Non-Hydric Se	DABK-S-SO19-0001	
	77	J	Non-Hydric PmB	DABK-S-SO26-0001	
	79	J	Non-Hydric PmB	DABK-S-SO33-0001	
	90	J	Non-Hydric PmB	DABK-S-SO23-0001	
	130		Hydric Se	DABK-S-SD14-000.5	
	140	J	Hydric Se	DABK-S-SD02-000.5	
	140	J	Non-Hydric Se	DABK-S-SO20-0001	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Chrysene (cont.)	250		Hydric Se	DABK-S-SD09-000.5	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260		Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	390		Hydric Se	DABK-S-SD20-000.5	
	580		Hydric Se	DABK-S-SD10-000.5	
	610		Hydric Se	DABK-S-SD04-000.5	
	650		Hydric Se	DABK-S-SD03-000.5	
	740		Hydric Se	DABK-S-SD06-000.5	
	750		Hydric Se	DABK-S-SD01-000.5	
	990		Hydric Se	DABK-S-SD03-000.5-D	
	1000		Hydric Se	DABK-S-SD07-000.5	
	1200		Hydric Se	DABK-S-SD11-000.5	
	1600		Hydric Se	DABK-S-SD18-000.5	
	2100		Hydric Se	DABK-S-SD15-000.5	
	2100	J	Hydric Se	DABK-S-SD16-000.5	
	2200		Hydric Se	DABK-S-SD12-000.5-D	
	2300		Hydric Se	DABK-S-SD08-000.5	
	2300		Hydric Se	DABK-S-SD12-000.5	
	3000		Hydric Se	DABK-S-SD17-000.5	
	3100		Hydric Se	DABK-S-SD13-000.5	
	3200		Hydric Se	DABK-S-SD19-000.5	
Dibenz(a,h)anthracene	19	U	Hydric Se	DABK-S-SD02-000.5	
	20	J	Hydric Se	DABK-S-SD14-000.5	
	32		Hydric Se	DABK-S-SD20-000.5	
	41		Hydric Se	DABK-S-SD09-000.5	
	43		Hydric Se	DABK-S-SD05-000.5	
	71		Hydric Se	DABK-S-SD04-000.5	
	71		Hydric Se	DABK-S-SD10-000.5	
	82		Hydric Se	DABK-S-SD03-000.5-D	
	94		Hydric Se	DABK-S-SD03-000.5	
	99		Hydric Se	DABK-S-SD06-000.5	
	110		Hydric Se	DABK-S-SD01-000.5	
	140		Hydric Se	DABK-S-SD07-000.5	
	170		Hydric Se	DABK-S-SD11-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	200		Hydric Se	DABK-S-SD08-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Dibenz(a,h)anthracene (cont.)	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250		Hydric Se	DABK-S-SD16-000.5	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310		Hydric Se	DABK-S-SD18-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	380		Hydric Se	DABK-S-SD15-000.5	
	420		Hydric Se	DABK-S-SD12-000.5	
	460		Hydric Se	DABK-S-SD12-000.5-D	
	550		Hydric Se	DABK-S-SD13-000.5	
	590		Hydric Se	DABK-S-SD17-000.5	
	620		Hydric Se	DABK-S-SD19-000.5	
Dibenzofuran	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	200	U	Hydric Se	DABK-S-SD20-000.5	
	230	J	Hydric Se	DABK-S-SD08-000.5	
	230	U	Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Hydric Se	DABK-S-SD02-000.5	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Hydric Se	DABK-S-SD18-000.5	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Dibenzofuran (cont.)	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Hydric Se	DABK-S-SD11-000.5	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	300	U	Hydric Se	DABK-S-SD10-000.5	
	300	U	Hydric Se	DABK-S-SD13-000.5	
	300	U	Hydric Se	DABK-S-SD14-000.5	
	300	U	Hydric Se	DABK-S-SD19-000.5	
	310	U	Hydric Se	DABK-S-SD06-000.5	
	310	U	Hydric Se	DABK-S-SD15-000.5	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	320	U	Hydric Se	DABK-S-SD03-000.5-D	
	330	U	Hydric Se	DABK-S-SD03-000.5	
	340	U	Hydric Se	DABK-S-SD01-000.5	
	340	U	Hydric Se	DABK-S-SD04-000.5	
	360	U	Hydric Se	DABK-S-SD07-000.5	
	410	U	Hydric Se	DABK-S-SD12-000.5	
	420	U	Hydric Se	DABK-S-SD12-000.5-D	
	460	U	Hydric Se	DABK-S-SD17-000.5	
	660	UJ	Hydric Se	DABK-S-SD16-000.5	
Fluoranthene	56	J	Non-Hydric Se	DABK-S-SO18-0001	
	56	J	Non-Hydric PmB	DABK-S-SO25-0001	
	58	J	Non-Hydric Se	DABK-S-SO06-0001	
	59	J	Non-Hydric Se	DABK-S-SO14-0001	
	59	J	Non-Hydric PmB	DABK-S-SO31-0001	
	62	J	Non-Hydric PmB	DABK-S-SO36-0001	
	64	J	Non-Hydric Se	DABK-S-SO11-0001-D	
	64	J	Non-Hydric PmB	DABK-S-SO37-0001	
	65	J	Non-Hydric Se	DABK-S-SO15-0001	
	68	J	Non-Hydric PmB	DABK-S-SO24-0001	
	69	J	Non-Hydric Se	DABK-S-SO04-0001	
	69	J	Non-Hydric Se	DABK-S-SO07-0001	
	71	J	Non-Hydric Se	DABK-S-SO08-0001	
	72	J	Non-Hydric Se	DABK-S-SO11-0001	
	75	J	Non-Hydric Se	DABK-S-SO09-0001	
	76	J	Non-Hydric PmB	DABK-S-SO25-0001-D	
	79	J	Non-Hydric Se	DABK-S-SO07-0001-D	
	82	J	Non-Hydric PmB	DABK-S-SO30-0001	
	83	J	Non-Hydric PmB	DABK-S-SO39-0001	
	84	J	Non-Hydric PmB	DABK-S-SO38-0001	
	87	J	Non-Hydric PmB	DABK-S-SO35-0001	
	90	J	Non-Hydric Se	DABK-S-SO03-0001	
	100	J	Non-Hydric Se	DABK-S-SO05-0001	
	100	J	Non-Hydric PmB	DABK-S-SO29-0001	
	110	J	Non-Hydric PmB	DABK-S-SO21-0001	
	110	J	Non-Hydric PmB	DABK-S-SO22-0001	
	110	J	Non-Hydric PmB	DABK-S-SO32-0001	
	110	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	120	J	Non-Hydric PmB	DABK-S-SO26-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Fluoranthene (cont.)	120	J	Non-Hydric PmB	DABK-S-SO27-0001	
	130	J	Non-Hydric Se	DABK-S-SO19-0001	
	130	J	Non-Hydric PmB	DABK-S-SO28-0001	
	140	J	Non-Hydric PmB	DABK-S-SO33-0001	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	170	J	Non-Hydric PmB	DABK-S-SO23-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	J	Non-Hydric Se	DABK-S-SO20-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	280		Hydric Se	DABK-S-SD02-000.5	
	280		Hydric Se	DABK-S-SD14-000.5	
	340		Hydric Se	DABK-S-SD09-000.5	
	430		Hydric Se	DABK-S-SD05-000.5	
	630		Hydric Se	DABK-S-SD20-000.5	
	760		Hydric Se	DABK-S-SD10-000.5	
	850		Hydric Se	DABK-S-SD04-000.5	
	950		Hydric Se	DABK-S-SD03-000.5	
	970		Hydric Se	DABK-S-SD06-000.5	
	1300		Hydric Se	DABK-S-SD01-000.5	
	1300		Hydric Se	DABK-S-SD07-000.5	
	1400		Hydric Se	DABK-S-SD03-000.5-D	
	1500		Hydric Se	DABK-S-SD11-000.5	
	2200		Hydric Se	DABK-S-SD18-000.5	
	2800	J	Hydric Se	DABK-S-SD16-000.5	
	2900		Hydric Se	DABK-S-SD12-000.5	
	3000		Hydric Se	DABK-S-SD12-000.5-D	
	3000		Hydric Se	DABK-S-SD15-000.5	
	3400		Hydric Se	DABK-S-SD08-000.5	
	4100		Hydric Se	DABK-S-SD17-000.5	Q75. NDX. Correlated w. largest Total PAHs., no QC probs. Retain.
	4500		Hydric Se	DABK-S-SD13-000.5	Q75. NDX. Correlated w. largest Total PAHs., no QC probs. Retain.
	4600		Hydric Se	DABK-S-SD19-000.5	Q75. NDX. Correlated w. largest Total PAHs., no QC probs. Retain.
Fluorene	16	J	Hydric Se	DABK-S-SD09-000.5	
	16	U	Hydric Se	DABK-S-SD20-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	24	U	Hydric Se	DABK-S-SD14-000.5	
	25		Hydric Se	DABK-S-SD03-000.5-D	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	28		Hydric Se	DABK-S-SD03-000.5	
	31		Hydric Se	DABK-S-SD10-000.5	
	35		Hydric Se	DABK-S-SD05-000.5	
	37		Hydric Se	DABK-S-SD18-000.5	
	42		Hydric Se	DABK-S-SD16-000.5	
	46		Hydric Se	DABK-S-SD15-000.5	
	50		Hydric Se	DABK-S-SD11-000.5	
	53		Hydric Se	DABK-S-SD12-000.5	
	61		Hydric Se	DABK-S-SD19-000.5	
	66		Hydric Se	DABK-S-SD13-000.5	
	69		Hydric Se	DABK-S-SD12-000.5-D	
	78	J	Hydric Se	DABK-S-SD07-000.5	
	82		Hydric Se	DABK-S-SD01-000.5	
	100		Hydric Se	DABK-S-SD06-000.5	
	160		Hydric Se	DABK-S-SD08-000.5	YDX. No localized pattern of contam., no QC probs. Retain.
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Fluorene (cont.)	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250		Hydric Se	DABK-S-SD17-000.5	YDX. No localized pattern of contam., no QC probs. Retain.
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
Hexachlorobenzene	0.2	J	Hydric Se	DABK-S-SD13-000.5	
	7	U	Hydric Se	DABK-S-SD03-000.5	
	8	U	Hydric Se	DABK-S-SD12-000.5	
	12	U	Hydric Se	DABK-S-SD06-000.5	
	13	U	Hydric Se	DABK-S-SD03-000.5-D	
	15	U	Hydric Se	DABK-S-SD07-000.5	
	16	U	Hydric Se	DABK-S-SD20-000.5	
	17	U	Hydric Se	DABK-S-SD11-000.5	
	17	U	Hydric Se	DABK-S-SD12-000.5-D	
	18	U	Hydric Se	DABK-S-SD09-000.5	
	18	U	Hydric Se	DABK-S-SD15-000.5	
	18	U	Hydric Se	DABK-S-SD19-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	20	U	Hydric Se	DABK-S-SD18-000.5	
	21	U	Hydric Se	DABK-S-SD05-000.5	
	24	U	Hydric Se	DABK-S-SD10-000.5	
	24	U	Hydric Se	DABK-S-SD14-000.5	
	26	U	Hydric Se	DABK-S-SD16-000.5	
	27	U	Hydric Se	DABK-S-SD01-000.5	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	34	U	Hydric Se	DABK-S-SD08-000.5	
	73	U	Hydric Se	DABK-S-SD17-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Hexachlorobenzene (cont.)	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
Indeno(1,2,3-cd)pyrene	60	J	Non-Hydric PmB	DABK-S-SO23-0001	
	81		Hydric Se	DABK-S-SD02-000.5	
	89		Hydric Se	DABK-S-SD14-000.5	
	98	J	Non-Hydric Se	DABK-S-SO20-0001	
	160	J	Hydric Se	DABK-S-SD05-000.5	
	170		Hydric Se	DABK-S-SD09-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Indeno(1,2,3-cd)pyrene (cont.)	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260		Hydric Se	DABK-S-SD20-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	360		Hydric Se	DABK-S-SD10-000.5	
	390		Hydric Se	DABK-S-SD01-000.5	
	390		Hydric Se	DABK-S-SD04-000.5	
	410		Hydric Se	DABK-S-SD03-000.5	
	460		Hydric Se	DABK-S-SD06-000.5	
	600		Hydric Se	DABK-S-SD03-000.5-D	
	610		Hydric Se	DABK-S-SD07-000.5	
	720		Hydric Se	DABK-S-SD11-000.5	
	1000		Hydric Se	DABK-S-SD18-000.5	
	1200		Hydric Se	DABK-S-SD08-000.5	
	1200	J	Hydric Se	DABK-S-SD16-000.5	
	1300		Hydric Se	DABK-S-SD15-000.5	
	1400		Hydric Se	DABK-S-SD12-000.5	
	1500		Hydric Se	DABK-S-SD12-000.5-D	
	2000		Hydric Se	DABK-S-SD13-000.5	
	2000		Hydric Se	DABK-S-SD17-000.5	
	2100		Hydric Se	DABK-S-SD19-000.5	
N-Nitroso-di-n-propylamine	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	200	U	Hydric Se	DABK-S-SD20-000.5	
	230	U	Hydric Se	DABK-S-SD09-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Hydric Se	DABK-S-SD02-000.5	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Hydric Se	DABK-S-SD18-000.5	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
N-Nitroso-di-n-propylamine (cont.)	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Hydric Se	DABK-S-SD05-000.5	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Hydric Se	DABK-S-SD11-000.5	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	300	U	Hydric Se	DABK-S-SD10-000.5	
	300	U	Hydric Se	DABK-S-SD13-000.5	
	300	U	Hydric Se	DABK-S-SD14-000.5	
	300	U	Hydric Se	DABK-S-SD19-000.5	
	310	U	Hydric Se	DABK-S-SD06-000.5	
	310	U	Hydric Se	DABK-S-SD15-000.5	
	310		Non-Hydric PmB	DABK-S-SO24-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	320	U	Hydric Se	DABK-S-SD03-000.5-D	
	330	U	Hydric Se	DABK-S-SD03-000.5	
	340	U	Hydric Se	DABK-S-SD01-000.5	
	340	U	Hydric Se	DABK-S-SD04-000.5	
	360	U	Hydric Se	DABK-S-SD07-000.5	
	410	U	Hydric Se	DABK-S-SD12-000.5	
	420	U	Hydric Se	DABK-S-SD08-000.5	
	420	U	Hydric Se	DABK-S-SD12-000.5-D	
	460	U	Hydric Se	DABK-S-SD17-000.5	
	660	UJ	Hydric Se	DABK-S-SD16-000.5	
Naphthalene	10	J	Hydric Se	DABK-S-SD15-000.5	
	12	J	Hydric Se	DABK-S-SD03-000.5	
	13	U	Hydric Se	DABK-S-SD03-000.5-D	
	13	J	Hydric Se	DABK-S-SD10-000.5	
	14	J	Hydric Se	DABK-S-SD13-000.5	
	15	J	Hydric Se	DABK-S-SD12-000.5-D	
	16	U	Hydric Se	DABK-S-SD20-000.5	
	17	J	Hydric Se	DABK-S-SD12-000.5	
	18	UJ	Hydric Se	DABK-S-SD09-000.5	
	18	J	Hydric Se	DABK-S-SD11-000.5	
	18	U	Hydric Se	DABK-S-SD19-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	20	U	Hydric Se	DABK-S-SD18-000.5	
	21	U	Hydric Se	DABK-S-SD05-000.5	
	24	UJ	Hydric Se	DABK-S-SD14-000.5	
	26	UJ	Hydric Se	DABK-S-SD16-000.5	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	30		Hydric Se	DABK-S-SD01-000.5	
	54	J	Hydric Se	DABK-S-SD07-000.5	
	73	UJ	Hydric Se	DABK-S-SD17-000.5	
	91		Hydric Se	DABK-S-SD06-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Naphthalene (cont.)	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	360	J	Hydric Se	DABK-S-SD08-000.5	
Phenanthrene	51	J	Non-Hydric PmB	DABK-S-SO25-0001-D	
	52	J	Non-Hydric PmB	DABK-S-SO35-0001	
	54	J	Non-Hydric Se	DABK-S-SO19-0001	
	55	J	Non-Hydric PmB	DABK-S-SO22-0001	
	56	J	Non-Hydric PmB	DABK-S-SO30-0001	
	58	J	Non-Hydric Se	DABK-S-SO03-0001	
	58	J	Non-Hydric PmB	DABK-S-SO21-0001	
	59	J	Non-Hydric Se	DABK-S-SO05-0001	
	61	J	Non-Hydric PmB	DABK-S-SO38-0001	
	65	J	Non-Hydric PmB	DABK-S-SO27-0001	
	66	J	Non-Hydric PmB	DABK-S-SO29-0001	
	70	J	Non-Hydric PmB	DABK-S-SO32-0001	
	73	J	Non-Hydric PmB	DABK-S-SO26-0001	
	74	J	Non-Hydric PmB	DABK-S-SO28-0001	
	78	J	Non-Hydric PmB	DABK-S-SO35-0001-D	
	91	J	Non-Hydric PmB	DABK-S-SO33-0001	
	92	J	Non-Hydric Se	DABK-S-SO20-0001	
	95	J	Non-Hydric PmB	DABK-S-SO23-0001	
	100	J	Hydric Se	DABK-S-SD02-000.5	
	100		Hydric Se	DABK-S-SD14-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	220		Hydric Se	DABK-S-SD20-000.5	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Phenanthrene (cont.)	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	280		Hydric Se	DABK-S-SD05-000.5	
	280		Hydric Se	DABK-S-SD09-000.5	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
	330	J	Hydric Se	DABK-S-SD03-000.5	
	350		Hydric Se	DABK-S-SD10-000.5	
	360		Hydric Se	DABK-S-SD04-000.5	
	400		Hydric Se	DABK-S-SD06-000.5	
	550	J	Hydric Se	DABK-S-SD03-000.5-D	
	600		Hydric Se	DABK-S-SD01-000.5	
	620		Hydric Se	DABK-S-SD11-000.5	
	660		Hydric Se	DABK-S-SD07-000.5	
	930	J	Hydric Se	DABK-S-SD16-000.5	
	940		Hydric Se	DABK-S-SD18-000.5	
	1200		Hydric Se	DABK-S-SD12-000.5	
	1200		Hydric Se	DABK-S-SD12-000.5-D	
	1500		Hydric Se	DABK-S-SD15-000.5	
	1700		Hydric Se	DABK-S-SD13-000.5	
	1700		Hydric Se	DABK-S-SD17-000.5	
	1800		Hydric Se	DABK-S-SD19-000.5	
	2900		Hydric Se	DABK-S-SD08-000.5	
Phenol	9		Hydric Se	DABK-S-SD03-000.5	
	12	U	Hydric Se	DABK-S-SD06-000.5	
	12	J	Hydric Se	DABK-S-SD10-000.5	
	12	J	Hydric Se	DABK-S-SD13-000.5	
	13	U	Hydric Se	DABK-S-SD03-000.5-D	
	13	J	Hydric Se	DABK-S-SD16-000.5	
	16	U	Hydric Se	DABK-S-SD20-000.5	
	18	U	Hydric Se	DABK-S-SD09-000.5	
	18		Hydric Se	DABK-S-SD12-000.5-D	
	18	U	Hydric Se	DABK-S-SD19-000.5	
	19	U	Hydric Se	DABK-S-SD02-000.5	
	20		Hydric Se	DABK-S-SD11-000.5	
	20	U	Hydric Se	DABK-S-SD18-000.5	
	21	U	Hydric Se	DABK-S-SD05-000.5	
	22		Hydric Se	DABK-S-SD15-000.5	
	24		Hydric Se	DABK-S-SD07-000.5	
	24		Hydric Se	DABK-S-SD12-000.5	
	24	U	Hydric Se	DABK-S-SD14-000.5	
	27	U	Hydric Se	DABK-S-SD01-000.5	
	27	U	Hydric Se	DABK-S-SD04-000.5	
	47	J	Hydric Se	DABK-S-SD17-000.5	
	88	J	Hydric Se	DABK-S-SD08-000.5	
	170	U	Non-Hydric Se	DABK-S-SO02-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO25-0001	
	230	U	Non-Hydric PmB	DABK-S-SO31-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	230	U	Non-Hydric PmB	DABK-S-SO35-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Phenol (cont.)	230	U	Non-Hydric PmB	DABK-S-SO37-0001	
	240	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	240	U	Non-Hydric Se	DABK-S-SO14-0001	
	240	U	Non-Hydric Se	DABK-S-SO15-0001	
	240	U	Non-Hydric PmB	DABK-S-SO21-0001	
	240	U	Non-Hydric PmB	DABK-S-SO22-0001	
	240	U	Non-Hydric PmB	DABK-S-SO24-0001	
	240	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	240	U	Non-Hydric PmB	DABK-S-SO26-0001	
	240	U	Non-Hydric PmB	DABK-S-SO27-0001	
	240	U	Non-Hydric PmB	DABK-S-SO38-0001	
	250	U	Non-Hydric Se	DABK-S-SO09-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	250	U	Non-Hydric Se	DABK-S-SO11-0001	
	250	U	Non-Hydric Se	DABK-S-SO18-0001	
	250	U	Non-Hydric Se	DABK-S-SO19-0001	
	250	U	Non-Hydric PmB	DABK-S-SO23-0001	
	250	U	Non-Hydric PmB	DABK-S-SO29-0001	
	250	U	Non-Hydric PmB	DABK-S-SO30-0001	
	250	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	250	U	Non-Hydric PmB	DABK-S-SO36-0001	
	260	U	Non-Hydric Se	DABK-S-SO04-0001	
	260	U	Non-Hydric Se	DABK-S-SO05-0001	
	260	U	Non-Hydric Se	DABK-S-SO06-0001	
	260	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	260	U	Non-Hydric Se	DABK-S-SO08-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	260	U	Non-Hydric Se	DABK-S-SO17-0001	
	260	U	Non-Hydric PmB	DABK-S-SO28-0001	
	260	U	Non-Hydric PmB	DABK-S-SO32-0001	
	260	U	Non-Hydric PmB	DABK-S-SO40-0001	
	270	U	Non-Hydric Se	DABK-S-SO03-0001	
	270	U	Non-Hydric Se	DABK-S-SO20-0001	
	280	U	Non-Hydric Se	DABK-S-SO07-0001	
	280	U	Non-Hydric PmB	DABK-S-SO33-0001	
	310	U	Non-Hydric PmB	DABK-S-SO39-0001	
Pyrene	44	J	Non-Hydric Se	DABK-S-SO02-0001	
	48	J	Non-Hydric PmB	DABK-S-SO25-0001	
	51	J	Non-Hydric PmB	DABK-S-SO31-0001	
	56	J	Non-Hydric Se	DABK-S-SO18-0001	
	56	J	Non-Hydric PmB	DABK-S-SO40-0001	
	57	J	Non-Hydric Se	DABK-S-SO17-0001	
	57	J	Non-Hydric PmB	DABK-S-SO37-0001	
	59	J	Non-Hydric PmB	DABK-S-SO24-0001	
	61	J	Non-Hydric PmB	DABK-S-SO36-0001	
	63	J	Non-Hydric Se	DABK-S-SO06-0001	
	72	J	Non-Hydric Se	DABK-S-SO14-0001	
	74	J	Non-Hydric PmB	DABK-S-SO25-0001-D	
	75	J	Non-Hydric PmB	DABK-S-SO35-0001	
	76	J	Non-Hydric Se	DABK-S-SO07-0001	
	77	J	Non-Hydric Se	DABK-S-SO04-0001	
	78	J	Non-Hydric Se	DABK-S-SO08-0001	
	79	J	Non-Hydric PmB	DABK-S-SO30-0001	
	82	J	Non-Hydric Se	DABK-S-SO07-0001-D	
	82	J	Non-Hydric Se	DABK-S-SO15-0001	
	83	J	Non-Hydric Se	DABK-S-SO11-0001-D	
	84	J	Non-Hydric PmB	DABK-S-SO38-0001	
	91	J	Non-Hydric Se	DABK-S-SO11-0001	
	93	J	Non-Hydric Se	DABK-S-SO09-0001	
	93	J	Non-Hydric PmB	DABK-S-SO29-0001	
	97	J	Non-Hydric PmB	DABK-S-SO21-0001	
	97	J	Non-Hydric PmB	DABK-S-SO22-0001	
	97	J	Non-Hydric PmB	DABK-S-SO39-0001	
	100	J	Non-Hydric PmB	DABK-S-SO32-0001	
	100	J	Non-Hydric PmB	DABK-S-SO35-0001-D	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Pyrene (cont.)	110	J	Non-Hydric Se	DABK-S-SO03-0001	
	110	J	Non-Hydric Se	DABK-S-SO05-0001	
	110	J	Non-Hydric PmB	DABK-S-SO27-0001	
	110	J	Non-Hydric PmB	DABK-S-SO28-0001	
	120	J	Non-Hydric PmB	DABK-S-SO26-0001	
	120	J	Non-Hydric PmB	DABK-S-SO33-0001	
	140	J	Non-Hydric Se	DABK-S-SO19-0001	
	150	J	Non-Hydric PmB	DABK-S-SO23-0001	
	190		Hydric Se	DABK-S-SD02-000.5	
	190	J	Non-Hydric Se	DABK-S-SO20-0001	
	230	U	Non-Hydric Se	DABK-S-SO01-0001	
	230	U	Non-Hydric Se	DABK-S-SO16-0001	
	230	U	Non-Hydric PmB	DABK-S-SO34-0001	
	250	U	Non-Hydric Se	DABK-S-SO10-0001	
	260	U	Non-Hydric Se	DABK-S-SO12-0001	
	260	U	Non-Hydric Se	DABK-S-SO13-0001	
	320	J	Hydric Se	DABK-S-SD14-000.5	
	420	J	Hydric Se	DABK-S-SD09-000.5	
	520	J	Hydric Se	DABK-S-SD05-000.5	
	820		Hydric Se	DABK-S-SD20-000.5	
	890	J	Hydric Se	DABK-S-SD10-000.5	
	940	J	Hydric Se	DABK-S-SD04-000.5	
	980	J	Hydric Se	DABK-S-SD03-000.5	
	1100	J	Hydric Se	DABK-S-SD06-000.5	
	1200	J	Hydric Se	DABK-S-SD01-000.5	
	1500	J	Hydric Se	DABK-S-SD03-000.5-D	
	1500	J	Hydric Se	DABK-S-SD07-000.5	
	1800	J	Hydric Se	DABK-S-SD11-000.5	
	2200		Hydric Se	DABK-S-SD18-000.5	
	3100	J	Hydric Se	DABK-S-SD12-000.5-D	
	3400	J	Hydric Se	DABK-S-SD12-000.5	
	3400	J	Hydric Se	DABK-S-SD16-000.5	
	3500	J	Hydric Se	DABK-S-SD15-000.5	
	4000	J	Hydric Se	DABK-S-SD08-000.5	
	4300	J	Hydric Se	DABK-S-SD13-000.5	
	4300		Hydric Se	DABK-S-SD17-000.5	
	4600		Hydric Se	DABK-S-SD19-000.5	
4,4'-DDD	3.4	U	Non-Hydric Se	DABK-S-SO02-0001	
	4.1	U	Hydric Se	DABK-S-SD20-000.5	
	4.5	U	Non-Hydric PmB	DABK-S-SO31-0001	
	4.6	U	Non-Hydric Se	DABK-S-SO16-0001	
	4.6	U	Non-Hydric PmB	DABK-S-SO25-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO01-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.7	U	Non-Hydric PmB	DABK-S-SO34-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO35-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO37-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO38-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO24-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	4.8	U	Non-Hydric PmB	DABK-S-SO26-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO14-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO15-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO19-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO21-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO22-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO23-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO27-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO30-0001	
	5	U	Non-Hydric PmB	DABK-S-SO36-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO05-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO06-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO08-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO09-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO10-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO11-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
4,4'-DDD (cont.)	5.1	U	Non-Hydric Se	DABK-S-SO18-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO29-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO12-0001	
	5.2	U	Non-Hydric Se	DABK-S-SO13-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO28-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO32-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO40-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO04-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO17-0001	
	5.4	U	Non-Hydric Se	DABK-S-SO20-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO03-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO07-0001	
	5.7	U	Non-Hydric PmB	DABK-S-SO33-0001	
	6.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	6.5		Hydric Se	DABK-S-SD02-000.5	
	7		Hydric Se	DABK-S-SD14-000.5	
	9.1		Hydric Se	DABK-S-SD09-000.5	
	11		Hydric Se	DABK-S-SD05-000.5	
	13		Hydric Se	DABK-S-SD03-000.5-D	
	13		Hydric Se	DABK-S-SD06-000.5	
	15		Hydric Se	DABK-S-SD04-000.5	
	16		Hydric Se	DABK-S-SD10-000.5	
	17		Hydric Se	DABK-S-SD19-000.5	
	18		Hydric Se	DABK-S-SD11-000.5	
	20		Hydric Se	DABK-S-SD01-000.5	
	22		Hydric Se	DABK-S-SD16-000.5	
	24		Hydric Se	DABK-S-SD15-000.5	
	24		Hydric Se	DABK-S-SD18-000.5	
	26		Hydric Se	DABK-S-SD03-000.5	
	27		Hydric Se	DABK-S-SD08-000.5	
	32		Hydric Se	DABK-S-SD13-000.5	
	52		Hydric Se	DABK-S-SD17-000.5	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
	55		Hydric Se	DABK-S-SD07-000.5	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
	60		Hydric Se	DABK-S-SD12-000.5	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
	65		Hydric Se	DABK-S-SD12-000.5-D	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
4,4'-DDE	3.4	U	Non-Hydric Se	DABK-S-SO02-0001	
	4.5	U	Non-Hydric PmB	DABK-S-SO31-0001	
	4.6	U	Non-Hydric Se	DABK-S-SO16-0001	
	4.6	U	Non-Hydric PmB	DABK-S-SO25-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO01-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.7	U	Non-Hydric PmB	DABK-S-SO34-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO35-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO37-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO38-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO24-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	4.9	U	Non-Hydric Se	DABK-S-SO14-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO15-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO22-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO27-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO30-0001	
	5	U	Non-Hydric PmB	DABK-S-SO36-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO05-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO06-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO08-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO10-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO11-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO18-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO29-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO12-0001	
	5.2	U	Non-Hydric Se	DABK-S-SO13-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
4,4'-DDE (cont.)	5.2	U	Non-Hydric PmB	DABK-S-SO28-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO32-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO40-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO04-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO17-0001	
	5.4		Non-Hydric Se	DABK-S-SO09-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO03-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO07-0001	
	5.7	U	Non-Hydric PmB	DABK-S-SO33-0001	
	6.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	7.1		Hydric Se	DABK-S-SD20-000.5	
	11		Non-Hydric PmB	DABK-S-SO26-0001	
	13		Non-Hydric PmB	DABK-S-SO21-0001	
	20		Non-Hydric PmB	DABK-S-SO23-0001	
	23		Hydric Se	DABK-S-SD02-000.5	
	29		Hydric Se	DABK-S-SD14-000.5	
	31		Non-Hydric Se	DABK-S-SO20-0001	
	37		Hydric Se	DABK-S-SD09-000.5	
	38		Hydric Se	DABK-S-SD05-000.5	
	43		Non-Hydric Se	DABK-S-SO19-0001	
	52		Hydric Se	DABK-S-SD18-000.5	
	62		Hydric Se	DABK-S-SD19-000.5	
	77		Hydric Se	DABK-S-SD06-000.5	
	77		Hydric Se	DABK-S-SD11-000.5	
	80		Hydric Se	DABK-S-SD10-000.5	
	96		Hydric Se	DABK-S-SD04-000.5	
	96		Hydric Se	DABK-S-SD16-000.5	
	100		Hydric Se	DABK-S-SD01-000.5	
	110		Hydric Se	DABK-S-SD03-000.5-D	
	110		Hydric Se	DABK-S-SD15-000.5	
	120		Hydric Se	DABK-S-SD08-000.5	
	140		Hydric Se	DABK-S-SD13-000.5	
	140		Hydric Se	DABK-S-SD17-000.5	
	160		Hydric Se	DABK-S-SD12-000.5	
	170		Hydric Se	DABK-S-SD03-000.5	
	170		Hydric Se	DABK-S-SD12-000.5-D	
	190		Hydric Se	DABK-S-SD07-000.5	
4,4'-DDT	3.6		Non-Hydric Se	DABK-S-SO02-0001	
	4.1	U	Hydric Se	DABK-S-SD20-000.5	
	4.5	U	Non-Hydric PmB	DABK-S-SO31-0001	
	4.6	U	Non-Hydric Se	DABK-S-SO16-0001	
	4.6	U	Non-Hydric PmB	DABK-S-SO25-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO01-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.7	U	Non-Hydric PmB	DABK-S-SO34-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO35-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO37-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO38-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO24-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	4.9	U	Non-Hydric Se	DABK-S-SO14-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO15-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO21-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO22-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO27-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO30-0001	
	5	U	Non-Hydric PmB	DABK-S-SO36-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO05-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO06-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO08-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO09-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO10-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO11-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO18-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO29-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO35-0001-D	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
4,4'-DDT (cont.)	5.2	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO12-0001	
	5.2	U	Non-Hydric Se	DABK-S-SO13-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO28-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO32-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO40-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO04-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO17-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO03-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO07-0001	
	5.6		Non-Hydric PmB	DABK-S-SO26-0001	
	5.7	U	Non-Hydric PmB	DABK-S-SO33-0001	
	6.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	8.5		Non-Hydric PmB	DABK-S-SO23-0001	
	16		Hydric Se	DABK-S-SD02-000.5	
	16		Non-Hydric Se	DABK-S-SO19-0001	
	18		Hydric Se	DABK-S-SD14-000.5	
	23		Non-Hydric Se	DABK-S-SO20-0001	
	26		Hydric Se	DABK-S-SD18-000.5	
	27		Hydric Se	DABK-S-SD09-000.5	
	29		Hydric Se	DABK-S-SD05-000.5	
	34		Hydric Se	DABK-S-SD12-000.5-D	
	50		Hydric Se	DABK-S-SD19-000.5	
	53		Hydric Se	DABK-S-SD12-000.5	
	57		Hydric Se	DABK-S-SD10-000.5	
	64		Hydric Se	DABK-S-SD15-000.5	
	70		Hydric Se	DABK-S-SD11-000.5	
	76		Hydric Se	DABK-S-SD16-000.5	
	82		Hydric Se	DABK-S-SD08-000.5	
	83		Hydric Se	DABK-S-SD06-000.5	
	93		Hydric Se	DABK-S-SD17-000.5	
	95		Hydric Se	DABK-S-SD04-000.5	
	98		Hydric Se	DABK-S-SD01-000.5	
	99		Hydric Se	DABK-S-SD07-000.5	
	110		Hydric Se	DABK-S-SD03-000.5-D	
	120		Hydric Se	DABK-S-SD13-000.5	
	140		Hydric Se	DABK-S-SD03-000.5	
Aldrin	1.8	U	Non-Hydric Se	DABK-S-SO02-0001	
	2.1	U	Hydric Se	DABK-S-SD20-000.5	
	2.3	U	Hydric Se	DABK-S-SD09-000.5	
	2.3	U	Non-Hydric PmB	DABK-S-SO25-0001	
	2.3	U	Non-Hydric PmB	DABK-S-SO31-0001	
	2.4	U	Hydric Se	DABK-S-SD02-000.5	
	2.4	U	Non-Hydric Se	DABK-S-SO01-0001	
	2.4	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	2.4	U	Non-Hydric Se	DABK-S-SO16-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO34-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO35-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO37-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO38-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO14-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO15-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO19-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO21-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO22-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO23-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO24-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	2.5	U	Non-Hydric PmB	DABK-S-SO26-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO27-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO30-0001	
	2.6	U	Hydric Se	DABK-S-SD18-000.5	
	2.6	U	Non-Hydric Se	DABK-S-SO05-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO06-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO08-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO09-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Aldrin (cont.)	2.6	U	Non-Hydric Se	DABK-S-SO10-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO11-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO18-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO29-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	2.6	U	Non-Hydric PmB	DABK-S-SO36-0001	
	2.7	U	Hydric Se	DABK-S-SD05-000.5	
	2.7	U	Non-Hydric Se	DABK-S-SO04-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	2.7	U	Non-Hydric Se	DABK-S-SO12-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO13-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO17-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO28-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO32-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO40-0001	
	2.8	U	Hydric Se	DABK-S-SD11-000.5	
	2.8	U	Non-Hydric Se	DABK-S-SO03-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO07-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO20-0001	
	2.9	U	Non-Hydric PmB	DABK-S-SO33-0001	
	3.1	U	Hydric Se	DABK-S-SD06-000.5	
	3.1	U	Hydric Se	DABK-S-SD10-000.5	
	3.1	U	Hydric Se	DABK-S-SD13-000.5	
	3.1	U	Hydric Se	DABK-S-SD14-000.5	
	3.1	U	Hydric Se	DABK-S-SD15-000.5	
	3.1	U	Hydric Se	DABK-S-SD19-000.5	
	3.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	3.3	U	Hydric Se	DABK-S-SD03-000.5-D	
	3.3	U	Hydric Se	DABK-S-SD16-000.5	
	3.4	U	Hydric Se	DABK-S-SD03-000.5	
	3.5	U	Hydric Se	DABK-S-SD01-000.5	
	3.5	U	Hydric Se	DABK-S-SD04-000.5	
	4.2	U	Hydric Se	DABK-S-SD12-000.5	
	4.3	U	Hydric Se	DABK-S-SD08-000.5	
	4.3	U	Hydric Se	DABK-S-SD12-000.5-D	
	4.7	U	Hydric Se	DABK-S-SD17-000.5	
	31	J	Hydric Se	DABK-S-SD07-000.5	
Alpha-Chlordane	1.8	U	Non-Hydric Se	DABK-S-SO02-0001	
	2.3	U	Non-Hydric PmB	DABK-S-SO25-0001	
	2.3	U	Non-Hydric PmB	DABK-S-SO31-0001	
	2.4	U	Non-Hydric Se	DABK-S-SO01-0001	
	2.4	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	2.4	U	Non-Hydric Se	DABK-S-SO16-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO34-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO35-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO37-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO38-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO14-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO15-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO21-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO23-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO24-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	2.5	U	Non-Hydric PmB	DABK-S-SO26-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO27-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO30-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO05-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO06-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO08-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO09-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO10-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO11-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO18-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO29-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	2.6	U	Non-Hydric PmB	DABK-S-SO36-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Alpha-Chlordane (cont.)	2.7	U	Non-Hydric Se	DABK-S-SO04-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	2.7	U	Non-Hydric Se	DABK-S-SO12-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO13-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO17-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO28-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO32-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO40-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO03-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO07-0001	
	2.9	U	Non-Hydric PmB	DABK-S-SO33-0001	
	3.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	3.8		Non-Hydric PmB	DABK-S-SO22-0001	
	5.6		Hydric Se	DABK-S-SD20-000.5	
	6.6		Non-Hydric Se	DABK-S-SO19-0001	
	7		Non-Hydric Se	DABK-S-SO20-0001	
	8.1		Hydric Se	DABK-S-SD14-000.5	
	8.9		Hydric Se	DABK-S-SD02-000.5	
	12		Hydric Se	DABK-S-SD09-000.5	
	16		Hydric Se	DABK-S-SD05-000.5	
	21		Hydric Se	DABK-S-SD10-000.5	
	28		Hydric Se	DABK-S-SD18-000.5	
	30		Hydric Se	DABK-S-SD06-000.5	
	33		Hydric Se	DABK-S-SD01-000.5	
	33		Hydric Se	DABK-S-SD19-000.5	
	34		Hydric Se	DABK-S-SD04-000.5	
	37		Hydric Se	DABK-S-SD16-000.5	
	38		Hydric Se	DABK-S-SD03-000.5-D	
	39		Hydric Se	DABK-S-SD11-000.5	
	41		Hydric Se	DABK-S-SD08-000.5	
	41		Hydric Se	DABK-S-SD15-000.5	
	50		Hydric Se	DABK-S-SD03-000.5	
	69		Hydric Se	DABK-S-SD07-000.5	
	89		Hydric Se	DABK-S-SD13-000.5	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
	100		Hydric Se	DABK-S-SD12-000.5	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
	110		Hydric Se	DABK-S-SD12-000.5-D	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
	110		Hydric Se	DABK-S-SD17-000.5	YDX. Prevalent in hydric soil samples. No QC probs. Retain.
Aroclor-1254	25	J	Non-Hydric Se	DABK-S-SO02-0001	
	41	U	Hydric Se	DABK-S-SD20-000.5	
	45	U	Hydric Se	DABK-S-SD09-000.5	
	45	U	Non-Hydric PmB	DABK-S-SO31-0001	
	46	U	Non-Hydric Se	DABK-S-SO16-0001	
	46	U	Non-Hydric PmB	DABK-S-SO25-0001	
	47	U	Non-Hydric Se	DABK-S-SO01-0001	
	47	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	47	U	Non-Hydric PmB	DABK-S-SO34-0001	
	47	U	Non-Hydric PmB	DABK-S-SO35-0001	
	47	U	Non-Hydric PmB	DABK-S-SO37-0001	
	47	U	Non-Hydric PmB	DABK-S-SO38-0001	
	48	U	Hydric Se	DABK-S-SD02-000.5	
	48	U	Non-Hydric PmB	DABK-S-SO24-0001	
	48	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	48	U	Non-Hydric PmB	DABK-S-SO26-0001	
	49	U	Non-Hydric Se	DABK-S-SO14-0001	
	49	U	Non-Hydric Se	DABK-S-SO15-0001	
	49	U	Non-Hydric Se	DABK-S-SO19-0001	
	49	U	Non-Hydric PmB	DABK-S-SO21-0001	
	49	U	Non-Hydric PmB	DABK-S-SO22-0001	
	49	U	Non-Hydric PmB	DABK-S-SO23-0001	
	49	U	Non-Hydric PmB	DABK-S-SO27-0001	
	49	U	Non-Hydric PmB	DABK-S-SO30-0001	
	50	U	Hydric Se	DABK-S-SD18-000.5	
	50	U	Non-Hydric PmB	DABK-S-SO36-0001	
	51	U	Non-Hydric Se	DABK-S-SO05-0001	
	51	U	Non-Hydric Se	DABK-S-SO06-0001	
	51	U	Non-Hydric Se	DABK-S-SO08-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Aroclor-1254 (cont.)	51	U	Non-Hydric Se	DABK-S-SO09-0001	
	51	U	Non-Hydric Se	DABK-S-SO10-0001	
	51	U	Non-Hydric Se	DABK-S-SO11-0001	
	51	U	Non-Hydric Se	DABK-S-SO18-0001	
	51	U	Non-Hydric PmB	DABK-S-SO29-0001	
	51	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	52	U	Hydric Se	DABK-S-SD05-000.5	
	52	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	52	U	Non-Hydric Se	DABK-S-SO12-0001	
	52	U	Non-Hydric Se	DABK-S-SO13-0001	
	52	U	Non-Hydric PmB	DABK-S-SO28-0001	
	52	U	Non-Hydric PmB	DABK-S-SO32-0001	
	52	U	Non-Hydric PmB	DABK-S-SO40-0001	
	53	U	Non-Hydric Se	DABK-S-SO04-0001	
	53	U	Non-Hydric Se	DABK-S-SO17-0001	
	54	U	Non-Hydric Se	DABK-S-SO20-0001	
	55	U	Hydric Se	DABK-S-SD11-000.5	
	55	U	Non-Hydric Se	DABK-S-SO03-0001	
	55	U	Non-Hydric Se	DABK-S-SO07-0001	
	57	U	Non-Hydric PmB	DABK-S-SO33-0001	
	59	U	Hydric Se	DABK-S-SD10-000.5	
	60	U	Hydric Se	DABK-S-SD14-000.5	
	61	U	Hydric Se	DABK-S-SD06-000.5	
	61	U	Hydric Se	DABK-S-SD13-000.5	
	61	U	Hydric Se	DABK-S-SD15-000.5	
	61	U	Hydric Se	DABK-S-SD19-000.5	
	62	U	Non-Hydric PmB	DABK-S-SO39-0001	
	64	U	Hydric Se	DABK-S-SD03-000.5-D	
	65	U	Hydric Se	DABK-S-SD16-000.5	
	66	U	Hydric Se	DABK-S-SD03-000.5	
	68	U	Hydric Se	DABK-S-SD01-000.5	
	68	U	Hydric Se	DABK-S-SD04-000.5	
	73	U	Hydric Se	DABK-S-SD07-000.5	
	82	U	Hydric Se	DABK-S-SD12-000.5	
	83	U	Hydric Se	DABK-S-SD12-000.5-D	
	84	U	Hydric Se	DABK-S-SD08-000.5	
	91	U	Hydric Se	DABK-S-SD17-000.5	
Aroclor-1260	26	J	Hydric Se	DABK-S-SD02-000.5	
	26	J	Hydric Se	DABK-S-SD09-000.5	
	28	J	Hydric Se	DABK-S-SD14-000.5	
	34	U	Non-Hydric Se	DABK-S-SO02-0001	
	34	J	Non-Hydric Se	DABK-S-SO14-0001	
	36	J	Hydric Se	DABK-S-SD11-000.5	
	41	U	Hydric Se	DABK-S-SD20-000.5	
	45	U	Non-Hydric PmB	DABK-S-SO31-0001	
	46	U	Non-Hydric Se	DABK-S-SO16-0001	
	46	U	Non-Hydric PmB	DABK-S-SO25-0001	
	47	U	Non-Hydric Se	DABK-S-SO01-0001	
	47	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	47	U	Non-Hydric PmB	DABK-S-SO34-0001	
	47	U	Non-Hydric PmB	DABK-S-SO35-0001	
	47	U	Non-Hydric PmB	DABK-S-SO37-0001	
	47	U	Non-Hydric PmB	DABK-S-SO38-0001	
	48	U	Non-Hydric PmB	DABK-S-SO24-0001	
	48	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	49	J	Hydric Se	DABK-S-SD04-000.5	
	49	J	Hydric Se	DABK-S-SD06-000.5	
	49	U	Non-Hydric Se	DABK-S-SO15-0001	
	49	U	Non-Hydric Se	DABK-S-SO19-0001	
	49	U	Non-Hydric PmB	DABK-S-SO23-0001	
	49	U	Non-Hydric PmB	DABK-S-SO27-0001	
	49	U	Non-Hydric PmB	DABK-S-SO30-0001	
	49	J	Non-Hydric PmB	DABK-S-SO32-0001	
	50	U	Hydric Se	DABK-S-SD18-000.5	
	50	U	Non-Hydric PmB	DABK-S-SO36-0001	
	51	U	Non-Hydric Se	DABK-S-SO05-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Aroclor-1260 (cont.)	51	U	Non-Hydric Se	DABK-S-SO06-0001	
	51	U	Non-Hydric Se	DABK-S-SO08-0001	
	51	U	Non-Hydric Se	DABK-S-SO09-0001	
	51	U	Non-Hydric Se	DABK-S-SO10-0001	
	51	U	Non-Hydric Se	DABK-S-SO11-0001	
	51	U	Non-Hydric Se	DABK-S-SO18-0001	
	51	J	Non-Hydric PmB	DABK-S-SO28-0001	
	51	U	Non-Hydric PmB	DABK-S-SO29-0001	
	51	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	52	J	Hydric Se	DABK-S-SD03-000.5-D	
	52	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	52	U	Non-Hydric Se	DABK-S-SO12-0001	
	52	U	Non-Hydric Se	DABK-S-SO13-0001	
	52	U	Non-Hydric PmB	DABK-S-SO40-0001	
	53	U	Non-Hydric Se	DABK-S-SO04-0001	
	53	U	Non-Hydric Se	DABK-S-SO17-0001	
	54	J	Hydric Se	DABK-S-SD12-000.5	
	54	U	Non-Hydric Se	DABK-S-SO20-0001	
	55	U	Non-Hydric Se	DABK-S-SO03-0001	
	55	U	Non-Hydric Se	DABK-S-SO07-0001	
	57	U	Non-Hydric PmB	DABK-S-SO33-0001	
	58	J	Hydric Se	DABK-S-SD08-000.5	
	58		Non-Hydric PmB	DABK-S-SO22-0001	
	60		Hydric Se	DABK-S-SD05-000.5	
	61	U	Hydric Se	DABK-S-SD19-000.5	
	61		Non-Hydric PmB	DABK-S-SO21-0001	
	62	U	Non-Hydric PmB	DABK-S-SO39-0001	
	69		Hydric Se	DABK-S-SD03-000.5	
	70		Hydric Se	DABK-S-SD10-000.5	
	71		Hydric Se	DABK-S-SD01-000.5	
	73		Hydric Se	DABK-S-SD15-000.5	
	78		Hydric Se	DABK-S-SD07-000.5	
	81		Hydric Se	DABK-S-SD13-000.5	
	83	U	Hydric Se	DABK-S-SD12-000.5-D	
	86		Non-Hydric PmB	DABK-S-SO26-0001	
	89		Hydric Se	DABK-S-SD16-000.5	
	91	U	Hydric Se	DABK-S-SD17-000.5	
Dieldrin	3.4	U	Non-Hydric Se	DABK-S-SO02-0001	
	4.5	U	Non-Hydric PmB	DABK-S-SO31-0001	
	4.6	U	Non-Hydric Se	DABK-S-SO16-0001	
	4.6	U	Non-Hydric PmB	DABK-S-SO25-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO01-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.7	U	Non-Hydric PmB	DABK-S-SO34-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO35-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO37-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO38-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO24-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	4.8	U	Non-Hydric PmB	DABK-S-SO26-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO14-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO15-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO21-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO22-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO23-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO27-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO30-0001	
	5	U	Non-Hydric PmB	DABK-S-SO36-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO05-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO06-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO08-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO09-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO10-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO11-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO18-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO29-0001	

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Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Dieldrin (cont.)	5.1	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO12-0001	
	5.2	U	Non-Hydric Se	DABK-S-SO13-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO28-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO32-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO40-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO04-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO17-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO03-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO07-0001	
	5.7	U	Non-Hydric PmB	DABK-S-SO33-0001	
	6.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	8.6		Hydric Se	DABK-S-SD20-000.5	
	13		Non-Hydric Se	DABK-S-SO19-0001	
	15		Hydric Se	DABK-S-SD02-000.5	
	16		Hydric Se	DABK-S-SD14-000.5	
	20		Hydric Se	DABK-S-SD05-000.5	
	25		Hydric Se	DABK-S-SD09-000.5	
	26		Non-Hydric Se	DABK-S-SO20-0001	
	44		Hydric Se	DABK-S-SD10-000.5	
	48		Hydric Se	DABK-S-SD18-000.5	
	71		Hydric Se	DABK-S-SD19-000.5	
	77		Hydric Se	DABK-S-SD01-000.5	
	86		Hydric Se	DABK-S-SD06-000.5	
	92		Hydric Se	DABK-S-SD04-000.5	
	96	J	Hydric Se	DABK-S-SD07-000.5	
	110		Hydric Se	DABK-S-SD08-000.5	
	110		Hydric Se	DABK-S-SD16-000.5	
	120		Hydric Se	DABK-S-SD03-000.5-D	
	120		Hydric Se	DABK-S-SD11-000.5	
	120		Hydric Se	DABK-S-SD15-000.5	
	170		Hydric Se	DABK-S-SD03-000.5	
	170		Hydric Se	DABK-S-SD12-000.5	
	180		Hydric Se	DABK-S-SD12-000.5-D	
	180		Hydric Se	DABK-S-SD13-000.5	
	190		Hydric Se	DABK-S-SD17-000.5	
Endosulfan Sulfate	3.4	U	Non-Hydric Se	DABK-S-SO02-0001	
	4.1	U	Hydric Se	DABK-S-SD20-000.5	
	4.5	U	Hydric Se	DABK-S-SD09-000.5	
	4.5	U	Non-Hydric PmB	DABK-S-SO31-0001	
	4.6	U	Non-Hydric Se	DABK-S-SO16-0001	
	4.6	U	Non-Hydric PmB	DABK-S-SO25-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO01-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.7	U	Non-Hydric PmB	DABK-S-SO34-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO35-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO37-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO38-0001	
	4.8	U	Hydric Se	DABK-S-SD02-000.5	
	4.8	U	Non-Hydric PmB	DABK-S-SO24-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	4.8	U	Non-Hydric PmB	DABK-S-SO26-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO14-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO15-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO19-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO21-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO22-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO23-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO27-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO30-0001	
	5	U	Hydric Se	DABK-S-SD18-000.5	
	5	U	Non-Hydric PmB	DABK-S-SO36-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO05-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO06-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO08-0001	

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
NDX = Dixon's Test is "no" (not outlier)
Q75 = value exceeds informal test versus 4 times 75th quantile

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Endosulfan Sulfate (cont.)	5.1	U	Non-Hydric Se	DABK-S-SO09-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO10-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO11-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO18-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO29-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	5.2	U	Hydric Se	DABK-S-SD05-000.5	
	5.2	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO12-0001	
	5.2	U	Non-Hydric Se	DABK-S-SO13-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO28-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO32-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO40-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO04-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO17-0001	
	5.4	U	Non-Hydric Se	DABK-S-SO20-0001	
	5.5	U	Hydric Se	DABK-S-SD11-000.5	
	5.5	U	Non-Hydric Se	DABK-S-SO03-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO07-0001	
	5.7	U	Non-Hydric PmB	DABK-S-SO33-0001	
	5.9	U	Hydric Se	DABK-S-SD10-000.5	
	6	U	Hydric Se	DABK-S-SD14-000.5	
	6.1	U	Hydric Se	DABK-S-SD06-000.5	
	6.1	U	Hydric Se	DABK-S-SD15-000.5	
	6.1	U	Hydric Se	DABK-S-SD19-000.5	
	6.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	6.4	U	Hydric Se	DABK-S-SD03-000.5-D	
	6.6	U	Hydric Se	DABK-S-SD03-000.5	
	6.8	U	Hydric Se	DABK-S-SD01-000.5	
	6.8	U	Hydric Se	DABK-S-SD04-000.5	
	7.3	U	Hydric Se	DABK-S-SD07-000.5	
	7.3		Hydric Se	DABK-S-SD16-000.5	
	8.4	U	Hydric Se	DABK-S-SD08-000.5	
	9.2		Hydric Se	DABK-S-SD13-000.5	
	9.6		Hydric Se	DABK-S-SD17-000.5	
	16		Hydric Se	DABK-S-SD12-000.5	
	18		Hydric Se	DABK-S-SD12-000.5-D	
Endrin Ketone	3.4	U	Non-Hydric Se	DABK-S-SO02-0001	
	4.1	U	Hydric Se	DABK-S-SD20-000.5	
	4.5	U	Hydric Se	DABK-S-SD09-000.5	
	4.5	U	Non-Hydric PmB	DABK-S-SO31-0001	
	4.6	U	Non-Hydric Se	DABK-S-SO16-0001	
	4.6	U	Non-Hydric PmB	DABK-S-SO25-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO01-0001	
	4.7	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	4.7	U	Non-Hydric PmB	DABK-S-SO34-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO35-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO37-0001	
	4.7	U	Non-Hydric PmB	DABK-S-SO38-0001	
	4.8	U	Hydric Se	DABK-S-SD02-000.5	
	4.8	U	Non-Hydric PmB	DABK-S-SO24-0001	
	4.8	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	4.8	U	Non-Hydric PmB	DABK-S-SO26-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO14-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO15-0001	
	4.9	U	Non-Hydric Se	DABK-S-SO19-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO21-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO22-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO23-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO27-0001	
	4.9	U	Non-Hydric PmB	DABK-S-SO30-0001	
	5	U	Hydric Se	DABK-S-SD18-000.5	
	5	U	Non-Hydric PmB	DABK-S-SO36-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO05-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO06-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO08-0001	

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
NDX = Dixon's Test is "no" (not outlier)
Q75 = value exceeds informal test versus 4 times 75th quantile

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Endrin Ketone (cont.)	5.1	U	Non-Hydric Se	DABK-S-SO09-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO10-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO11-0001	
	5.1	U	Non-Hydric Se	DABK-S-SO18-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO29-0001	
	5.1	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	5.2	U	Hydric Se	DABK-S-SD05-000.5	
	5.2	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	5.2	U	Non-Hydric Se	DABK-S-SO12-0001	
	5.2	U	Non-Hydric Se	DABK-S-SO13-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO28-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO32-0001	
	5.2	U	Non-Hydric PmB	DABK-S-SO40-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO04-0001	
	5.3	U	Non-Hydric Se	DABK-S-SO17-0001	
	5.4	U	Non-Hydric Se	DABK-S-SO20-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO03-0001	
	5.5	U	Non-Hydric Se	DABK-S-SO07-0001	
	5.7	U	Non-Hydric PmB	DABK-S-SO33-0001	
	5.9	U	Hydric Se	DABK-S-SD10-000.5	
	6	U	Hydric Se	DABK-S-SD14-000.5	
	6.1	U	Hydric Se	DABK-S-SD06-000.5	
	6.1	U	Hydric Se	DABK-S-SD13-000.5	
	6.1	U	Hydric Se	DABK-S-SD15-000.5	
	6.1	U	Hydric Se	DABK-S-SD19-000.5	
	6.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	6.4	U	Hydric Se	DABK-S-SD03-000.5-D	
	6.5	U	Hydric Se	DABK-S-SD16-000.5	
	6.8	U	Hydric Se	DABK-S-SD04-000.5	
	6.9		Hydric Se	DABK-S-SD01-000.5	
	7.2		Hydric Se	DABK-S-SD03-000.5	
	7.3	U	Hydric Se	DABK-S-SD07-000.5	
	7.6		Hydric Se	DABK-S-SD11-000.5	
	8.3	U	Hydric Se	DABK-S-SD12-000.5-D	
	8.4	U	Hydric Se	DABK-S-SD08-000.5	
	8.6		Hydric Se	DABK-S-SD12-000.5	
	9.1	U	Hydric Se	DABK-S-SD17-000.5	
Gamma-BHC (Lindane)	1.8	U	Non-Hydric Se	DABK-S-SO02-0001	
	2.1	U	Hydric Se	DABK-S-SD20-000.5	
	2.3	U	Hydric Se	DABK-S-SD09-000.5	
	2.3	U	Non-Hydric PmB	DABK-S-SO25-0001	
	2.3	U	Non-Hydric PmB	DABK-S-SO31-0001	
	2.4	U	Hydric Se	DABK-S-SD02-000.5	
	2.4	U	Non-Hydric Se	DABK-S-SO01-0001	
	2.4	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	2.4	U	Non-Hydric Se	DABK-S-SO16-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO34-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO35-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO37-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO38-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO14-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO15-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO19-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO21-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO22-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO23-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO24-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	2.5	U	Non-Hydric PmB	DABK-S-SO26-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO27-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO30-0001	
	2.6	U	Hydric Se	DABK-S-SD18-000.5	
	2.6	U	Non-Hydric Se	DABK-S-SO05-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO06-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO08-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO09-0001	

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
NDX = Dixon's Test is "no" (not outlier)
Q75 = value exceeds informal test versus 4 times 75th quantile

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Gamma-BHC (Lindane) (cont.)	2.6	U	Non-Hydric Se	DABK-S-SO10-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO11-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO18-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO29-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	2.6	U	Non-Hydric PmB	DABK-S-SO36-0001	
	2.7	U	Hydric Se	DABK-S-SD05-000.5	
	2.7	U	Non-Hydric Se	DABK-S-SO04-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	2.7	U	Non-Hydric Se	DABK-S-SO12-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO13-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO17-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO28-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO32-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO40-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO03-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO07-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO20-0001	
	2.9	U	Non-Hydric PmB	DABK-S-SO33-0001	
	3.1	U	Hydric Se	DABK-S-SD06-000.5	
	3.1	U	Hydric Se	DABK-S-SD10-000.5	
	3.1	U	Hydric Se	DABK-S-SD13-000.5	
	3.1	U	Hydric Se	DABK-S-SD14-000.5	
	3.1	U	Hydric Se	DABK-S-SD15-000.5	
	3.1	U	Hydric Se	DABK-S-SD19-000.5	
	3.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	3.3	U	Hydric Se	DABK-S-SD03-000.5-D	
	3.3		Hydric Se	DABK-S-SD11-000.5	
	3.3	U	Hydric Se	DABK-S-SD16-000.5	
	3.4	U	Hydric Se	DABK-S-SD03-000.5	
	3.5	U	Hydric Se	DABK-S-SD01-000.5	
	3.5	U	Hydric Se	DABK-S-SD04-000.5	
	3.8	U	Hydric Se	DABK-S-SD07-000.5	
	4.2	U	Hydric Se	DABK-S-SD12-000.5	
	4.3	U	Hydric Se	DABK-S-SD08-000.5	
	4.3	U	Hydric Se	DABK-S-SD12-000.5-D	
	4.7	U	Hydric Se	DABK-S-SD17-000.5	
Gamma-Chlordane	1.8	U	Non-Hydric Se	DABK-S-SO02-0001	
	2.3	U	Non-Hydric PmB	DABK-S-SO25-0001	
	2.3	U	Non-Hydric PmB	DABK-S-SO31-0001	
	2.4	U	Non-Hydric Se	DABK-S-SO01-0001	
	2.4	U	Non-Hydric Se	DABK-S-SO11-0001-D	
	2.4	U	Non-Hydric Se	DABK-S-SO16-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO34-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO35-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO37-0001	
	2.4	U	Non-Hydric PmB	DABK-S-SO38-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO14-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO15-0001	
	2.5	U	Non-Hydric Se	DABK-S-SO19-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO21-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO23-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO24-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO25-0001-D	
	2.5	U	Non-Hydric PmB	DABK-S-SO27-0001	
	2.5	U	Non-Hydric PmB	DABK-S-SO30-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO05-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO06-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO08-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO09-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO10-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO11-0001	
	2.6	U	Non-Hydric Se	DABK-S-SO18-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO29-0001	
	2.6	U	Non-Hydric PmB	DABK-S-SO35-0001-D	
	2.6	U	Non-Hydric PmB	DABK-S-SO36-0001	

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
NDX = Dixon's Test is "no" (not outlier)
Q75 = value exceeds informal test versus 4 times 75th quantile

Substance	Conc.	Qual	Soil Type	Sample I.D.	Rationale for Exclusion / Comments
Gamma-Chlordane (cont.)	2.7	U	Non-Hydric Se	DABK-S-SO04-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO07-0001-D	
	2.7	U	Non-Hydric Se	DABK-S-SO12-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO13-0001	
	2.7	U	Non-Hydric Se	DABK-S-SO17-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO28-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO32-0001	
	2.7	U	Non-Hydric PmB	DABK-S-SO40-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO03-0001	
	2.8	U	Non-Hydric Se	DABK-S-SO07-0001	
	2.8		Non-Hydric PmB	DABK-S-SO26-0001	
	2.9	U	Non-Hydric PmB	DABK-S-SO33-0001	
	3.2	U	Non-Hydric PmB	DABK-S-SO39-0001	
	3.6		Hydric Se	DABK-S-SD20-000.5	
	4.2		Non-Hydric Se	DABK-S-SO20-0001	
	5.1		Hydric Se	DABK-S-SD14-000.5	
	7.2		Non-Hydric PmB	DABK-S-SO22-0001	
	7.4		Hydric Se	DABK-S-SD02-000.5	
	9.1		Hydric Se	DABK-S-SD09-000.5	
	14		Hydric Se	DABK-S-SD05-000.5	
	14		Hydric Se	DABK-S-SD10-000.5	
	21		Hydric Se	DABK-S-SD18-000.5	
	22		Hydric Se	DABK-S-SD06-000.5	
	23		Hydric Se	DABK-S-SD16-000.5	
	24		Hydric Se	DABK-S-SD01-000.5	
	24		Hydric Se	DABK-S-SD19-000.5	
	26		Hydric Se	DABK-S-SD03-000.5-D	
	26		Hydric Se	DABK-S-SD04-000.5	
	30		Hydric Se	DABK-S-SD11-000.5	
	30		Hydric Se	DABK-S-SD15-000.5	
	32		Hydric Se	DABK-S-SD08-000.5	
	35		Hydric Se	DABK-S-SD03-000.5	
	48		Hydric Se	DABK-S-SD07-000.5	
	48		Hydric Se	DABK-S-SD13-000.5	
	63		Hydric Se	DABK-S-SD17-000.5	
	81		Hydric Se	DABK-S-SD12-000.5	
	87		Hydric Se	DABK-S-SD12-000.5-D	YDX. Prevalent in hydric soil samples. No QC probs. Retain.

YDX = Outlier per Dixon Test
NDX = Not Outlier per Dixon Test
Q75 = Exceeds 75th Quantile

* Notes: YDX = Dixon's Test is "yes" (possible outlier):
NDX = Dixon's Test is "no" (not outlier)
Q75 = value exceeds informal test versus 4 times 75th quantile

Appendix C, Table C-3
Minimum Detectable Difference for t-, WRS, and Quantile Tests Given Power and Sample Size
NUSC Disposal Area
NUWC, Middletown, Rhode Island

N1=N2 = 20	Power=	0.9	0.8	0.95
	beta=	0.1	0.2	0.05
	Z(1-beta)=	1.282	0.842	1.645
alpha	Z(1-alpha)	MDD for t-Test		
0.025	1.960	1.05	0.91	1.17
0.05	1.645	0.94	0.80	1.06
0.1	1.282	0.82	0.68	0.94
0.2	0.842	0.67	0.53	0.79
alpha	Z(1-alpha)	MDD for WRS Test		
0.025	1.960	1.17	0.98	1.34
0.05	1.645	1.03	0.85	1.19
0.1	1.282	0.88	0.72	1.03
0.2	0.842	0.72	0.56	0.85

N1, N2= 20 7	Power=	0.9	0.8	0.95
	beta=	0.1	0.2	0.05
	Z(1-beta)=	1.282	0.842	1.645
alpha	Z(1-alpha)	MDD for t-Test		
0.025	1.960	1.48	1.28	1.65
0.05	1.645	1.32	1.12	1.48
0.1	1.282	1.14	0.94	1.30
0.2	0.842	0.92	0.73	1.08
alpha	Z(1-alpha)	MDD for WRS Test		
0.025	1.960	1.90	1.50	2.43
0.05	1.645	1.60	1.27	1.96
0.1	1.282	1.32	1.04	1.60
0.2	0.842	1.04	0.80	1.27

N1, N2= 20 8	Power=	0.9	0.8	0.95
	beta=	0.1	0.2	0.05
	Z(1-beta)=	1.282	0.842	1.645
alpha	Z(1-alpha)	MDD for t-Test		
0.025	1.960	1.41	1.22	1.57
0.05	1.645	1.26	1.07	1.41
0.1	1.282	1.08	0.90	1.24
0.2	0.842	0.88	0.70	1.03
alpha	Z(1-alpha)	MDD for WRS Test		
0.025	1.960	1.75	1.40	2.15
0.05	1.645	1.49	1.19	1.79
0.1	1.282	1.24	0.98	1.49
0.2	0.842	0.98	0.76	1.19

N1, N2= 20 9	Power=	0.9	0.8	0.95
	beta=	0.1	0.2	0.05
	Z(1-beta)=	1.282	0.842	1.645
alpha	Z(1-alpha)	MDD for t-Test		
0.025	1.960	1.35	1.17	1.50
0.05	1.645	1.20	1.02	1.35
0.1	1.282	1.04	0.86	1.19
0.2	0.842	0.84	0.67	0.99
alpha	Z(1-alpha)	MDD for WRS Test		
0.025	1.960	1.63	1.32	1.97
0.05	1.645	1.40	1.13	1.67
0.1	1.282	1.18	0.94	1.40
0.2	0.842	0.94	0.72	1.13

Quantile Test: Detectable Fraction (F) of Samples Having Shift of Area 2 Mean Vs. Area 1 Mean = 4 Standard Dev.

N1=N2 = 20	Power= 0.8	Power= 0.9
α=0.025	MDD = 4	
F =	0.30	0.40

N1=N2 = 20	Power= 0.8	Power= 0.9
α=0.05	MDD = 4	
F =	0.30	0.30

Notes:
MDD - Minimum Detectable Difference, expressed in units of shift in mean divided by standard deviation.
Power - Probability the test will conclude Area 2 > Area 1 if the true shift in the 2 populations' MDD is as given.
Beta - Probability the test does not conclude Area 2 > Area 1 if the true shift in the MDD is as given.
Alpha - Probability the test will conclude Area 2 > Area 1 if the true shift in the 2 populations' MDD is zero.
Z(value) - Normal distribution function of probability shown in parenthesis.

Sample Size Equation for t-Test, Given N1 = N2:
EPA, 1992. Methods for Evaluating the Attainment of Cleanup Standards. Volume 3: Reference-Based Standards for Soils and Solid Media. Office of Policy, Planning, and Evaluation. Washington, DC.
Sample Size Equation for t-Test, Given N1 not equal to N2:
Dixon, W.J., 1983. Introduction to Statistical Analysis. McGraw-Hill Book Co.. New York, New York.
Sample Size Equation for WRS Test, Given N1=N2:
EPA, 1996. Guidance for Data Quality Assessment. EPA QA/G-9, EPA/600/R-96084. Office of Research and Development, Quality Assurance Division. Washington, D.C.
Sample Size Equation for WRS Test, Given N1 not equal to N2:
EPA, 1992. Methods for Evaluating the Attainment of Cleanup Standards. Volume 3: Reference-Based Standards for Soils and Solid Media. Office of Policy, Planning, and Evaluation. Washington, DC.
Sample Size Tables for Quantile Test, Given N1 = N2:
NFEC, 2002. Guidance for Environmental Background Analysis. Volume I: Soil. NFESC UG-2049-ENV. April.

Appendix C, Table C-4
Quantile Range Distributions of Background Hydric Soil Type Se Versus Non-Hydric Soil Type Se
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Substance	Non-Hydric Soil Type Se Data Distribution																					Hydric Soil Type Se Data Distribution																					
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results										Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results									
	Min. Detect. Limit	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. D.L.	No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. Conc.	Min. Detect. Limit	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. D.L.	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. Conc.
AVS/SEM-Cadmium																						0.001		0.00075	1	0.0015	1	0.002		0.002		0.002	2	0.002	2	0.003	2	0.00375	2	0.004		0.004
AVS/SEM-Copper																																	2	0.193	3	0.365	3	0.42	2	0.51		0.51
AVS/SEM-Lead																																	2	0.221	3	0.281	3	0.402	2	0.575		0.575
AVS/SEM-Nickel																																	2	0.07	3	0.125	3	0.13	2	0.13		0.13
AVS/SEM-Zinc																																	2	0.855	3	1.89	3	2.41	2	2.52		2.52
SEM																																	2	1.29	3	2.76	3	3.38	2	3.59		3.59
Aluminum												5	10100	5	12300	5	13100	4	16600	1	16700												5	12000	5	14300	5	15900	4	19200	1	19400
Antimony																						7.2	1	7.28	1	9.2	1	11.2	1	11.3		11.3		0.415	1	0.83		0.83		0.83		0.83
Arsenic												5	6.73	5	9.7	5	12.5	4	69.3	1	71.7												5	14.7	5	17.7	5	21.6	4	34	1	34.35
Barium												5	25.6	5	32.1	5	45.5	4	60	1	60.6												5	40.2	5	77.7	5	96.3	4	230	1	231
Cadmium	0.57	5	0.651	5	0.695	5	0.743	4	0.815	1	0.815											0.6	5	0.72	5	0.84	5	0.91	4	1		1		0.108	1	0.215		0.215		0.215		0.215
Chromium												5	10.2	5	11.9	5	14	4	27.6	1	28.2												5	16.7	5	22.5	5	24.8	4	79	1	81.5
Cobalt												5	4.2	5	4.6	5	6.03	4	11.9	1	11.9												5	10.3	5	17.7	5	20.6	4	36.2	1	36.35
Iron												5	15100	5	18500	5	22400	4	52400	1	53900												5	24100	5	30400	5	33900	4	42600	1	42700
Lead												5	18.6	5	22.6	5	26.8	4	37.8	1	38												5	43.2	5	72.9	5	117	4	291	1	297
Magnesium	964	1	1030	2	1210	1	1360	1	1380		1380	4	1670	4	1770	4	2380	3	2930		2930												5	2470	5	3130	5	3250	4	3620	1	3630
Manganese												5	70.2	5	91.7	5	179	4	369	1	373												5	1020	5	2700	5	4360	4	9560	1	9740
Nickel												5	8.75	5	10.7	5	13.7	4	18.9	1	19.1												5	17.9	5	25.5	5	27	4	48.6	1	49.5
Vanadium												5	22.3	5	24	5	30.2	4	34.2	1	34.2												5	26.6	5	29.6	5	33.8	4	42.1	1	42.25
Zinc												5	34.6	5	41.7	5	52.5	4	80.7	1	81.7												5	110	5	192	5	238	4	522	1	534
TOC																																	2	32200	3	37900	3	42700	2	50500		50500
4,4'-DDD	3.4	5	4.9	5	5.1	5	5.28	4	5.5	1	5.5											4.1		2.05	1	4.1		4.1		4.1		4.1	5	13	5	19.5	5	27	4	62.5		62.5
4,4'-DDE	3.4	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	5.4	1	31	1	43		43		43												5	41.5	5	88	5	135	4	189	1	190
4,4'-DDT	4.6	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	3.6	1	16	1	23		23		23	4.1		2.05	1	4.1		4.1		4.1		4.1	5	29	5	70	5	95	4	125		125
Aldrin	1.8	5	2.5	5	2.6	5	2.7	4	2.8	1	2.8											2.1	5	2.7	5	3.1	5	3.5	4	4.7		4.7		15.5	1	31		31		31		31
Alpha-Chlordane	1.8	4	2.5	5	2.6	5	2.7	4	2.8		2.8		4.95	1	6.8	1	7		7		7												5	17.3	5	33.5	5	43.3	4	110	1	110
Aroclor-1260	34	5	49	5	51	5	53	4	55		55		17	1	34		34		34		34	41	1	43.3	1	55.5	1	83.5	1	91		91	4	38.9	4	59	4	72.5	4	89		89
Dieldrin	3.4	4	4.9	5	5.1	5	5.23	4	5.5		5.5		9.75	1	19.5	1	26		26		26												5	29.8	5	89	5	120	4	190	1	190
Endosulfan Sulfate	3.4	5	4.9	5	5.1	5	5.28	4	5.5	1	5.5											4.1	4	5.05	4	6.05	4	6.73	4	8.4		8.4	1	7.78	1	9.4	1	15.2	1	17		17
Endrin Ketone	3.4	5	4.9	5	5.1	5	5.28	4	5.5	1	5.5											4.1	4	5.05	4	6.1	4	6.73	4	9.1		9.1	1	5.49	1	6.64	1	7.43	1	7.6		7.6
Gamma-BHC (Lindane)	1.8	5	2.5	5	2.6	5	2.7	4	2.8	1	2.8											2.1	5	2.7	5	3.1	5	3.5	4	4.7		4.7		1.65	1	3.3		3.3		3.3		3.3
Gamma-Chlordane	1.8	5	2.5	5	2.6	5	2.7	4	2.8		2.8		2.1	1	4.2		4.2		4.2		4.2												5	14	5	24	5	31.6	4	83	1	84
2-Methylnaphthalene	170	5	241	5	255	5	260	4	270	1	270											16	3	18	4	21	3	26.5	3	73		73	2	10	2	14	2	35	1	40		40
Acenaphthene	170	5	241	5	255	5	260	4	270	1	270											16	1	17.5	2	20	1	25.5	1	27		27	4	28	4	39	4	61	3	130		130
Acenaphthylene	170	5	241	5	255	5	260	4	270	1	270											19	1	19.5	1	24	1	27	1	27		27	4	19.5	4	27	4	37	4	230		230
Anthracene	170	5	241	5	255	5	260	4	270	1	270											260		130	1	260		260		260		260	5	38	5	120	5	170	4	680		680
Benz(a)anthracene	170	4	240	5	250	4	260	4	270		270	1	53	1	54	1	79		79		79												5	308	5	500	5	1300	4	1890	1	1900
Benzaldehyde	170	3	240	3	250	3	260	2	270		270	2	64	3	72	2	115	2	150		150	200	1	223	2	250	2	390	1	660		660	3	110	4	165	4	233	3	860		860
Benzo(a)pyrene	170	4	240	5	255	5	260	4	270		270		46.5	1	78.5	1	95		95		95												5	390	5	630	5	1680	4	2490	1	2500
Benzo(b)fluoranthene	170	4	240	5	250	4	260	4	270		270	1	64	1	110	1	130		130		130												5	525	5	1200	5	2900	4	4300	1	4300
Benzo(g,h,i)perylene	170	5	240	5	250	5	260	4	270		270		50	1	100		100		100		100												5	365	5	743	5	1680	4	2800	1	2800
Benzo(k)fluoranthene	170	5	240	5	250	5	260	4	270		270		55	1	110		110		110		110												5	183	5	460	5	913	4	1690	1	1700
Bis(2-ethylhexyl) Phthalate	230	4	244	5	255	5	260	4	270		270		97.5	1	145	1	160		160		160	240	3	313	3	400	3	708	3	1500		1500	2	1480	2	2380	2	3800	2	5600		5600
Butyl Benzyl Phthalate	170	5	241	5	255	5	260	4	270	1	270											230	3	265	4	310	3	350	3	460		460	2	120	2	210	2	1200	1	1600		1600
Carbazole	170	5	241	5	255	5	260	4	270	1	270											200	1	215	2	240	1	280	1	300		300	4	95	4	150	4	280	3	410		410
Chrysene	170	4	240	5	250	4	260	4	270		270	1	54	1	77	1	140		140		140												5	438	5	910	5	2210	4	3200	1	3200
Dibenz(a,h)anthracene	170	5	241	5	255	5	260	4	270	1	270											19		9.5	1	19		19		19		19	5	71	5	140	5	380	4	620		620
Dibenzofuran	170	5	241	5	255	5	260	4	270	1	270											200	5	260	5	300	5	340	4	660		660		115	1	230		230		230		230
Fluoranthene	170	2	230	2	250	2	260	1	260		260	3	62	4	71	3	95	3	230		230												5	663	5	1300	5	2990	4	4600	1	4600
Fluorene	170	5	241	5	255	5	260	4	270	1	270											16	1	16.8	1	21.5	1	26.3	1	27		27	4	35.5	4	55.5	4	81	4	250		250
Hexachlorobenzene	170	5	241	5	255	5	260	4	270	1	270											10	5	16	5	19	5	26	4	73		73		0.1	1	0.2		0.2		0.2		0.2
Indeno(1,2,3-cd)pyrene	170	5	240	5	250	5	260	4	270		270		49	1	98		98		98		98												5	285	5	558	5	1280	4	2100	1	2100
Naphthalene	170	5	241	5	255	5	260	4	270	1	270											16	2	18	3	20.5	3	26.3	2	73		73	2	12.3	3	17	3	63.3	2	360		360
Phenanthrene	170	4	240	4	250	4	260	4	270		270	1	55	1	58.5	1	83.8	1	92		92												5	298	5	610	5	1430	4	2850	1	2900
Phenol	170	5	241	5	255	5	260	4	270	1	270											12	2	17.5	3	19.5	3	24.8	2	27		27	2	12	3	20.5	3	29.8	2	88		88
Pyrene	230	1	230	2	250	1	260	1	260		260	4	63	4	79	4	110	3	190		190												5	838	5	1370	5	3480	4	4590	1	4600

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

Appendix C, Table C-5
Quantile Range Distributions of Background Non-Hydric Soil Type Se Versus Hydric Soil Type Se
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Substance	Hydric Soil Type Se Data Distribution																						
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min. Detect. Limit	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. D.L.	No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. Conc.		
Aluminum												5	12000	5	14300	5	15900	4	19200	1	19400		
Arsenic												5	14.7	5	17.7	5	21.6	4	34	1	34.35		
Barium												5	40.2	5	77.7	5	96.3	4	230	1	231		
Beryllium	0.6	5	0.725	5	0.843	5	0.91	4	1.29	1	1.3												
Chromium												5	16.7	5	22.5	5	24.8	4	79	1	81.5		
Cobalt												5	10.3	5	17.7	5	20.6	4	36.2	1	36.35		
Iron												5	24100	5	30400	5	33900	4	42600	1	42700		
Lead												5	43.2	5	72.9	5	117	4	291	1	297		
Magnesium												5	2470	5	3130	5	3250	4	3620	1	3630		
Manganese												5	1020	5	2700	5	4360	4	9560	1	9740		
Mercury	0.066	5	0.128	5	0.18	5	0.208	4	0.313	1	0.315												
Nickel												5	17.9	5	25.5	5	27	4	48.6	1	49.5		
Vanadium												5	26.6	5	29.6	5	33.8	4	42.1	1	42.25		
Zinc												5	110	5	192	5	238	4	522	1	534		
4,4'-DDE												5	41.5	5	88	5	135	4	189	1	190		
4,4'-DDT	4.1		2.05	1	4.1		4.1		4.1		4.1	5	29	5	70	5	95	4	125		125		
Alpha-Chlordane												5	17.3	5	33.5	5	43.3	4	110	1	110		
Aroclor-1254	41	5	52.8	5	61	5	68	4	90.7	1	91												
Aroclor-1260	41	1	43.3	1	55.5	1	83.5	1	91		91	4	38.9	4	59	4	72.5	4	89		89		
Dieldrin												5	29.8	5	89	5	120	4	190	1	190		
Gamma-Chlordane												5	14	5	24	5	31.6	4	83	1	84		
Benz(a)anthracene												5	308	5	500	5	1300	4	1890	1	1900		
Benzaldehyde	200	1	223	2	250	2	390	1	660		660	3	110	4	165	4	233	3	860		860		
Benzo(a)pyrene												5	390	5	630	5	1680	4	2490	1	2500		
Benzo(b)fluoranthene												5	525	5	1200	5	2900	4	4300	1	4300		
Benzo(g,h,i)perylene												5	365	5	743	5	1680	4	2800	1	2800		
Benzo(k)fluoranthene												5	183	5	460	5	913	4	1690	1	1700		
Bis(2-ethylhexyl) Phthalate	240	3	313	3	400	3	708	3	1500		1500	2	1480	2	2380	2	3800	2	5600		5600		
Chrysene												5	438	5	910	5	2210	4	3200	1	3200		
Fluoranthene												5	663	5	1300	5	2990	4	4600	1	4600		
Indeno(1,2,3-cd)pyrene												5	285	5	558	5	1280	4	2100	1	2100		
Phenanthrene												5	298	5	610	5	1430	4	2850	1	2900		
Pyrene												5	838	5	1370	5	3480	4	4590	1	4600		

Substance	Non-Hydric Soil Type Se Data Distribution																						
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results											
	Min. Detect. Limit	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. D.L.	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. Conc.		
Aluminum												5	10100	5	12300	5	13100	4	16600	1	16700		
Arsenic												5	6.73	5	9.7	5	12.5	4	69.3	1	71.7		
Barium												5	25.6	5	32.1	5	45.5	4	60	1	60.6		
Beryllium	0.57	5	0.65	5	0.7	5	0.75	4	0.815		0.815		0.185	1	0.37		0.37		0.37		0.37		
Chromium												5	10.2	5	11.9	5	14	4	27.6	1	28.2		
Cobalt												5	4.2	5	4.6	5	6.03	4	11.9	1	11.9		
Iron												5	15100	5	18500	5	22400	4	52400	1	53900		
Lead												5	18.6	5	22.6	5	26.8	4	37.8	1	38		
Magnesium	964	1	1030	2	1210	1	1360	1	1380		1380	4	1670	4	1770	4	2380	3	2930		2930		
Manganese												5	70.2	5	91.7	5	179	4	369	1	373		
Mercury	0.052	4	0.069	5	0.0835	5	0.12	4	0.22		0.22		0.075	1	0.11	1	0.12		0.12		0.12		
Nickel												5	8.75	5	10.7	5	13.7	4	18.9	1	19.1		
Vanadium												5	22.3	5	24	5	30.2	4	34.2	1	34.2		
Zinc												5	34.6	5	41.7	5	52.5	4	80.7	1	81.7		
4,4'-DDE	3.4	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	5.4	1	31	1	43		43		43		
4,4'-DDT	4.6	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	3.6	1	16	1	23		23		23		
Alpha-Chlordane	1.8	4	2.5	5	2.6	5	2.7	4	2.8		2.8		4.95	1	6.8	1	7		7		7		
Aroclor-1254	46	5	49	5	51	5	53	4	55		55		12.5	1	25		25		25		25		
Aroclor-1260	34	5	49	5	51	5	53	4	55		55		17	1	34		34		34		34		
Dieldrin	3.4	4	4.9	5	5.1	5	5.23	4	5.5		5.5		9.75	1	19.5	1	26		26		26		
Gamma-Chlordane	1.8	5	2.5	5	2.6	5	2.7	4	2.8		2.8		2.1	1	4.2		4.2		4.2		4.2		
Benz(a)anthracene	170	4	240	5	250	4	260	4	270		270	1	53	1	54	1	79		79		79		
Benzaldehyde	170	3	240	3	250	3	260	2	270		270	2	64	3	72	2	115	2	150		150		
Benzo(a)pyrene	170	4	240	5	255	5	260	4	270		270		46.5	1	78.5	1	95		95		95		
Benzo(b)fluoranthene	170	4	240	5	250	4	260	4	270		270	1	64	1	110	1	130		130		130		
Benzo(g,h,i)perylene	170	5	240	5	250	5	260	4	270		270		50	1	100		100		100		100		
Benzo(k)fluoranthene	170	5	240	5	250	5	260	4	270		270		55	1	110		110		110		110		
Bis(2-ethylhexyl) Phthalate	230	4	244	5	255	5	260	4	270		270		97.5	1	145	1	160		160		160		
Chrysene	170	4	240	5	250	4	260	4	270		270	1	54	1	77	1	140		140		140		
Fluoranthene	170	2	230	2	250	2	260	1	260		260	3	62	4	71	3	95	3	230		230		
Indeno(1,2,3-cd)pyrene	170	5	240	5	250	5	260	4	270		270		49	1	98		98		98		98		
Phenanthrene	170	4	240	4	250	4	260	4	270		270	1	55	1	58.5	1	83.8	1	92		92		
Pyrene	230	1	230	2	250	1	260	1	260		260	4	63	4	79	4	110	3	190		190		

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

Appendix C, Table C-6
Quantile Range Distributions of Background Non-Hydric Soil Type Se Versus Non-Hydric Soil Type PmB
Background Soil Investigation, NUSC Disposal Area
NUWC, Middletown, Rhode Island

	Non-Hydric Soil Type PbB Data Distribution																				
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results									
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max				25% to 50%		50% to 75%		75% to 95%		95% to Max	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.
Aluminum												5	9850	5	11100	5	12100	4	14600	1	14600
Arsenic												5	6	5	8.6	5	12.7	4	21	1	21.3
Barium												5	35.6	5	38.8	5	45	4	52.9	1	53.1
Beryllium	0.59	5	0.635	5	0.65	5	0.67	4	0.77		0.77		0.176	1	0.353		0.353		0.353		0.3525
Chromium												5	12.2	5	13.5	5	14.9	4	16	1	16
Cobalt												5	6.13	5	6.95	5	7.78	4	13.6	1	13.8
Iron												5	15600	5	18300	5	22900	4	42400	1	43300
Lead												5	23.1	5	32.3	5	36.3	4	49.3	1	49.5
Magnesium												5	1460	5	1590	5	1680	4	1960	1	1960
Manganese												5	197	5	280	5	395	4	476	1	477
Mercury	0.031	4	0.042	4	0.0625	4	0.0734	4	0.13		0.13	1	0.11	1	0.2	1	0.575	1	0.68		0.68
Nickel												5	8.43	5	10.4	5	11.5	4	14.4	1	14.4
Vanadium												5	28.2	5	30.4	5	33.2	4	35.8	1	35.8
Zinc												5	32.5	5	47	5	64.6	4	93.2	1	93.7
4,4'-DDE	4.5	4	4.7	5	4.9	4	5.2	4	6.2		6.2	1	11	1	13	1	20		20		20
4,4'-DDT	4.5	4	4.7	5	4.9	5	5.2	4	6.2		6.2		4.2	1	7.05	1	8.5		8.5		8.5
Alpha-Chlordane	2.3	5	2.4	5	2.5	5	2.7	4	3.2		3.2		1.9	1	3.8		3.8		3.8		3.8
Aroclor-1254	45	5	47.3	5	49	5	51.8	4	61.8	1	62										
Aroclor-1260	45	4	47	4	49	4	51	3	62		62	1	50	2	58	1	73.5	1	86		86
Dieldrin	4.5	5	4.73	5	4.9	5	5.18	4	6.18	1	6.2										
Gamma-Chlordane	2.3	4	2.4	5	2.5	5	2.7	4	3.2		3.2		2.1	1	5	1	7.2		7.2		7.2
Benz(a)anthracene	230	4	238	5	240	4	250	4	310		310	1	52	1	59	1	66		66		66
Benzaldehyde	230	4	239	5	240	5	253	4	310		310		44.3	1	94.5	1	130		130		130
Benzo(a)pyrene	230	3	230	3	240	3	250	2	310		310	2	53	3	58	2	66	2	78		78
Benzo(b)fluoranthene	230	2	230	3	240	3	253	2	310		310	2	59.8	3	69.5	3	76.8	2	120		120
Benzo(g,h,i)perylene	230	4	236	4	240	4	258	4	310		310	1	55.5	1	57.5	1	68.5	1	72		72
Benzo(k)fluoranthene	230	3	234	4	240	4	260	3	310		310	1	52.8	2	57.5	2	60.8	1	69		69
Bis(2-ethylhexyl) Phthalate	230	5	240	5	240	5	258	4	309	1	310										
Chrysene	230	2	230	3	240	3	253	2	310		310	2	64.3	3	68	3	77.5	2	90		90
Fluoranthene	230		173	1	245	1	260		260		260	4	67.5	5	99.3	5	120	4	170		170
Indeno(1,2,3-cd)pyrene	230	5	240	5	240	5	260	4	310		310		30	1	60		60		60		60
Phenanthrene	230	2	230	2	240	2	260	1	310		310	3	57	4	65	3	73.5	3	95		95
Pyrene	230		115	1	230		230		230		230	5	61	5	93	5	110	4	150		150

	Non-Hydric Soil Type Se Data Distribution																				
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results									
	Min.	Min. to 25 %		25% to 50%		50% to 75%		75% to 95%		95% to Max				25% to 50%		50% to 75%		75% to 95%		95% to Max	
Substance	Detect. Limit	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. D.L.	No. Pts	25% Quantile	No. Pts	50% Quantile	No. Pts	75% Quantile	No. Pts	95% Quantile	No. Pts	Max. Conc.
Aluminum												5	10100	5	12300	5	13100	4	16600	1	16700
Arsenic												5	6.73	5	9.7	5	12.5	4	69.3	1	71.7
Barium												5	25.6	5	32.1	5	45.5	4	60	1	60.6
Beryllium	0.57	5	0.65	5	0.7	5	0.75	4	0.815		0.815		0.185	1	0.37		0.37		0.37		0.37
Chromium												5	10.2	5	11.9	5	14	4	27.6	1	28.2
Cobalt												5	4.2	5	4.6	5	6.03	4	11.9	1	11.9
Iron												5	15100	5	18500	5	22400	4	52400	1	53900
Lead												5	18.6	5	22.6	5	26.8	4	37.8	1	38
Magnesium	964	1	1030	2	1210	1	1360	1	1380		1380	4	1670	4	1770	4	2380	3	2930		2930
Manganese												5	70.2	5	91.7	5	179	4	369	1	373
Mercury	0.052	4	0.069	5	0.0835	5	0.12	4	0.22		0.22		0.075	1	0.11	1	0.12		0.12		0.12
Nickel												5	8.75	5	10.7	5	13.7	4	18.9	1	19.1
Vanadium												5	22.3	5	24	5	30.2	4	34.2	1	34.2
Zinc												5	34.6	5	41.7	5	52.5	4	80.7	1	81.7
4,4'-DDE	3.4	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	5.4	1	31	1	43		43		43
4,4'-DDT	4.6	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	3.6	1	16	1	23		23		23
Alpha-Chlordane	1.8	4	2.5	5	2.6	5	2.7	4	2.8		2.8		4.95	1	6.8	1	7		7		7
Aroclor-1254	46	5	49	5	51	5	53	4	55		55		12.5	1	25		25		25		25
Aroclor-1260	34	5	49	5	51	5	53	4	55		55		17	1	34		34		34		34
Dieldrin	3.4	4	4.9	5	5.1	5	5.23	4	5.5		5.5		9.75	1	19.5	1	26		26		26
Gamma-Chlordane	1.8	5	2.5	5	2.6	5	2.7	4	2.8		2.8		2.1	1	4.2		4.2		4.2		4.2
Benz(a)anthracene	170	4	240	5	250	4	260	4	270		270	1	53	1	54	1	79		79		79
Benzaldehyde	170	3	240	3	250	3	260	2	270		270	2	64	3	72	2	115	2	150		150
Benzo(a)pyrene	170	4	240	5	255	5	260	4	270		270		46.5	1	78.5	1	95		95		95
Benzo(b)fluoranthene	170	4	240	5	250	4	260	4	270		270	1	64	1	110	1	130		130		130
Benzo(g,h,i)perylene	170	5	240	5	250	5	260	4	270		270		50	1	100		100		100		100
Benzo(k)fluoranthene	170	5	240	5	250	5	260	4	270		270		55	1	110		110		110		110
Bis(2-ethylhexyl) Phthalate	230	4	244	5	255	5	260	4	270		270		97.5	1	145	1	160		160		160
Chrysene	170	4	240	5	250	4	260	4	270		270	1	54	1	77	1	140		140		140
Fluoranthene	170	2	230	2	250	2	260	1	260		260	3	62	4	71	3	95	3	230		230
Indeno(1,2,3-cd)pyrene	170	5	240	5	250	5	260	4	270		270		49	1	98		98		98		98
Phenanthrene	170	4	240	4	250	4	260	4	270		270	1	55	1	58.5	1	83.8	1	92		92
Pyrene	230	1	230	2	250	1	260	1	260		260	4	63	4	79	4	110	3	190		190

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

Appendix C, Table C-7
Quantile Range Distributions of Background Non-Hydric Soil Type PcB Versus Non-Hydric Soil Type Se
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Substance	Non-Hydric Soil Type Se Data Distribution																					
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results										
	Min. Detect. Limit	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. D.L.	No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. Conc.
Aluminum												5	10100	5	12300	5	13100	4	16600	1	16700
Arsenic												5	6.73	5	9.7	5	12.5	4	69.3	1	71.7
Barium												5	25.6	5	32.1	5	45.5	4	60	1	60.6
Beryllium	0.57	5	0.65	5	0.7	5	0.75	4	0.815		0.815		0.185	1	0.37		0.37		0.37		0.37
Chromium												5	10.2	5	11.9	5	14	4	27.6	1	28.2
Cobalt												5	4.2	5	4.6	5	6.03	4	11.9	1	11.9
Iron												5	15100	5	18500	5	22400	4	52400	1	53900
Lead												5	18.6	5	22.6	5	26.8	4	37.8	1	38
Magnesium	964	1	1030	2	1210	1	1360	1	1380		1380	4	1670	4	1770	4	2380	3	2930		2930
Manganese												5	70.2	5	91.7	5	179	4	369	1	373
Mercury	0.052	4	0.069	5	0.0835	5	0.12	4	0.22		0.22		0.075	1	0.11	1	0.12		0.12		0.12
Nickel												5	8.75	5	10.7	5	13.7	4	18.9	1	19.1
Vanadium												5	22.3	5	24	5	30.2	4	34.2	1	34.2
Zinc												5	34.6	5	41.7	5	52.5	4	80.7	1	81.7
4,4'-DDE	3.4	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	5.4	1	31	1	43		43		43
4,4'-DDT	4.6	4	4.9	5	5.1	4	5.25	4	5.5		5.5	1	3.6	1	16	1	23		23		23
Alpha-Chlordane	1.8	4	2.5	5	2.6	5	2.7	4	2.8		2.8		4.95	1	6.8	1	7		7		7
Aroclor-1260	34	5	49	5	51	5	53	4	55		55		17	1	34		34		34		34
Gamma-Chlordane	1.8	5	2.5	5	2.6	5	2.7	4	2.8		2.8		2.1	1	4.2		4.2		4.2		4.2
Benz(a)anthracene	170	4	240	5	250	4	260	4	270		270	1	53	1	54	1	79		79		79
Benzaldehyde	170	3	240	3	250	3	260	2	270		270	2	64	3	72	2	115	2	150		150
Benzo(a)pyrene	170	4	240	5	255	5	260	4	270		270		46.5	1	78.5	1	95		95		95
Benzo(b)fluoranthene	170	4	240	5	250	4	260	4	270		270	1	64	1	110	1	130		130		130
Benzo(g,h,i)perylene	170	5	240	5	250	5	260	4	270		270		50	1	100		100		100		100
Benzo(k)fluoranthene	170	5	240	5	250	5	260	4	270		270		55	1	110		110		110		110
Chrysene	170	4	240	5	250	4	260	4	270		270	1	54	1	77	1	140		140		140
Fluoranthene	170	2	230	2	250	2	260	1	260		260	3	62	4	71	3	95	3	230		230
Indeno(1,2,3-cd)pyrene	170	5	240	5	250	5	260	4	270		270		49	1	98		98		98		98
N-Nitroso-di-n-propylamine	170	5	241	5	255	5	260	4	270	1	270										
Phenanthrene	170	4	240	4	250	4	260	4	270		270	1	55	1	58.5	1	83.8	1	92		92
Pyrene	230	1	230	2	250	1	260	1	260		260	4	63	4	79	4	110	3	190		190

Substance	Non-Hydric Soil Type PmB Data Distribution																					
	Concentration Range of NONDETECTED Results											Concentration Range of POSITIVE Results										
	Min. Detect. Limit	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. D.L.	Min. to 25 % No. Pts	25% Quantile	25% to 50% No. Pts	50% Quantile	50% to 75% No. Pts	75% Quantile	75% to 95% No. Pts	95% Quantile	95% to Max No. Pts	Max. Conc.
Aluminum												5	9850	5	11100	5	12100	4	14600	1	14600
Arsenic												5	6	5	8.6	5	12.7	4	21	1	21.3
Barium												5	35.6	5	38.8	5	45	4	52.9	1	53.1
Beryllium	0.59	5	0.635	5	0.65	5	0.67	4	0.77		0.77		0.176	1	0.353		0.353		0.353		0.3525
Chromium												5	12.2	5	13.5	5	14.9	4	16	1	16
Cobalt												5	6.13	5	6.95	5	7.78	4	13.6	1	13.8
Iron												5	15600	5	18300	5	22900	4	42400	1	43300
Lead												5	23.1	5	32.3	5	36.3	4	49.3	1	49.5
Magnesium												5	1460	5	1590	5	1680	4	1960	1	1960
Manganese												5	197	5	280	5	395	4	476	1	477
Mercury	0.031	4	0.042	4	0.0625	4	0.0734	4	0.13		0.13	1	0.11	1	0.2	1	0.575	1	0.68		0.68
Nickel												5	8.43	5	10.4	5	11.5	4	14.4	1	14.4
Vanadium												5	28.2	5	30.4	5	33.2	4	35.8	1	35.8
Zinc												5	32.5	5	47	5	64.6	4	93.2	1	93.7
4,4'-DDE	4.5	4	4.7	5	4.9	4	5.2	4	6.2		6.2	1	11	1	13	1	20		20		20
4,4'-DDT	4.5	4	4.7	5	4.9	5	5.2	4	6.2		6.2		4.2	1	7.05	1	8.5		8.5		8.5
Alpha-Chlordane	2.3	5	2.4	5	2.5	5	2.7	4	3.2		3.2		1.9	1	3.8		3.8		3.8		3.8
Aroclor-1260	45	4	47	4	49	4	51	3	62		62	1	50	2	58	1	73.5	1	86		86
Gamma-Chlordane	2.3	4	2.4	5	2.5	5	2.7	4	3.2		3.2		2.1	1	5	1	7.2		7.2		7.2
Benz(a)anthracene	230	4	238	5	240	4	250	4	310		310	1	52	1	59	1	66		66		66
Benzaldehyde	230	4	239	5	240	5	253	4	310		310		44.3	1	94.5	1	130		130		130
Benzo(a)pyrene	230	3	230	3	240	3	250	2	310		310	2	53	3	58	2	66	2	78		78
Benzo(b)fluoranthene	230	2	230	3	240	3	253	2	310		310	2	59.8	3	69.5	3	76.8	2	120		120
Benzo(g,h,i)perylene	230	4	236	4	240	4	258	4	310		310	1	55.5	1	57.5	1	68.5	1	72		72
Benzo(k)fluoranthene	230	3	234	4	240	4	260	3	310		310	1	52.8	2	57.5	2	60.8	1	69		69
Chrysene	230	2	230	3	240	3	253	2	310		310	2	64.3	3	68	3	77.5	2	90		90
Fluoranthene	230		173	1	245	1	260		260		260	4	67.5	5	99.3	5	120	4	170		170
Indeno(1,2,3-cd)pyrene	230	5	240	5	240	5	260	4	310		310		30	1	60		60		60		60
N-Nitroso-di-n-propylamine		5	240	5	240	5	260	4	310		310		155	1	310		310		310		310
Phenanthrene	230	2	230	2	240	2	260	1	310		310	3	57	4	65	3	73.5	3	95		95
Pyrene	230		115	1	230		230		230		230	5	61	5	93	5	110	4	150		150

Notes:
Units are mg/kg for inorganics, ug/kg for organics.
The 25 % quantile of a set of samples is an estimate of the concentration such that 25 % of the population has concentrations less than this magnitude.
Number of points refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.
Number of sample results excludes rejected data or blank-qualified data. Duplicates are consolidated into one result.
Number of samples may vary based on the number of usable results.

Appendix C, Table C-8
Factor Analysis of Metals Data for Hydric Soil Type Se
Background Soil Investigation, NUSC Disposal Area
NUWC, Middletown, Rhode Island

Factor Analysis Results for:
Variable Range = Sheet1!$B$1:$M$23
Factors were extracted by the Principal Component Method
from the correlation matrix
All factors were extracted

Descriptive Statistics

Variable	Mean	Std Dev.	Std Err	N
AL	13587.727	3429.427	731.156	22
AS	18.677	7.287	1.554	22
BA	89.473	58.269	12.423	22
CR	23.936	14.032	2.992	22
CO	18.368	8.440	1.799	22
FE	30245.455	6852.023	1460.856	22
PB	95.236	65.791	14.027	22
MG	2945.455	528.905	112.763	22
MN	3110.136	2250.546	479.818	22
NI	25.405	9.619	2.051	22
V	29.423	8.443	1.800	22
ZN	209.745	123.071	26.239	22

Correlation Matrix

	AL	AS	BA	CR	CO	FE	PB	MG	MN	NI	V	ZN
AL	1.000	0.630	0.413	0.350	0.530	0.699	0.430	0.895	0.209	0.642	0.946	0.458
AS	0.630	1.000	0.904	0.304	0.951	0.911	0.590	0.525	0.492	0.912	0.794	0.915
BA	0.413	0.904	1.000	0.279	0.968	0.774	0.530	0.323	0.651	0.830	0.600	0.892
CR	0.350	0.304	0.279	1.000	0.338	0.339	0.861	0.376	0.328	0.344	0.339	0.341
CO	0.530	0.951	0.968	0.338	1.000	0.868	0.614	0.476	0.619	0.920	0.718	0.940
FE	0.699	0.911	0.774	0.339	0.868	1.000	0.514	0.691	0.525	0.843	0.793	0.801
PB	0.430	0.590	0.530	0.861	0.614	0.514	1.000	0.420	0.297	0.643	0.545	0.652
MG	0.895	0.525	0.323	0.376	0.476	0.691	0.420	1.000	0.241	0.596	0.829	0.388
MN	0.209	0.492	0.651	0.328	0.619	0.525	0.297	0.241	1.000	0.342	0.239	0.400
NI	0.642	0.912	0.830	0.344	0.920	0.843	0.643	0.596	0.342	1.000	0.829	0.959
V	0.946	0.794	0.600	0.339	0.718	0.793	0.545	0.829	0.239	0.829	1.000	0.685
ZN	0.458	0.915	0.892	0.341	0.940	0.801	0.652	0.388	0.400	0.959	0.685	1.000

Explained Variance (Eigenvalues)

Value	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
Eigenvalue	7.916	1.553	1.280	0.788	0.180	0.131	0.063	0.055	0.018	0.010	0.004	0.002
% of Var.	65.969	12.942	10.667	6.567	1.496	1.095	0.522	0.456	0.154	0.081	0.037	0.013
Cum. %	65.969	78.912	89.579	96.146	97.642	98.738	99.259	99.715	99.869	99.950	99.987	100.000

Communalities

	Variable
AL	1.000
AS	1.000
BA	1.000
CR	1.000
CO	1.000
FE	1.000
PB	1.000
MG	1.000
MN	1.000
NI	1.000
V	1.000
ZN	1.000

Appendix C, Table C-8
Factor Analysis of Metals Data for Hydric Soil Type Se
Background Soil Investigation, NUSC Disposal Area
NUWC, Middletown, Rhode Island

Unrotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
AL	0.745	-0.602	-0.160	0.131	-0.169	-0.084	0.045	0.002	0.000	0.041	-0.032	0.003
AS	0.949	0.167	-0.156	-0.079	0.003	-0.162	-0.073	0.000	-0.098	-0.018	0.001	0.001
BA	0.865	0.447	-0.086	0.020	-0.127	0.005	-0.001	-0.161	0.024	0.013	0.007	-0.015
CR	0.491	-0.178	0.837	0.052	0.029	-0.059	0.122	-0.054	-0.018	-0.020	0.006	0.004
CO	0.945	0.304	-0.079	-0.008	-0.019	0.049	-0.031	-0.031	0.036	-0.029	-0.016	0.030
FE	0.921	-0.006	-0.165	0.119	0.280	-0.166	0.011	0.014	0.057	0.005	-0.002	-0.006
PB	0.713	-0.055	0.641	-0.221	-0.032	0.019	-0.155	0.050	0.027	0.019	-0.007	-0.006
MG	0.691	-0.629	-0.093	0.234	0.145	0.183	-0.061	-0.072	-0.029	0.006	0.012	0.002
MN	0.533	0.436	0.139	0.702	-0.054	0.056	0.003	0.089	-0.011	0.004	0.001	-0.004
NI	0.942	0.050	-0.115	-0.251	0.037	0.148	0.074	0.047	-0.011	-0.035	-0.029	-0.016
V	0.873	-0.407	-0.184	-0.051	-0.164	-0.029	0.008	0.063	0.035	-0.036	0.038	-0.002
ZN	0.900	0.288	-0.045	-0.293	0.043	0.071	0.078	0.053	-0.019	0.058	0.023	0.009

Varimax Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
AL	0.267	-0.936	0.156	0.048	0.002	-0.151	0.021	-0.033	-0.032	0.005	-0.041	0.002
AS	0.859	-0.376	0.145	0.190	0.137	-0.076	-0.037	-0.028	-0.194	-0.002	0.001	0.000
BA	0.883	-0.136	0.127	0.378	-0.045	-0.032	0.018	-0.197	-0.013	-0.007	-0.002	-0.006
CR	0.079	-0.181	0.958	0.162	0.048	-0.004	0.124	-0.009	0.016	0.000	-0.002	-0.001
CO	0.883	-0.272	0.178	0.325	0.028	0.019	-0.051	-0.044	0.010	-0.059	0.016	0.013
FE	0.687	-0.519	0.134	0.264	0.412	0.028	0.007	0.006	-0.012	0.000	-0.001	0.000
PB	0.442	-0.198	0.849	0.028	-0.030	0.013	-0.204	0.015	-0.030	-0.002	0.005	0.000
MG	0.172	-0.917	0.185	0.105	0.088	0.273	-0.009	0.020	0.028	-0.001	-0.001	-0.001
MN	0.307	-0.064	0.144	0.938	0.033	0.005	0.000	0.001	-0.004	0.001	0.000	0.000
NI	0.867	-0.421	0.206	0.021	-0.013	0.061	0.000	0.128	0.073	-0.025	0.011	-0.045
V	0.528	-0.830	0.165	0.003	-0.027	-0.141	-0.050	0.021	-0.012	-0.012	0.077	-0.003
ZN	0.943	-0.184	0.232	0.069	0.019	0.007	-0.005	0.100	0.051	0.063	-0.011	0.024

Rotation completed in 11 iterations
Rotation was normalised

Casewise Factor Scores

Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
1	-0.612	-0.532	-0.540	-0.296	-1.289	0.331	1.125	-0.568	-0.361	-1.112	1.248	-0.632
2	-0.539	-3.241	-0.486	-0.352	-0.351	0.209	-0.161	0.292	1.672	0.628	1.780	-1.273
3	-0.248	-0.878	-0.372	0.647	0.159	0.829	0.819	1.075	0.369	-1.865	-0.520	0.304
4	-0.205	-0.905	-0.341	1.380	-0.142	-0.232	0.574	1.563	0.388	-0.654	-0.920	-1.159
5	-0.176	-0.306	-0.493	0.871	-0.164	0.933	0.825	0.162	1.175	0.208	-0.520	0.613
6	-0.602	-0.234	-0.320	-0.908	0.082	2.109	-0.365	-0.080	-2.128	-0.413	1.270	-0.743
7	-0.336	-0.521	-0.322	0.361	0.017	-0.153	0.777	-0.162	0.247	2.837	1.615	0.972
8	-0.554	-1.913	-0.260	-1.057	-1.066	-0.380	0.679	-1.580	0.972	0.879	-1.209	-0.191
9	0.139	-0.367	-0.326	0.131	3.824	-1.287	0.653	-0.307	0.147	-0.373	0.671	-0.255
10	-0.569	2.011	-0.377	-0.565	-1.044	-1.873	-0.428	0.321	0.286	-1.409	0.632	1.575
11	-0.451	-0.977	-0.078	-0.286	0.119	-0.240	-1.244	0.158	0.443	-1.110	1.224	0.301
12	1.093	0.975	-0.303	2.905	-0.241	0.374	-0.420	-2.721	-0.653	-0.359	0.119	-0.019
13	2.762	0.228	0.133	-0.974	-0.231	-0.166	0.541	1.209	-1.351	0.614	0.238	-0.865
14	2.842	-0.212	0.245	-1.132	-0.346	-0.008	-0.142	-0.614	1.672	-0.687	-0.152	0.302
15	0.394	-0.279	0.583	0.320	-0.254	0.317	-0.815	0.351	-0.866	0.387	-0.386	0.102
16	-0.742	-0.019	-0.330	-0.689	-0.378	-2.362	0.657	-0.898	-1.827	-0.012	-1.119	-0.795
17	-0.002	-0.879	0.063	-0.327	0.408	0.275	-0.675	0.294	-0.883	0.277	-0.079	2.951
18	-0.475	-0.664	0.403	-0.108	0.254	-0.228	-3.410	-0.116	0.500	0.423	-0.640	-1.217
19	0.020	0.529	-0.293	1.544	-0.713	-0.841	-0.263	1.962	-0.285	1.174	-0.360	-0.136
20	-0.435	1.345	-0.499	-0.697	0.397	1.300	-0.021	0.050	-0.187	0.233	-1.801	0.907
21	-0.688	0.393	4.266	0.203	-0.012	0.084	0.869	-0.098	0.150	-0.151	0.154	-0.046
22	-0.614	1.907	-0.353	-0.971	0.970	1.009	0.425	-0.294	0.520	0.484	-1.245	-0.696

Appendix C, Table C-9
Factor Analysis of Metals Data for NonHydric Soil Type Se
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Factor Analysis Results for:
Variable Range = Sheet1!$B$1:$M$23
Factors were extracted by the Principal Component method from the correlation matrix
All factors were extracted

Descriptive Statistics

Variable	Mean	Std Dev.	Std Err	N
AL	11933.182	2331.934	497.170	22
AS	12.482	13.974	2.979	22
BA	35.355	11.551	2.463	22
CR	12.550	4.193	0.894	22
CO	5.445	2.261	0.482	22
FE	18959.545	9011.260	1921.207	22
PB	22.900	6.443	1.374	22
MG	1807.000	544.038	115.989	22
MN	124.927	86.184	18.375	22
NI	11.005	3.432	0.732	22
V	24.714	5.412	1.154	22
ZN	42.932	14.163	3.020	22

Correlation Matrix

	AL	AS	BA	CR	CO	FE	PB	MG	MN	NI	V	ZN
AL	1.000	0.411	0.339	0.544	0.465	0.534	0.518	0.549	0.457	0.569	0.652	0.644
AS	0.411	1.000	0.324	0.359	0.740	0.953	0.282	0.449	0.757	0.455	0.494	0.459
BA	0.339	0.324	1.000	0.618	0.725	0.264	0.528	0.615	0.601	0.530	-0.060	0.567
CR	0.544	0.359	0.618	1.000	0.811	0.447	0.649	0.743	0.687	0.841	0.183	0.905
CO	0.465	0.740	0.725	0.811	1.000	0.726	0.596	0.744	0.917	0.776	0.212	0.810
FE	0.534	0.953	0.264	0.447	0.726	1.000	0.360	0.460	0.768	0.510	0.603	0.540
PB	0.518	0.282	0.528	0.649	0.596	0.360	1.000	0.721	0.679	0.625	0.480	0.619
MG	0.549	0.449	0.615	0.743	0.744	0.460	0.721	1.000	0.655	0.903	0.306	0.834
MN	0.457	0.757	0.601	0.687	0.917	0.768	0.679	0.655	1.000	0.660	0.313	0.696
NI	0.569	0.455	0.530	0.841	0.776	0.510	0.625	0.903	0.660	1.000	0.283	0.947
V	0.652	0.494	-0.060	0.183	0.212	0.603	0.480	0.306	0.313	0.283	1.000	0.302
ZN	0.644	0.459	0.567	0.905	0.810	0.540	0.619	0.834	0.696	0.947	0.302	1.000

Explained Variance (Eigenvalues)

Value	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
Eigenvalue	7.452	1.694	1.164	0.613	0.449	0.306	0.152	0.070	0.036	0.028	0.023	0.014
% of Var.	62.100	14.119	9.698	5.108	3.741	2.549	1.263	0.583	0.299	0.237	0.190	0.115
Cum. %	62.100	76.219	85.917	91.026	94.766	97.315	98.577	99.160	99.459	99.696	99.885	100.000

Communalities

	Variable
AL	1.000
AS	1.000
BA	1.000
CR	1.000
CO	1.000
FE	1.000
PB	1.000
MG	1.000
MN	1.000
NI	1.000
V	1.000
ZN	1.000

Appendix C, Table C-9
Factor Analysis of Metals Data for NonHydric Soil Type Se
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Unrotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
AL	0.691	-0.250	-0.475	-0.066	-0.436	0.057	-0.187	-0.030	0.001	-0.024	0.005	-0.002
AS	0.700	-0.542	0.435	-0.042	-0.007	-0.123	0.017	-0.037	0.012	-0.040	0.031	-0.076
BA	0.662	0.456	0.234	0.339	-0.376	-0.150	0.132	0.047	-0.029	0.015	-0.020	-0.004
CR	0.853	0.340	-0.076	-0.156	0.002	0.290	0.146	-0.140	-0.004	0.005	-0.035	-0.024
CO	0.926	0.086	0.336	0.008	-0.011	0.063	0.019	-0.014	0.085	-0.069	0.046	0.065
FE	0.748	-0.580	0.275	-0.090	0.004	0.024	0.016	-0.027	-0.118	0.045	0.002	0.049
PB	0.750	0.126	-0.335	0.482	0.250	0.076	-0.042	-0.008	-0.060	-0.031	0.053	-0.012
MG	0.865	0.242	-0.159	-0.041	0.143	-0.349	-0.073	-0.119	0.035	0.057	-0.006	0.012
MN	0.881	-0.076	0.311	0.193	0.112	0.162	-0.173	0.068	0.048	0.045	-0.072	-0.011
NI	0.884	0.234	-0.141	-0.294	0.141	-0.128	-0.003	0.093	-0.051	-0.087	-0.058	0.000
V	0.463	-0.699	-0.477	0.142	0.045	-0.042	0.196	0.043	0.062	0.009	-0.033	0.011
ZN	0.906	0.216	-0.136	-0.286	0.006	0.063	0.037	0.126	0.014	0.073	0.075	-0.018

Varimax Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
AL	0.363	-0.212	-0.802	0.128	0.124	-0.024	0.383	-0.026	0.006	-0.003	0.000	0.001
AS	0.168	-0.947	-0.069	0.121	0.008	-0.081	0.199	0.026	-0.031	-0.010	-0.007	-0.090
BA	0.347	-0.179	-0.096	0.686	0.201	-0.037	-0.108	-0.025	0.008	0.001	0.001	-0.001
CR	0.797	-0.208	-0.170	0.262	0.250	0.100	0.003	-0.388	0.014	-0.011	0.005	0.003
CO	0.572	-0.636	-0.074	0.393	0.241	0.012	-0.053	-0.110	0.052	-0.177	0.005	-0.013
FE	0.238	[illegible]	-0.173	0.022	0.064	0.012	0.277	-0.041	-0.030	0.047	0.007	0.113
PB	0.414	-0.111	-0.123	0.248	0.806	-0.053	0.294	-0.033	-0.012	-0.004	0.000	0.002
MG	0.753	-0.229	-0.121	0.271	0.303	-0.421	0.128	0.078	-0.010	0.002	-0.006	-0.002
[illegible]	0.395	[illegible]	-0.102	0.263	0.459	0.039	-0.022	-0.047	0.241	-0.022	0.008	-0.002
NI	0.911	-0.259	-0.135	0.147	0.170	-0.070	0.095	0.091	-0.005	0.009	-0.111	-0.001
V	0.072	-0.318	-0.267	-0.127	0.193	-0.021	0.877	0.004	-0.003	0.002	0.000	0.000
ZN	0.882	-0.273	-0.231	0.194	0.150	0.067	0.099	-0.023	0.043	-0.007	0.130	0.007

Rotation completed in 21 iterations
Rotation was normalised

Casewise Factor Scores

Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
1	0.268	0.130	-1.919	-1.623	-1.081	-1.172	-0.830	-0.972	1.275	-0.911	0.300	0.620
2	2.840	-0.162	0.757	1.041	0.803	1.086	-1.273	-2.534	-0.029	-0.021	0.258	0.335
3	-0.482	0.604	0.601	-0.220	0.731	-0.130	2.245	-0.896	-1.034	0.518	2.154	0.090
4	0.522	0.751	-2.290	-0.168	-0.800	1.818	0.926	0.392	-0.960	-1.533	0.342	-0.645
5	-0.312	0.108	-0.586	-1.181	0.878	0.556	0.549	-0.072	2.074	0.883	0.876	-0.614
6	-0.096	-4.230	-0.164	0.626	-0.427	-0.005	0.563	0.317	-0.112	-0.710	0.439	-0.417
7	1.004	0.771	-0.723	1.483	-0.792	-0.499	0.533	0.961	-0.905	0.013	-1.332	-0.005
8	0.841	0.583	0.236	0.727	-0.778	-0.530	0.045	1.171	-0.400	0.307	-0.136	-0.106
9	0.125	-0.083	0.040	0.461	0.668	-0.054	-0.008	0.956	2.031	0.895	-1.372	0.793
10	-0.050	-0.055	0.920	-0.894	0.171	0.331	1.387	-0.070	-0.461	0.405	-0.556	1.404
11	-0.733	-0.440	-1.074	-0.771	0.089	0.374	-0.897	-0.321	-1.803	1.729	-0.113	2.105
12	-0.961	0.280	1.129	-0.176	-0.130	0.357	-1.284	0.263	-0.581	0.409	0.439	-1.518
13	-0.645	0.531	1.023	0.432	-0.386	0.385	-0.322	0.272	-0.224	-0.641	0.552	-1.078
14	-0.528	0.491	-0.283	1.188	-1.001	-0.701	-0.017	-0.451	0.791	0.499	1.014	0.455
15	1.206	-0.117	1.028	-0.811	-1.683	0.961	-0.409	1.706	0.616	1.502	0.824	-0.036
16	0.123	-0.169	1.182	-2.020	0.261	-0.559	-0.162	0.145	-1.109	-0.986	-1.734	0.243
17	-0.290	0.186	0.393	-0.665	0.047	1.103	1.129	-1.147	0.829	-0.327	-1.934	-1.453
18	-1.341	0.086	-0.143	-0.187	-0.384	-0.416	-2.111	-0.651	-0.548	0.012	0.005	-1.060
19	-2.148	0.167	-0.200	1.984	0.299	1.189	-0.057	-0.443	0.454	-0.130	-0.911	0.993
20	-0.181	0.471	1.451	0.324	-0.595	-1.641	0.286	-0.113	0.652	-2.130	0.628	1.330
21	0.350	0.205	-0.511	0.000	3.113	0.102	-0.969	1.952	-0.052	-1.210	0.806	0.211
22	0.489	-0.107	-0.867	0.451	0.997	-2.554	0.678	-0.464	-0.504	1.427	-0.550	-1.648

Appendix C, Table C-10
Factor Analysis of Metals Data for Non-Hydric Soil Type PmB
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Factor Analysis Results for:
Variable Range = Sheet1!$B$1:$M$23
Factors were extracted by the Principal Component method from the correlation matrix
All factors were extracted

Descriptive Statistics

Variable	Mean	Std Dev.	Std Err	N
AL	11235.000	1553.373	331.180	22
AS	10.023	5.779	1.232	22
BA	39.695	6.661	1.420	22
CR	13.532	1.373	0.293	22
CO	7.264	1.836	0.391	22
FE	20813.636	10189.878	2172.489	22
PB	31.377	9.729	2.074	22
MG	1623.636	187.427	39.960	22
MN	295.455	123.616	26.355	22
NI	10.286	1.902	0.405	22
VA	30.727	3.714	0.792	22
ZN	49.550	18.959	4.042	22

Correlation Matrix

	AL	AS	BA	CR	CO	FE	PB	MG	MN	NI	VA	ZN
AL	1.000	0.365	0.648	0.856	0.257	0.344	0.202	0.463	-0.160	0.580	0.497	0.473
AS	0.365	1.000	0.349	0.425	0.318	0.968	0.525	-0.086	0.489	0.277	0.850	0.430
BA	0.648	0.349	1.000	0.760	0.545	0.285	0.512	0.291	-0.075	0.571	0.508	0.660
CR	0.856	0.425	0.760	1.000	0.531	0.349	0.394	0.468	-0.084	0.677	0.582	0.698
CO	0.257	0.318	0.545	0.531	1.000	0.258	0.451	0.019	0.477	0.313	0.421	0.535
FE	0.344	0.968	0.285	0.349	0.258	1.000	0.391	-0.124	0.559	0.129	0.806	0.261
PB	0.202	0.525	0.512	0.394	0.451	0.391	1.000	0.247	-0.027	0.558	0.698	0.670
MG	0.463	-0.086	0.291	0.468	0.019	-0.124	0.247	1.000	-0.441	0.649	0.143	0.139
MN	-0.160	0.489	-0.075	-0.084	0.477	0.559	-0.027	-0.441	1.000	-0.305	0.325	-0.057
NI	0.580	0.277	0.571	0.677	0.313	0.129	0.558	0.649	-0.305	1.000	0.373	0.734
VA	0.497	0.850	0.508	0.582	0.421	0.806	0.698	0.143	0.325	0.373	1.000	0.555
ZN	0.473	0.430	0.660	0.698	0.535	0.261	0.670	0.139	-0.057	0.734	0.555	1.000

Explained Variance (Eigenvalues)

Value	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
Eigenvalue	5.700	2.672	1.123	0.965	0.627	0.395	0.230	0.117	0.105	0.036	0.020	0.010
% of Var.	47.503	22.267	9.361	8.041	5.223	3.291	1.917	0.973	0.872	0.304	0.166	0.082
Cum. %	47.503	69.770	79.131	87.172	92.395	95.686	97.603	98.577	99.449	99.753	99.918	100.000

Communalities

	Variable
AL	1.000
AS	1.000
BA	1.000
CR	1.000
CO	1.000
FE	1.000
PB	1.000
MG	1.000
MN	1.000
NI	1.000
VA	1.000
ZN	1.000

Appendix C, Table C-10
Factor Analysis of Metals Data for Non-Hydric Soil Type PmB
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Unrotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
AL	0.722	-0.314	0.311	0.455	-0.132	0.002	0.106	-0.050	0.211	-0.032	-0.017	-0.008
AS	0.716	0.591	0.303	-0.110	-0.044	0.093	-0.081	-0.087	-0.063	-0.006	-0.002	-0.072
BA	0.791	-0.222	-0.205	0.186	-0.198	-0.333	-0.303	0.078	-0.011	0.006	0.001	-0.005
CR	0.861	-0.282	0.019	0.340	-0.054	0.033	0.141	-0.027	-0.179	-0.040	0.071	0.014
CO	0.609	0.195	-0.659	0.232	0.264	-0.043	0.077	-0.143	-0.005	0.055	-0.039	-0.005
FE	0.619	0.666	0.384	0.005	-0.005	0.014	-0.103	-0.081	-0.046	-0.008	-0.046	0.063
PB	0.723	0.027	-0.166	-0.614	0.076	-0.204	0.064	-0.076	0.083	-0.081	0.034	0.009
MG	0.355	-0.683	0.296	-0.023	0.551	-0.059	-0.021	0.069	-0.059	-0.036	-0.047	-0.010
MN	0.121	0.854	-0.202	0.266	0.301	0.133	-0.072	0.143	0.074	-0.063	0.036	0.001
NI	0.728	-0.510	-0.003	-0.184	0.119	0.340	-0.180	-0.033	0.069	0.071	0.046	0.014
VA	0.838	0.365	0.212	-0.148	0.033	-0.150	0.194	0.157	0.018	0.108	0.012	0.001
ZN	0.806	-0.154	-0.331	-0.194	-0.284	0.267	0.067	0.128	-0.033	-0.045	-0.064	0.000

Varimax Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
AL	0.901	0.221	-0.007	-0.189	0.253	0.005	-0.179	0.003	0.087	-0.007	0.025	0.000
AS	0.135	0.947	-0.102	-0.191	-0.045	-0.154	-0.060	-0.040	-0.020	0.011	0.017	-0.076
BA	0.434	0.145	-0.224	-0.301	0.127	-0.210	-0.768	0.014	-0.011	0.020	0.005	0.000
CR	0.710	0.226	-0.252	-0.385	0.285	-0.062	-0.250	0.055	-0.264	0.104	-0.042	-0.002
CO	0.168	0.124	-0.913	-0.223	-0.001	-0.194	-0.185	0.010	-0.020	0.040	0.001	-0.001
FE	0.141	0.976	-0.095	-0.014	-0.060	-0.063	-0.068	-0.038	0.008	-0.014	-0.003	0.068
PB	-0.015	0.330	-0.153	-0.367	0.182	-0.818	-0.171	0.007	-0.004	0.038	0.010	-0.001
MG	0.250	-0.110	0.064	-0.078	0.948	-0.103	-0.061	0.023	-0.019	0.023	-0.021	0.000
MN	-0.198	0.545	-0.603	0.158	-0.258	0.203	0.095	0.027	0.031	-0.396	-0.009	0.001
NI	0.282	0.087	-0.042	-0.708	0.544	-0.174	-0.141	-0.095	0.069	0.046	0.218	-0.002
VA	0.283	[illegible]	-0.153	-0.175	0.100	-0.401	-0.116	0.337	-0.028	-0.040	-0.029	0.000
ZN	0.282	0.164	-0.200	-0.836	-0.016	-0.307	-0.201	0.078	-0.052	0.010	-0.105	-0.002

Rotation completed in 17 iterations
Rotation was normalised

Casewise Factor Scores

Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
1	-1.509	0.253	0.954	-1.796	-1.093	0.042	-0.110	-1.768	-0.173	1.514	0.279	-1.834
2	0.673	0.038	-0.065	-2.314	-0.873	-0.765	1.165	1.012	-0.606	-0.704	-0.683	1.546
3	-0.147	-0.061	0.114	-0.323	2.007	0.429	0.289	0.302	1.539	0.768	2.181	0.169
4	0.671	0.249	0.404	-0.381	-1.682	0.402	-0.302	0.078	-1.040	1.247	1.616	1.656
5	1.486	0.216	-0.407	0.005	1.618	1.690	1.289	-1.284	0.256	0.304	-0.261	0.417
6	-0.019	4.172	-0.054	0.969	-0.475	-0.440	-0.541	0.099	0.645	-0.295	-0.250	0.144
7	-0.207	0.597	0.749	-2.080	1.753	-0.255	-0.169	0.518	-0.591	-1.487	-0.625	-0.895
8	-0.172	-0.517	1.298	0.084	0.108	-2.093	0.287	-0.691	1.643	-0.804	1.235	0.388
9	-0.537	-0.305	-1.289	-1.030	-0.150	0.041	-0.415	0.693	0.648	1.059	-0.805	-0.154
10	2.385	-0.181	0.586	0.390	0.292	-0.363	-0.550	0.675	-0.521	0.460	0.527	-0.121
11	1.925	-0.760	0.014	-0.219	-0.808	0.523	-1.933	-1.489	0.388	-1.067	-0.304	-0.431
12	-0.375	-0.411	-0.320	0.188	-1.084	0.843	1.524	-0.062	1.107	-0.721	-1.385	1.048
13	0.294	-0.223	-3.509	0.091	0.168	-1.683	-0.174	-0.674	0.163	0.174	0.000	-0.778
14	-0.302	-0.792	0.577	0.350	0.077	0.106	-2.302	1.961	1.129	1.183	-1.286	0.171
15	-1.104	-0.538	-0.765	0.620	-0.780	0.599	-0.410	-0.534	-0.688	-0.987	1.320	0.372
16	-0.952	-0.335	-0.120	0.807	0.969	-1.203	-0.376	0.398	-2.526	-0.291	0.463	0.694
17	-1.135	0.012	-0.032	0.427	1.342	0.591	-0.113	-0.403	-0.603	0.921	-0.965	1.224
18	0.311	-0.608	1.419	1.555	0.050	-1.627	0.965	-1.265	-0.357	0.729	-1.745	-0.262
19	0.699	0.187	0.006	0.642	-0.408	0.949	1.320	1.187	-1.252	0.879	0.137	-2.200
20	-0.609	-0.510	-0.038	0.855	-0.824	-0.025	1.386	1.217	1.135	0.062	0.610	-0.352
21	-1.002	-0.068	0.168	0.484	0.077	1.570	-0.780	-0.932	-0.214	-0.743	-0.278	0.572
22	-0.374	-0.416	0.310	0.674	-0.284	0.665	-0.050	0.961	-0.080	-2.201	0.219	-1.376

Table C-11
Power of the 2 Sample Test of Proportions Given Unequal Sample Sizes and Reference Area Frequency of Detection**
NUSC Disposal Area
NUWC, Middletown, Rhode Island

Test of Proportions Estimated Power** Calculated Using:			Number of Samples in Area 1	Number of Samples in Area 2	Detection Freq. in Area 1	Detect Freq. in Area 2			Alpha	Assumed No. of Detects in Area 1	Smallest* No. of Detects in Area 2 Which Yields 80% Power:		
Method (1)	Method (2)	Method (3)				Meth.1	Meth.2	Meth.3			Method (1)	Method (2)	Method (3)
0.80	0.86	NA	20	7	0	0.428571429	0.428571429	NA	0.05	0	3	3	NA
0.83	0.88	0.88	20	7	0.05	0.571428571	0.571428571	0.714285714	0.05	1	4	4	5
0.90	0.79	0.78	20	7	0.1	0.714285714	0.571428571	0.714285714	0.05	2	5	4	5
0.82	0.87	0.91	20	7	0.15	0.714285714	0.714285714	0.857142857	0.05	3	5	5	6
0.93	0.79	0.82	20	7	0.2	0.857142857	0.714285714	0.857142857	0.05	4	6	5	6
0.87	0.92	0.99	20	7	0.25	0.857142857	0.857142857	1	0.05	5	6	6	7
0.78	0.85	0.95	20	7	0.3	0.857142857	0.857142857	1	0.05	6	6	6	7
0.98	0.76	0.88	20	7	0.35	1	0.857142857	1	0.05	7	7	6	7
0.76	0.83	NA	20	8	0	0.375	0.375	NA	0.05	0	3	3	NA
0.77	0.83	0.80	20	8	0.05	0.5	0.5	0.625	0.05	1	4	4	5
0.82	0.87	0.87	20	8	0.1	0.625	0.625	0.75	0.05	2	5	5	6
0.90	0.78	0.77	20	8	0.15	0.75	0.625	0.75	0.05	3	6	5	6
0.81	0.87	0.90	20	8	0.2	0.75	0.75	0.875	0.05	4	6	6	7
0.93	0.78	0.81	20	8	0.25	0.875	0.75	0.875	0.05	5	7	6	7
0.86	0.91	0.98	20	8	0.3	0.875	0.875	1	0.05	6	7	7	8
0.77	0.84	0.92	20	8	0.35	0.875	0.875	1	0.05	7	7	7	8
0.96	0.75	0.83	20	8	0.4	1	0.875	1	0.05	8	8	7	8
0.85	0.80	NA	20	9	0	0.444444444	0.333333333	NA	0.05	0	4	3	NA
0.86	0.78	0.89	20	9	0.05	0.555555556	0.444444444	0.666666667	0.05	1	5	4	6
0.75	0.81	0.78	20	9	0.1	0.555555556	0.555555556	0.666666667	0.05	2	5	5	6
0.81	0.86	0.86	20	9	0.15	0.666666667	0.666666667	0.777777778	0.05	3	6	6	7
0.88	0.76	0.76	20	9	0.2	0.777777778	0.666666667	0.777777778	0.05	4	7	6	7
0.80	0.85	0.88	20	9	0.25	0.777777778	0.777777778	0.888888889	0.05	5	7	7	8
0.91	0.76	0.78	20	9	0.3	0.888888889	0.777777778	0.888888889	0.05	6	8	7	8
0.84	0.89	0.95	20	9	0.35	0.888888889	0.888888889	1	0.05	7	8	8	9
0.97	0.81	0.89	20	9	0.4	1	0.888888889	1	0.05	8	9	8	9
0.93	0.97	0.78	20	9	0.45	1	1	1	0.05	9	9	9	9
0.75	0.80	NA	40	15	0	0.2	0.2	NA	0.05	0	3	3	NA
0.84	0.79	0.85	40	15	0.025	0.333333333	0.266666667	0.4	0.05	1	5	4	6
0.75	0.80	0.87	40	15	0.05	0.333333333	0.333333333	0.466666667	0.05	2	5	5	7
0.79	0.83	0.81	40	15	0.075	0.4	0.4	0.466666667	0.05	3	6	6	7
0.83	0.75	0.85	40	15	0.1	0.466666667	0.4	0.533333333	0.05	4	7	6	8
0.76	0.80	0.79	40	15	0.125	0.466666667	0.466666667	0.533333333	0.05	5	7	7	8
0.81	0.85	0.84	40	15	0.15	0.533333333	0.533333333	0.6	0.05	6	8	8	9
0.75	0.79	0.78	40	15	0.175	0.533333333	0.533333333	0.6	0.05	7	8	8	9
0.81	0.85	0.85	40	15	0.2	0.6	0.6	0.666666667	0.05	8	9	9	10
0.75	0.80	0.79	40	15	0.225	0.6	0.6	0.666666667	0.05	9	9	9	10
0.83	0.86	0.87	40	15	0.25	0.666666667	0.666666667	0.733333333	0.05	10	10	10	11
0.77	0.81	0.82	40	15	0.275	0.666666667	0.666666667	0.733333333	0.05	11	10	10	11
0.85	0.75	0.76	40	15	0.3	0.733333333	0.666666667	0.733333333	0.05	12	11	10	11
0.80	0.84	0.85	40	15	0.325	0.733333333	0.733333333	0.8	0.05	13	11	11	12
0.89	0.79	0.80	40	15	0.35	0.8	0.733333333	0.8	0.05	14	12	11	12
0.84	0.88	0.90	40	15	0.375	0.8	0.8	0.866666667	0.05	15	12	12	13

** Power is defined as the probability the test of proportions will conclude there is a difference in frequencies of detection given 2 populations with true frequencies in Area 2 and Area 1 as given.
*For a fixed number of detects in Area 1, power was recalculated while incrementing the number of detects in Area 2, stopping when power >= 0.8 plus or minus 0.05.
(a) - Indicates that given the number of detects in the reference Area 1, it is not possible to achieve a power of 80 percent, regardless of number of detects in Area 2.
NA - Indicates power calculation method is invalid for the given values for frequency of detection.

Using the three methods cited below, power was estimated for the test of proportions given alpha=0.025, with the null hypothesis Ho: Freq.2 <=Freq.1, and the alternative hypothesis Ha: Freq.2 > Freq.1.

Method (1): Uncorrected Chi-Square, Rosner, Fundamentals of Biostatistics 4th ed., p.385 as coded in SAS by R. Bosch, 1996, Harvard University Dept. of Biostatistics (http://www.biostat.harvard.edu/~rbosch/p1p2.html)
Power = Normal Distribution [term 1] + Normal Distribution [term 2], where term 1 and term 2 are defined below:
term 1 = (p2-p1)/SQRT(p1*(1-p1)/n1 + p2*(1-p2)/n2) - InverseNormalDistribution [1-0.025/2] *SQRT(((n1*p1+n2*p2)/(n1+n2))*(1-((n1*p1+n2*p2)/(n1+n2)))*(1/n1+1/n2))/SQRT(p1*(1-p1)/n1 + p2*(1-p2)/n2))
term 2 = -(p2-p1)/SQRT(p1*(1-p1)/n1 + p2*(1-p2)/n2) + InverseNormalDistribution [0.025/2] *SQRT(((n1*p1+n2*p2)/(n1+n2))*(1- ((n1*p1+n2*p2)/(n1+n2)))*(1/n1+1/n2)/SQRT(p1*(1-p1)/n1 + p2*(1-p2)/n2)

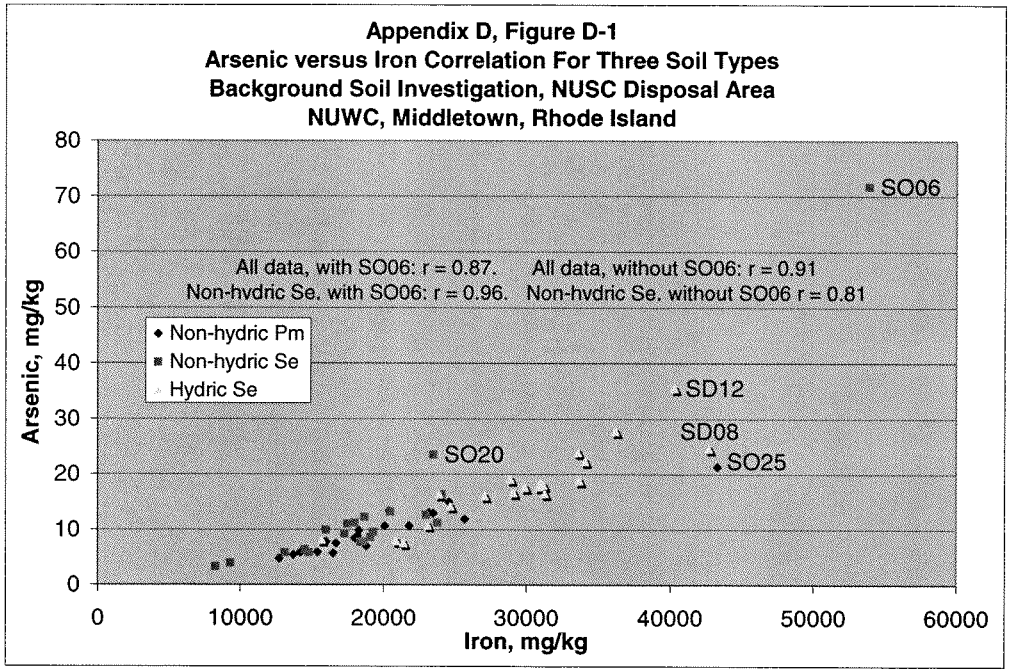
Method (2): Same source equation as method 2 (Rosner, Fundamentals of Biostatistics 4th ed., p.385 as coded in SAS by R. Bosch, 1996, Harvard University), but with a continuity correction for n1 and n2:
corrected n1 = n1/4 x (1+SQRT(1+((1/n1+1/n2)/ABS(p2-p1))))^2
corrected n2 = n2/n1 x (corrected n1)
Source of continuity correction: Richardson, P., 2005, Calculation of Sample Size and Power, Houston Center for Quality of Care and Utilization Studies, Department of Medicine,
Baylor College of Medicine: http://www.hsrd.houston.med.va.gov/seminars.htm#

Method (3): Fisher Exact Test power, from Dupont WD, Plummer WD, Jr: Power and Sample Size Calculations: A Review and Computer Program. Controlled Clinical Trials 11:116-128, 1990. Fisher's Exact Test power calculation method from Casagrande JT, Pike MC, Smith PG: "An Improved Approximate Formula for Calculating Sample Sizes for Comparing Two Binomial Distributions", Biometrics, 1978; 34:483-486. Generalization for unequal sample sizes adapted from Fleiss JL: "Statistical Methods for Rates and Proportions" 2nd Ed. NewYork: John Wiley, 1981:38-46.
Download website: http://biostat.mc.vanderbilt.edu/twiki/bin/view/Main/PowerSampleSize. Department of Statistics, Vanderbilt University School of Medicine.

APPENDIX D

SELECTED METALS CORRELATION TESTS

GROUP	NSAMPLE	ASVAL	ALVAL	MNVAL	FEVAL
PmSO	SO33	4.7	11200	141	12700
PmSO	SO38	5.4	9430	342	13700
PmSO	SO31	5.7	9780	419	16500
PmSO	SO36	5.8	10600	101	14200
PmSO	SO34	5.9	9110	433	15400
PmSO	SO40	6.3	10300	402	14500
PmSO	SO39	7	9890	373	18800
PmSO	SO35	7.5	9710	261	16700
PmSO	SO27	7.8	11000	159	16000
PmSO	SO30	8.4	14000	257	18000
PmSO	SO23	8.8	12100	197	18200
PmSO	SO28	9.8	10800	319	18300
PmSO	SO29	10.6	14600	141	21800
PmSO	SO37	10.6	11400	311	20100
PmSO	SO24	11.9	11700	252	25700
PmSO	SO22	12.9	12100	300	23500
PmSO	SO32	13	11700	477	23200
PmSO	SO21	13.3	9290	197	20400
PmSO	SO26	15	12400	253	24600
PmSO	SO25	21.3	13050	453.5	43300
SeSD	SD20	7.5	6230	326	21400
SeSD	SD02	7.9	8020	1610	20900
SeSD	SD09	8.1	7080	1010	15700
SeSD	SD18	10.7	8100	1030	23100
SeSD	SD01	14.2	14200	1870	24700
SeSD	SD05	16	12400	754	27100
SeSD	SD14	16.3	14400	1000	23900
SeSD	SD04	16.5	13800	4700	31300
SeSD	SD07	16.6	19400	593	29100
SeSD	SD19	17.6	14000	4390	29900
SeSD	SD06	17.7	14800	3610	30900
SeSD	SD10	18	16000	2310	31200
SeSD	SD16	18.4	15400	2790	31000
SeSD	SD03	18.8	15600	4330	33700
SeSD	SD17	19	12300	6160	28900
SeSD	SD15	22.3	16300	2610	34100
SeSD	SD13	23.9	15100	4280	33600
SeSD	SD08	24.6	15400	3700	42700
SeSD	SD11	27.7	11900	9740	36200
SeSD	SD12	35.5	15400	2970	40300
SeSO	SO11	3.3	7580	46.6	8290
SeSO	SO16	3.9	9020	50	9330
SeSO	SO17	5.8	11000	115	14800
SeSO	SO18	5.8	9140	73.7	13100
SeSO	SO12	6.4	11900	82.7	14500
SeSO	SO04	7.7	16700	68	18400
SeSO	SO01	7.8	14300	93.4	18600
SeSO	SO03	8.6	12300	68.7	19100
SeSO	SO19	9.2	13000	248	17300
SeSO	SO05	9.5	13100	164	19300
SeSO	SO07	9.9	13150	90.6	16000
SeSO	SO15	11	11700	110	17500
SeSO	SO10	11.2	12500	85.2	23800
SeSO	SO14	11.2	9250	69	18000
SeSO	SO13	12.2	9840	86.7	18700
SeSO	SO09	12.6	11200	92.8	23000
SeSO	SO08	13.2	12300	206	20500
SeSO	SO02	16.3	12500	296	24100
SeSO	SO20	23.5	15200	184	23500
SeSO	SO06	71.7	14800	373	53900



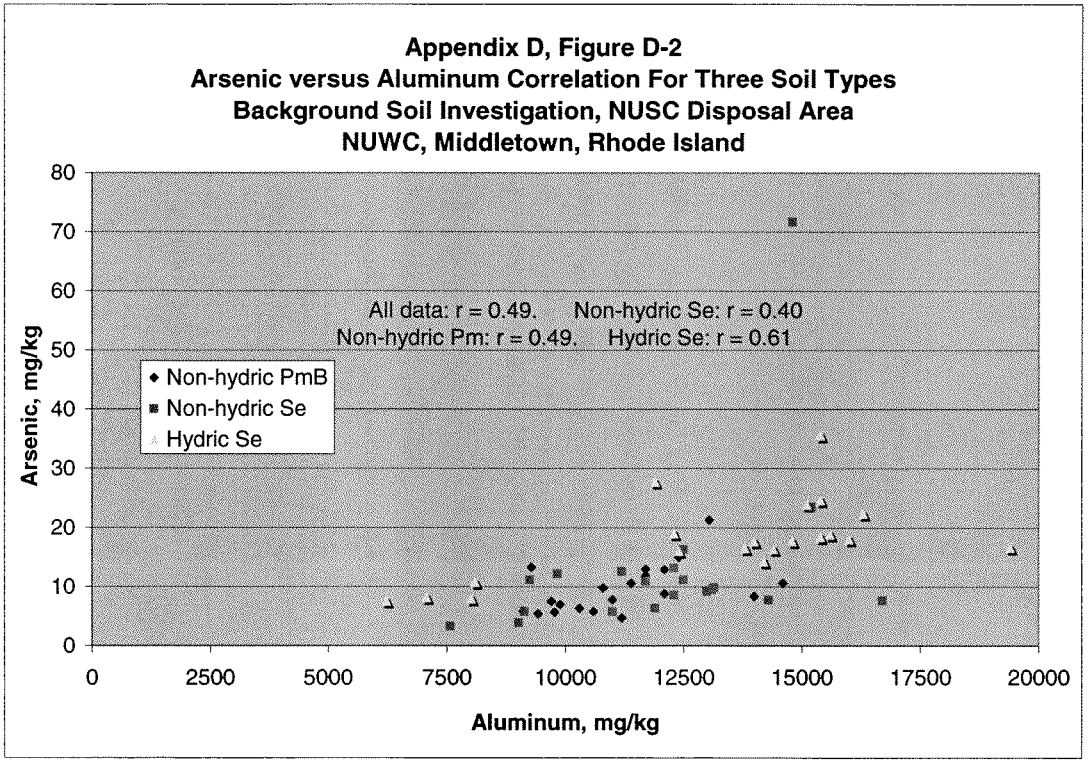
Arsenic Vs. Iron
Overall Corr
r = 0.873
Nonhydric Se
r = 0.957
Nonhydric PmB
r = 0.937
Hydric Se
r = 0.899
Hydric Se
r = 0.937

WITHOUT SO20:
Arsenic Vs. Iron
Overall Corr
r = 0.908
Nonhydric Se
r = 0.810

Correlation worse without outlier point.
So it is not that far out of range.

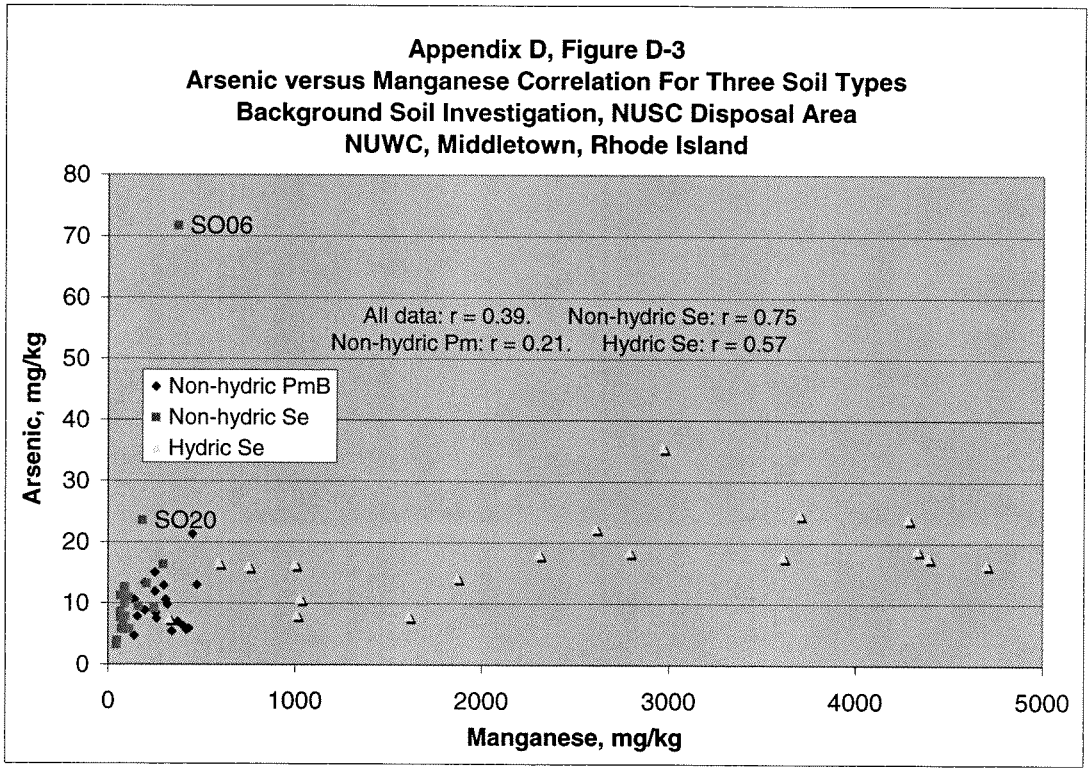
Ratio of Iron to Arsenic:
SO06: r= 752
Average Ratio in Soil Type Se:
Se soil: r= 1959
all soil: r= 1968

GROUP	NSAMPLE	ASVAL	ALVAL	MNVAL	FEVAL
PmSO	SO33	4.7	11200	141	12700
PmSO	SO38	5.4	9430	342	13700
PmSO	SO31	5.7	9780	419	16500
PmSO	SO36	5.8	10600	101	14200
PmSO	SO34	5.9	9110	433	15400
PmSO	SO40	6.3	10300	402	14500
PmSO	SO39	7	9890	373	18800
PmSO	SO35	7.5	9710	261	16700
PmSO	SO27	7.8	11000	159	16000
PmSO	SO30	8.4	14000	257	18000
PmSO	SO23	8.8	12100	197	18200
PmSO	SO28	9.8	10800	319	18300
PmSO	SO29	10.6	14600	141	21800
PmSO	SO37	10.6	11400	311	20100
PmSO	SO24	11.9	11700	252	25700
PmSO	SO22	12.9	12100	300	23500
PmSO	SO32	13	11700	477	23200
PmSO	SO21	13.3	9290	197	20400
PmSO	SO26	15	12400	253	24600
PmSO	SO25	21.3	13050	453.5	43300
SeSD	SD20	7.5	6230	326	21400
SeSD	SD02	7.9	8020	1610	20900
SeSD	SD09	8.1	7080	1010	15700
SeSD	SD18	10.7	8100	1030	23100
SeSD	SD01	14.2	14200	1870	24700
SeSD	SD05	16	12400	754	27100
SeSD	SD14	16.3	14400	1000	23900
SeSD	SD04	16.5	13800	4700	31300
SeSD	SD07	16.6	19400	593	29100
SeSD	SD19	17.6	14000	4390	29900
SeSD	SD06	17.7	14800	3610	30900
SeSD	SD10	18	16000	2310	31200
SeSD	SD16	18.4	15400	2790	31000
SeSD	SD03	18.8	15600	4330	33700
SeSD	SD17	19	12300	6160	28900
SeSD	SD15	22.3	16300	2610	34100
SeSD	SD13	23.9	15100	4280	33600
SeSD	SD08	24.6	15400	3700	42700
SeSD	SD11	27.7	11900	9740	36200
SeSD	SD12	35.5	15400	2970	40300
SeSO	SO11	3.3	7580	46.6	8290
SeSO	SO16	3.9	9020	50	9330
SeSO	SO17	5.8	11000	115	14800
SeSO	SO18	5.8	9140	73.7	13100
SeSO	SO12	6.4	11900	82.7	14500
SeSO	SO04	7.7	16700	68	18400
SeSO	SO01	7.8	14300	93.4	18600
SeSO	SO03	8.6	12300	68.7	19100
SeSO	SO19	9.2	13000	248	17300
SeSO	SO05	9.5	13100	164	19300
SeSO	SO07	9.9	13150	90.6	16000
SeSO	SO15	11	11700	110	17500
SeSO	SO10	11.2	12500	85.2	23800
SeSO	SO14	11.2	9250	69	18000
SeSO	SO13	12.2	9840	86.7	18700
SeSO	SO09	12.6	11200	92.8	23000
SeSO	SO08	13.2	12300	206	20500
SeSO	SO02	16.3	12500	296	24100
SeSO	SO20	23.5	15200	184	23500
SeSO	SO06	71.7	14800	373	53900



Arsenic Vs. Aluminum
Overall Corr
r = 0.487
Nonhydric Se
r = 0.403
Nonhydric Pm
r = 0.492
Hydric Se
r = 0.613

GROUP	NSAMPLE	ASVAL	ALVAL	MNVAL	FEVAL
PmSO	SO33	4.7	11200	141	12700
PmSO	SO38	5.4	9430	342	13700
PmSO	SO31	5.7	9780	419	16500
PmSO	SO36	5.8	10600	101	14200
PmSO	SO34	5.9	9110	433	15400
PmSO	SO40	6.3	10300	402	14500
PmSO	SO39	7	9890	373	18800
PmSO	SO35	7.5	9710	261	16700
PmSO	SO27	7.8	11000	159	16000
PmSO	SO30	8.4	14000	257	18000
PmSO	SO23	8.8	12100	197	18200
PmSO	SO28	9.8	10800	319	18300
PmSO	SO29	10.6	14600	141	21800
PmSO	SO37	10.6	11400	311	20100
PmSO	SO24	11.9	11700	252	25700
PmSO	SO22	12.9	12100	300	23500
PmSO	SO32	13	11700	477	23200
PmSO	SO21	13.3	9290	197	20400
PmSO	SO26	15	12400	253	24600
PmSO	SO25	21.3	13050	453.5	43300
SeSD	SD20	7.5	6230	326	21400
SeSD	SD02	7.9	8020	1610	20900
SeSD	SD09	8.1	7080	1010	15700
SeSD	SD18	10.7	8100	1030	23100
SeSD	SD01	14.2	14200	1870	24700
SeSD	SD05	16	12400	754	27100
SeSD	SD14	16.3	14400	1000	23900
SeSD	SD04	16.5	13800	4700	31300
SeSD	SD07	16.6	19400	593	29100
SeSD	SD19	17.6	14000	4390	29900
SeSD	SD06	17.7	14800	3610	30900
SeSD	SD10	18	16000	2310	31200
SeSD	SD16	18.4	15400	2790	31000
SeSD	SD03	18.8	15600	4330	33700
SeSD	SD17	19	12300	6160	28900
SeSD	SD15	22.3	16300	2610	34100
SeSD	SD13	23.9	15100	4280	33600
SeSD	SD08	24.6	15400	3700	42700
SeSD	SD11	27.7	11900	9740	36200
SeSD	SD12	35.5	15400	2970	40300
SeSO	SO11	3.3	7580	46.6	8290
SeSO	SO16	3.9	9020	50	9330
SeSO	SO17	5.8	11000	115	14800
SeSO	SO18	5.8	9140	73.7	13100
SeSO	SO12	6.4	11900	82.7	14500
SeSO	SO04	7.7	16700	68	18400
SeSO	SO01	7.8	14300	93.4	18600
SeSO	SO03	8.6	12300	68.7	19100
SeSO	SO19	9.2	13000	248	17300
SeSO	SO05	9.5	13100	164	19300
SeSO	SO07	9.9	13150	90.6	16000
SeSO	SO15	11	11700	110	17500
SeSO	SO10	11.2	12500	85.2	23800
SeSO	SO14	11.2	9250	69	18000
SeSO	SO13	12.2	9840	86.7	18700
SeSO	SO09	12.6	11200	92.8	23000
SeSO	SO08	13.2	12300	206	20500
SeSO	SO02	16.3	12500	296	24100
SeSO	SO20	23.5	15200	184	23500
SeSO	SO06	71.7	14800	373	53900



Arsenic Vs. Manganese
Overall Corr
r = 0.389
Nonhydric Se
r = 0.751
Nonhydric PmB
r = 0.210
Hydric Se
r = 0.569

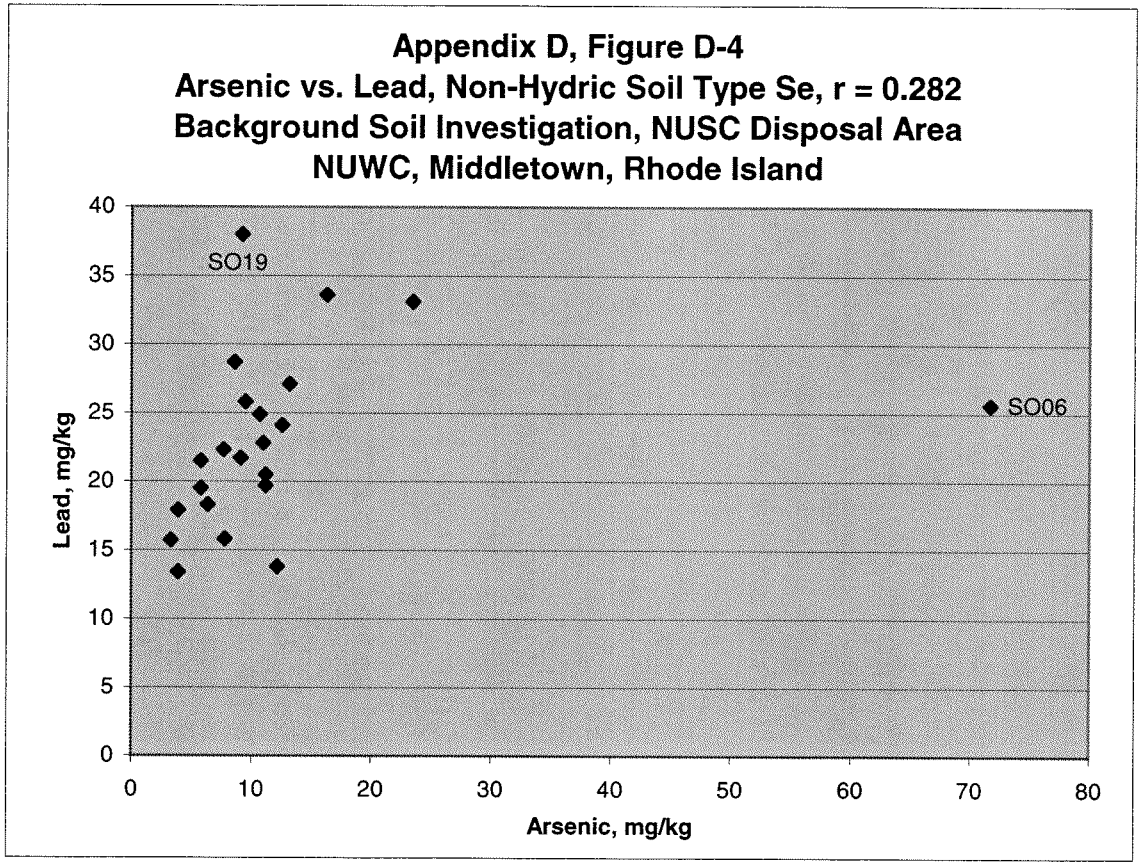
Type	Sample	Arsenic	Lead
SeSO	SO06	71.7	25.6
SeSO	SO02	16.3	33.6
SeSO	SO03	8.6	28.7
SeSO	SO04	7.7	22.3
SeSO	SO05	9.5	25.8
SeSO	SO01	7.8	15.8
SeSO	SO07	10.7	24.9
SeSO	SO07-D	9.1	21.7
SeSO	SO08	13.2	27.1
SeSO	SO09	12.6	24.1
SeSO	SO10	11.2	19.7
SeSO	SO11	3.3	15.7
SeSO	SO11-D	3.9	17.9
SeSO	SO12	6.4	18.3
SeSO	SO13	12.2	13.8
SeSO	SO14	11.2	20.5
SeSO	SO15	11	22.8
SeSO	SO16	3.9	13.4
SeSO	SO17	5.8	21.5
SeSO	SO18	5.8	19.5
SeSO	SO19	9.2	38
SeSO	SO20	23.5	33.1

Correlation Including SO06

r = 0.2817

Correlation Excluding SO06

r = 0.6011



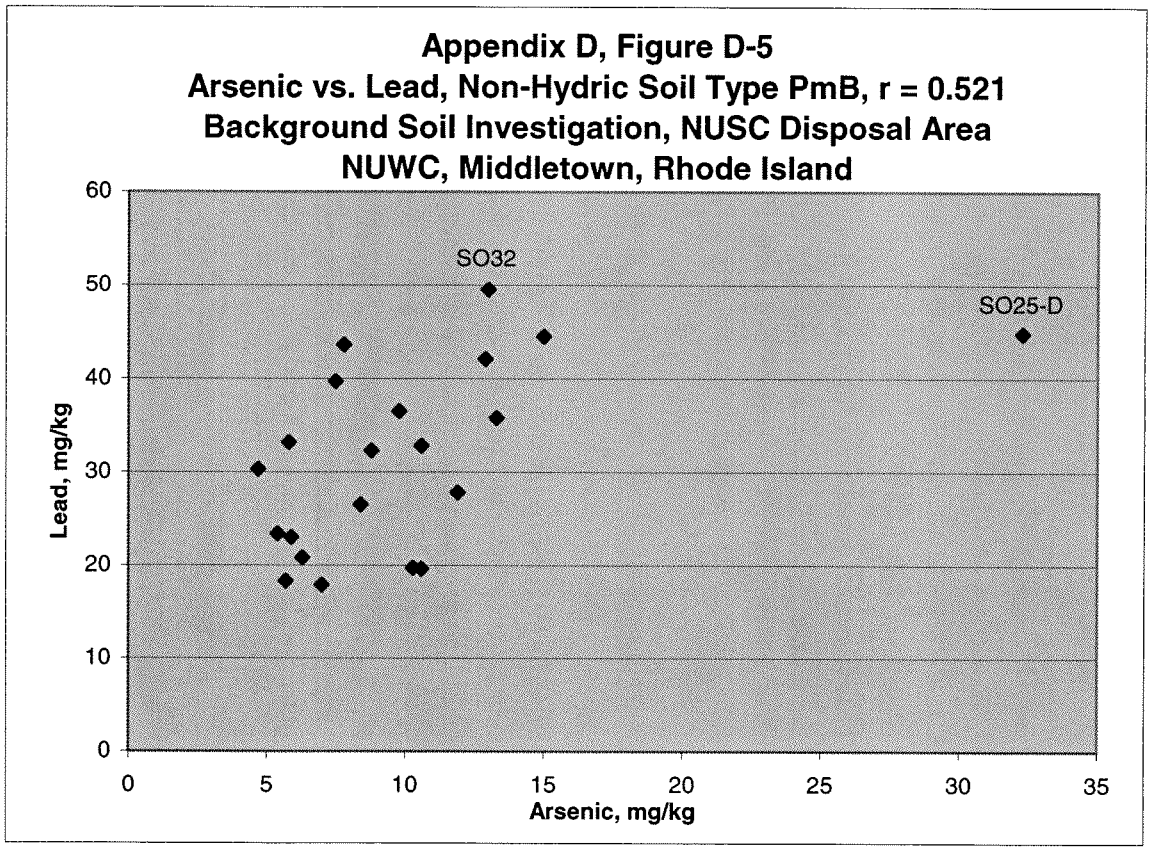
GROUP	Sample	Arsenic Conc.	Lead Conc.
PmSO	SO25-D	32.3	44.8
PmSO	SO22	12.9	42.1
PmSO	SO23	8.8	32.3
PmSO	SO24	11.9	27.8
PmSO	SO25	10.3	19.7
PmSO	SO21	13.3	35.8
PmSO	SO26	15	44.5
PmSO	SO27	7.8	43.6
PmSO	SO28	9.8	36.5
PmSO	SO29	10.6	32.8
PmSO	SO30	8.4	26.5
PmSO	SO31	5.7	18.3
PmSO	SO32	13	49.5
PmSO	SO33	4.7	30.3
PmSO	SO34	5.9	23
PmSO	SO35	7.5	39.7
PmSO	SO36	5.8	33.2
PmSO	SO37	10.6	19.6
PmSO	SO38	5.4	23.4
PmSO	SO39	7	17.9
PmSO	SO40	6.3	20.8

Correlation Including SO25-D

r = 0.5213

Correlation Excluding SO25-D

r = 0.5333



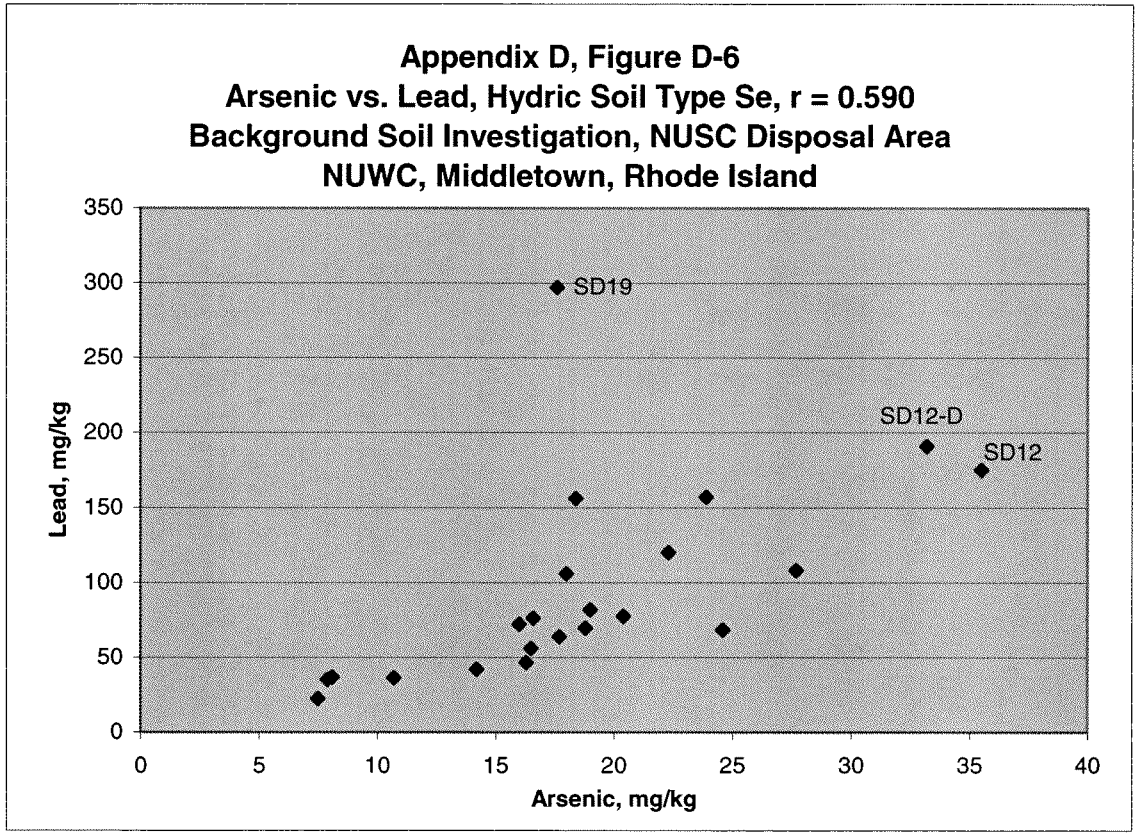
GROUP	Sample	Arsenic Conc.	Lead Conc.
SeSD	SD01	14.2	42.1
SeSD	SD02	7.9	35.3
SeSD	SD03	18.8	69.7
SeSD	SD03-D	20.4	77.5
SeSD	SD04	16.5	55.9
SeSD	SD05	16	72.2
SeSD	SD06	17.7	63.9
SeSD	SD07	16.6	76.3
SeSD	SD08	24.6	68.4
SeSD	SD09	8.1	36.8
SeSD	SD10	18	106
SeSD	SD11	27.7	108
SeSD	SD12	35.5	175
SeSD	SD12-D	33.2	191
SeSD	SD13	23.9	157
SeSD	SD14	16.3	46.5
SeSD	SD15	22.3	120
SeSD	SD16	18.4	156
SeSD	SD17	19	81.8
SeSD	SD18	10.7	36.3
SeSD	SD20	7.5	22.5
SeSD	SD19	17.6	297

Correlation Including SD19

r = 0.5899986

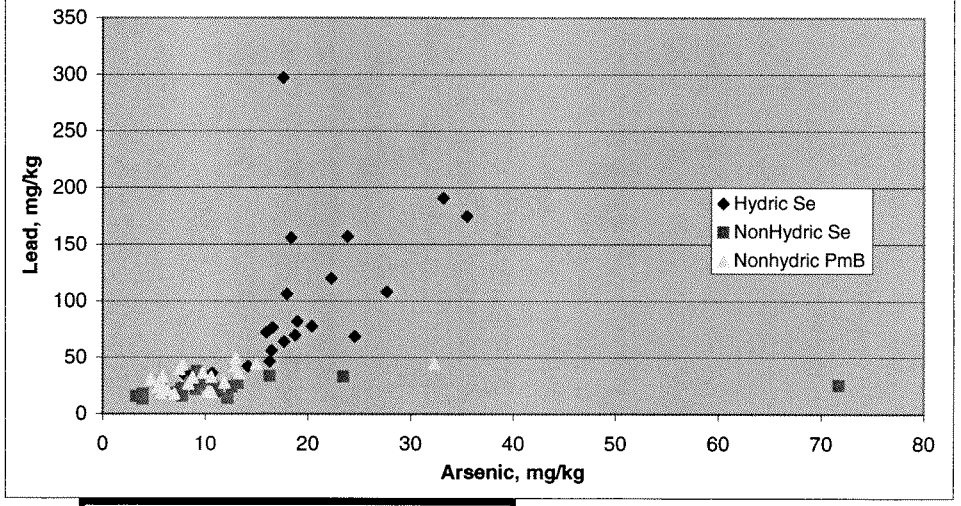
Correlation Excluding SD19

r = 0.84130447



GROUP	Sample	Arsenic Conc.	Lead Conc.
PmSO	SO25-D	32.3	44.8
PmSO	SO22	12.9	42.1
PmSO	SO23	8.8	32.3
PmSO	SO24	11.9	27.8
PmSO	SO25	10.3	19.7
PmSO	SO21	13.3	35.8
PmSO	SO26	15	44.5
PmSO	SO27	7.8	43.6
PmSO	SO28	9.8	36.5
PmSO	SO29	10.6	32.8
PmSO	SO30	8.4	26.5
PmSO	SO31	5.7	18.3
PmSO	SO32	13	49.5
PmSO	SO33	4.7	30.3
PmSO	SO34	5.9	23
PmSO	SO35	7.5	39.7
PmSO	SO36	5.8	33.2
PmSO	SO37	10.6	19.6
PmSO	SO38	5.4	23.4
PmSO	SO39	7	17.9
PmSO	SO40	6.3	20.8
SeSD	SD01	14.2	42.1
SeSD	SD02	7.9	35.3
SeSD	SD03	18.8	69.7
SeSD	SD03-D	20.4	77.5
SeSD	SD04	16.5	55.9
SeSD	SD05	16	72.2
SeSD	SD06	17.7	63.9
SeSD	SD07	16.6	76.3
SeSD	SD08	24.6	68.4
SeSD	SD09	8.1	36.8
SeSD	SD10	18	106
SeSD	SD11	27.7	108
SeSD	SD12	35.5	175
SeSD	SD12-D	33.2	191
SeSD	SD13	23.9	157
SeSD	SD14	16.3	46.5
SeSD	SD15	22.3	120
SeSD	SD16	18.4	156
SeSD	SD17	19	81.8
SeSD	SD18	10.7	36.3
SeSD	SD20	7.5	22.5
SeSD	SD19	17.6	297

Appendix D, Figure D-7
Arsenic vs. Lead, All Soil Types, r = 0.590
Background Soil Investigation, NUSC Disposal Area
NUWC, Middletown, Rhode Island



SeSO	SO06	71.7	25.6
SeSO	SO02	16.3	33.6
SeSO	SO03	8.6	28.7
SeSO	SO04	7.7	22.3
SeSO	SO05	9.5	25.8
SeSO	SO01	7.8	15.8
SeSO	SO07	10.7	24.9
SeSO	SO07-D	9.1	21.7
SeSO	SO08	13.2	27.1
SeSO	SO09	12.6	24.1
SeSO	SO10	11.2	19.7
SeSO	SO11	3.3	15.7
SeSO	SO11-D	3.9	17.9
SeSO	SO12	6.4	18.3
SeSO	SO13	12.2	13.8
SeSO	SO14	11.2	20.5
SeSO	SO15	11	22.8
SeSO	SO16	3.9	13.4
SeSO	SO17	5.8	21.5
SeSO	SO18	5.8	19.5
SeSO	SO19	9.2	38
SeSO	SO20	23.5	33.1

Predicted value for Lead Arsenate (acid form: PbHAsO4)
Lead mg/kg versus Arsenic mg/kg = 207.4 / 74.9

Predicted =	**2.8**	**1:1 Lead : Arsenic**
Observed =	**5.0**	**Hydric Soil**
Observed =	**4.4**	**Hydric Soil without SD19**
Observed =	**2.6**	**nonhydric Se**
Observed =	**2.7**	**nonhydric Se without SO06**
Observed =	**3.5**	**nonhydric PmB**
Observed =	**3.6**	**nonhydric PmB without SO25-D**
Observed =	**16.9**	**Ratio in sample SD19**

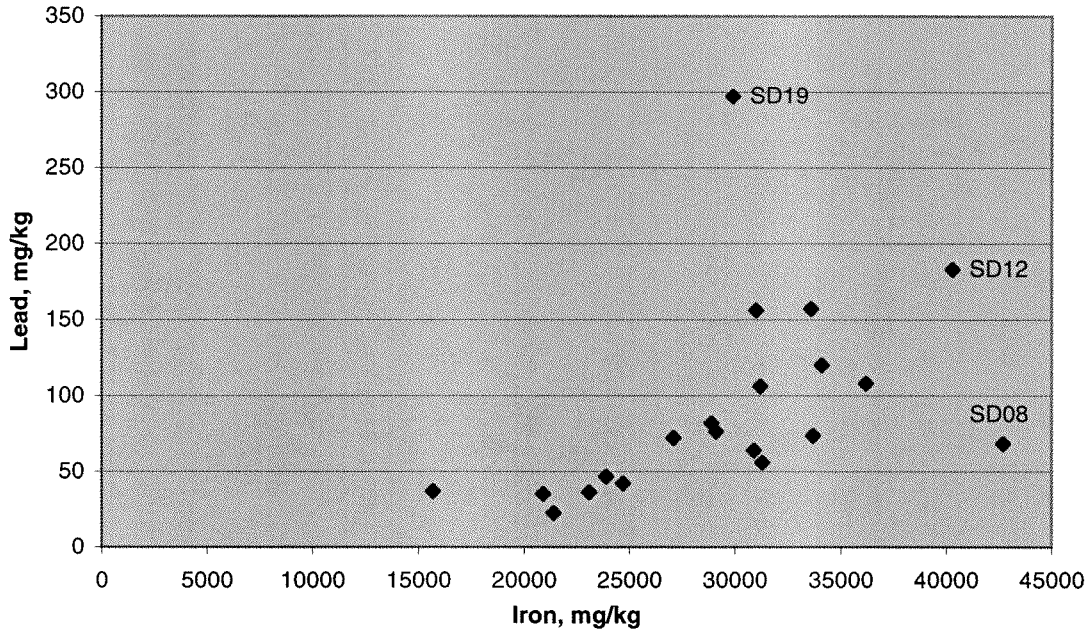
So hydric soil has excess arsenic, which suggests that if a lead arsenate source is upstream of sampling, then more lead than arsenic has migrated and sorbed into creek bed or if creek bed is a source area, then more arsenic has leached away leaving enriched lead behind

Soil Type	Location	Iron	Lead
SeSD	SD01	24700	42.1
SeSD	SD02	20900	35.3
SeSD	SD03	33700	73.6
SeSD	SD04	31300	55.9
SeSD	SD05	27100	72.2
SeSD	SD06	30900	63.9
SeSD	SD07	29100	76.3
SeSD	SD20	21400	22.5
SeSD	SD09	15700	36.8
SeSD	SD10	31200	106
SeSD	SD11	36200	108
SeSD	SD12	40300	183
SeSD	SD13	33600	157
SeSD	SD14	23900	46.5
SeSD	SD15	34100	120
SeSD	SD16	31000	156
SeSD	SD17	28900	81.8
SeSD	SD18	23100	36.3
SeSD	SD08	42700	68.4
SeSD	SD19	29900	297

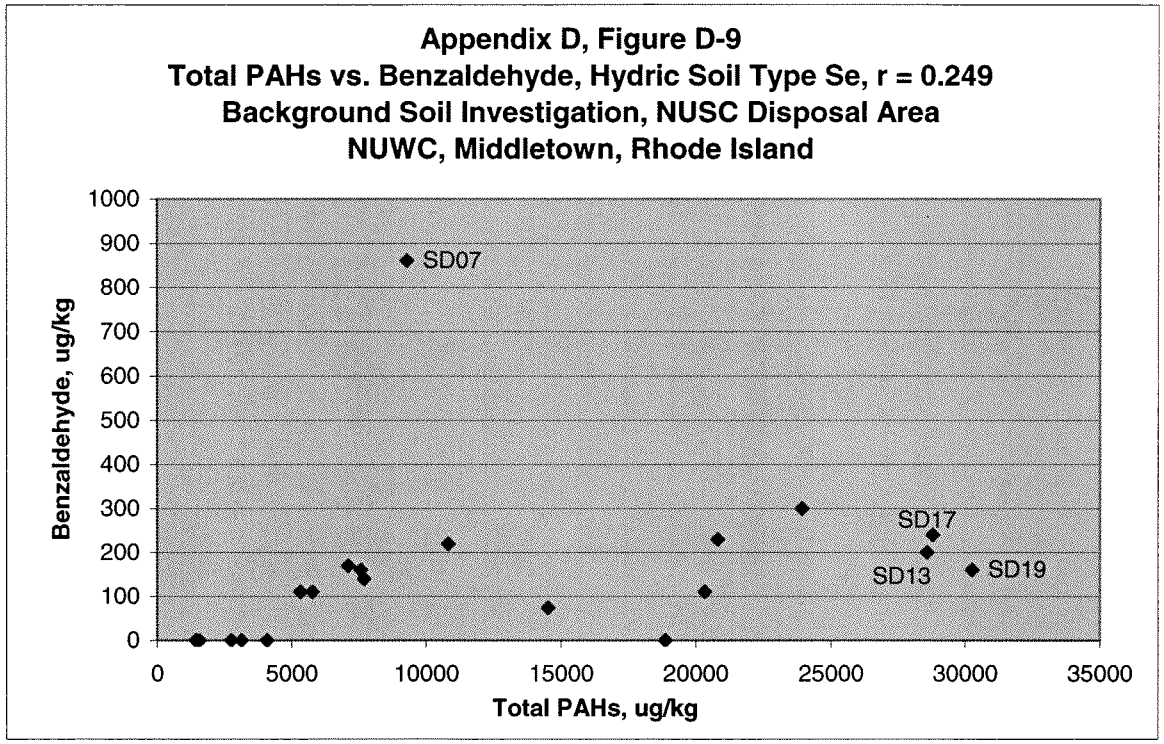
Correlation of Iron vs. Lead
r = 0.473 with SD19 and SD08

Correlation of Iron vs. Lead
r = 0.808 without SD19 or SD08

Appendix D, Figure D-8
Iron vs. Lead, Hydric Soil Type Se, r = 0.473
Background Soil Investigation, NUSC Disposal Area
NUWC, Middletown, Rhode Island



Sample	Benzaldehyde Conc.	Total PAHs Conc.
SD02	0	1443
SD05	0	3137
SD09	0	2760
SD14	0	1571
SD16	0	18879
SD20	0	4098
SD18	74	14527
SD04	110	5779
SD10	110	5341
SD15	110	20341
SD01	140	7687
SD03	160	7578.5
SD19	160	30269
SD06	170	7116
SD13	200	28590
SD11	220	10824
SD12	230	20822
SD17	240	28798
SD08	300	23934
SD07	860	9302



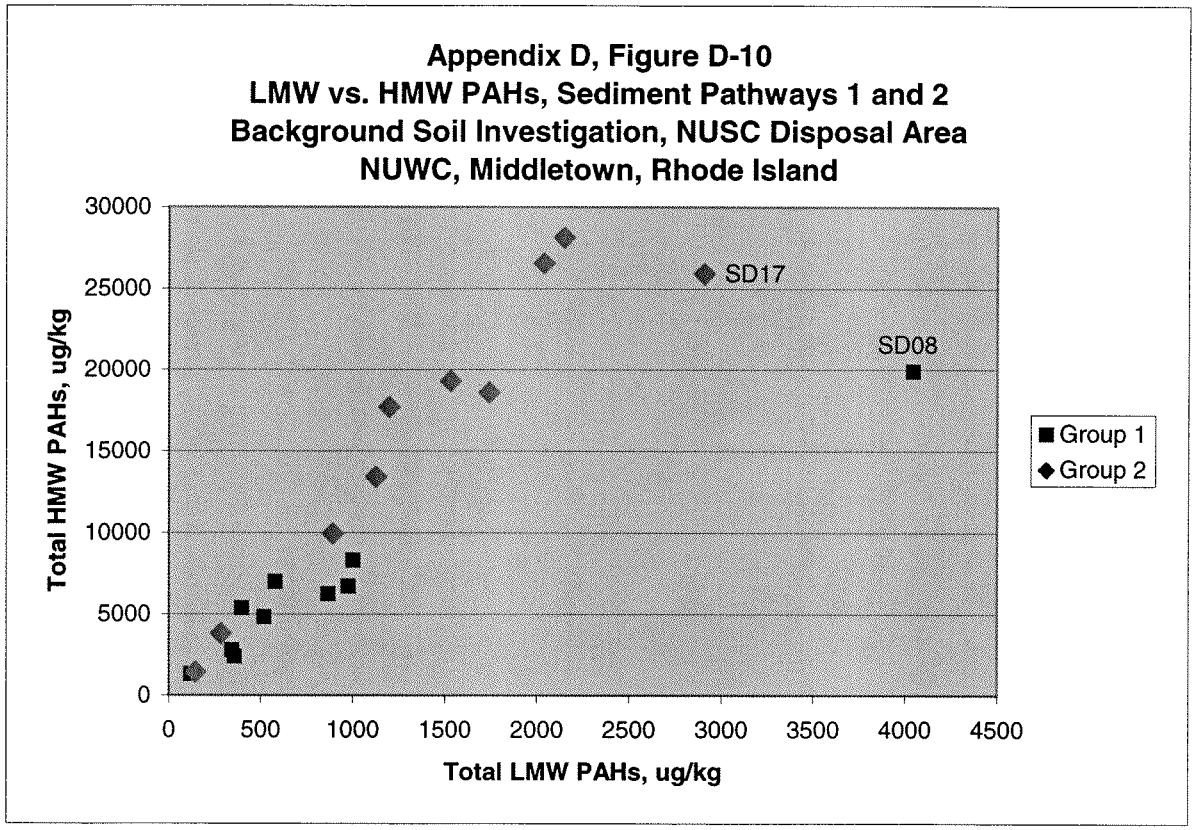
Sample	LMW PAHs Conc.	HMW PAHs Conc.
SD08	4044	19890
SD02	120	1323
SD03	580.5	6998
SD04	398	5381
SD05	344	2793
SD06	867	6249
SD07	1002	8300
SD01	977	6710
SD09	359	2401
SD10	520	4821
SD11	894	9930
SD12	1532	19290
SD13	2040	26550
SD14	147	1424
SD15	1741	18600
SD16	1199	17680
SD17	2908	25890
SD18	1127	13400
SD19	2149	28120
SD20	286	3812

LMW/HMW correlation with SD08
r = 0.834

LMW/HMW correlation without SD08
r = 0.950

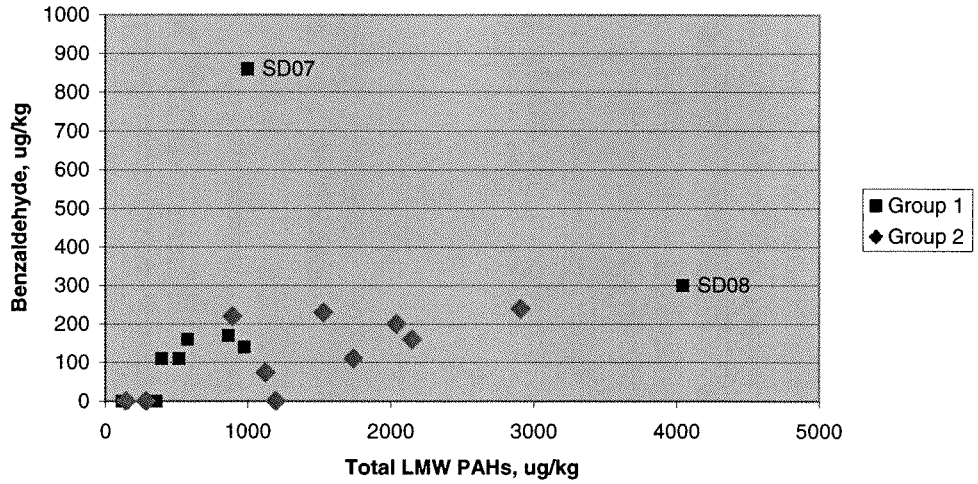
HMW/LMW ratio SD08
4.9

HMW/LMW average ratio
10.6



Sample	Benzaldehyde Conc.	LMW PAHs Conc.	Sediment Group
SD01	140	977	Pathway 1
SD02	0	120	Pathway 1
SD03	160	580.5	Pathway 1
SD04	110	398	Pathway 1
SD05	0	344	Pathway 1
SD06	170	867	Pathway 1
SD07	860	1002	Pathway 1
SD08	300	4044	Pathway 1
SD09	0	359	Pathway 1
SD10	110	520	Pathway 1
SD11	220	894	Pathway 2
SD12	230	1532	Pathway 2
SD13	200	2040	Pathway 2
SD14	0	147	Pathway 2
SD15	110	1741	Pathway 2
SD16	0	1199	Pathway 2
SD17	240	2908	Pathway 2
SD18	74	1127	Pathway 2
SD19	160	2149	Pathway 2
SD20	0	286	Pathway 2

Appendix D, Figure D-11
Benzaldehyde vs. LMW PAHs, Hydric Soil Type Se
Background Soil Investigation, NUSC Disposal Area
NUWC, Middletown, Rhode Island



APPENDIX E

TABULAR STATISTICS AND DISTRIBUTION OF ARSENIC CONCENTRATIONS MEASURED

TABLE E-1
ARSENIC TABULAR STATISTICS FOR HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Analytical Data for Arsenic in Hydric Soil		
Sample ID	**Concentration (mg/kg)**	**Qualifier**
DABK-S-SD20-000.5	7.5	J
DABK-S-SD02-000.5	7.9	J
DABK-S-SD09-000.5	8.1	J
DABK-S-SD18-000.5	10.7	J
DABK-S-SD01-000.5	14.2	J
DABK-S-SD05-000.5	16	J
DABK-S-SD14-000.5	16.3	J
DABK-S-SD04-000.5	16.5	J
DABK-S-SD07-000.5	16.6	J
DABK-S-SD19-000.5	17.6	J
DABK-S-SD06-000.5	17.7	J
DABK-S-SD10-000.5	18	J
DABK-S-SD16-000.5	18.4	J
DABK-S-SD03-000.5	18.8	J
DABK-S-SD17-000.5	19	J
DABK-S-SD03-000.5-D	20.4	J
DABK-S-SD15-000.5	22.3	J
DABK-S-SD13-000.5	23.9	J
DABK-S-SD08-000.5	24.6	J
DABK-S-SD11-000.5	27.7	J
DABK-S-SD12-000.5-D	33.2	J
DABK-S-SD12-000.5	35.5	J

Descriptive Statistics for Arsenic in Hydric Soil										
Frequency of Detection	**Mean of All Data (mg/kg)**	**Absolute Range of Positive Detections***		**Location of Maximum**	**Interquartile Range (Detects)**	**Standard Deviation**	**Variance**	**Skewness**	**Kurtosis**	**Geometric Mean**
		Minimum	**Maximum**							
20/20	17.8	7.5	35.5	DABK-S-SD12-000.5	6.9	6.69	42.5	0.513	0.801	16.6

*Absolute range of positive detections considers duplicate samples as individual data points. All other statistics on this page use the average of duplicates.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two for descriptive statistics and the W-test.
Skewness is a measure of asymmetry of the data distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis measures sharpness of the central peak of the data as a positive or negative value, compared to the sharpness of a normal distribution.

Range and Distribution of Quantiles for Arsenic Non-Detected Results in Hydric Soil										
Minimum Detection Limit	**Min. to 25 %**		**25% to 50%**		**50% to 75%**		**75% to 95%**		**95% to Max**	
	No. of Points In Interval	**25% Quantile**	**No. of Points In Interval**	**50% Quantile**	**No. of Points In Interval**	**75% Quantile**	**No. of Points In Interval**	**95% Quantile**	**No. of Points In Interval**	**Max. D.L.**
--	--	--	--	--	--	--	--	--	--	--

Range and Distribution of Quantiles for Arsenic Positive Results in Hydric Soil										
Minimum Positive Value	**Min. to 25 %**		**25% to 50%**		**50% to 75%**		**75% to 95%**		**95% to Max**	
	No. of Points In Interval	**25% Quantile**	**No. of Points In Interval**	**50% Quantile**	**No. of Points In Interval**	**75% Quantile**	**No. of Points In Interval**	**95% Quantile**	**No. of Points In Interval**	**Max. Positive**
7.5	5	14.7	5	17.7	5	21.6	4	34	1	34.35

Number of points in interval refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.

Best Fit Distributional Analysis of Arsenic Data for Hydric Soil				
Number of Sample Results	**Statistical Distribution of Data Set**	**Results of Shapiro-Wilk Test for Distributional Shape**		
		W-Score - Normal	**W-Score - Lognormal**	**Critical Value**
20	normal	0.9453	0.9218	0.905

The W-scores calculated for both lognormal and normal distributions were > Critical Value, but the normal distribution matched better.

Dixon's Outlier Test - Largest Value, Hydric Soil Arsenic Data								
1st Test Y/N ?	**Maximum Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-1 Points**	**W-Test Score**	**W-Test Critical Value**	Conclusions:
N	34.35	--	0.371	0.45				The largest value is not an outlier. C < C-critical.

Dixon's Outlier Test, Second Rank Value, Hydric Soil Arsenic Data								
2nd Test Y/N ?	**Second Rank Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-2 Points**	**W-Test Score**	**W-Test Critical Value**	Conclusions:
N	27.7	--	0.194	0.462				Second rank value is not an outlier. C < C-critical.

Dixon's Outlier Test, Third Rank Value, Hydric Soil Arsenic Data								
3rd Test Y/N ?	**Third Rank Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-3 Points**	**W-Test Score**	**W-Test Critical Value**	Conclusions:
N	24.6	--	0.139	0.475				Third rank value is not an outlier. C < C-critical.

Dixon's Outlier Test compares the largest concentration (or the second or third ranked) data point to the remaining values. The test is performed 3 times.
The outlier test asks, "Is the Nth largest value in the data set a possible outlier?", and may be true if the sample "C" statistic exceeds the critical value.
The test was applied if the remaining data matched a normal distribution by the W-test, have < 50 % non-detects, and the candidate outlier is positive.
If a lower ranked value is a potential outlier, then the larger values are automatically considered potential outliers.

TABLE E-2
ARSENIC TABULAR STATISTICS FOR NON-HYDRIC SOIL TYPE Se
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Analytical Data for Arsenic in Non-Hydric Se Soil		
Sample ID	**Concentration (mg/kg)**	**Qualifier**
DABK-S-SO11-0001	3.3	J
DABK-S-SO11-0001-D	3.9	UJ
DABK-S-SO16-0001	3.9	J
DABK-S-SO17-0001	5.8	J
DABK-S-SO18-0001	5.8	J
DABK-S-SO12-0001	6.4	J
DABK-S-SO04-0001	7.7	J
DABK-S-SO01-0001	7.8	J
DABK-S-SO03-0001	8.6	J
DABK-S-SO07-0001-D	9.1	J
DABK-S-SO19-0001	9.2	J
DABK-S-SO05-0001	9.5	J
DABK-S-SO07-0001	10.7	J
DABK-S-SO15-0001	11	J
DABK-S-SO10-0001	11.2	J
DABK-S-SO14-0001	11.2	J
DABK-S-SO13-0001	12.2	J
DABK-S-SO09-0001	12.6	J
DABK-S-SO08-0001	13.2	J
DABK-S-SO02-0001	16.3	J
DABK-S-SO20-0001	23.5	J
DABK-S-SO06-0001	71.7	J

Descriptive Statistics for Arsenic in Non-Hydric Se Soil										
Frequency of Detection	**Mean of All Data (mg/kg)**	**Absolute Range of Positive Detections***		**Location of Maximum**	**Interquartile Range (Detects)**	**Standard Deviation**	**Variance**	**Skewness**	**Kurtosis**	**Geometric Mean**
		Minimum	**Maximum**							
20/20	13	3.3	71.7	DABK-S-SO06-0001	5.77	14.6	201	3.790	15.614	9.9

*Absolute range of positive detections considers duplicate samples as individual data points. All other statistics on this page use the average of duplicates.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two for descriptive statistics and the W-test.
Skewness is a measure of asymmetry of the data distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis measures sharpness of the central peak of the data as a positive or negative value, compared to the sharpness of a normal distribution.

Range and Distribution of Quantiles for Arsenic Non-Detected Results in Non-Hydric Se Soil										
Minimum Detection Limit	**Min. to 25 %**		**25% to 50%**		**50% to 75%**		**75% to 95%**		**95% to Max**	
	No. of Points In Interval	**25% Quantile**	**No. of Points In Interval**	**50% Quantile**	**No. of Points In Interval**	**75% Quantile**	**No. of Points In Interval**	**95% Quantile**	**No. of Points In Interval**	**Max. D.L.**
--	--	--	--	--	--	--	--	--	--	--

Range and Distribution of Quantiles for Arsenic Positive Results in Non-Hydric Se Soil										
Minimum Positive Value	**Min. to 25 %**		**25% to 50%**		**50% to 75%**		**75% to 95%**		**95% to Max**	
	No. of Points In Interval	**25% Quantile**	**No. of Points In Interval**	**50% Quantile**	**No. of Points In Interval**	**75% Quantile**	**No. of Points In Interval**	**95% Quantile**	**No. of Points In Interval**	**Max. Positive**
2.63	5	6.73	5	9.7	5	12.5	4	69.3	1	71.7

Number of points in interval refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.

Best Fit Distributional Analysis of Arsenic Data for Non-Hydric Se Soil				
Number of Sample Results	**Statistical Distribution of Data Set**	**Results of Shapiro-Wilk Test for Distributional Shape**		
		W-Score - Normal	**W-Score - Lognormal**	**Critical Value**
20	lognormal	0.5162	0.9162	0.905

The W-score calculated for the lognormal distribution was > Critical Value, which indicates acceptable match to a lognormal distribution.

Dixon's Outlier Test - Largest Value, Non-Hydric Se Soil Arsenic Data								
1st Test Y/N ?	**Maximum Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-1 Points**	**W-Test Score**	**W-Test Critical Value**	Conclusions: Normality assumed. C > C-critical.
Y	71.7	DABK-S-SO06-0001	0.841	0.45	Lognormal better fit than normal	0.963	0.901	The largest value is a candidate outlier, and scientific.or judmental evaluation should be applied to evaluate whether to retain or discard.

Dixon's Outlier Test, Second Rank Value, Non-Hydric Se Soil Arsenic Data								
2nd Test Y/N ?	**Second Rank Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-2 Points**	**W-Test Score**	**W-Test Critical Value**	Conclusions: Normality assumed. C > C-critical.
Y	23.5	DABK-S-SO20-0001	0.582	0.462	Normal better fit than lognormal	0.989	0.897	The second rank value is a candidate outlier, and scientific.or judgmental evaluation should be applied to evaluate whether to retain or discard.

Dixon's Outlier Test, Third Rank Value, Non-Hydric Se Soil Arsenic Data								
3rd Test Y/N ?	**Third Rank Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-3 Points**	**W-Test Score**	**W-Test Critical Value**	Conclusions:
N	16.3		0.352	0.475				Third rank value is not an outlier. C < C-critical.

Dixon's Outlier Test compares the largest concentration (or the second or third ranked) data point to the remaining values. The test is performed 3 times.
The outlier test asks, "Is the Nth largest value in the data set a possible outlier?", and may be true if the sample "C" statistic exceeds the critical value.
The test was applied if the remaining data matched a normal distribution by the W-test, have < 50 % non-detects, and the candidate outlier is positive.
If a lower ranked value is a potential outlier, then the larger values are automatically considered potential outliers.

TABLE E-3
ARSENIC TABULAR STATISTICS FOR NON-HYDRIC SOIL TYPE PmB
NUSC DISPOSAL AREA
NUWC, MIDDLETOWN, RHODE ISLAND

Analytical Data for Arsenic in Non-Hydric PmB Soil		
Sample ID	**Concentration (mg/kg)**	**Qualifier**
DABK-S-SO33-0001	4.7	J
DABK-S-SO38-0001	5.4	J
DABK-S-SO31-0001	5.7	J
DABK-S-SO36-0001	5.8	J
DABK-S-SO34-0001	5.9	J
DABK-S-SO40-0001	6.3	J
DABK-S-SO39-0001	7	J
DABK-S-SO35-0001	7.5	J
DABK-S-SO27-0001	7.8	J
DABK-S-SO30-0001	8.4	J
DABK-S-SO23-0001	8.8	J
DABK-S-SO28-0001	9.8	J
DABK-S-SO25-0001	10.3	J
DABK-S-SO29-0001	10.6	J
DABK-S-SO37-0001	10.6	J
DABK-S-SO24-0001	11.9	J
DABK-S-SO22-0001	12.9	J
DABK-S-SO32-0001	13	J
DABK-S-SO21-0001	13.3	J
DABK-S-SO26-0001	15	J
DABK-S-SO25-0001-D	32.3	J
DABK-S-SO35-0001-D	--	R

The R qualifier indicates rejected data that are not used for any statistics or calculations.

Descriptive Statistics for Arsenic in Non-Hydric PmB Soil										
Frequency of Detection	**Mean of All Data (mg/kg)**	**Absolute Range of Positive Detections***		**Location of Maximum**	**Interquartile Range (Detects)**	**Standard Deviation**	**Variance**	**Skewness**	**Kurtosis**	**Geometric Mean**
		Minimum	**Maximum**							
20/20	9.59	4.7	32.3	DABK-S-SO25-0001-D	6.7	4.12	16.1	1.246	1.963	8.9

*Absolute range of positive detections considers duplicate samples as individual data points. All other statistics on this page use the average of duplicates.
Mean of all data includes positive detections and non-detected results. Detection limits are divided by two for descriptive statistics and the W-test.
Skewness is a measure of asymmetry of the data distribution. 0 indicates perfect symmetry. Positive or negative values indicate asymmetry.
Kurtosis measures sharpness of the central peak of the data as a positive or negative value, compared to the sharpness of a normal distribution.

Range and Distribution of Quantiles for Arsenic Non-Detected Results in Non-Hydric PmB Soil										
Minimum Detection Limit	**Min. to 25 %**		**25% to 50%**		**50% to 75%**		**75% to 95%**		**95% to Max**	
	No. of Points In Interval	**25% Quantile**	**No. of Points In Interval**	**50% Quantile**	**No. of Points In Interval**	**75% Quantile**	**No. of Points In Interval**	**95% Quantile**	**No. of Points In Interval**	**Max. D.L.**
--	--	--	--	--	--	--	--	--	--	--

Range and Distribution of Quantiles for Arsenic Positive Results in Non-Hydric PmB Soil										
Minimum Positive Value	**Min. to 25 %**		**25% to 50%**		**50% to 75%**		**75% to 95%**		**95% to Max**	
	No. of Points In Interval	**25% Quantile**	**No. of Points In Interval**	**50% Quantile**	**No. of Points In Interval**	**75% Quantile**	**No. of Points In Interval**	**95% Quantile**	**No. of Points In Interval**	**Max. Positive**
4.7	5	6	5	8.6	5	12.7	4	21	1	21.3

Number of points in interval refers to the number of samples with concentrations in a range bracketed by the quantile to the left and the quantile to the right.

Best Fit Distributional Analysis of Arsenic Data for Non-Hydric PmB Soil				
Number of Sample Results	**Statistical Distribution of Data Set**	**Results of Shapiro-Wilk Test for Distributional Shape**		
		W-Score - Normal	**W-Score - Lognormal**	**Critical Value**
20	lognormal	0.8978	0.9677	0.905

The W-score calculated for the lognormal distribution was > Critical Value, which indicates acceptable match to a lognormal distribution.

Dixon's Outlier Test - Largest Value, Non-Hydric PmB Soil Arsenic Data							
1st Test Y/N ?	**Maximum Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-1 Points**	**W-Test Score**	**W-Test Critical Value**
Y	21.3	DABK-S-SO25-0001	0.513	0.45	Lognormal better fit than normal	0.951	0.901

Conclusions: Normality assumed. C > C-critical. The largest value is a candidate outlier, and scientific.or judmental evaluation should be applied to evaluate whether to retain or discard.

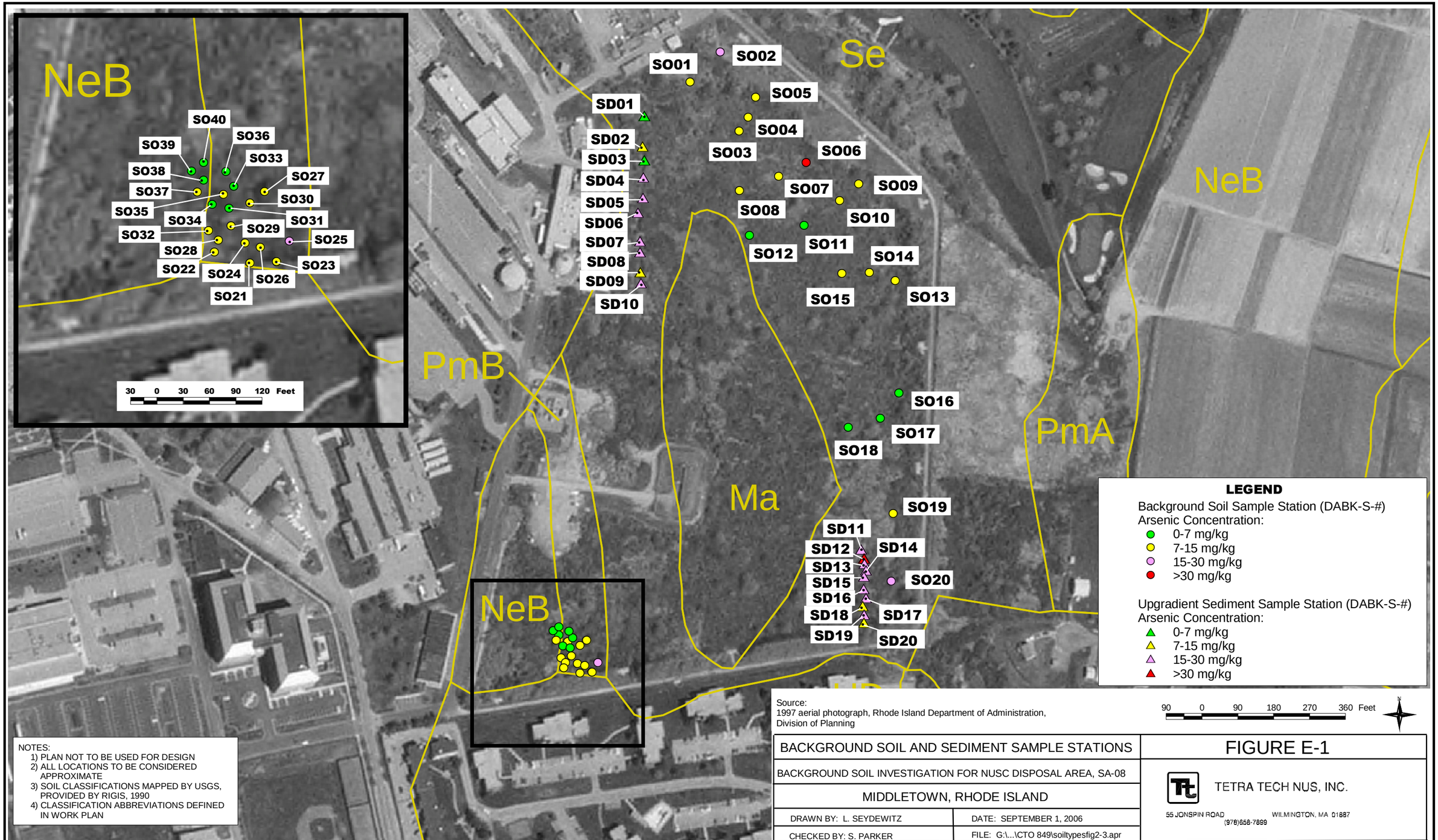
Dixon's Outlier Test, Second Rank Value, Non-Hydric PmB Soil Arsenic Data							
2nd Test Y/N ?	**Second Rank Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-2 Points**	**W-Test Score**	**W-Test Critical Value**
N	15		0.215	0.462			

Conclusions:
Second rank value is not an outlier. C < C-critical.

Dixon's Outlier Test, Third Rank Value, Non-Hydric PmB Soil Arsenic Data							
3rd Test Y/N ?	**Third Rank Value**	**Sample ID**	**Sample "C" Statistic**	**Critical "C" Value**	**Distribution of n-3 Points**	**W-Test Score**	**W-Test Critical Value**
N	13.3		0.053	0.475			

Conclusions:
Third rank value is not an outlier. C < C-critical.

Dixon's Outlier Test compares the largest concentration (or the second or third ranked) data point to the remaining values. The test is performed 3 times.
The outlier test asks, "Is the Nth largest value in the data set a possible outlier?", and may be true if the sample "C" statistic exceeds the critical value.
The test was applied if the remaining data matched a normal distribution by the W-test, have < 50 % non-detects, and the candidate outlier is positive.
If a lower ranked value is a potential outlier, then the larger values are automatically considered potential outliers.



NOTES:
1) PLAN NOT TO BE USED FOR DESIGN
2) ALL LOCATIONS TO BE CONSIDERED APPROXIMATE
3) SOIL CLASSIFICATIONS MAPPED BY USGS, PROVIDED BY RIGIS, 1990
4) CLASSIFICATION ABBREVIATIONS DEFINED IN WORK PLAN

Source:
1997 aerial photograph, Rhode Island Department of Administration, Division of Planning

BACKGROUND SOIL AND SEDIMENT SAMPLE STATIONS	FIGURE E-1
BACKGROUND SOIL INVESTIGATION FOR NUSC DISPOSAL AREA, SA-08	TETRA TECH NUS, INC.
MIDDLETOWN, RHODE ISLAND	55 JONSPIN ROAD WILMINGTON, MA 01887 (978)658-7899
DRAWN BY: L. SEYDEWITZ / DATE: SEPTEMBER 1, 2006	
CHECKED BY: S. PARKER / FILE: G:\...\CTO 849\soiltypesfig2-3.apr	