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SITE INSPECTION REPORT FOR MUNITIONS RESPONSE PROGRAM SITE TOPSHAM ANNEX SKEET RANGE NAS BRUNSWICK ME

2/1/2012

TETRA TECH

Site Inspection Report
for
Munitions Response Program Site

Topsham Annex Skeet Range

Topsham, Maine

Naval Facilities Engineering Command
Mid-Atlantic

Contract Number N62472-03-D-0057
Contract Task Order 69

February 2012

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SITE INSPECTION REPORT
FOR
MUNITIONS RESPONSE PROGRAM SITE

TOPSHAM ANNEX SKEET RANGE

TOPSHAM, MAINE

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
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CERTIFICATION

By affixing my seal to the "*Site Inspection Report for Munitions Response Program Site, Topsham Annex Skeet Range, Topsham, Maine,*" prepared by Tetra Tech and dated February 2012, I am certifying that the geologic information and interpretations herein are true and correct to the best of my knowledge. I further certify that I am licensed to practice in the State of Maine and that it is within my professional expertise to verify the correctness of the information.

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ACRONYMS

AOC	Area of Concern
°C	degrees Celsius
CEC	cation exchange capacity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
COPC	chemical of potential concern
CSM	Conceptual Site Model
CTO	Contract Task Order
DERP	Defense Environmental Restoration Program
DI	deionized
DNT	dinitrotoluene
DO	dissolved oxygen
DoD	Department of Defense
DoN	Department of Navy
DQI	data quality indicator
EPA	Environmental Protection Agency
EPC	exposure point concentration
°F	degrees Fahrenheit
FBL	fixed-base laboratory
FOL	Field Operations Leader
FY	Fiscal Year
gpm	gallon per minute
GPS	Global Positioning System
HASP	Health and Safety Plan
HHRSE	Human Health Risk Screening Evaluation
HI	hazard index
HQ	hazard quotient
IDW	investigation-derived waste
ILCR	incremental lifetime cancer risk
INRMP	Integrated Natural Resources Management Plan
LCS	laboratory control sample
MC	Munitions Constituents
MDL	method detection limit

MEC	Munitions and Explosives of Concern
MEDEP	Maine Department of Environmental Protection
MGBR	Machine Gun Boresight Range
mg/kg	milligram per kilogram
MRP	Munitions Response Program
MRS	Munitions Response Site
MS	matrix spike
MSAD	Maine School Administration District
msl	mean sea level
NAD	North American Datum
NASB	Naval Air Station Brunswick
NAVD	North American Vertical Datum
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFESC	Naval Facilities Engineering Service Center
NG	nitroglycerin
NIST	National Institute of Standards and Technology
OPPTS	Office of Prevention, Pesticides, and Toxic Substances
ORP	oxidation-reduction potential
OSWER	Office of Solid Waste and Emergency Response
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PAL	Project Action Limit
Ppt	part per thousand
PQLG	project quantitation limit goal
QA	quality assurance
QC	quality control
%R	Percent Recovery
RAG	Remedial Action Guidelines
RI	Remedial Investigation
RPD	Relative Percent Difference
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SDZ	surface danger zone
SI	Site Inspection
SKT	Skeet Range

SL	Screening Level
SOP	Standard Operating Procedure
TAL	Target Analyte List
TASKT	Topsham Annex Skeet Range
TOC	total organic carbon
UCL	upper confidence limit
UFP	Uniform Federal Policy
µg/kg	microgram per kilogram
µg/L	microgram per liter
UPL	upper prediction limit
USACE	United States Army Corps of Engineers
U.S.C	United States Code
USDA-SCS	United States Department of Agriculture, Soil Conservation Service
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
XRF	x-ray fluorescence

EXECUTIVE SUMMARY

This report describes Site Inspection (SI) activities performed to assess Munitions Constituents (MC) at one Munitions Response Site (MRS) under the Munitions Response Program (MRP) associated with the Former Naval Air Station Brunswick (NASB) Cumberland County, Maine: Topsham Annex Skeet Range (TASKT) Sagadahoc County, Maine.

Field activities included MC sampling and analysis of shallow and deep surface soil, sediment, and surface water samples. Tetra Tech personnel mobilized to TASKT in summer 2009 to initiate the MC investigation. Several field events were required due to various delays (e.g., consensus on fixed-base sampling locations, TASKT property access agreement, winter weather, and a supplemental sampling event). Personnel demobilized in spring 2010 and winter 2010 after completion of SI and supplemental sampling activities. This work was performed by Tetra Tech under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057, Contract Task Order (CTO) 69.

This document addresses the MC activities associated with the SI. Following MC sample collection and analysis, data management, including data validation and database management, was conducted.

The MC SI work is based on Department of Defense (DoD) and United States Environmental Protection Agency (USEPA) guidance for performing response actions at military ranges (2000), Navy Munitions Response Program Guidance (2005), Defense Environmental Restoration Program (DERP) Management Guidance (2001), USEPA Guidance for Performing Site Inspections (1992), and applicable United States Army Corps of Engineers (USACE) guidance on ordnance and explosive response actions (USACE, 2002, 2003a through f, and 2004).

Shallow and Deep Surface Soil

No lead shot or lead shot fragments were observed. For shallow surface soil (0 to 3 inches bgs), a total of eight chemicals (arsenic, lead, and the following PAHs - benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected at concentrations exceeding both Maine Department of Environmental Protection (MEDEP) criteria and USEPA Regional Screening Levels (RSLs). Cobalt and iron were the only analytes exceeding both MEDEP criteria and USEPA RSLs in the deep surface soil (3 to 12 inches bgs). Note that the PAHs benzo(a)pyrene and benzo(b)fluoranthene exceed MEDEP criteria at the off site sampling

location (SS01) collected for comparison purposes. Furthermore, PAH concentrations in this off site soil sample were greater than those detected in the majority of the samples collected from the shortfall zone, but off site soil PAH concentrations were much less than in samples collected at the firing line.

Sediment

For sediment, arsenic, barium, beryllium, cobalt, iron, lead, manganese, nickel, selenium, and vanadium were detected at concentrations greater than PALs.

Surface Water

For surface water, barium, manganese and PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected at concentrations greater than PALs.

Recommendations

Shallow surface soil (0 to 3 inches bgs) warrants remediation, further investigation is also necessary to refine the extent of the contamination. Cleanup levels need to be established. Remediation is not warranted for deep surface soil (3 to 12 inches bgs) or for surface water or sediment associated with the intermittent stream.

1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

This report describes Site Inspection (SI) activities performed to assess Munitions Constituents (MC) at one Munitions Response Site (MRS) under the Munitions Response Program (MRP) associated with the Former Naval Air Station Brunswick (NASB) Cumberland County, Maine (Figure 1-1), Topsham Annex Skeet Range (TASKT), Sagadahoc County, Maine (Figure 1-2).

Field activities included MC sampling and analysis of surface soil, sediment, and surface water samples. SI field activities at TASKT were conducted concurrently with SI field activities at the Machine Gun Boresight Range (MGBR) and the Skeet Range (SKT), to be provided as separate reports. This work was performed by Tetra Tech under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057, Contract Task Order (CTO) 69.

1.2 SCOPE OF WORK

This document addresses the MC activities associated with the SI. The following MC sample collection and analysis, data management, including data validation and database management, was conducted in accordance with the Site Inspection (SI) Work Plan Munitions Constituents at Three Munitions Response Sites (Tetra Tech, 2009) and the Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan (Tetra Tech, 2010).

The MC SI work is based on Department of Defense (DoD) and United States Environmental Protection Agency (USEPA) guidance for performing response actions at military ranges (2000), Navy Munitions Response Program Guidance (2005), Defense Environmental Restoration Program (DERP) Management Guidance (2001), USEPA Guidance for Performing Site Inspections (1992), and applicable United States Army Corps of Engineers (USACE) guidance on ordnance and explosive response actions (USACE, 2003a through f, and 2004).

<u>Topsham Annex Skeet Range</u>

TASKT is located in the northern portion of the Topsham Annex along the Navy property line and east of the Mt. Ararat Middle School athletic field. The former 29-acre area was used during the Air Force's use of Topsham Annex prior to the 1970s. The surface danger zone (SDZ) of a skeet range was a 900-foot radius from the shooting field. Based on the visual survey during the Preliminary Assessment (PA)

conducted by Malcolm Pirnie (Malcolm Pirnie, 2005) and historical layout, it appears that the direction of fire was toward the north. The majority (27 acres) of the SDZ extends off base to the north onto private property and land transferred to the Maine School Administration District (MSAD) No. 75. No structures remain at the site, but clay target fragments were identified during the visual survey. The primary potential constituents of concern at TASKT were lead from shot and polynuclear aromatic hydrocarbons (PAHs) from clay targets. Other MC that were less of a concern included antimony, arsenic, nickel, lead azide, propellants, and plasticizers. The MC investigation at TASKT included shallow and deep surface soil, sediment, and surface water sampling.

1.3 OBJECTIVES

The objective of the SI described was to conduct an on-site investigation and gather sufficient data to determine the presence or absence of MC that may remain from activities conducted by the DoD during site operation and that may subsequently pose a threat to human health and/or the environment (Tetra Tech, 2009). Under the MRP, the primary goal of the SI is to collect the appropriate amount of information necessary to make one of the following decisions: 1) whether a Remedial Investigation (RI) is required at a site; 2) whether an immediate response is needed; or 3) whether the site qualifies for no further action (NFA). Based on the results of the SI, recommendations establishing the path forward considering MC concerns for the MRS were developed, as applicable.

1.4 REPORT ORGANIZATION

The following information is contained in this document:

- Section 1.0 discusses the purpose of the report, presents a brief MRS description and SI scope information, and summarizes the objectives of the SI.
- Section 2.0 discusses the site background and physical setting.
- Section 3.0 discusses the general MC SI methodology.
- Section 4.0 discusses the TASKT.
- Section 5.0 presents the references used in preparation of this document.

The following appendices are included in this report and provide technical information compiled during the SI:

- Appendix A: Project Personnel Sign-Off Sheet
- Appendix B: Photographic Log

- Appendix C: MC Field Documentation
- Appendix D: Validated Analytical Results
- Appendix E: MC Data Usability Assessment
- Appendix F: X-Ray Fluorescence/Fixed-Base Laboratory Correlation Statistical Evaluation
- Appendix G: Project Action Limits Screening Supporting Documentation and Environmental Assessment Information
- Appendix H: Responses to Stakeholder Comments on Draft Version of SI Report

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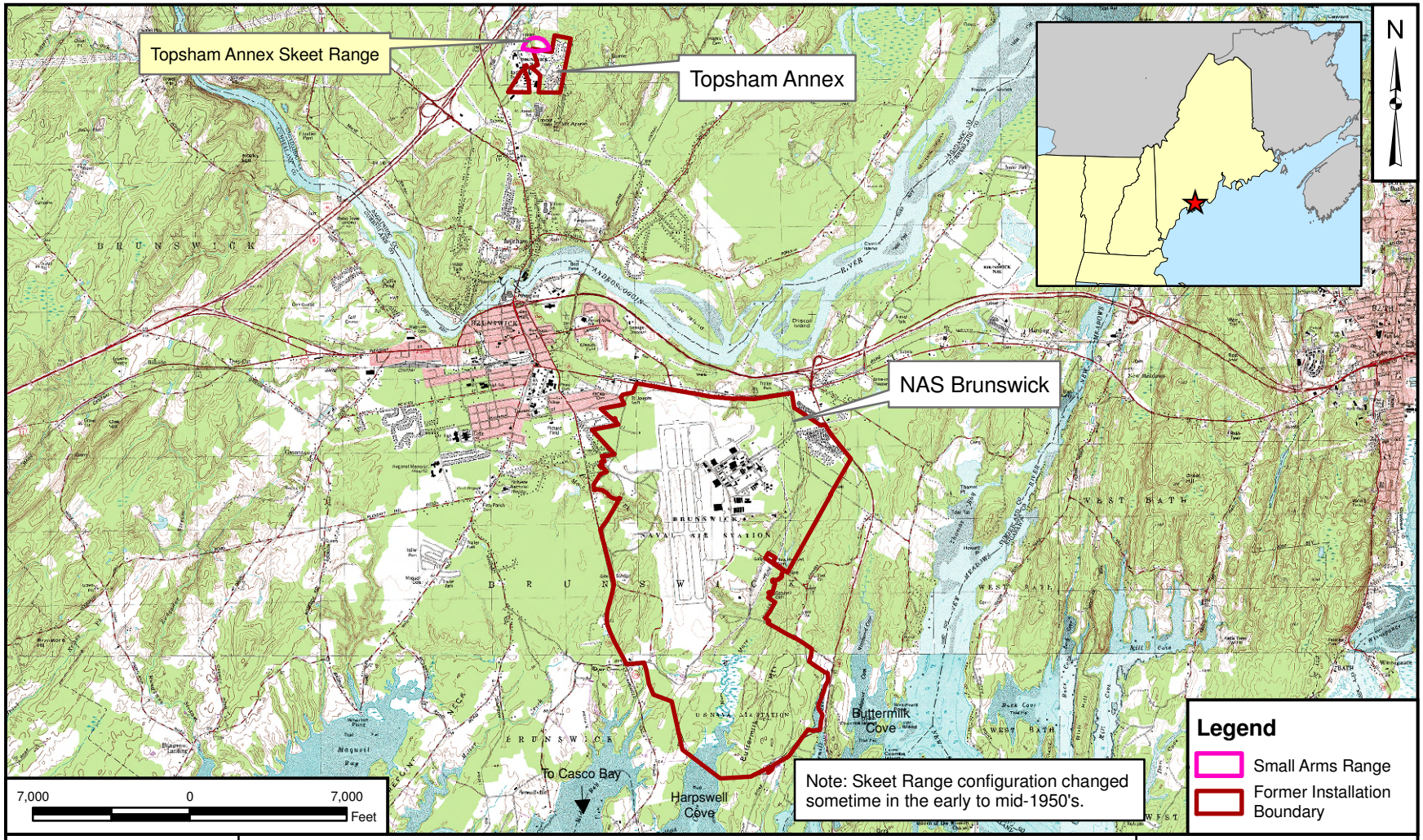

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S. STROZ	6/22/11		___ / ___
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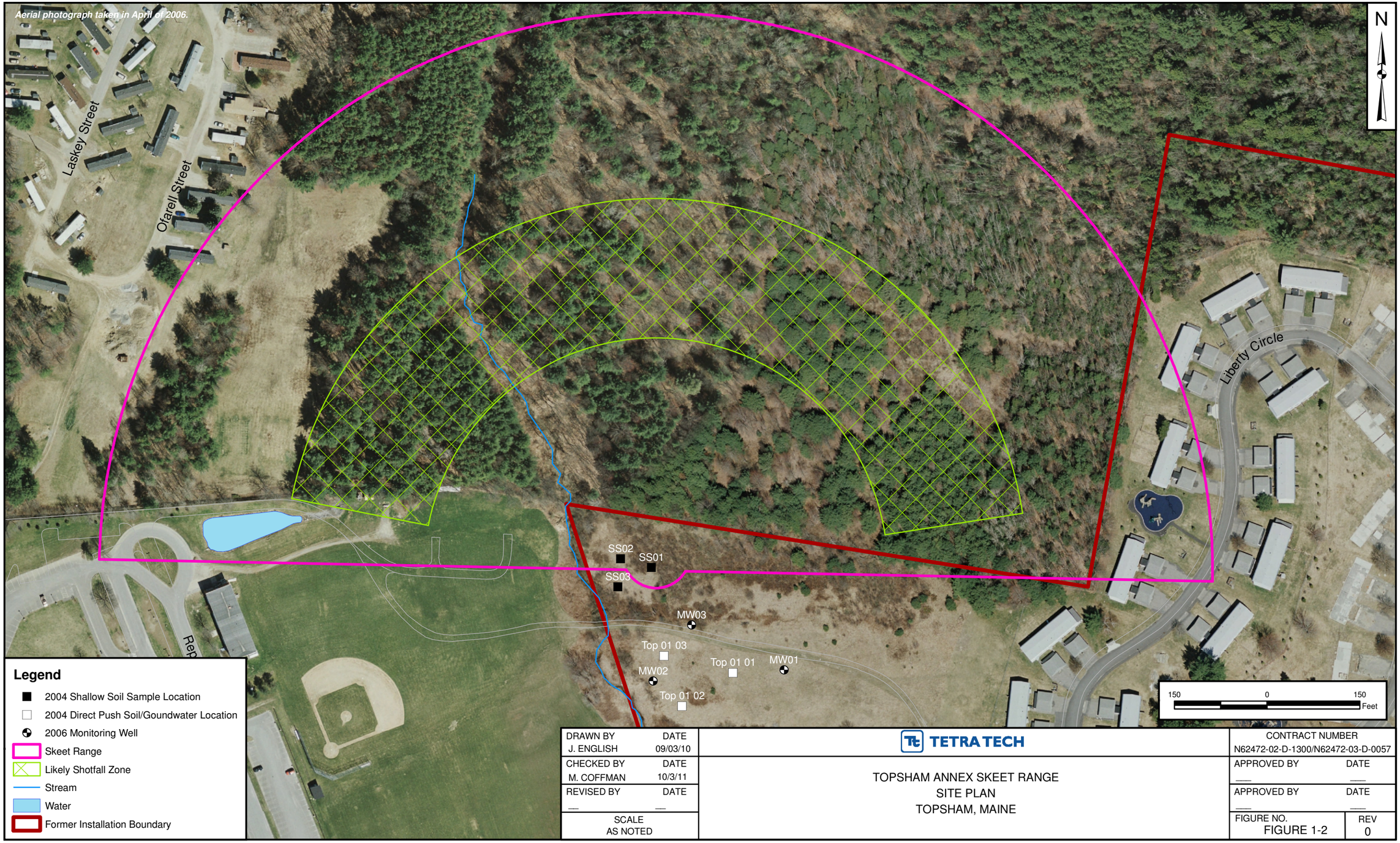

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2.0 SITE BACKGROUND AND PHYSICAL SETTING

2.1 GENERAL SITE BACKGROUND AND PHYSICAL SETTING

2.1.1 Regulatory Framework

The regulatory process for managing Navy MRP sites is guided by a complex mixture of federal, state, and local laws, as well as DoD and Navy regulations and guidance. The key legislation, policy, and guidance directing the program includes, but is not limited to, the following:

- Navy Munitions Response Program Guidance (Navy, 2005), which states that munitions response will be conducted "in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)."

- Management Guidance for the DERP (DERP, 2001). The history of the DERP dates back to the Superfund Amendments and Reauthorization Act (SARA) of 1986. The scope of the DERP is defined in 10 United States Code (U.S.C.) 2701(b), which states the following:

  > "Goals of the program shall include the following: (1) The identification, investigation, research and development, and cleanup of contamination from hazardous substances, and pollutants and contaminants. (2) Correction of other environmental damage (such as detection and disposal of unexploded ordnance) which creates an imminent and substantial endangerment to the public health or welfare or to the environment…"

- Fiscal year (FY)2002 National Defense Authorization Act (Sections 311 and 312) reinforced DoD's 2001 DERP Management Guidance by tasking the DoD to develop and maintain an inventory of defense sites that are known or suspected to contain Munitions and Explosives of Concern (MEC) and MC. Section 311 requires DoD to develop a protocol for prioritizing defense sites for response activities in consultation with states and tribes, and Section 312 requires DoD to create a separate program element to ensure that DoD can identify and track munitions response funding. The 2001 Management Guidance for the DERP and 2002 National Defense Authorization Act, described here, established the MRP. The Navy baseline inventory of sites was completed in FY 2002 and was used to establish the sites or Areas of Concern (AOCs) where PAs were needed to further evaluate the potential for MEC and MC.

2.1.2 History

Topsham Annex was founded as a U.S. Air Force station in 1956 with its mission focused on the operation of a semi-automatic ground environment facility (U.S. Department of Defense July 1996). The semi-automatic ground environment facility was a computerized defense system for tracking and intercepting enemy aircraft and missiles during the Cold War and was one of the first military uses of computers for defense. During the early 1970s, the Air Force terminated all of its activities at the property and transferred the property to the Navy. The majority of the buildings at Topsham Annex were constructed from 1958 to 1962 (U.S. Department of Defense July 1996). According to a 2009 architectural survey report, one building is considered eligible for the National Register of Historic Places, Building 333, the Flag Headquarters/Army Reserve Office. This building was designed by the Auburn, Maine-based architecture and engineering firm of Alonzo J. Harriman, Inc. In a letter dated 26 January 2010, the Maine Historic Preservation Commission determined the building exhibits distinctive characteristics under Criterion C as a 1950s modern institutional building; it retains integrity of location, design, setting, materials, and workmanship. The agency believes the building is eligible for its local architectural significance. In a programmatic agreement dated 27 September 2010, the Navy and the Maine Historic Preservation Commission placed a preservation covenant on Building 333. The covenant requires the Navy and all successors to the property to consult with the Maine Historic Preservation Commission before taking any action at Topsham Annex that would impact Building 333. Routine maintenance activities such as painting, lawn maintenance, roof repair, and interior modifications are exempt from these consultation requirements. To the same extent that is required of the government, successors to the property are required to provide for the Building 333's security and stabilization to prevent deterioration.

2.1.3 Location and Setting

Topsham Annex, located in the Town of Topsham, approximately 4 miles north of the Former Main Base, which consists of approximately 74 acres of land and facilities. Originally, Topsham Annex consisted of 125 acres; however, 51 acres were transferred.

2.1.4 Current Land Use and Anticipated Future Land Use

Concerning future land use, the Navy-owned portion of TASKT is slated for recreational use, as part of an educational public benefit conveyance to Maine School District 75. Currently, the remainder of TASKT is private residential property and former open land/pasture area, which is now wooded, although the use may be subject to change in the future.

2.2 GENERAL PHYSICAL/ENVIRONMENTAL CHARACTERISTICS

2.2.1 Climate

The State of Maine is divided into three major climatic divisions. NASB, including Topsham Annex, is located in the Coastal Division, which is strongly influenced by its proximity to the Atlantic Ocean to the east and the White Mountains to the northwest. The Atlantic Ocean moderates extremes in temperature and increases the amount of precipitation received by the area. The White Mountains keep considerable snow from reaching the area from the northwest and also moderate temperatures.

Information obtained from the National Climatic Data Center station in Portland, Maine (approximately 25 miles southwest of Brunswick) provides representative climatic data for the area in which the installation is located. Average temperatures range from 21.7 degrees Fahrenehit (°F) in January to 68.7°F in July, with an annual average of 45.7°F. Mean daily maximum and minimum temperatures of 78.8°F in July and 12.5°F in January have been recorded. During extreme conditions, a daily maximum of 100°F in July and a daily minimum of minus 26°F in January have been recorded. There are, on average, 13 days of zero or subzero temperatures per year.

The annual average precipitation is 45.83 inches, with monthly average peaks as high as 5.17 inches in the fall and as low as 2.87 inches in the summer. The annual average relative humidity ranges from 65 and 77 percent. The mean seasonal snowfall is 67.3 inches. Because of the proximity to the Atlantic Ocean, winter precipitation in southern midcoastal Maine is often in the form of rain or wet snow. Fog occurs frequently along the Maine coast at all times during the year except winter. On average, there are 49 days with heavy fog, defined as visibility less than one-fourth of a mile. Days with the possibility of sunshine range from 48 percent in November to 64 percent in August; the annual percentage of days with sunshine is 57.

Prevailing winds are from the south from April to September, from the north in November and December, and from the west to northwest for the remainder of the year. The annual average wind speed is approximately 9 miles per hour (mph), with monthly average wind speeds not varying considerably (7.7 mph in the summer to 10.1 mph in the spring). Strong winds in the winter, generated by coastal storms, can produce abnormally high wind-driven tides. Regional diurnal and seasonal variations may moderately influence wind directions and wind speeds.

2.2.2 Topography

The highest elevations on Topsham Annex property, ranging from more than 100 feet to 240 feet above mean sea level (msl), occur in the eastern part of the property on the hills and slopes around Mount Ararat. In the western part of the Annex property, glacial sediments overlie the bedrock, and the land slopes more gently. Elevations in the eastern part of the property range from 100 feet to 110 feet above msl (Navy, 2010).

2.2.3 Geology

Surficial geology along the Maine coastline in the area of the Town of Topsham is characterized by low hills oriented southwest to northeast, following the orientation of folds and faults in the underlying bedrock. Topsham is located within the Norumbega fault zone, a system of major and minor faults extending along the Maine coastline. Bedrock in the region consists of metamorphosed volcanic rocks of the Cushing Formation, which range in age from Precambrian to Ordovician. Glacial-marine sediments, comprising sands overlying silt and clay, and glacial till sediments, comprising mixtures of sand, silt, clay, and stones, were deposited by successive glaciations in the late Pleistocene and Holocene epochs and cover the bedrock in most areas. Bedrock outcrops do occur in isolated areas, including in the hills on Annex property near Mount Ararat (Navy, 2010).

2.2.4 Soil and Vegetation

Eight soil types (Table shown below) are found at Topsham Annex (National Cooperative Soil Survey n.d.). The most common soil on the property is Walpole fine sandy loam. Hollis fine sandy loam and Adams loamy sand also cover large areas of the property, while Belgrade very fine sandy loam, sand and gravel pits, Hollis very rocky fine sandy loam, Ninigret fine sandy loam, and Scantic silt loam are present over smaller areas. Two soil types at Topsham Annex, Walpole fine sandy loam and Scantic silt loam, are included on the list of *Hydric Soils of the United States* (Natural Resources Conservation Service January 2009). Together, these two soil types cover approximately 31 acres of the Annex property. Hydric soils are soils that experience saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions (characterized by a lack of oxygen) in the upper layers (Natural Resources Conservation Service n.d.). Hydric soils may indicate the presence of a wetland if hydrophytic vegetation and wetland hydrology are also present (Navy, 2010).

Soils on Topsham Annex

Soil	Description	Hydric Soil	Prime Farmland
Adams loamy sand (AaB)	Occurs on glacial outwash terraces. Composed of sandy glaciofluvial deposits derived from crystalline rock. Somewhat excessively drained. Depth to water table is more than 80 inches.	--	Farmland of statewide importance
Belgrade very fine sandy loam (BgB)	Occurs in former lakebeds. Composed of coarse-silty glaciolacustrine deposits. Moderately well-drained. Depth to water table is about 18 to 30 inches.	--	Farmland of statewide importance
Sand and gravel pits (GP)	Sand with gravel.	--	--
Hollis fine sandy loam (HrB and HrC)	Occurs on hills. Composed of coarse-loamy glacial till derived from mica schist. Somewhat excessively drained. Depth to water table is more than 80 inches.	--	Farmland of statewide importance
Hollis very rocky fine sandy loam (HsC)	Occurs on hills. Composed of coarse-loamy glacial till derived from mica schist. Somewhat excessively drained. Depth to water table is more than 80 inches.	--	--
Ninigret fine sandy loam (NgB)	Occurs on glacial outwash terraces. Composed of coarse-loamy glaciofluvial deposits derived from slate. Moderately well-drained. Depth to water table is about 18 to 36 inches.	--	Prime farmland
Scantic silt loam (ScA)	Occurs on coastal plains. Composed of fine glaciolacustrine deposits. Poorly drained. Depth to water table is about 0 to 12 inches.	Hydric soil	--
Walpole fine sandy loam (Wa)	Occurs on glacial outwash plains. Composed of sandy glaciofluvial deposits. Poorly drained. Depth to water table is about 0 to 18 inches.	Hydric soil	--

Source: National Cooperative Soil Survey n.d.

Ninigret fine sandy loam has been designated by the U.S. Department of Agriculture as prime farmland. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, and fiber crops and is available for agricultural uses. Excluding previously built, urban areas, these soils are regulated under the Farmland Protection Policy Act (7 U.S.C. §4201 et seq.), which restricts actions of the federal government that would cause the irreversible conversion of prime and unique farmland to nonagricultural uses. Ninigret fine sandy loam occurs over about 6 acres in the residential and parks and recreational areas. Several soils at Topsham Annex, including Adams

loamy sand, Belgrade very fine sandy loam, and Hollis fine sandy loam, are designated as farmland of statewide importance by the Maine Department of Agriculture. Farmlands of statewide importance include those that nearly meet the requirements for prime farmland and economically produce high yields of crops when properly managed. These soil types cover approximately 28 acres of the Annex property. Approximately 2.5 acres of prime farmland and farmland of statewide importance on the Annex property are currently developed (see Figure 3-6 of Appendix G).

2.2.5 Hydrology

The Town of Topsham, located in Sagadahoc County, Maine, is in the Cathance River Watershed (Navy, 2010) which is part of the Lower Androscoggin Watershed (Navy, 2010). The Cathance River originates northwest of Topsham at Bradley Pond and meanders in a general west to east direction, crossing the northern part of Topsham to the confluence with Androscoggin River at Merrymeeting Bay in the east. Together the Cathance River and the Androscoggin River join with the Kennebec River at Merrymeeting Bay, which empties into the Gulf of Maine in the south. Topsham Annex is in the northern part of the Town of Topsham and its northern boundary is within about 1,000 feet of the Cathance River (Navy, 2010). The majority of Topsham Annex slopes towards the Cathance River (Navy, 2010), so the surface water run-off from the Annex discharges into the Cathance River. The Cathance River joins the Androscoggin River at Merrymeeting Bay. Surface water features on the Annex property are limited to intermittent drainages associated with wetlands on the western and southeastern portion of the Annex. The nearest perennial surface water is to the west of the Annex, within the western portion of the TASKT shotfall zone, where there is a small stream that flows northward to the Cathance River (Navy, 2010).

2.2.6 Hydrogeology

The shallow unconfined saturated groundwater unit beneath Topsham Annex is assumed to flow with the slope of the land west and northwest towards the Cathance River (Malcom Pirnie 2001). The area beneath Topsham Annex is not considered to be a significant aquifer, i.e., it does not have the capacity to hold large volumes of water (Navy, 2010). The Maine State Legislature [38 Maine Revised Statutes Annotated (MRSA) Chapter 3, Section 482, 4-D] defines a significant groundwater aquifer, as “a porous formation of ice-contact and glacial-outwash sand and gravel or fractured bedrock that contains significant recoverable quantities of water which is likely to provide drinking water supplies”. The closest significant aquifer is about 1,000 feet to the west-southwest of Topsham Annex and is separated from the property by a stream bed that most likely forms a hydrogeologic boundary (Navy, 2010). There are no water supply wells on the Topsham Annex property; all water used by the Annex is supplied by the Brunswick-Topsham Water District public water supply (Navy, 2010).

2.3 ECOLOGICAL SUMMARY

2.3.1 Vegetation and Wildlife

Less than 20% of Topsham Annex is developed and vegetation covering the remainder of the property is predominantly maintained lawn or previously disturbed successional communities. Scattered shade and ornamental trees are located within the Military Triangle and the residential area of the Annex. Narrow strips of natural vegetation, ranging from early successional scrub/brush communities to mature second and third growth woodlands, occur along the perimeter of the residential area (Navy, 2010). Tree species typical of natural forests in the area include white pine, red pine, and hemlock (Navy, 2010). A scrub/brush community covering several acres is in the 13-acre undeveloped area west of the existing housing. The majority of the area within the shotfall zone of the former skeet range is now wooded. Wildlife may be relatively sparse on Topsham Annex because most of the vegetated areas on the property are regularly maintained and provide little diverse habitat. As such, wildlife at Topsham Annex is limited to species adapted to urban/suburban conditions such as the eastern gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*) , striped skunk (*Mephitis mephitis*), American robin (*Turdus migratorius*), northern red cardinal (*Cardinalis cardinalis*), and blackcapped chickadee (*Pecile atricapillus*). The extensive natural and rural areas surrounding the Annex, which includes the off site portion of the former skeet range, support a large variety of animals that may travel onto Annex property, including white-tailed deer (*Odocoileus virginiana*), red fox (*Vulpes vulpes*), and coyote (*Canis latrans*).

2.3.2 Endangered/Threatened Species

No federal endangered or threatened species are listed. In the January 12, 2009 letter, the United States Fish and Wildlife Service indicated that no federally listed threatened or endangered species are known to occur on Topsham Annex. No state-listed threatened or endangered species have been documented on the Topsham Annex property to date. The United States Fish and Wildlife Service indicated that the Atlantic salmon (*Salmo salar*), listed as endangered under the ESA, occurs in Merrymeeting Bay, located about 3 miles east of Topsham Annex. Although the Town of Topsham and Topsham Annex are located in the Merrymeeting Bay watershed, they have no areas containing critical habitat for salmon. Furthermore, Atlantic salmon have not been documented in the Cathance River, a tributary of Merrymeeting Bay, which is located approximately 1,000 feet north of Topsham Annex. No critical habitat for this species has been identified or proposed for any water body in the immediate vicinity of the Annex property (Navy, 2010).

As documented in the Integrated Natural Resources Management Plan (INRMP) (DoN, 2006), one state endangered plant species, the clothed sedge, may occur on the installation. The clothed sedge inhabits dry, semi-open conditions and may exist in the grassland habitat at the installation. It is a low-growing, herbaceous, grass-like plant, and artificial areas that are routinely cut, such as under electric power lines, often provide suitable habitat.

2.3.3 Wetlands

Wetlands and Stream Protection Areas located in and around Topsham Annex are shown in Figures 3-1 and 3-7 of Appendix G. A field reconnaissance of the Annex was conducted during the summer of 2008. The approximate boundaries of wetlands located with the Annex boundaries were identified based on wetland vegetation and surface hydrology. Two wetland communities were identified on the Annex. A small palustrine emergent (PEM) wetland covering approximately 0.87 acres was identified south of the commissary parking lot. The dominant vegetation in this wetland consists of cattails (*Typha latifolia*), sedges (*Carex* spp.), wool grass (*Scirpus cyperinus*), and other tall herbs and forbs. The second wetland identified during the field reconnaissance is located in the northeastern portion of the Annex in the parks and recreation area. This scrub-shrub wetland is a depressional wetland covering approximately 2.97 acres. Dominant vegetation consists of willow (*Salix sp*), sedges (*Carex sp*), raspberry (*Rubus sp*), speckled alder *(Alnus incana*), common herbs, and forbs. National Wetlands Inventory (NWI) maps were reviewed to identify wetlands in the vicinity of Topsham Annex. Several small wetlands are located in the vicinity of the Annex, including two wetland areas immediately adjacent to the property (Navy, 2010). A palustrine forest wetland is located adjacent to the southwestern boundary of the property and is hydrologically connected to the PEM wetland described above. The second wetland is located broad-leafed deciduous scrub-shrub wetland with an unconsolidated bottom (PUB/SS1F) (Navy, 2010). To the north of Topsham Annex are various riverine and palustrine wetlands associated with the Cathance River, which is part of the Merrymeeting Bay Focus Area of Statewide Significance (Maine Natural Areas Program 2004a). The freshwater marshes along the river are composed predominantly of wild rice (*Zizania aquatica*) with lesser amounts of pickerelweed (*Pontederia cordata*), water parsnip (*Sium sauve*), soft-stem bulrush (*Schoenoplectus tabernaemontanii*), and river bulrush (*Bolboschoenus fluviatilis*) (Maine Natural Areas Program 2004b). Wetlands along the Cathance River are known to support rare plants such as estuary bur-marigold (*Bidens hyperborea*), spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa*), Parker's pipewort (*Eriocaulon parkeri*), and Long's bittercress (*Cardamine longii*) (Maine Natural Areas Program 2004b).

2.3.4 Cultural and Natural Resources

Topsham Annex is included in the Maine Department of Environmental Protection's (MEDEP) Coastal Zone Management Program, which incorporates regulations regarding development and use of the coastal zone (i.e., point-source discharges, land use, solid waste management, air quality, stream alteration, and spill prevention and control).

2.3.5 Water Resources

Residents and employees at the Topsham Annex and the Brunswick-Topsham area obtain drinking water from four groundwater sources, three wells in Brunswick and one well in Topsham (Navy, 2010). The water is delivered to the Annex via a system constructed by the Navy in the 1940s. The primary delivery conduit is a 12-inch water main owned by the Brunswick and Topsham Water District. The system includes a 586,000-gallon water storage tank and 8,700 linear feet of 8-, 10-, and 12-inch water mains. The Brunswick and Topsham Water District has enough excess capacity to serve the Brunswick-Topsham area (Navy, 2010). The Brunswick and Topsham Water District allocates reserve-system capacity on a first-come, first-served basis.

3.0 GENERAL METHODOLOGY

3.1 SITE INSPECTION APPROACH

This section describes the sampling design and methods and documentation utilized during the SI field activities performed in 2009 and 2010 at TASKT. All SI field work was conducted in accordance with the procedures and methodologies described in the Uniform Federal Policy (UFP) site-specific Sampling and Analysis Plan (SAP), which was approved by USEPA and MEDEP (Tetra Tech, 2009), and the Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan (Tetra Tech, 2010). Standard Operating Procedures (SOPs) that governed the field work are included in Appendix A of the approved UFP-SAP.

Project personnel sign-off sheet associated with the SI is provided in Appendix A of this SI report. Sample Log Sheets, field documentation, site photographs, and other supporting information associated with the SI are provided in Appendices B and C of this SI Report.

3.1.1 Site Preparation Activities

Following approval of the UFP-SAP, Tetra Tech personnel began mobilization activities in summer 2009. Mobilization for the supplemental sampling at Topsham Annex Skeet Range took place in the winter of 2010. The field team members reviewed the approved UFP-SAP, associated appendices, supplemental soil sampling work plan, and Health and Safety Plan (HASP) prior to the start of project activities. In addition, the Field Operations Leader (FOL) held a field team orientation meeting to ensure that personnel were familiar with the scope of the field activities.

Prior to collecting any samples at the site, the FOL arrived at the site and began on-site mobilization activities. On-site mobilization activities included the receipt of all field equipment directly from vendors. Upon receipt, each piece of equipment was checked to verify that it was in proper working condition.

3.1.1.1 Permitting/Site Access

All on-site personnel presented proof of United States Citizenship (i.e., birth certificate or passport), photo identification card, vehicle registration information, and proof of automobile insurance before entry to the site was allowed.

3.1.1.2 Utility Clearance

Before any subsurface sampling activities were performed at the site, utility maps of the facility were obtained from the Navy and thoroughly reviewed. The Navy provided clearance for all site utilities and Tetra Tech pre-marked proposed sampling locations. Predefined coordinates based on the sample location maps were provided to a State of Maine licensed site surveying subcontractor and each location was identified with a pin flag. Locations were moved as necessary to provide proper utility clearance.

3.1.1.3 Mobilization/Demobilization

Tetra Tech personnel mobilized to NASB in summer 2009 to initiate the MC investigation and mobilized in winter 2010 for supplemental sampling at TASKT. The FOL held a field team orientation meeting to ensure that personnel were familiar with the scope of MC field activities. Several field events were required due to various delays (e.g., consensus on fixed-base sampling locations, TASKT property access agreement, winter weather, and a supplemental sampling event). Personnel demobilized in winter 2010 after completion of all SI and supplemental sampling field activities.

3.1.1.4 Vegetation Management

Hand-held brush cutters/weed eaters (string or blade) were used to clear light vegetation and small grassy areas. Brush/vegetation cuttings were left at each site at the edge of the area cleared. Vegetation management activities were not conducted during supplemental sampling at TASKT.

3.1.2 Field Investigation Methods

3.1.2.1 Hand Auger

The hand auger system consisted of a stainless steel bucket bit (i.e. a cylinder 6.5 inches long and 2.75 inches in diameter), a 3- or 4-foot extension rod, and a cross handle. A properly decontaminated bucket bit was attached to a clean extension rod and then to the cross handle. The area to be sampled was cleared of any surface debris (i.e., leaves, twigs), the hand auger was turned into the ground, and the sample material was removed and placed into a zip-lock bag. This process was repeated until the hand auger reached the final desired depth. Larger debris such as twigs, roots, or stones was removed from the sample. The sample ID, date, time, and depth were marked on the bag with an indelible marker. Excess soil core material was returned to the hole.

3.1.2.2 XRF

Prior to analyzing samples in the field via x-ray fluorescence (XRF) the instrument was standardized in accordance with the manufacturer's instructions, and three known lead concentrations [National Institute of Standards and Technology (NIST) standards] were analyzed to verify the accuracy of the instrument and to assess the stability and consistency of the results.

Sample processing prior to field XRF analysis consisted of homogenizing each soil sample within a large zip-lock bag, removing rocks and other debris and then physically processing the sample material to eliminate clods and produce a fine uniform particle size. Each sample was then transferred to a smaller zip-lock bag from which three separate XRF measurements were made, one from each end and one from the center of the sample zip-lock bag. The average lead concentration of the three readings was used as the final XRF lead concentration for the sample.

During sample collection activities, all soil material was visually inspected in the field for the presence of lead shot or lead shot fragments. The soil material was again visually monitored in the field laboratory during processing for XRF analysis. No lead shot or lead shot fragments were observed.

3.1.3 <u>Site Sampling Operations</u>

3.1.3.1 Surface Soil

Shallow and deep surface soil samples were collected at TASKT for chemical analysis (site-specific) and lithologic analysis. Samples from selected intervals were sent for fixed-base laboratory (FBL) analysis in accordance with the UFP-SAP (Tetra Tech, 2009) and the Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan (Tetra Tech, 2010). Depending on depth of a sample and need to collect lithology information, a variety of sampling methods were used including polyethylene scoop, stainless steel trowel, and hand auger. Upon advancement to the planned depth and completion of soil sample collection, borings were backfilled with native soil core material.

Soil Sample Log Sheets are provided in Appendix C.

3.1.3.2 Sediment

During sediment sampling, vegetative matter or debris, if present, was cleared from the sample location using a stainless steel hand auger. Sediment samples collected were a composite of two samples to help improve characterization. Sediment samples at the TASKT were collected from an unnamed brook using

a stainless steel hand auger or plastic scoop. All sediment samples were collected to a depth of 6 inches. Samples were homogenized, decanted if necessary, and transferred into appropriate bottleware. The sample ID, date, time, and sampler initials were written on the bottleware with an indelible marker. Required information was completed on the Sediment Sample Log Sheet and the chain-of-custody form was updated. Appendix C includes Sediment Sample Log Sheets.

3.1.3.3 Surface Water

Surface water samples were obtained using a Kemmler sampler or direct dip and polyethylene gloves. Surface water samples were co-located with sediment samples and collected in accordance with Tetra Tech SOP S12 (SA-1.2). The samples were collected and placed directly in the appropriate sample containers, labeled, and placed in an ice chest chilled to a maximum temperature of 4 degrees Celsius (˚C). Water quality parameters such as temperature, pH, specific conductance, dissolved oxygen (DO), and salinity were measured during sample collection using a YSI Model 650 MDS water quality meter and flow-through cell. Turbidity was measured using a Lamotte 2020. Analytical laboratory analysis was site-specific. Copies of Surface Water Sample Log Sheets are included in Appendix C.

3.1.4 Quality Assurance/Quality Control Samples

Quality assurance (QA)/quality control (QC) samples were generated during SI sampling activities and supplemental sampling activities to monitor both field and laboratory procedures, in accordance with the approved UFP-SAP. QA/QC samples included field duplicates, equipment rinsate blanks, and temperature blanks (Table 3-1). Duplicate sample analysis and the locations where they were collected are summarized in the site-specific sections of this report. The following types of QA/QC samples were collected during the SI:

- Field Duplicates consisted of a single sample split into two portions. Field duplicates were collected at the rate of 1 in 10 during this field investigation to assess the overall precision of the sampling and analysis program.

- Equipment Rinsate Blanks were obtained under representative field conditions by collecting the rinse water generated by running analyte-free water through or over sample collection equipment after decontamination of reusable sample collection equipment and before use. Equipment rinsate blanks were analyzed for the same chemical constituents as the associated environmental samples.

- Temperature Blanks were used to determine if samples were adequately cooled during shipment. One temperature blank was submitted to the laboratory in each cooler, and the temperature was checked upon receipt at the laboratory.

- Field Blanks were collected to assess contamination resulting from field conditions during sampling.

Sample log sheets were generated for each QA/QC sample and are provided in Appendix C.

3.1.5 Field Sample Documentation

The sample numbering scheme and sample labeling was in accordance with the UFP-SAP and Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan. Sample documentation consisted of the completion of Sample Log Sheets, chain-of-custody forms, field logbooks, and health and safety documentation. The Sample Log Sheets contain information such as sample location and sample ID number, container requirements and analyses performed, and sample type, time, and date. Any unusually circumstances encountered during sample collection were noted on the form. Chain-of-custody forms (Appendix D) were used to track each sample from collection in the field to receipt and analysis at the laboratory.

3.1.6 Sample Handling, Packaging, and Shipping

Sample containers, preservation, packaging, and shipping were in accordance with the UFP-SAP. All sample containers shipped to the laboratory were sealed in plastic zip-lock bags, placed in a cooler lined with a large plastic garbage bag, and covered with ice. A temperature blank was placed in each cooler prior to shipment. The plastic garbage bag was sealed with tape, and the chain-of-custody form was sealed in a zip-lock bag taped to the inside of the cooler lid. A signed and dated custody seal was applied to each end of the cooler and then covered with strapping tape to provide a tamper-evident seal. A FedEx® air bill was applied to the shipping cooler. Tetra Tech maintained custody of the samples until they were relinquished to FedEx®. All samples were shipped to the laboratory for overnight delivery and were received within sample holding times.

Laboratory sample custody procedures (receipt of samples, archiving, and disposal) were in accordance with Empirical Laboratories, LLC, SOPs.

3.1.7 Surveying

A State of Maine licensed surveyor documented the horizontal locations and elevations of all soil and groundwater sample points. Survey control was maintained by tying into the Maine State Grid coordinate North American Datum (NAD) 83 West Zone for horizontal datum and the North American Vertical Datum (NAVD) 1988 system for vertical datum. Surveyed features were horizontally located to within +/-0.01 foot and vertical accuracy was +/-0.01 foot. A global positioning system (GPS) unit was used to locate surface water and sediment sampling locations. Appendix C provides SI survey data.

3.1.8 Decontamination Procedures

Small reusable (non-dedicated) sampling equipment (e.g., kemmler sampler, hand auger, stainless steel trowel) was decontaminated prior to beginning sampling and between sample locations in accordance with the UFP-SAP using potable and deionized (DI) water with Liquinox detergent.

At the conclusion of SI and supplemental sampling field activities, the FOL completed a final decontamination of all non-drilling equipment, which was then shipped back to the appropriate vendor(s).

3.1.9 Investigation-Derived Waste Handling

Investigation-derived waste (IDW) materials generated during the field investigation included excess soil sample material, decontamination fluid, and spent calibration fluid. IDW was containerized into 55-gallon drums and stored at the hazardous material building (Building 45) on base. The three containers (one aqueous and two solid) of IDW were labeled with points of origin and dates collected (note the TASKT field investigation was completed concurrently with those conducted at the MGBR and SKT; therefore, IDW described herein was combined for these three sites). ENPRO was subcontracted to characterize, transport, and dispose of the IDW generated during the investigation. On March 15, 2010, two drums of aqueous IDW and one drum of solid IDW were removed from the hazardous material building and transported under a bill of lading to the ENPRO Services, Inc., facility in South Portland, Maine, for disposal as non-hazardous waste. No IDW was generated during supplemental sampling activities conducted at TASKT.

3.1.10 Record Keeping

SI records include field forms, included in Appendix C, chain-of-custody forms, included in Appendix D, and field log books. Information recorded daily in field logbooks included field activities, weather conditions, identity and arrival and departure times of personnel, management issues, etc.

3.2 ANALYTICAL METHODOLOGY

3.2.1 Analytical Methods

Chemical analysis for Target Analyte List (TAL) Metals and lead (SW-846 Method 6010B), propellants [dinitrotoluene (DNT) and nitroglycerin (NG)] by explosives analysis SW-846 Methods 8330A and 8332, respectively, total organic carbon (TOC) (Lloyd Kahn Method), pH (SW-846 9046D), cation exchange capacity (CEC) (SW-846 9081), and PAHs (USEPA Method 8270C SIM) were performed by Empirical Laboratories, LLC, of Nashville, Tennessee under approval by the Naval Facilities Engineering Service Center (NFESC).

3.2.2 Data Usability General Methodology

Data review processes were used to determine whether analytical laboratory data were of acceptable technical quality for use in decision making. The review began with data validation, which is a comparison of data quality indicators (DQIs) to prescribed acceptance criteria. The DQIs used are measures to assess the bias and precision of the analytical calibrations and sample analyses. The output of this review was a set of alphabetic flags such as U, J, R, or combinations thereof that may have been assigned to individual results based on the validation effort. These flags were used to infer the general quality of the data. Also evaluated were the measures of data completeness, sensitivity, comparability, and representativeness. Validated analytical results are provided in Appendix D, and the MC data usability report is provided in Appendix E.

3.2.3 Data Validation Process

Full data validation conducted to evaluate false positives included evaluations of data completeness, holding time compliance, calibrations, field QC and laboratory-generated blank results, field duplicate precision, and detection limits for the data collected during the SI. The data packages provided by the analytical laboratory are expansive enough to allow future complete formal data validation, if necessary.

Assignment of data qualification flags conformed to USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (2008), and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Validation (2004) guidelines to the greatest extent practicable for non-Contract Laboratory Program data. Data validation specifications require that various data qualifiers be assigned when a deficiency is detected or when a result is less than its detection limit.

If no qualifier is assigned to a result that has been validated, the data user is assured that no technical deficiencies were identified during validation. The qualification flags used are defined as follows:

U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate of the true concentration.

UR – Indicates that the chemical may or may not be present. The non-detected analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (e.g., holding time missed by a factor of two times the specified time limit, severe calibration non-compliance, and extremely low analyte recovery).

R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies.

The preceding data qualifiers may be categorized as indicative of major or minor problems. Major problems are defined as issues that result in the rejection of data and qualification with UR or R qualifiers. These data are considered invalid and are not used for decision-making purposes unless they are used in a qualitative way and the use is justified and documented. Minor problems are defined as issues resulting in the estimation of data and qualification with U, J, and UJ qualifiers. Estimated analytical results are considered to be suitable for decision-making purposes unless the data use requirements are very stringent and the qualifier indicates a deficiency that is incompatible with the intended data use. A U qualifier does not necessarily indicate that a data deficiency exists because all non-detect values are flagged with the U qualifier regardless of whether a quality deficiency has been detected.

3.2.4 Data Validation Outputs

After data were validated, a list was developed of non-conformities requiring data qualifier flags used to alert the data user to inaccurate or imprecise data. The reviewer then prepared a technical memorandum presenting qualification of the data, if necessary, and the rationale for making such qualifications (see Appendix E). The net result was a data package that had been carefully reviewed for its adherence to prescribed technical requirements. Pertinent quality estimates are summarized in a more quantitative format in the following section.

3.2.5 Data Quality Review

DQIs are parameters monitored to help establish the quality of data generated during an investigation. Some of the DQIs are generated from analysis of field samples (e.g., field duplicates), and some are generated from the analysis of laboratory samples (e.g., laboratory duplicates). Individually, field and laboratory DQIs provide measures of the performance of the respective investigative operations. During data validation, individual QC results were evaluated. If individual QC results were acceptable, no validation flag was assigned to an analytical result; otherwise, a flag indicating the type of QC deficiency was assigned to the result.

3.2.5.1 Completeness

Completeness is a measure of the number of valid samples or measurements that are available relative to the number of samples or measurements that were intended to be generated. For this project, completeness was measured on two different bases:

Samples collected - measure of the usable samples collected compared to those intended to be collected.

Laboratory measurements - measure of the amount of usable valid laboratory measurements per matrix for each target analyte.

Usable valid samples (or results) were those judged, after data assessment, to represent the sampling populations and to have not been disqualified for use through data validation or additional data review. Completeness was determined using the following equation:

$$\%C = \frac{V}{T} \times 100$$

where %C = percent completeness
V = number of samples (or results) determined to be valid
T = total number of planned samples (or results)

3.2.5.2 Sensitivity and Quantitation Limits

Sensitivity is a comparison of the project quantitation limit goals (PQLGs) to the laboratory's method detection limits (MDLs) listed in Worksheet #15 in the UFP-SAP (Tetra Tech, 2009).

3.2.5.3 Accuracy

Accuracy requirements for field measurements are typically ensured through control over sample collection and handling and through routine instrument calibration. Field accuracies were monitored with blanks to detect cross-contamination and by monitoring adherence to procedures that prevent sample contamination or degradation. Equipment rinsate blanks were collected during the SI to assess cross-contamination via reusable sample collection equipment. The blanks were obtained under representative field conditions by collecting the rinse water generated by running analyte-free water through sample collection equipment after decontamination and before use. The rinsate blanks were analyzed for the same chemical constituents as the associated environmental samples.

Accuracy in the laboratory was measured through the comparison of a spiked sample or laboratory control sample (LCS) result to a known or calculated value and was expressed as a percent recovery (%R). It was also assessed by monitoring the analytical recovery of select surrogate compounds added to samples that are analyzed by organic chromatographic methods. LCSs were used to assess the accuracy of laboratory operations with minimal sample matrix effects. Matrix spike (MS) and surrogate compound analyses measure the combined accuracy effects of the sample matrix, sample preparation, and sample measurement. LCS and MS analyses were performed at a frequency of 1 per 20 associated samples of like matrix. Laboratory accuracy was assessed by comparing calculated %R values to accuracy control limits specified by the laboratory using SW-846 methods.

Percent recovery is calculated using the following equation:

$$\%R = \frac{Ss - So}{S} \times 100$$

where %R = percent recovery
Ss = result of spiked sample
So = result of non-spiked sample
S = concentration of spiked amount

3.2.5.4 Precision

Precision is a measure of the degree to which two or more measurements are in agreement and describes the reproducibility of measurements of the same parameter for samples analyzed under similar conditions. Precision for chemical parameters is expressed as a Relative Percent Difference (RPD), which is defined as the ratio of the difference to the mean for the two values being evaluated. RPDs are used to evaluate both field and laboratory duplicate precision and are calculated as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where RPD = relative percent difference
V1, V2 = two results obtained by analyzing duplicate samples

The precision estimates obtained from duplicate field samples encompass the combined uncertainty associated with sample collection, homogenization, splitting, handling, laboratory and field storage (as applicable), preparation for analysis, and analysis. In contrast, precision estimates obtained from analyzing duplicate laboratory samples incorporate only homogenization, sub-sampling, preparation for analysis, laboratory storage (if applicable), and analysis uncertainties.

3.2.5.5 Comparability

Comparability is defined as the confidence with which one data set can be compared to another (e.g., among sampling points and among sampling events). Comparability was achieved by using standardized sampling and analysis methods and standardized data reporting formats. Comparability of field data was guaranteed by following the UFP-SAP (Tetra Tech, 2009), and comparability of laboratory measurements was achieved primarily through the use and documentation of standard sampling and analytical methods. Results were reported in units that ensured comparability with previous data and with current state and federal standards and guidelines. Comparability of laboratory measurements was assessed primarily with QC samples and through adherence to the laboratory's QA plans.

3.2.5.6 Representativeness

Representativeness is an expression of the degree to which data accurately and precisely depict the actual characteristics of a population or environmental condition existing at the site. The UFP-SAP (Tetra Tech, 2009) and use of standardized sampling, sample handling, sample analysis, and data reporting procedures were designed so that the final data would accurately represent actual site conditions. It is believed that all reported data are adequately representative of site conditions.

3.3 CORRELATION BETWEEN XRF AND FIXED-BASE LABORATORY DATA

Using data from samples analyzed in the field using XRF and also at the FBL, a regression analysis was conducted to evaluate the correlation between the FBL lead results and XRF lead results. To evaluate the regression analysis, the Pearson Correlation and Rsquared value were calculated. The Pearson Correlation is a measure of the strength of the linear relationship between two or more variables with a range of -1 to +1. The value of -1 represents a perfect negative correlation (i.e., as one variable decreases the other increases proportionally); whereas, a value of +1 represents a perfect positive correlation (i.e., as one variable increases the other increases proportionally). A value of 0 represents a lack of correlation.

The correlation analysis results for TASKT are presented in Sections 4.4.1 with supporting documentation included in Appendix F. Note, samples were not collected during supplemental sampling for XRF analysis.

3.4 DATA COMPARISON TO SCREENING CRITERIA AND PROJECT ACTION LIMITS

The screening criteria and project action limits (PALs) used to evaluate the chemical concentrations detected in site media and to decide whether further site investigation is warranted, are presented in Appendix G. The screening criteria evaluated for soil include Residential Soil Regional Screening Level (RSL) (June 2011) and Maine Remedial Action Guidelines for Soil (RAGS) for Multiple Contaminants, all Scenarios and all Pathways (January, 2010). For surface water and sediment samples, screening criteria include values established by EA (EA Engineering, 2006) and other ecological criteria as presented in Appendix G. Based on the decision-making process set forth in the UFP-SAP, if an analyte concentration in any sample within the study area boundary exceeded screening criteria or the PAL, the project team evaluated the data and determined whether further investigation was warranted for a given media. Detailed discussions regarding site-specific screening evaluations are presented in Sections 4.4.2 of this report.

TABLE 3-1

SUMMARY OF QA/QC SAMPLES
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Sample Number	Date Collected	Medium	Type	Analyses
NASB-TASKT-SO-RB01-042210	04-22-10	Solid	Rinsate Blank: Hand Auger/Plastic Scoop/Aluminum Pan	TAL Metals, PAHs, Dinitrotoluene, and Nitroglycerine
NASB-TASKT-SO-RB02-042210	04-22-10	Solid	Rinsate Blank: Plastic Scoop/Aluminum Pan	TAL Metals and PAHs
NASB-TASKT-SO-RB03-042210	04-22-10	Solid	Rinsate Blank: Plastic Scoop/Aluminum Pan	TAL Metals and PAHs
NASB-TASKT-SO-FB01-042210	04-22-10	Aqueous	Field Blank: Source Water Blank	TAL Metals, PAHs, Dinitrotoluene, and Nitroglycerine
NASB-TASKT-2-FB01-112910	11-29-10	Aqueous	Field Blank: Source Water Blank	Lead, PAHs
NASB-TASKT-2-RB01-112910	11-29-10	Aqueous	Rinsate: Aluminum Pan/Stainless Steel Trowel	PAHs
NASB-TASKT-2-RB02-112910	11-29-10	Aqueous	Rinsate: Aluminum Pan/Plastic Scoop	Lead
NASB-TASKT-2-RB03-112910	11-29-10	Aqueous	Rinsate: Aluminum Pan/Plastic Scoop	Lead

Duplicate samples are included in site-specific sample tables.

QA/QC = Quality assurance/quality control.
TAL = Target Analyte List.
PAHs = Polynuclear aromatic hydrocarbons.

4.0 TOPSHAM ANNEX SKEET RANGE

4.1 SITE BACKGROUND

4.1.1 Historical Information

The TASKT is located in the northern portion of Topsham Annex along the Navy property line and east of the Mt. Ararat Middle School athletic field. The 29-acre area was formerly used by the Air Force during the 1970s. Navy Programming Guidance from the 1950s defined the TASKT SDZ of a skeet range as a 900-foot radius from the shooting field. The majority (27 acres) of the SDZ extends onto private property and onto land transferred to the MSAD No. 75. The site is currently undeveloped and heavily vegetated.

4.1.2 Munitions Constituents

The source areas of potential MC contamination at the TASKT are in and around the likely shotfall zone and firing points. As a result, metals, propellants, and PAHs could have contaminated soil, sediment, and surface water and samples were collected for fixed-base laboratory analysis as per Table 4-1.

4.1.3 Current Land Use and Anticipated Future Land Use

Concerning future land use, the Navy-owned portion of TASKT is slated for recreational use, as part of an educational public benefit conveyance to Maine School Administrative District 75. Currently, the remainder of TASKT is private residential property, although the use may be subject to change in the future. The site is currently undeveloped.

4.2 FIELD WORK

4.2.1 Site Field Activities

Shallow and deep surface soil, surface water, and sediment samples were collected and submitted for FBL analysis to determine whether site activities have resulted in contamination of the site and adjacent areas. Table 4-1 provides a summary of the samples collected during the SI and supplemental sampling, including sampling depths, duplicate locations, and the analytical program, and MC sampling locations are shown on Figure 4-1.

4.2.2 Work Plan Deviations

All SI activities at TASKT were performed in accordance with the UFP-SAP (Tetra Tech, 2009) and the Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan (Tetra Tech, 2010).

4.2.3 Field Data Collection

4.2.3.1 Shallow and Deep Surface Soil Sampling

During the initial sampling events at the former TASKT, 44 soil samples were collected for XRF field analysis and 24 surface soil samples were collected for laboratory analysis of TAL metals and PAHs, in accordance with the SAP and detailed in Tables 4-1 (FBL) and 4-2 (XRF). Five surface soil samples were also analyzed for the propellants NG and DNTs. Selected surface soil samples TASKT-SS04, TASKT-SS09, TASKT-SS14, and TASKT-SB05 were analyzed for TOC, pH, and CEC, in addition to NG and DNTs. Uppermost surface soil sample were collected from 0 to 3 inches, and deep surface soil samples were collected from 3 to 12 inches. Soil Sample Log Sheets are included in Appendix C.

During the supplemental sampling at TASKT, six surface soil samples [0 to 3 inches below ground surface (bgs)] were collected for PAH analysis and 39 surface soil samples (0 to 3 inches bgs) were collected for lead analysis. Samples were collected in accordance with the UFP-SAP (Tetra Tech 2009) and the Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan (Tetra Tech, 2010) and detailed in Table 4-1 (FBL). Soil Sample Log Sheets are included in Appendix C.

4.2.3.2 Sediment Sampling

Sediment samples were collected following Tetra Tech SOP SA-1.2 from three TASKT locations during the initial sampling even, and one sediment sample was collected during the supplemental sampling event, to characterize the sediment in an unnamed brook/intermittent stream in the west-central portion of the site (Figure 4-1). Three sediment samples at the TASKT were collected on April 21, 2010, using a stainless steel hand auger and one sediment sample was collected on December 9, 2010, using a plastic scoop, all samples were collected to a depth of 6 inches. One sample log sheet was completed for each sediment sample collected (included in Appendix C). Chain-of-custody forms are included in Appendix D. Sediment samples were analyzed for TAL metals, TOC, pH (2010 only), CEC (2010 only), and PAHs.

4.2.3.3 Surface Water Sampling

Surface water samples were collected at locations co-located with sediment samples from an unnamed brook/intermittent stream located at the TASKT on April 21, 2010 (Figure 4-1), surface water samples were not collected during the supplemental sampling event. Surface water sample TASKT-SW03 was collected at a location where the depth to water was less than 2.5 feet; therefore, a Kemmerer sampler could not be used. This sample was collected by directly dipping a dedicated unpreserved bottle into the surface water and transferring the sample into appropriate sample bottles. After collection of surface water samples, the pH, temperature, specific conductivity, DO, salinity, oxidation-reduction potential (ORP), and turbidity of surface water was measured in situ and recorded on Sample Log Sheets. Field parameter measurements are summarized on Table 4-3 and provided in Appendix C. Chain-of-custody forms are included in Appendix D. Surface water samples were analyzed for TAL metals and PAHs.

4.2.3.4 Surveying

A State of Maine licensed surveyor documented the horizontal locations of all soil sample points at the TASKT. Survey control was maintained by tying into the Maine State Grid Coordinate NAD83 West Zone for horizontal datum. Elevations were referenced to a United States Geological Survey (USGS) benchmark. Surveyed features were horizontally and vertically located to within +/-0.01 foot.

4.2.3.5 Visual Inspection

During the SI, Tetra Tech performed a visual inspection of the TASKT to identify any former structures or areas of clay pigeons or lead shot. During the inspection of TASKT, four wooden posts were discovered around the firing point, the locations of which are depicted on Figure 4-1.

4.3 GEOLOGY EVALUATION

The site is relatively level in the area of the former shooting stations. The land surface in the area of the shooting field slopes to the north and northwest.

Soil borings were advanced to a maximum depth of 1 foot at the TASKT. Based on the boring log information, the shallow subsurface at the site is fine- to medium-grained sand and silt underlying topsoil.

Note that hydrogeology was not investigated. Based on topography, groundwater is expected to flow to the north to northwest toward the drainage that runs through the western portion of the site.

4.4 ANALYTICAL RESULTS

4.4.1 Correlation Between Field XRF Analysis and Fixed-Based Laboratory Lead Data

To determine whether XRF concentrations could be used to predict FBL concentrations, a statistical correlation analysis was conducted. The correlation analysis for the TASKT are presented in Appendix F. Based on the correlation analysis, it was concluded that correlation between the FBL and field XRF results was acceptable for XRF concentrations less than 400 and that predicted FBL concentrations could be meaningfully calculated. XRF results are presented in Table 4-2, calculated lead values are included in the summary statistics Table 4-4 and both XRF values and calculated values are shown in Table 4-5 for the individual samples. See Appendix F for details on the correlation effort.

4.4.2 MC Sampling Results and Comparisons with Screening Criteria and PALs

This section presents the analytical results for soil, sediment, and surface water samples collected at the TASKT, and presents comparisons of analytical results to applicable screening criteria. A summary of the analytical program for the SI samples collected at the TASKT is provided in Table 4-1, and TASKT sampling locations are shown on Figure 4-1.

4.4.2.1 Shallow and Deep Surface Soil

Twenty-three soil samples were collected and analyzed for TAL metals and PAHs, six soil samples were analyzed for PAHs, 39 samples were analyzed for lead, and five samples were analyzed for NG and DNTs. Summary statistics for these soil samples are provided in Table 4-4, and analytical results for target analytes detected at least once in shallow and deep surface soil are presented in Table 4-5.

The metals arsenic and lead were detected in shallow surface soil samples at concentrations exceeding both MEDEP RAGs Appendix 3 criteria and USEPA RSLs. Figure 4-2 shows the positive detections of metals in soil, all positively detected metals with the exception of calcium, magnesium, potassium, and sodium (essential nutrients) are shown. The maximum detection of arsenic was detected in a sample collected from the shotfall zone, NASB-TASKT-SS09-003 (0 to 3 inches). Arsenic was detected at concentrations exceeding screening criteria by an order of magnitude or less. Arsenic concentrations ranged from 2.72J to 53.5 milligram per kilogram (mg/kg). Lead was detected at concentrations ranging from 6.5J to 44,100J mg/kg with concentrations exceeding screening criteria at locations throughout the shotfall zone and at the firing point. The maximum lead concentration detected in sample NASB-TASKT-2-SS32. Cobalt and iron were detected in the deep surface soil (0.25 to 1 foot bgs) at concentrations greater than MEDEP and USEPA RSLs at one sample location, SB01-0312.

NG and DNTs were either not detected or were detected at concentrations less than screening criteria in all TASKT soil samples.

Figure 4-3 presents the positive detections of PAHs in soil. Benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected at concentrations that exceeded screening criteria, with some exceeding criteria by more than one order of magnitude. Samples with PAH concentrations greater than both MEDEP criteria and USEPA RSLs were all collected from 0 to 3 inches bgs. The maximum concentrations of all of these PAHs, benzo(a)anthracene [16,700 microgram per kilogram (µg/kg)], benzo(a)pyrene (25,300 µg/kg), benzo(b)fluoranthene (35,600J µg/kg), benzo(k)fluoranthene (8,850J µg/kg), dibenzo(a,h)anthracene (2,590 µg/kg), and indeno(1,2,3-cd)pyrene (12,900 µg/kg) were detected in surface soil sample from NASB-TASKT-2-SS04, which is located at the firing point. Note that the PAHs benzo(a)pyrene and benzo(b)fluoranthene exceed MEDEP criteria at the off site sampling location (SS01) collected for comparison purposes. Furthermore, PAH concentrations in this off site soil sample were greater than those detected in the majority of the samples collected from the shortfall zone, but off site soil PAH concentrations were much less than in samples collected at the firing line.

4.4.2.2 Sediment

Four sediment samples were collected and analyzed for TAL metals, PAHs, pH (2010 only), CEC (2010 only), and TOC. Summary statistics for these sediment samples are provided in Table 4-6, and analytical results for target analytes detected at least once in sediment are presented in Table 4-7.

Arsenic, barium, beryllium, cobalt, iron, lead, manganese, nickel, selenium, and vanadium were detected in sediment samples at concentrations exceeding PALs. The maximum concentration of barium, beryllium, cobalt, iron, lead, manganese, nickel, selenium, and vanadium were detected in the sediment sample from NASB-TASKT-SD01, located within the shotfall zone. The maximum concentration of arsenic was detected in sample TASKT-SD04. PAHs were not detected at concentrations exceeding PALs in any of the TASKT sediment samples. Figure 4-4 presents positive detections of metals and PAHs in sediment.

4.4.2.3 Surface Water

Three surface water samples were collected and analyzed for TAL metals and PAHs. Summary statistics for these surface water samples are provided in Table 4-8, and analytical results for target analytes detected at least once in surface water are presented in Table 4-9.

Concentrations of the barium and manganese exceeded PALs in all surface water samples; however, exceedances were an order of magnitude or less. The maximum concentration of barium [14.0 micrograms per liter (µg/L)] was detected in surface water sample NASB-TASKT-SW01-D and the maximum concentration of manganese (305J µg/L) was detected in surface water sample at NASB-TASKT-SW03.

Concentrations of the PAHs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo (g,h,i)perylene, benzo(k)flouranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded PALs in all surface water samples. All results were qualified J as estimated as described in Section 4.4.2.4.

Figure 4-4 presents positive detections of metals and PAHs in surface water.

4.4.2.4 Data Usability

Data usability was evaluated based on the results of data validation and the data quality review (DQR), which are discussed in Appendix E. Based on the DQR for the TASKT, SI data are of acceptable quality to make decisions on the path forward for the site. The following summarizes the evaluation for the individual DQIs for the NASB TASKT analytical results:

- Validation process - In accordance with the UFP-SAP, full data validation was conducted. Based on the validation results, no data collected for TASKT were rejected.

- Completeness - Sample collection completeness for all sample types was at least 100 percent. The sample analytical completeness for all sample types was also at least 100 percent. The completeness evaluation for TASKT is tabulated in Table E.6 of Appendix E.

- Sensitivity – Non-detected results for benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene in surface water and selenium in sediment were greater than corresponding

PALs and exceedance of criteria were noted in the SI Report; therefore, even though sensitivity issues were identified for those compounds data usability is still sufficient for the purposes of this investigation. Non-detected silver in surface soil, sediment, and surface water, cadmium in surface water results and antimony in sediment results were greater than corresponding PALs. Sensitivity for all other analytes and matrices was sufficient for the purposes of this investigation.

- Laboratory Accuracy - There were no significant laboratory accuracy concerns for NASB TASKT samples and soil, sediment, and surface water accuracy is considered acceptable. See Appendix E for discussions on site data qualified due to laboratory accuracy issues and corresponding result biases.

- Precision - No significant QC deficiencies were noted, and soil, sediment, and surface water precision is considered acceptable. See Appendix E for discussions on site data qualified due to precision issues.

- Comparability - No comparability issues were noted.

- Representativeness - The reported data are adequately representative of site conditions and intended populations at TASKT.

4.5 CONCLUSIONS

4.5.1 Shallow and Deep Surface Soil

For shallow surface soil (0 to 3 inches bgs), a total of eight chemicals (arsenic, lead, and the following PAHs - benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected at concentrations exceeding both MEDEP criteria and USEPA RSLs. Cobalt and iron were the only analytes exceeding both MEDEP criteria and USEPA RSLs in the deep surface soil (3 to 12 inches bgs). Note that the PAHs benzo(a)pyrene and benzo(b)fluoranthene exceed Maine RAGs at the off site sampling location (SS01) collected for comparison purposes. Furthermore, PAH concentrations in this off site soil sample were greater than those detected in the majority of the samples collected from the shortfall zone, but off site soil PAH concentrations were much less than in samples collected at the firing line.

4.5.2 Sediment

For sediment, arsenic, barium, beryllium, cobalt, iron, lead, manganese, nickel, selenium, and vanadium were detected at concentrations greater than PALs.

4.5.3 Surface Water

For surface water, barium, manganese and PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected at concentrations greater than PALs.

4.6 UPDATED CSM

Malcolm Pirnie developed a Conceptual Site Model (CSM) describing the TASKT and its environmental setting in the PA Report (2005). The CSM has been updated based on the findings of this SI and is summarized in Table 4-10. Exposure pathways by which site receptors could be exposed to or contaminated by MC are shown on Figure 4-5, and Figure 4-6 presents a graphical representation of the CSM.

4.7 RECOMMENDATIONS

Shallow surface soil (0 to 3 inches bgs) warrants remediation, further investigation is also necessary to refine the extent of the contamination. Cleanup levels need to be established. Remediation is not warranted for deep surface soil (3 to 12 inches bgs) or for surface water or sediment associated with the intermittent stream.

TABLE 4-1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH (feet bgs)	FBL ANALYSIS						
					TAL METALS (SW 846-6010B)	Lead (SW 846-6010B)	pH, CEC, TOC	TOC	NG (SW 846-8332)	DINITROLUENE (SW 846-8330A)	PAHs (USEPA-8270C SIM)
SOIL											
TASKT-SS01 (1)	NASB-TASKT-SS01-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS02	NASB-TASKT-SS02-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS03	NASB-TASKT-SS03-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS04	NASB-TASKT-SS04-0003	4/21/2010	PS	0 - 0.25	X	--	X	--	--	--	X
TASKT-SS05	NASB-TASKT-SS05-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS06	NASB-TASKT-SS06-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS07	NASB-TASKT-SS07-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS08	NASB-TASKT-SS08-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS09	NASB-TASKT-SS09-0003	4/21/2010	PS	0 - 0.25	X	--	X	--	--	--	X
	NASB-TASKT-SS09-0003-D	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS10	NASB-TASKT-SS10-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SS14	NASB-TASKT-SS14-0003	4/21/2010	PS	0 - 0.25	X	--	X	--	--	--	X
TASKT-SS18	NASB-TASKT-SS18-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	X	X	X
TASKT-SS19	NASB-TASKT-SS19-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	X	X	X
	NASB-TASKT-SS19-0003-D	4/21/2010	PS	0 - 0.25	X	--	--	--	X	X	X
TASKT-SS20	NASB-TASKT-SS20-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	X	X	X
TASKT-SB01	NASB-TASKT-SB01-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	X	X	X
TASKT-SB01	NASB-TASKT-SB01-0312	4/21/2010	HA	0.25 - 1.0	X	--	--	--	X	X	X
TASKT-SB02	NASB-TASKT-SB02-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SB02	NASB-TASKT-SB02-0312	4/21/2010	HA	0.25 - 1.0	X	--	--	--	--	--	X
TASKT-SB03	NASB-TASKT-SB03-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SB03	NASB-TASKT-SB03-0312	4/21/2010	HA	0.25 - 1.0	X	--	--	--	--	--	X
TASKT-SB04	NASB-TASKT-SB04-0003	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SB04	NASB-TASKT-SB04-0312	4/21/2010	HA	0.25 - 1.0	X	--	--	--	--	--	X
TASKT-SB05	NASB-TASKT-SB05-0003	4/21/2010	PS	0 - 0.25	X	--	X	--	--	--	X
TASKT-SB05	NASB-TASKT-SB05-0003-D	4/21/2010	PS	0 - 0.25	X	--	--	--	--	--	X
TASKT-SB05	NASB-TASKT-SB05-0312	4/21/2010	HA	0.25 - 1.0	X	--	--	--	--	--	X
TASKT-2-SS01	NASB-TASKT-2-SS01	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
TASKT-2-SS02	NASB-TASKT-2-SS02	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
TASKT-2-SS03	NASB-TASKT-2-SS03	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
	NASB-TASKT-2-SS03-D	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
TASKT-2-SS04	NASB-TASKT-2-SS04	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
TASKT-2-SS05	NASB-TASKT-2-SS05	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
TASKT-2-SS06	NASB-TASKT-2-SS06	11/29/2010	SST	0 - 0.25	--	--	--	--	--	--	X
TASKT-2-SS07	NASB-TASKT-2-SS07	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS08	NASB-TASKT-2-SS08	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS09	NASB-TASKT-2-SS09	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS10	NASB-TASKT-2-SS10	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS11	NASB-TASKT-2-SS11	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS12	NASB-TASKT-2-SS12	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS13	NASB-TASKT-2-SS13	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS14	NASB-TASKT-2-SS14	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS15	NASB-TASKT-2-SS15	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--

TABLE 4-1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH (feet bgs)	FBL ANALYSIS						
					TAL METALS (SW 846-6010B)	Lead (SW 846-6010B)	pH, CEC, TOC	TOC	NG (SW 846-8332)	DINITROLUENE (SW 846-8330A)	PAHs (USEPA-8270C SIM)
TASKT-2-SS16	NASB-TASKT-2-SS16	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS17	NASB-TASKT-2-SS17	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS18	NASB-TASKT-2-SS18	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS19	NASB-TASKT-2-SS19	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS20	NASB-TASKT-2-SS20	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS21	NASB-TASKT-2-SS21	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS22	NASB-TASKT-2-SS22	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS23	NASB-TASKT-2-SS23	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS24	NASB-TASKT-2-SS24	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS25	NASB-TASKT-2-SS25	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS26	NASB-TASKT-2-SS26	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS27	NASB-TASKT-2-SS27	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS28	NASB-TASKT-2-SS28	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS29	NASB-TASKT-2-SS29	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
	NASB-TASKT-2-SS29D	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS30	NASB-TASKT-2-SS30	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS31	NASB-TASKT-2-SS31	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS32	NASB-TASKT-2-SS32	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS33	NASB-TASKT-2-SS33	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
	NASB-TASKT-2-SS33D	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS34	NASB-TASKT-2-SS34	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS35	NASB-TASKT-2-SS35	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
	NASB-TASKT-2-SS35D	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS36	NASB-TASKT-2-SS36	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
	NASB-TASKT-2-SS36D	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS37	NASB-TASKT-2-SS37	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS38	NASB-TASKT-2-SS38	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS39	NASB-TASKT-2-SS39	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS40	NASB-TASKT-2-SS40	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS41	NASB-TASKT-2-SS41	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS42	NASB-TASKT-2-SS42	11/29/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS43	NASB-TASKT-2-SS43	12/9/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS44	NASB-TASKT-2-SS44	12/9/2010	PS	0 - 0.25	--	X	--	--	--	--	--
TASKT-2-SS45	NASB-TASKT-2-SS45	12/9/2010	PS	0 - 0.25	--	X	--	--	--	--	--
SEDIMENT											
TASKT-SD01	NASB-TASKT-SD01-0006	4/21/2010	HA	0 - 0.5	X	--	--	X	--	--	X
	NASB-TASKT-SD01-0006-D	4/21/2010	HA	0 - 0.5	X	--	--	X	--	--	X
TASKT-SD02	NASB-TASKT-SD02-0006	4/21/2010	HA	0 - 0.5	X	--	--	X	--	--	X
TASKT-SD03	NASB-TASKT-SD03-0006	4/21/2010	HA	0 - 0.5	X	--	--	X	--	--	X
TASKT-SD04	NASB-TASKT-SD04-0006	12/9/2010	PS	0 - 0.5	X	--	X	--	--	--	X

TABLE 4-1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH (feet bgs)	FBL ANALYSIS						
					TAL METALS (SW 846-6010B)	Lead (SW 846-6010B)	pH, CEC, TOC	TOC	NG (SW 846-8332)	DINITROLUENE (SW 846-8330A)	PAHs (USEPA-8270C SIM)
SURFACE WATER											
TASKT-SW01	NASB-TASKT-SW01-042110	4/21/2010	DD	Grab	X	--	--		--	--	X
TASKT-SW02	NASB-TASKT-SW02-042110	4/21/2010	DD	Grab	X	--	--		--	--	X
TASKT-SW03	NASB-TASKT-SW03-042110	4/21/2010	DD	Grab	X	--	--		--	--	X

X = Indicates sample was collected and analyzed as proposed in the Uniform Federal Policy Sampling and Analysis Plan (Tetra Tech, 2009).

bgs = Below ground surface.
CEC = Cation exchange capacity.
FBL = Fixed-base laboratory.
HA = Hand auger.
PS = Plastic scoop.
DD = Direct dip.
SST = Stainless steel trowel.
NASB = Naval Air Station Brunswick.
TOC = Total organic carbon.
XRF = X-ray fluorescence.
SS = Surface soil.
SB = Soil boring.
TASKT = Topsham Annex Skeet Range.

1. Off-site sample for comparison purposes.

TABLE 4-2

XRF SOIL LEAD DETECTIONS
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Sample ID	Depth (inches bgs)	Date	Time	XRF Analysis				Qualitative Moisture Content	Description/Comments
				1st (ppm)	2nd (ppm)	3rd (ppm)	Average (ppm)		
NASB-TASKT-XRF-SS01-0003 (1)	0-3	7/9/2009	1533	70	60	46	59	Slightly Damp	Brown, F-Sand some Silt
NASB-TASKT-XRF-SS01N-0003 (1)	0-3	7/9/2009	1538	13	10	7	10	Slightly Damp	Dk Brown, F-Sand some Silt (Loam)
NASB-TASKT-XRF-SS01S-0003 (1)	0-3	7/9/2009	1544	19	19	20	19	Slightly Damp	Brown F-Sand trace Silt
NASB-TASKT-XRF-SS01E-0003 (1)	0-3	7/9/2009	1549	19	16	15	17	Damp	Brown F-Sand some Silt
NASB-TASKT-XRF-SS01W-0003 (1)	0-3	7/9/2009	1554	15	16	10	14	Slightly Damp	Dk Brown, F-Sand some Silt (Loam)
NASB-TASKT-XRF-SS02-0003	0-3	7/9/2009	1528	29	34	29	31	Slightly Damp	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS03-0003	0-3	7/9/2009	1111	62	61	57	60	Slightly Damp	Brown, F-Sand and Silt
NASB-TASKT-XRF-SS04-0003	0-3	7/9/2009	1116	286	207	313	269	Damp	Brown, Silt with F-Sand
NASB-TASKT-XRF-SS04-0003 (DUP04)	0-3	7/9/2009	1221	266	276	285	276	Damp	Brown, Silt with F-Sand
NASB-TASKT-XRF-SS05-0003	0-3	7/9/2009	1122	15	20	25	20	Damp	Brown, F-Sand little Silt
NASB-TASKT-XRF-SS06-0003	0-3	7/9/2009	1127	216	231	218	222	Damp	Brown, F-Sand with Silt (4th reading taken, removed result was 112 ppm)
NASB-TASKT-XRF-SS07-0003	0-3	7/9/2009	1227	113	56	65	78	Slightly Damp	Dk Brown, F-Sand with Silt
NASB-TASKT-XRF-SS08-0003	0-3	7/9/2009	1232	95	94	78	89	Slightly Damp	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS09-0003	0-3	7/9/2009	1238	571	495	346	471	Damp	Dk Brown, F-Sand with Silt
NASB-TASKT-XRF-SS09-0312	3-12	7/13/2009	1017	196		128	162	Slightly Damp	Brown F-Sand and Silt (4th reading taken, removed result was 70 ppm)
NASB-TASKT-XRF-SS10-0003	0-3	7/9/2009	1243	200	264	310	258	Damp	Dk Brown, F-Sand with Silt
NASB-TASKT-XRF-SS11-0003	0-3	7/13/2009	1041	19	12	18	16	Slightly Damp	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS12-0003	0-3	7/13/2009	1047	18	18	15	17	Slightly Damp	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS13-0003	0-3	7/13/2009	0946	36	38	40	38	Slightly Damp	Brown, F-Sand little Silt
NASB-TASKT-XRF-SS14-0003	0-3	7/13/2009	1056	231	232	297	253	Dry	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS14-0003 (DUP07)	0-3	7/13/2009	1218	288	276	276	280	Dry	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS15-0003	0-3	7/13/2009	1102	151	148	121	140	Dry	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SS16-0003	0-3	7/13/2009	1012	117	137	130	128	Damp	Brown Silt, some F-Sand
NASB-TASKT-XRF-SS16-0003 (DUP06)	0-3	7/13/2009	1024	134	131	123	129	Damp	Brown Silt, some F-Sand
NASB-TASKT-XRF-SS17-0003	0-3	7/13/2009	0940	105	98	87	97	Slightly Damp	Brown, F-Sand some Silt, clay pigeon
NASB-TASKT-XRF-SB01-0003	0-3	7/9/2009	1505	20	28	23	24	Damp	Brown, Silt some Clay
NASB-TASKT-XRF-SB01-0312	3-12	7/9/2009	1512	20	19	14	18	Damp	Brown, Silt some Clay, trace F-Sand
NASB-TASKT-XRF-SB02-0003	0-3	7/9/2009	1133	200	199	156	185	Slightly Damp	Dk Brown, F-Sand little Silt (4th reading taken, removed result was 347 ppm)
NASB-TASKT-XRF-SB02-0312	3-12	7/9/2009	1140	28	47	32	36	Slightly Damp	Brown, F-Sand little Silt

TABLE 4-2

XRF SOIL LEAD DETECTIONS
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Sample ID	Depth (inches bgs)	Date	Time	XRF Analysis				Qualitative Moisture Content	Description/Comments
				1st (ppm)	2nd (ppm)	3rd (ppm)	Average (ppm)		
NASB-TASKT-XRF-SB03-0003	0-3	7/9/2009	1145	25	31	57	38	Slightly Damp	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SB03-0312	3-12	7/9/2009	1155	25	25	19	23	Slightly Damp	Brown, F-Sand some Silt
NASB-TASKT-XRF-SB04-0003	0-3	7/9/2009	1200	26	28	28	27	Slightly Damp	Dk Brown, F-Sand little Silt
NASB-TASKT-XRF-SB04-0312	3-12	7/9/2009	1205	39	39	45	41	Slightly Damp	Brown, F-Sand, some Silt
NASB-TASKT-XRF-SB05-0003	0-3	7/9/2009	1248	530	771	756	686	Sl. Damp	Dk Brown, F-Sand trace Silt
NASB-TASKT-XRF-SB05-0003 (DUP05)	0-3	7/9/2009	1558	680	419	493	531	Slightly Damp	Dk Brown, F-Sand little Silt
NASB-TASKT-XRF-SB05-0312	3-12	7/9/2009	1253	144	91	102	112	Damp	Brown, F-Sand and Silt
NASB-TASKT-XRF-SB06-0003	0-3	7/13/2009	1120	77	76	114	89	Slightly Damp	Brown, F-Sand some Silt
NASB-TASKT-XRF-SB06-0312	3-12	7/13/2009	1127	116	161	160	146	Slightly Damp	Brown, F-Sand some Silt
NASB-TASKT-XRF-SB07-0003	0-3	7/13/2009	0951	99	100	94	98	Slightly Damp	Brown, F-Sand and Silt
NASB-TASKT-XRF-SB07-0312	3-12	7/13/2009	0957	39	35	31	35	Slightly Damp	Brown, F-Sand and Silt
NASB-TASKT-XRF-SB08-0003	0-3	7/13/2009	1135	23	19	16	19	Slightly Damp	Dk Brown, F-Sand and Silt
NASB-TASKT-XRF-SB08-0312	3-12	7/13/2009	1143	13	17	12	14	Slightly Damp	Dk Brown, F-Sand some Silt
NASB-TASKT-XRF-SB09-0003	0-3	7/13/2009	1148	19	23	16	19	Dry	Dk Brown, F-Sand some Silt, fibrous
NASB-TASKT-XRF-SB09-0312	3-12	7/13/2009	1154	14	17	14	15	Slightly Damp	Brown, F-Sand some Silt
NASB-TASKT-XRF-SB10-0003	0-3	7/13/2009	1208	26	24	19	23	Dry	Dk Brown, F-Sand some Silt (Loam)
NASB-TASKT-XRF-SB10-0312	3-12	7/13/2009	1213	33	31	33	32	Dry	Brown, F-Sand some Silt
NASB-TASKT-XRF-SB11-0003	0-3	7/13/2009	1002	41	41	35	39	Damp	Brown Silt, little F-Sand
NASB-TASKT-XRF-SB11-0312	3-12	7/13/2009	1008	25	25	16	22	Damp	Brown Silt and Clay, Trace F-Sand

N/A = Not Applicable.
BKG = Background sample.
PPM = parts per million.
bgs = Below ground surface.
Pb = Lead.
QA = Quality Assurance.

1. Off-site sample for comparison purposes.

TABLE 4-3

SURFACE WATER SAMPLING FIELD PARAMETERS
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Sample Identification	Sample Date	Time of Collection	Sample Depth (ft bgs)	Depth to Bottom (ft bgs)	Sample Method	Color	pH	Spec. Cond. (mS/cm)	Temp (^{o}C)	Turbidity (NTU)	DO (mg/l)	Salinity (ppm)	ORP (mV)	Notes
NASB-TASKT-SW01	4/21/2010	850	0.2	0.5	Direct Dip	Clear	5.88	223	7.35	1.14	11.5	0.11	256.6	--
NASB-TASKT-SW02	4/21/2010	915	0.2	0.46	Direct Dip	Clear	6.41	231	7.9	1.26	10.99	0.11	222.9	--
NASB-TASKT-SW03	4/21/2010	945	0.2	0.75	Direct Dip	Clear	6.48	221	8.55	2.30	11.4	0.11	169.2	Some iron floc on bottom of stream. Very rocky.

^{o}C = Degrees Centigrade.
mS/cm = MilliSiemens per centimeter.
DO = Dissolved oxygen.
ft bgs = Feet below ground surface.
mg/l = Milligrams per liter.
mV = Millivolts.
NTU = Nephelometric turbidity units.
ORP = Oxidation/reduction potential.

TABLE 4-4

FREQUENCY OF DETECTION IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Parameter	Frequency of Detection	Minimum Result	Maximum Result	Location of Maximum Detection	Sample with Maximum Detection	Minimum Non-Detection	Maximum Non-Detection	Maine RAGS Appendix 3 Criteria [1]	USEPA RSL Criterion[2]
METALS (mg/kg)									
ALUMINUM	24/24	2780	26700	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	69,000	*7700* N
ANTIMONY	3/24	0.436 J	1.3 J	NASB-TASKT-XRF-SS04	NASB-TASKT-SS04-0003	0.301	0.467	14	3.1 N
ARSENIC	24/24	2.72 J	53.5 J	NASB-TASKT-XRF-SS09	NASB-TASKT-SS09-0003	--	--	9	*0.39* C
BARIUM	24/24	10.7	91.7	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	6,800	1500 N
BERYLLIUM	24/24	0.14 J	1.54	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	68	16 N
CALCIUM	24/24	228 J	2890	NASB-TASKT-XRF-SS02	NASB-TASKT-SS02-0003	--	--	--	--
CHROMIUM	24/24	4.49	40.1	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	100 [4]	*0.29* C[4]
COBALT	24/24	0.406 J	18	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	15	*2.3* N
COPPER	24/24	3.25	18.3	NASB-TASKT-XRF-SS01	NASB-TASKT-SS01-0003	--	--	480	31 N
IRON	24/24	4760	33200	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	31,000	*550* N
LEAD	63/63	6.5 J	44100 J	TASKT-2-SS32	NASB-TASKT-2-SS32	--	--	170	*400* [4]
LEAD-CALC	14/18	1.6	243	NASB-TASKT-XRF-SB06	NASB-TASKT-XRF-SB06-0312	0	0	170	400 [5]
MAGNESIUM	24/24	259 J	7430	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	--	--
MANGANESE	24/24	18.5	956	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	1,100	*180* N
MERCURY	24/24	0.0344 J	0.194	NASB-TASKT-XRF-SS19	NASB-TASKT-SS19-0003-D	--	--	10	2.3 N[6]
NICKEL	24/24	2.6	31.7	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	100	150 N
POTASSIUM	24/24	268 J	2380 J	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	--	--
SELENIUM	24/24	0.359 J	0.857	NASB-TASKT-XRF-SS02	NASB-TASKT-SS02-0003	--	--	68	39 N
SODIUM	4/24	88.8 J	107 J	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	60.1	93.4	--	--
VANADIUM	24/24	13.7	53.7	NASB-TASKT-XRF-SB01	NASB-TASKT-SB01-0312	--	--	240	*39* N
ZINC	24/24	9.02	92.9	NASB-TASKT-XRF-SS19	NASB-TASKT-SS19-0003	--	--	10,000	2300 N
EXPLOSIVES (mg/kg)									
NITROGLYCERIN	3/5	0.304 J	0.446 J	NASB-TASKT-XRF-SS18	NASB-TASKT-SS18-0003	0.25	0.25	--	0.61 N
POLYCYCLIC AROMATIC HYDROCARBONS (ug/kg)									
1-METHYLNAPHTHALENE	6/30	5.88 J	136 J	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	10.4	--	22000 C
2-METHYLNAPHTHALENE	6/30	9.25 J	200 J	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	16.1	36,000	31000 N
ACENAPHTHENE	8/30	4.43 J	3200	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	4.75	110,000	340000 N
ACENAPHTHYLENE	9/30	16.6	115	NASB-TASKT-XRF-SS01	NASB-TASKT-SS01-0003	2.06	27.7	68,000	340000 N[7]
ANTHRACENE	16/30	2.12 J	4470	TASKT-2-SS04	NASB-TASKT-2-SS04	1.68	4.75	430,000	1700000 N
BENZO(A)ANTHRACENE	11/30	19.4 J	16700	TASKT-2-SS04	NASB-TASKT-2-SS04	1.68	4.75	260	*150* C
BENZO(A)PYRENE	20/30	9.35	25300	TASKT-2-SS04	NASB-TASKT-2-SS04	1.86	4.75	26	*15* C
BENZO(B)FLUORANTHENE	29/30	16.2	35600 J	TASKT-2-SS04	NASB-TASKT-2-SS04	1.86	4.75	260	*150* C
BENZO(G,H,I)PERYLENE	8/30	99	14000	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	4.75	750,000	170000 N[8]
BENZO(K)FLUORANTHENE	29/30	8.1 J	8850 J	TASKT-2-SS04	NASB-TASKT-2-SS04	1.86	4.75	2,600	*1500* C
CHRYSENE	11/30	11.9	14600 J	TASKT-2-SS04	NASB-TASKT-2-SS04	1.68	4.75	26000	15000 C
DIBENZO(A,H)ANTHRACENE	5/30	37.6	2590	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	5.14	26	*15* C
FLUORANTHENE	30/30	18.7	34900	TASKT-2-SS04	NASB-TASKT-2-SS04	4.75	4.75	1,000,000	230000 N
FLUORENE	20/30	2.09 J	1800	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	4.75	120,000	230000 N
INDENO(1,2,3-CD)PYRENE	7/30	90.8	12900	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	4.89	260	*150* C
NAPHTHALENE	6/30	6.07 J	570	TASKT-2-SS04	NASB-TASKT-2-SS04	1.63	2.48	1,700	3600 C
PHENANTHRENE	19/30	8.59	17700	TASKT-2-SS04	NASB-TASKT-2-SS04	1.68	4.75	97,000	170000 N[8]
PYRENE	30/30	16.6	25600	TASKT-2-SS04	NASB-TASKT-2-SS04	4.75	4.75	750,000	170000 N
XRF (mg/kg)									
LEAD	44/44	10	686	NASB-TASKT-XRF-SB05	NASB-TASKT-XRF-SB05-0003	--	--	170	*400* [5]
MISCELLANEOUS PARAMETERS									
CATION EXCHANGE CAPACITY (MEQ/10	4/4	16.9	34	NASB-TASKT-XRF-SB05	NASB-TASKT-SB05-0003	--	--	--	--
pH (S.U.)	4/4	3.63 J	4.05 J	NASB-TASKT-XRF-SS09	NASB-TASKT-SS09-0003	--	--	--	--
TOTAL ORGANIC CARBON (mg/kg)	4/4	56500	102000	NASB-TASKT-XRF-SB05	NASB-TASKT-SB05-0003	--	--	--	--

TABLE 4-4

FREQUENCY OF DETECTION IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

mg/kg = Miligrams per kilogram.
ug/kg= Micrograms per kilogram.
J = Value is estimated.
NC = No criterion.
MEQ/100 = Milliequivalent.
S.U. = Standard Units.
XRF = X-ray fluorescence.

Footnotes
1 Maine RAGS, Appendix 3, (January, 2010).
2 USEPA residential Regional Screening Level (June, 2011). Non-carcinogen values are divided by 10.
3 Off site sample for comparison purposes
4 Screening level is for hexavalent chromium.
5 Screening level is not adjusted because it is not risk based.
6 Screening level is for mercuric chloride.
7 Screening level is for acenaphthene.
8 Screening level is for pyrene.

Red Shading - concentration greater than Maine RAGs criterion.
Italics - concentration greater than RSL criterion.

Associated Samples:

NASB-TASKT-XRF-SB01-0003	NASB-TASKT-XRF-SS02-0003	NASB-TASKT-2-SS05	NASB-TASKT-2-SS32
NASB-TASKT-XRF-SB01-0312	NASB-TASKT-XRF-SS03-0003	NASB-TASKT-2-SS06	NASB-TASKT-2-SS33
NASB-TASKT-XRF-SB02-0003	NASB-TASKT-XRF-SS04-0003	NASB-TASKT-2-SS07	NASB-TASKT-2-SS33-AVG
NASB-TASKT-XRF-SB02-0312	NASB-TASKT-XRF-SS04-0003-AVG	NASB-TASKT-2-SS08	NASB-TASKT-2-SS33-D
NASB-TASKT-XRF-SB03-0003	NASB-TASKT-XRF-SS04-0003-D	NASB-TASKT-2-SS09	NASB-TASKT-2-SS34
NASB-TASKT-XRF-SB03-0312	NASB-TASKT-XRF-SS05-0003	NASB-TASKT-2-SS10	NASB-TASKT-2-SS35
NASB-TASKT-XRF-SB04-0003	NASB-TASKT-XRF-SS06-0003	NASB-TASKT-2-SS11	NASB-TASKT-2-SS35-AVG
NASB-TASKT-XRF-SB04-0312	NASB-TASKT-XRF-SS07-0003	NASB-TASKT-2-SS12	NASB-TASKT-2-SS35-D
NASB-TASKT-XRF-SB05-0003	NASB-TASKT-XRF-SS08-0003	NASB-TASKT-2-SS13	NASB-TASKT-2-SS36
NASB-TASKT-XRF-SB05-0003-AVG	NASB-TASKT-XRF-SS09-0003	NASB-TASKT-2-SS14	NASB-TASKT-2-SS36-AVG
NASB-TASKT-XRF-SB05-0003-D	NASB-TASKT-XRF-SS09-0312	NASB-TASKT-2-SS15	NASB-TASKT-2-SS36-D
NASB-TASKT-XRF-SB05-0312	NASB-TASKT-XRF-SS10-0003	NASB-TASKT-2-SS16	NASB-TASKT-2-SS37
NASB-TASKT-XRF-SB06-0003	NASB-TASKT-XRF-SS11-0003	NASB-TASKT-2-SS17	NASB-TASKT-2-SS38
NASB-TASKT-XRF-SB06-0312	NASB-TASKT-XRF-SS12-0003	NASB-TASKT-2-SS18	NASB-TASKT-2-SS39
NASB-TASKT-XRF-SB07-0003	NASB-TASKT-XRF-SS13-0003	NASB-TASKT-2-SS19	NASB-TASKT-2-SS40
NASB-TASKT-XRF-SB07-0312	NASB-TASKT-XRF-SS14-0003	NASB-TASKT-2-SS20	NASB-TASKT-2-SS41
NASB-TASKT-XRF-SB08-0003	NASB-TASKT-XRF-SS14-0003-AVG	NASB-TASKT-2-SS21	NASB-TASKT-2-SS42
NASB-TASKT-XRF-SB08-0312	NASB-TASKT-XRF-SS14-0003-D	NASB-TASKT-2-SS22	NASB-TASKT-2-SS43
NASB-TASKT-XRF-SB09-0003	NASB-TASKT-XRF-SS15-0003	NASB-TASKT-2-SS23	NASB-TASKT-2-SS44
NASB-TASKT-XRF-SB09-0312	NASB-TASKT-XRF-SS16-0003	NASB-TASKT-2-SS24	NASB-TASKT-2-SS45
NASB-TASKT-XRF-SB10-0003	NASB-TASKT-XRF-SS16-0003-AVG	NASB-TASKT-2-SS25	NASB-TASKT-SB01-0003
NASB-TASKT-XRF-SB10-0312	NASB-TASKT-XRF-SS16-0003-D	NASB-TASKT-2-SS26	NASB-TASKT-SB01-0312
NASB-TASKT-XRF-SB11-0003	NASB-TASKT-XRF-SS17-0003	NASB-TASKT-2-SS27	NASB-TASKT-SB02-0003
NASB-TASKT-XRF-SB11-0312	NASB-TASKT-2-SS01	NASB-TASKT-2-SS28	NASB-TASKT-SB02-0312
NASB-TASKT-XRF-SS01-0003 (3)	NASB-TASKT-2-SS02	NASB-TASKT-2-SS29	NASB-TASKT-SB03-0003
NASB-TASKT-XRF-SS01E-0003 (3)	NASB-TASKT-2-SS03	NASB-TASKT-2-SS29-AVG	NASB-TASKT-SB03-0312
NASB-TASKT-XRF-SS01N-0003 (3)	NASB-TASKT-2-SS03-AVG	NASB-TASKT-2-SS29-D	NASB-TASKT-SB04-0003
NASB-TASKT-XRF-SS01S-0003 (3)	NASB-TASKT-2-SS03-D	NASB-TASKT-2-SS30	NASB-TASKT-SB04-0312
NASB-TASKT-XRF-SS01W-0003 (3)	NASB-TASKT-2-SS04	NASB-TASKT-2-SS31	NASB-TASKT-SB05-0003

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-XRF							
				SB01-0003	SB01-0312	SB02-0003	SB02-0312	SB03-0003	SB03-00312	SB04-0003	SB04-0312
				0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs
				Jul-09		Jul-09		Jul-09		Jul-09	
METALS (mg/kg)											
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)											
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)											
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)											
LEAD	170	400	N	24	18	185	36	38	23	27	41
MISCELLANEOUS PARAMETERS (MEQ/100)											
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)											
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)											
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-XRF								
				SB05-0003			SB05-0312	SB06-0003	SB06-0312	SB07-0003	SB07-0312	SB08-0003
				0 - 0.25 ft bgs			0.25 - 1 ft bgs					
				Sample	Duplicate	Average		0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs
				Jul-09			Jul-09	Jul-09		Jul-09		Jul-09
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NC	400		NA	NA	NA	NA	135	243	152	32	1.6
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	*686*	*531*	*608.5*	112	89	146	98	35	19
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) [1]	USEPA RSL (June 2011) [2]		NASB-TASKT-XRF								
				SB08-0312	SB09-0003	SB09-0312	SB10-0003	SB10-0312	SB11-0003	SB11-0312	SS01-0003 [3]	SS01E-0003 [3]
				0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Jul-09	Jul-09		Jul-09		Jul-09		Jul-09	Jul-09
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NC	400		0 U	1.6	0 U	9.2	26.3	39.6	7.3	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	14	19	15	23	32	39	22	59	17
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) [1]	USEPA RSL (June 2011) [2]		NASB-TASKT-XRF-								
				SS01N-0003 [3]	SS01S-0003 [3]	SS01W-0003 [3]	SS02-0003	SS03-0003	SS04-0003			SS05-0003
									0 - 0.25 ft bgs			
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	Sample	Duplicate	Average	0 - 0.25 ft bgs
				Jul-09	Jul-09	Jul-09	Jul-09	Jul-09	Jul-09			Jul-09
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	10	19	14	31	60	269	276	272.5	20
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-XRF-								
				SS06-0003	SS07-0003	SS08-0003	SS09-0003	SS09-0312	SS10-0003	SS11-0003	SS12-0003	SS13-0003
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Jul-09	Jul-09	Jul-09	Jul-09	Jul-09	Jul-09	Jul-09	Jul-09	Jul-09
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NC	400		NA	NA	NA	NA	239	NA	0 U	0 U	37.7
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	222	78	89	*471*	144	258	16	17	38
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) [1]	USEPA RSL (June 2011) [2]		NASB-TASKT-XRF-								
				SS14-0003			SS15-0003	SS16-0003			SS17-0003	SB01-0003
				0 - 0.25 ft bgs				0 - 0.25 ft bgs				
				Sample	Duplicate	Average	0 - 0.25 ft bgs	Sample	Duplicate	Average	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Jul-09			Jul-09	Jul-09			Jul-09	Apr-10
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	*21500*
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	0.401 UJ
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	*4.99 J*
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	73.4
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	1.21
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	1930
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	*32.7*
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	*10.9*
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	12.3
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	*27000*
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	27.6 J
LEAD-CALC	NC	400		NA	NA	NA	232	NA	NA	NA	150	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	5810
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	*480*
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	0.0535 J
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	25.1
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	1970 J
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	0.513
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	103 J
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	*44.4*
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	75.9
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	0.362 J
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	5.73 UJ
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	6.2 UJ
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	2.15 U
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	2.15 U
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	19.9
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	140 J
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	*178*
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	*191*
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	120
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	103
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	164
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	*37.6*
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	192
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	11.3
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	139
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	2.15 U
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	92.3
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	180
XRF (mg/kg)												
LEAD	170	400	N	253	280	266.5	140	128	129	128.5	97	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-XRF-						
				SB01-0312	SB02-0003	SB02-0312	SB03-0003	SB03-0312	SB04-0003	SB04-0312
				0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs	0 - 0.25 ft bgs	0.25 - 1 ft bgs
				Apr-10	Apr-10		Apr-10		Apr-10	
METALS (mg/kg)										
ALUMINUM	69000	7700	N	*26700*	*10700*	*11100*	*11500*	*13100*	*12100*	*13000*
ANTIMONY	14	3.1	N	0.339 UJ	0.328 UJ	0.307 UJ	0.314 UJ	0.301 UJ	0.355 UJ	0.323 UJ
ARSENIC	9	0.39	C	*5.42 J*	*4.66 J*	*2.72 J*	*4.3 J*	*3.01 J*	*4.57 J*	*3.61 J*
BARIUM	6800	1500	N	91.7	15.6	16.6	16.7	18.4	15.9	16.2
BERYLLIUM	68	16	N	1.54	0.526	0.591	0.597	0.759	0.592	0.687
CALCIUM	NC	NC		1410	326 J	228 J	333	310	378	265 J
CHROMIUM	100	0.29		*40.1*	*8.96*	*9.23*	*10.3*	*12.3*	*9.82*	*10.9*
COBALT	15	2.3	N	*18*	1.46	1.56	2.18	*2.93*	1.65	2.06
COPPER	480	310	N	11.3	5.46	3.92	6.01	4.6	6.66	4.7
IRON	31000	5500	N	*33200*	*11200*	*11300*	*11900*	*12800*	*12400*	*12000*
LEAD	170	400	N	14.4 J	98.2 J	16.9 J	24.3 J	6.5 J	82.3 J	11.9 J
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		7430	880	966	1190	1530	1030	1270
MANGANESE	1100	180	N	*956*	93.5	97.3	116	134	85.5	93.8
MERCURY	10	2.3	N	0.0383 J	0.0981	0.0469	0.0612	0.0396	0.0731	0.0579
NICKEL	100	150	N	31.7	4.74	4.82	6.53	7.98	5.44	6.06
POTASSIUM	NC	NC		2380 J	381 J	384 J	503 J	557 J	458 J	528 J
SELENIUM	68	39	N	0.755	0.722	0.62	0.589	0.54	0.767	0.649
SODIUM	NC	NC		107 J	65.6 U	61.5 U	62.8 U	60.1 U	71.1 U	64.7 U
VANADIUM	240	39	N	*53.7*	21.9	19.3	20.3	21.1	22	20.2
ZINC	10000	2300	N	81.7	22.1	22.4	29.8	37.3	22	23
EXPLOSIVES (mg/kg)										
NITROGLYCERIN	NC	0.61	N	0.25 U	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)										
1-METHYLNAPHTHALENE	NC	22000	C	3.06 UJ	4.39 UJ	1.82 UJ	1.84 UJ	1.63 U	1.96 U	1.77 U
2-METHYLNAPHTHALENE	3600	31000	N	3.21 UJ	4.7 UJ	1.85 UJ	2.05 UJ	1.63 U	1.96 U	1.77 U
ACENAPHTHENE	110000	340000	N	1.82 U	1.81 U	1.68 U	1.7 U	1.63 U	1.96 U	1.77 U
ACENAPHTHYLENE	68000	340000	N	4.57 UJ	16.6	5.75 UJ	7.05 UJ	3.63 UJ	11.9 U	4.79 UJ
ANTHRACENE	430000	1700000	N	1.82 U	8.41 J	1.68 U	3.06 J	2.12 J	1.96 U	1.77 U
BENZO(A)ANTHRACENE	260	150	C	1.82 UJ	1.81 UJ	1.68 UJ	1.7 UJ	19.4 J	1.96 UJ	1.77 UJ
BENZO(A)PYRENE	26	15	C	14.2	*41.8*	12.4	*21.1*	9.35	*40.7 J*	*16*
BENZO(B)FLUORANTHENE	260	150	C	16.7	74.4	25.7	36.7	16.2	56.4 J	22.4
BENZO(G,H,I)PERYLENE	750000	170000	N	1.82 U	1.81 U	1.68 U	1.7 U	1.63 U	1.96 UJ	1.77 U
BENZO(K)FLUORANTHENE	2600	1500	C	11.6	35.7	15.9	11.4	8.1 J	37.7 J	10.8
CHRYSENE	26000	15000	C	1.82 U	1.81 U	1.68 U	1.7 U	11.9	1.96 U	1.77 U
DIBENZO(A,H)ANTHRACENE	26	15	C	1.82 U	1.81 U	1.68 U	1.7 U	1.63 U	1.96 UJ	1.77 U
FLUORANTHENE	1000000	230000	N	20.9	102	29.1	39.5	18.7	78.4	26.8
FLUORENE	120000	230000	N	1.82 U	6.46 J	1.68 U	2.09 J	1.63 U	1.96 U	1.77 U
INDENO(1,2,3-CD)PYRENE	260	150	C	1.82 U	1.81 U	1.68 U	1.7 U	1.63 U	1.96 UJ	1.77 U
NAPHTHALENE	1700	3600	C	1.82 U	1.81 U	1.68 U	1.7 U	1.63 U	1.96 U	1.77 U
PHENANTHRENE	97000	170000	N	1.82 U	54.2	1.68 U	19	8.59	1.96 U	1.77 U
PYRENE	750000	170000	N	21.8	93.4	27.3	37.3	16.6	69.7	24.9
XRF (mg/kg)										
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)										
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)										
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)										
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) [1]	USEPA RSL (June 2011) [2]		NASB-TASKT-XRF-								
				SB05-0003			SB05-0312	SS01-0003 [3]	SS02-0003	SS03-0003	SS04-0003	SS05-0003
				0 - 0.25 ft bgs			0.25 - 1 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Sample	Duplicate	Average	Apr-10	Apr-10	Apr-10	Apr-10	Apr-10	Apr-10
METALS (mg/kg)												
ALUMINUM	69000	7700	N	*17700*	*18700*	*18200*	*15700*	6910	6850	*10800*	*11600*	*14000*
ANTIMONY	14	3.1	N	0.45 UJ	0.45 UJ	0.45 U	0.339 UJ	0.438 UJ	0.38 UJ	0.396 UJ	1.3 J	0.467 UJ
ARSENIC	9	0.39	C	*10.8 J*	*10.8 J*	*10.8*	*5.9 J*	*3.02 J*	*4.22 J*	*4.66 J*	*5.93 J*	*5.69 J*
BARIUM	6800	1500	N	32.3	34.2	33.25	35.7	14.8	29.5	29.4	22.6	31.9
BERYLLIUM	68	16	N	1	1.01	1.005	0.966	0.335 J	0.426	0.659	0.577	0.804
CALCIUM	NC	NC		606	494	550	549	352 J	2890	821	630	549
CHROMIUM	100	0.29		*21.1*	*22.2*	*21.65*	*19.4*	*7.54*	*9.05*	*14.6*	*18.8*	*17.5*
COBALT	15	2.3	N	*4.77*	*5.44*	*5.105*	*5.35*	0.928 J	1.71	*4.57*	*3.91*	*3.38*
COPPER	480	310	N	13.9	13.3	13.6	12.4	18.3	6.78	9.53	7.16	9.66
IRON	31000	5500	N	*22100*	*23000*	*22550*	*19000*	*9360*	*9880*	*13600*	*16200*	*16800*
LEAD	170	400	N	*453 J*	299 J	376	26.4 J	123 J	33.1 J	70.4 J	*960 J*	198 J
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		2910	2990	2950	3090	524	1170	2430	2690	2500
MANGANESE	1100	180	N	170	174	172	*185*	46.1	159	*369*	137	126
MERCURY	10	2.3	N	0.0917	0.0901	0.0909	0.0529	0.127	0.0913	0.0609	0.0644	0.0941
NICKEL	100	150	N	15.3	15.3	15.3	14.8	4.69	7.59	10.7	11.8	12.2
POTASSIUM	NC	NC		1230 J	1160 J	1195	1320 J	469 J	561 J	1210 J	1080 J	1080 J
SELENIUM	68	39	N	0.841	0.82	0.8305	0.538	0.846	0.857	0.464 J	0.539	0.847
SODIUM	NC	NC		90 U	89.9 U	89.95 U	67.8 U	87.5 U	76 U	79.2 U	76.8 U	93.4 U
VANADIUM	240	39	N	*41.4*	*40.8*	*41.1*	31.7	22.5	25.5	26.2	32.7	33.2
ZINC	10000	2300	N	42.2	50.4	46.3	35.3	28	52.9	32	35.7	32
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	2.41 U	10.4 UJ	6.405 U	1.86 U	10.4 UJ	3.76 UJ	2.11 U	2.25 UJ	4.24 UJ
2-METHYLNAPHTHALENE	3600	31000	N	2.41 U	11 UJ	6.705 U	1.86 U	10.9 UJ	4.39 UJ	2.11 U	2.58 UJ	4.82 UJ
ACENAPHTHENE	110000	340000	N	2.41 U	2.43 U	2.42 U	1.86 U	2.4 U	2.01 U	2.11 U	2.13 U	4.43 J
ACENAPHTHYLENE	68000	340000	N	12.4 U	19.8	13	4.74 UJ	115	28.2	19	13.6 U	21.2
ANTHRACENE	430000	1700000	N	2.41 U	2.43 U	2.42 U	1.86 U	57.6	14.5	2.11 U	2.13 U	16.1
BENZO(A)ANTHRACENE	260	150	C	2.41 UJ	2.43 U	2.42 U	1.86 UJ	*185 J*	58.2 J	2.11 U	2.13 U	2.48 U
BENZO(A)PYRENE	26	15	C	*64.4 J*	2.43 UJ	*32.8075*	1.86 U	*329*	*97.9*	*77*	2.13 U	2.48 U
BENZO(B)FLUORANTHENE	260	150	C	78.6	70.5	74.55	1.86 U	*420*	126	86.9	56.2	95.1
BENZO(G,H,I)PERYLENE	750000	170000	N	2.41 U	2.43 U	2.42 U	1.86 U	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U
BENZO(K)FLUORANTHENE	2600	1500	C	45.4	50.4 J	47.9	1.86 U	259	82.1	61.1 J	44.1 J	51.3 J
CHRYSENE	26000	15000	C	2.41 U	2.43 U	2.42 U	1.86 U	385	106	2.11 U	2.13 U	2.48 U
DIBENZO(A,H)ANTHRACENE	26	15	C	2.41 U	2.43 U	2.42 U	1.86 U	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U
FLUORANTHENE	1000000	230000	N	106	105	105.5	22.2	558	174	86.6	86.7	139
FLUORENE	120000	230000	N	2.41 U	8.91 J	5.0575	1.86 U	20.4	6.9 J	2.11 U	2.13 U	7.51 J
INDENO(1,2,3-CD)PYRENE	260	150	C	2.41 U	2.43 U	2.42 U	1.86 U	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U
NAPHTHALENE	1700	3600	C	2.41 U	2.43 U	2.42 U	1.86 U	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U
PHENANTHRENE	97000	170000	N	2.41 UJ	65.4 J	33.3025	1.86 U	268	77.2	2.11 U	2.13 U	86.6
PYRENE	750000	170000	N	94.9	92.9	93.9	19.7	527	149	80.8	75.6	122
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		34	NA	34	NA	NA	NA	NA	16.9	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		102000	NA	102000	NA	NA	NA	NA	57400	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		3.89 J	NA	3.89 J	NA	NA	NA	NA	3.63 J	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-XRF-								
				SS06-0003	SS07-0003	SS07-0003	SS09-0003			SS10-0003	SS14-0003	SS18-0003
							0 - 0.25 ft bgs					
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	Sample	Duplicate	Average	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Apr-10	Apr-10	Apr-10	Apr-10			Apr-10	Apr-10	Apr-10
METALS (mg/kg)												
ALUMINUM	69000	7700	N	*20300*	*19200*	*17000*	*11800*	*12100*	*12400*	*17600*	2780	*18700*
ANTIMONY	14	3.1	N	0.796 J	0.399 UJ	0.345 UJ	0.563 J	0.4995	0.436 J	0.361 UJ	0.388 UJ	0.438 UJ
ARSENIC	9	0.39	C	*8.89 J*	*10.1 J*	*9.47 J*	*53.5 J*	*30.56*	*7.62 J*	*5.34 J*	*2.93 J*	*5.03 J*
BARIUM	6800	1500	N	40	44	37.6	24	24.8	25.6	47	10.7	63.7
BERYLLIUM	68	16	N	1.08	0.975	0.864	0.63	0.6355	0.641	0.944	0.14 J	1.03
CALCIUM	NC	NC		610	546	881	491	484	477	796	310 J	1900
CHROMIUM	100	0.29		*25.9*	*22.8*	*19.9*	*15.8*	*16*	*16.2*	*27.1*	*4.49*	*27.7*
COBALT	15	2.3	N	*6.16*	*5.69*	*4.74*	*2.97*	*3.085*	*3.2*	*7.48*	0.406 J	*11.6*
COPPER	480	310	N	12.7	12.8	11.4	8.28	8.505	8.73	9.98	3.25	13.7
IRON	31000	5500	N	*27300*	*23600*	*20500*	*18600*	*17900*	*17200*	*26500*	4760	*24500*
LEAD	170	400	N	364 J	51.7 J	168 J	*24300 J*	*12347.5*	395 J	295 J	*407 J*	22.9 J
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		3890	3290	2920	2120	2160	2200	4730	259 J	4850
MANGANESE	1100	180	N	*345*	*241*	*257*	124	129.5	135	*358*	18.5	*561*
MERCURY	10	2.3	N	0.0813	0.109	0.0788	0.0865	0.08285	0.0792	0.0411	0.0962	0.051 J
NICKEL	100	150	N	17.7	16.8	15.9	9.85	10.225	10.6	17.9	2.6	21.6
POTASSIUM	NC	NC		1450 J	1220 J	1080 J	748 J	754	760 J	1490 J	268 J	1820 J
SELENIUM	68	39	N	0.683	0.846	0.635	0.786	0.7885	0.791	0.433 J	0.738	0.73
SODIUM	NC	NC		87.6 U	79.7 U	69 U	80.8 U	82.8 U	84.8 U	72.2 U	77.7 U	87.5 U
VANADIUM	240	39	N	*47.1*	*41.5*	36.4	37.9	35.6	33.3	*48.3*	13.7	37.7
ZINC	10000	2300	N	58.7	52.7	56.5	29.8	30.85	31.9	58.2	9.02	66
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	0.446 J
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	3.52 UJ	2.83 UJ	2.43 UJ	2.25 U	3.91 U	5.57 UJ	1.92 U	2.3 UJ	2.35 U
2-METHYLNAPHTHALENE	3600	31000	N	3.83 UJ	3.52 UJ	2.48 UJ	2.4 UJ	4.09 U	5.78 UJ	1.92 U	2.53 UJ	2.35 U
ACENAPHTHENE	110000	340000	N	2.32 U	2.14 U	1.92 U	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
ACENAPHTHYLENE	68000	340000	N	19	13.2 U	10.5 U	11.2 UJ	13.2 U	15.2 U	8.17 UJ	2.17 U	4.46 UJ
ANTHRACENE	430000	1700000	N	2.32 U	10.5 J	7.64 J	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
BENZO(A)ANTHRACENE	260	150	C	2.32 U	2.14 U	1.92 U	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
BENZO(A)PYRENE	26	15	C	2.32 U	2.14 U	1.92 U	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
BENZO(B)FLUORANTHENE	260	150	C	88.2	78.1	44	48.5	52	55.5	31.6	58.8	81.9
BENZO(G,H,I)PERYLENE	750000	170000	N	2.32 U	2.14 U	1.92 UJ	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
BENZO(K)FLUORANTHENE	2600	1500	C	54.1 J	45.8 J	32.7 J	27.1 J	30.4	33.7 J	21.5 J	52.1 J	52.3 J
CHRYSENE	26000	15000	C	2.32 U	2.14 U	1.92 U	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
DIBENZO(A,H)ANTHRACENE	26	15	C	2.32 U	2.14 U	1.92 UJ	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
FLUORANTHENE	1000000	230000	N	120	102	67.9	73	75.3	77.6	49.6	86.3	82.5
FLUORENE	120000	230000	N	6.94 J	5.91 J	4.5 J	2.25 U	3.3325	5.54 J	1.92 U	2.17 U	4.12 J
INDENO(1,2,3-CD)PYRENE	260	150	C	2.32 U	2.14 U	1.92 UJ	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
NAPHTHALENE	1700	3600	C	2.32 U	2.14 U	1.92 U	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
PHENANTHRENE	97000	170000	N	79.2	58.8	36.7	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U
PYRENE	750000	170000	N	114	89.6	59.4	60.1	64.7	69.3	43.7	76	73.6
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	21.3	21.3	NA	NA	23.5	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	56500	56500	NA	NA	60500	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	4.05 J	4.05 J	NA	NA	3.72 J	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) [1]	USEPA RSL (June 2011) [2]		NASB-TASKT-XRF-				NASB-TASKT-2-				
				SS19-0003			SS20-0003	SS01	SS02	SS03		
				0 - 0.25 ft bgs						0 - 0.25 ft bgs		
				Sample	Duplicate	Average	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	Sample	Duplicate	Average
				Apr-10			Apr-10	Nov-10	Nov-10	Nov-10		
METALS (mg/kg)												
ALUMINUM	69000	7700	N	*14000*	*14200*	*14100*	*16100*	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	0.369 UJ	0.375 UJ	0.372 U	0.4 UJ	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	*4.79 J*	*4.68 J*	*4.735*	*4.82 J*	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	58.7	56.9	57.8	58.3	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	0.847	0.878	0.8625	0.954	NA	NA	NA	NA	NA
CALCIUM	NC	NC		2060	1920	1990	2400	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		*24.5*	*25.5*	*25*	*27.3*	NA	NA	NA	NA	NA
COBALT	15	2.3	N	*7.95*	*7.94*	*7.945*	*8.9*	NA	NA	NA	NA	NA
COPPER	480	310	N	13.6	13.9	13.75	16.1	NA	NA	NA	NA	NA
IRON	31000	5500	N	*19500*	*20300*	*19900*	*22700*	NA	NA	NA	NA	NA
LEAD	170	400	N	52.4 J	47.8 J	50.1	23 J	NA	NA	NA	NA	NA
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		4420	4490	4455	5150	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	*421*	*389*	*405*	*417*	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	0.0809	0.194	0.13745	0.0344 J	NA	NA	NA	NA	NA
NICKEL	100	150	N	18.9	18.9	18.9	21.9	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		1810 J	1810 J	1810	2120 J	NA	NA	NA	NA	NA
SELENIUM	68	39	N	0.382 J	0.365 J	0.3735	0.359 J	NA	NA	NA	NA	NA
SODIUM	NC	NC		91.3 J	88.8 J	90.05	101 J	NA	NA	NA	NA	NA
VANADIUM	240	39	N	33	34.3	33.65	38	NA	NA	NA	NA	NA
ZINC	10000	2300	N	92.9	83	87.95	63.1	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	0.25 U	0.25 U	0.25 U	0.304 J	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	5.76 UJ	10.3 UJ	8.03 U	2.12 U	16.8	5.88 J	8.18 J	47.7 J	27.94
2-METHYLNAPHTHALENE	3600	31000	N	6.65 UJ	16.1 U	11.375 U	2.25 UJ	21.3	9.25 J	12.4 J	91 J	51.7
ACENAPHTHENE	110000	340000	N	45.8	75.7	60.75	2.12 U	12.7	36.8	10	4.75 U	6.1875
ACENAPHTHYLENE	68000	340000	N	2.06 U	8.46 UJ	5.26 U	12.9 U	83.2	5.14 U	40.4 J	4.75 UJ	21.3875
ANTHRACENE	430000	1700000	N	2.06 UJ	161 J	81.015	2.12 U	91.7	79.6	63.6 J	4.75 UJ	32.9875
BENZO(A)ANTHRACENE	260	150	C	*306 J*	*723 J*	*514.5*	2.12 U	*445*	*176*	141 J	4.75 UJ	71.6875
BENZO(A)PYRENE	26	15	C	*682 J*	*1630 J*	*1156*	*106*	*632*	*198*	*237 J*	4.75 UJ	*119.6875*
BENZO(B)FLUORANTHENE	260	150	C	*546 J*	*1250 J*	*898*	110	*789*	*267*	*291 J*	4.75 UJ	146.6875
BENZO(G,H,I)PERYLENE	750000	170000	N	446 J	929 J	687.5	2.12 U	409	99	160 J	4.75 UJ	81.1875
BENZO(K)FLUORANTHENE	2600	1500	C	444 J	935 J	689.5	94.1 J	287 J	127 J	67.5 J	4.75 UJ	34.9375
CHRYSENE	26000	15000	C	469 J	941 J	705	2.12 U	613 J	208 J	190 J	4.75 UJ	96.1875
DIBENZO(A,H)ANTHRACENE	26	15	C	*96.3 J*	*251 J*	*173.65*	2.12 U	4.54 U	5.14 U	4.89 U	4.75 U	4.82 U
FLUORANTHENE	1000000	230000	N	590 J	894 J	742	207	1770	449	616 J	4.75 UJ	309.1875
FLUORENE	120000	230000	N	30.4 J	54.9 J	42.65	3.18 J	55.5	35.6	32.8 J	4.75 UJ	17.5875
INDENO(1,2,3-CD)PYRENE	260	150	C	*528 J*	*1240 J*	*884*	2.12 U	*328*	90.8	4.89 U	4.75 U	4.82 U
NAPHTHALENE	1700	3600	C	2.06 U	2.07 U	2.065 U	2.12 U	121	6.07 J	58.3 J	109 J	83.65
PHENANTHRENE	97000	170000	N	1350 J	561 J	955.5	63.3	1340	322	581 J	4.75 UJ	291.6875
PYRENE	750000	170000	N	942	1160	1051	174	1470	371	509 J	4.75 UJ	255.6875
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-2-								
				SS04	SS05	SS06	SS07	SS08	SS09	SS10	SS11	SS12
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	NA	NA	NA	285 J	239 J	160 J	125 J	717 J	78.6 J
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	136 J	73.8	39.1	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	200 J	84.2	65.6	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	3200	961	691	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	27.7 U	26.3 U	6.03 U	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	4470	1840	1180	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	16700	7000	5050	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	25300	10600	8700	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	35600 J	13000	9250	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	14000	6250	4460	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	8850 J	4200 J	2620 J	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	14600 J	7320 J	4600 J	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	2590	1590	1190	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	34900	11300	8590	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	1800	554	412	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	12900	5540	3930	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	570	191	148	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	17700	6640	4740	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	25600	10400	8090	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-2-								
				SS13	SS14	SS15	SS16	SS17	SS18	SS19	SS20	SS21
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	93.1 J	260 J	79.9 J	*436 J*	367 J	183 J	154 J	151 J	*962 J*
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-2						
				SS22	SS23	SS24	SS25	SS26	SS27	SS28
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10	Nov-10
METALS (mg/kg)										
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	*929 J*	*476 J*	*1890 J*	141 J	275 J	384 J	*419 J*
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)										
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)										
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)										
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)										
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)										
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)										
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-2-								
				SS29			SS30	SS31	SS32	SS33		
				0 - 0.25 ft bgs						0 - 0.25 ft bgs		
				Sample	Duplicate	Average	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	Sample	Duplicate	Average
				Nov-10			Nov-10	Nov-10	Nov-10	Nov-10		
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	*1790 J*	*1790 J*	*1790*	63.2 J	363 J	*44100 J*	210 J	267 J	238.5
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) (1)	USEPA RSL (June 2011) (2)		NASB-TASKT-2-								
				SS34	SS35			SS36			SS37	SS38
					0 - 0.25 ft bgs			0 - 0.25 ft bgs				
				0 - 0.25 ft bgs	Sample	Duplicate	Average	Sample	Duplicate	Average	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Nov-10	Nov-10			Nov-10			Nov-10	Nov-10
METALS (mg/kg)												
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	334 J	326 J	*544 J*	*435*	247 J	227 J	237	279 J	243 J
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)												
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)												
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)												
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)												
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)												
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)												
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4-5

SUMMARY OF DETECTED CONCENTRATIONS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	MAINE RAGS (Appendix 3) (Jan 2011) [1]	USEPA RSL (June 2011) [2]		NASB-TASKT-2-						
				SS39	SS40	SS41	SS42	SS43	SS44	SS45
				0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
				Nov-10	Nov-10	Nov-10	Nov-10	Dec-10	Dec-10	Dec-10
METALS (mg/kg)										
ALUMINUM	69000	7700	N	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	14	3.1	N	NA	NA	NA	NA	NA	NA	NA
ARSENIC	9	0.39	C	NA	NA	NA	NA	NA	NA	NA
BARIUM	6800	1500	N	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	68	16	N	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
CHROMIUM	100	0.29		NA	NA	NA	NA	NA	NA	NA
COBALT	15	2.3	N	NA	NA	NA	NA	NA	NA	NA
COPPER	480	310	N	NA	NA	NA	NA	NA	NA	NA
IRON	31000	5500	N	NA	NA	NA	NA	NA	NA	NA
LEAD	170	400	N	222 J	*798 J*	328 J	99.1 J	122	303	55.7
LEAD-CALC	NC	400		NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
MANGANESE	1100	180	N	NA	NA	NA	NA	NA	NA	NA
MERCURY	10	2.3	N	NA	NA	NA	NA	NA	NA	NA
NICKEL	100	150	N	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
SELENIUM	68	39	N	NA	NA	NA	NA	NA	NA	NA
SODIUM	NC	NC		NA	NA	NA	NA	NA	NA	NA
VANADIUM	240	39	N	NA	NA	NA	NA	NA	NA	NA
ZINC	10000	2300	N	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (mg/kg)										
NITROGLYCERIN	NC	0.61	N	NA	NA	NA	NA	NA	NA	NA
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)										
1-METHYLNAPHTHALENE	NC	22000	C	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	3600	31000	N	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	110000	340000	N	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	68000	340000	N	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	430000	1700000	N	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	260	150	C	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	26	15	C	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	260	150	C	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	2600	1500	C	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	26000	15000	C	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	26	15	C	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	1000000	230000	N	NA	NA	NA	NA	NA	NA	NA
FLUORENE	120000	230000	N	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	260	150	C	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	1700	3600	C	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	97000	170000	N	NA	NA	NA	NA	NA	NA	NA
PYRENE	750000	170000	N	NA	NA	NA	NA	NA	NA	NA
XRF (mg/kg)										
LEAD	170	400	N	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)										
CATION EXCHANGE CAPACITY	NC	NC		NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (mg/kg)										
TOTAL ORGANIC CARBON	NC	NC		NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)										
pH	NC	NC		NA	NA	NA	NA	NA	NA	NA

MEQ/100 = Milliequivalent.
NC = No criterion.
J = Value is estimated.
S.U. = Standard Units.
U = Analyte not detected at the reported detection limilt.
Red Shading - concentration greater than Maine RAGs criterion.
Italics - concentration greater than RSL criterion.

1 Maine RAGS, Appendix 3, (Jan, 2010).
2 USEPA residential Regional Screening Level (June, 2011). Non-carcinogen values are divided by 10.
3 Off-site sample for comparison purposes.

TABLE 4-6

FREQUENCY OF DETECTION IN SEDIMENT
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Parameter	Frequency of Detection	Minimum Result	Maximum Result	Location of Maximum Detection	Sample with Maximum Detection	Minimum Non-Detection	Maximum Non-Detection	Project Action Limit (1)
METALS (MG/KG)								
ALUMINUM	4/4	12500	22000	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	26000
ARSENIC	4/4	4.92	10.3	TASKT-SD04	NASB-TASKT-SD04-0006	--	--	9.8
BARIUM	4/4	57.3	100 J	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	0.7
BERYLLIUM	4/4	1.07	1.5	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	0.55
CADMIUM	1/4	0.0661 J	0.0661 J	TASKT-SD04	NASB-TASKT-SD04-0006	0.066	0.34	0.99
CALCIUM	4/4	1600	3220	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	NC
CHROMIUM	4/4	22.9	34.7	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	43.4
COBALT	4/4	10.8	16.4	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	10
COPPER	4/4	9.74	30.8	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	31.6
IRON	4/4	18700	33100	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	10000
LEAD	4/4	13.2 J	76.3 J	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006-D	--	--	35.8
MAGNESIUM	4/4	4640	7270	NASB-TASKT-SWSD02	NASB-TASKT-SD02-0006	--	--	NC
MANGANESE	4/4	271	656	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006-D	--	--	630
MERCURY	1/4	0.0419 J	0.0419 J	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	0.0133	0.0428	0.18
NICKEL	4/4	20.4	35.4	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	22.7
POTASSIUM	4/4	1950	5370	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	NC
SELENIUM	2/4	0.605	0.831 J	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	0.198	0.522	0.29
SODIUM	4/4	115 J	258 J	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	NC
VANADIUM	4/4	34.7	50.2	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006-D	--	--	43
ZINC	4/4	60.4	95.5	NASB-TASKT-SWSD01	NASB-TASKT-SD01-0006	--	--	121
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)								
2-METHYLNAPHTHALENE	1/4	2.05 J	2.05 J	TASKT-SD04	NASB-TASKT-SD04-0006	2.12	12.5	20.2
ACENAPHTHYLENE	1/4	21.6	21.6	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	2.78	3.46	160
ANTHRACENE	1/4	19.9	19.9	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	1.68	3.46	57.2
BENZO(A)ANTHRACENE	1/4	4.69 J	4.69 J	TASKT-SD04	NASB-TASKT-SD04-0006	1.68	1.92	108
BENZO(A)PYRENE	1/4	67.5	67.5	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	1.68	3.46	150
BENZO(B)FLUORANTHENE	4/4	5.24 J	117	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	--	--	1800
BENZO(K)FLUORANTHENE	4/4	2.24 J	56.4	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	--	--	240
CHRYSENE	2/4	7.2 J	128	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	1.68	1.83	166
FLUORANTHENE	3/4	11.3	208	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	1.68	1.83	423
FLUORENE	2/4	2.09 J	12.2	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	1.77	3.46	77.4
INDENO(1,2,3-CD)PYRENE	1/4	3.92 J	3.92 J	TASKT-SD04	NASB-TASKT-SD04-0006	1.68	1.92	200
PHENANTHRENE	2/4	7.23 J	91	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	1.68	1.83	204
PYRENE	4/4	11.1	162	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	--	--	195
MISCELLANEOUS PARAMETERS								
CATION EXCHANGE CAPACITY (MEQ/1(	1/1	9.28	9.28	TASKT-SD04	NASB-TASKT-SD04-0006	--	--	NC
pH (S.U.)	1/1	6.33 J	6.33 J	TASKT-SD04	NASB-TASKT-SD04-0006	--	--	NC
TOTAL ORGANIC CARBON (MG/KG)	4/4	2430	24900	NASB-TASKT-SWSD03	NASB-TASKT-SD03-0006	--	--	NC

Note that a sample and its duplicate sample were considered separately when determining the maximum concentration, and the average concentration of a sample and its duplicate were used in determining frequency of detection.

1 See Appendix G for supporting documentation.
Shaded concentrations exceed Project Action Limits.
J = Value is estimated.
NC = No criterion.

Associated Samples:
NASB-TASKT-SD01-0006
NASB-TASKT-SD01-0006-AVG
NASB-TASKT-SD01-0006-D
NASB-TASKT-SD02-0006
NASB-TASKT-SD03-0006
NASB-TASKT-SD04-0006

TABLE 4-7

SUMMARY OF DETECTED CONCENTRATIONS IN SEDIMENT
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	PROJECT ACTION LIMIT[1]	NASB-TASKT-					
		SD01-0006			SD02-0006	SD03-0006	SD04-0006
		0 - 0.5 ft bgs					
		Sample	Duplicate	Average	0 - 0.5 ft bgs	0 - 0.5 ft bgs	0 - 0.5 ft bgs
		Apr-10			Apr-10	Apr-10	Dec-10
METALS (mg/kg)							
ALUMINUM	26000	22000	19300	20650	19000	17500	12500
ARSENIC	9.8	7.85 J	8.02	7.935	5.41 J	4.92	**10.3**
BARIUM	0.7	**100 J**	**81.2**	**90.6**	**86.3 J**	**70.4**	**57.3**
BERYLLIUM	0.55	**1.5**	**1.39**	**1.445**	**1.23**	**1.07**	**1.1**
CADMIUM	0.99	0.34 UJ	0.066 U	0.203 U	0.259 UJ	0.168 UJ	0.0661 J
CALCIUM	NC	3220	2970	3095	3180	1600	2130
CHROMIUM	43.4	34.7	31.9	33.3	31	27.5	22.9
COBALT	10	**16.4**	**14.9**	**15.65**	**14.4**	**10.8**	**11.6**
COPPER	31.6	30.8	25	27.9	29.2	9.74	16.7
IRON	10000	**33100**	**31600**	**32350**	**29700**	**18700**	**22600**
LEAD	35.8	18.2 J	**76.3 J**	**47.25**	13.2 J	15.8 J	15.2
MAGNESIUM	NC	7180	6950	7065	7270	4650	4640
MANGANESE	630	**634**	**656**	**645**	432	271	454
MERCURY	0.18	0.0153 U	0.0168 U	0.01605 U	0.0133 U	0.0419 J	0.0428 U
NICKEL	22.7	**35.4**	**32.7**	**34.05**	**31**	20.4	21.9
POTASSIUM	NC	5370	5190	5280	4500	1950	2610
SELENIUM	0.29	**0.831 J**	0.198 U	**0.465**	0.36 U	**0.605**	0.522 UJ
SODIUM	NC	258 J	243 J	250.5	217 J	115 J	142 J
VANADIUM	43	**48.8**	**50.2**	**49.5**	40	34.9	34.7
ZINC	121	95.5	84.5	90	79.5	60.4	75
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)							
2-METHYLNAPHTHALENE	20.2	2.12 UJ	3.09 UJ	2.605 U	2.12 UJ	12.5 U	2.05 J
ACENAPHTHYLENE	160	2.78 UJ	3.29 UJ	3.035 U	2.94 UJ	21.6	3.46 U
ANTHRACENE	57.2	1.83 U	1.77 U	1.8 U	1.68 U	19.9	3.46 U
BENZO(A)ANTHRACENE	108	1.83 UJ	1.77 UJ	1.8 U	1.68 UJ	1.92 UJ	4.69 J
BENZO(A)PYRENE	150	1.83 U	1.77 U	1.8 U	1.68 U	67.5	3.46 U
BENZO(B)FLUORANTHENE	1800	6.41 J	9.16 J	7.785	5.24 J	117	7.11 J
BENZO(K)FLUORANTHENE	240	6.21 J	4.21 J	5.21	2.24 J	56.4	4.31 J
CHRYSENE	166	1.83 U	1.77 U	1.8 U	1.68 U	128	7.2 J
FLUORANTHENE	423	1.83 U	11.3	6.1075	1.68 U	208	11.7
FLUORENE	77.4	1.83 U	1.77 U	1.8 U	2.09 J	12.2	3.46 U
INDENO(1,2,3-CD)PYRENE	200	1.83 U	1.77 U	1.8 U	1.68 U	1.92 U	3.92 J
PHENANTHRENE	204	1.83 U	1.77 U	1.8 U	1.68 U	91	7.23 J
PYRENE	195	13.8	12.4	13.1	12	162	11.1
MISCELLANEOUS PARAMETERS							
CATION EXCHANGE CAPACITY (MEQ/100)	NC	NA	NA	NA	NA	NA	9.28
TOTAL ORGANIC CARBON (mg/kg)	NC	3370	3270	3320	2430	24900	4490
pH (S.U.)	NC	NA	NA	NA	NA	NA	6.33 J

1 See Appendix G for supporting documentation.
NC = No criterion.
J = Value is estimated.

U = Analyte not detected at the reported detection limit.
Shaded concentrations exceed Project Action Limits.

TABLE 4-8

FREQUENCY OF DETECTION IN SURFACE WATER
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Parameter	Frequency of Detection	Minimum Result	Maximum Result	Location of Maximum Detection	Sample with Maximum Detection	Minimum Non-Detection	Maximum Non-Detection	Project Action Limit (1)
METALS (µg/L)								
ALUMINUM	3/3	65.4	79.9	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	--	--	87
BARIUM	3/3	13.2	14.9	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110-D	--	--	3.9
CALCIUM	3/3	14100 J	15800 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110-D	--	--	NC
CHROMIUM	1/3	0.505 J	0.505 J	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	0.5	0.5	11
IRON	3/3	311 J	640 J	NASB-TASKT-SWSD03	NASB-TASKT-SW03-042110	--	--	1000
MAGNESIUM	3/3	2710	3840	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110-D	--	--	NC
MANGANESE	3/3	196 J	305 J	NASB-TASKT-SWSD03	NASB-TASKT-SW03-042110	--	--	120
NICKEL	3/3	2.94	4.03	NASB-TASKT-SWSD03	NASB-TASKT-SW03-042110	--	--	13.4
POTASSIUM	3/3	2690	3050	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110-D	--	--	NC
SODIUM	3/3	15400	17200	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110-D	--	--	NC
ZINC	3/3	7.77	10.1	NASB-TASKT-SWSD03	NASB-TASKT-SW03-042110	--	--	30.6
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/L)								
1-METHYLNAPHTHALENE	3/3	0.0284 J	0.0457 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0189	72.16
2-METHYLNAPHTHALENE	3/3	0.0282 J	0.0516 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0189	72.16
ACENAPHTHENE	2/3	0.0258 J	0.0352 J	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	0.0189	0.0192	55.85
ACENAPHTHYLENE	2/3	0.0234 J	0.0341 J	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	0.0189	0.0192	306.9
ANTHRACENE	3/3	0.0277 J	0.0519 J	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	0.0189	0.0189	20.73
BENZO(A)ANTHRACENE	2/3	0.0512 J	0.0747 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
BENZO(A)PYRENE	2/3	0.0317 J	0.0336 J	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	0.0189	0.0192	0.003
BENZO(B)FLUORANTHENE	2/3	0.0455 J	0.0858 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
BENZO(G,H,I)PERYLENE	2/3	0.0467 J	0.0791 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
BENZO(K)FLUORANTHENE	2/3	0.0396 J	0.0784 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
CHRYSENE	2/3	0.0498 J	0.0908 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
DIBENZO(A,H)ANTHRACENE	2/3	0.0466 J	0.0818 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
FLUORENE	2/3	0.0298 J	0.0424 J	NASB-TASKT-SWSD02	NASB-TASKT-SW02-042110	0.0189	0.0192	39.3
INDENO(1,2,3-CD)PYRENE	2/3	0.046 J	0.0852 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0192	0.003
NAPHTHALENE	3/3	0.0351 J	0.0845 J	NASB-TASKT-SWSD01	NASB-TASKT-SW01-042110	0.0189	0.0189	193.5

Note that a sample and its duplicate sample were considered separately when determining the maximum concentration, and the average concentration of a sample and its duplicate were used in determining frequency of detection.

1 See Appendix G for supporting documentation.
Shaded concentrations exceed Project Action Limits.
J = Value is estimated.

Associated Samples:
NASB-TASKT-SW01-042110
NASB-TASKT-SW01-042110-AVG
NASB-TASKT-SW01-042110-D
NASB-TASKT-SW02-042110
NASB-TASKT-SW03-042110

TABLE 4-9

SUMMARY OF DETECTED CONCENTRATIONS IN SURFACE WATER
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

PARAMETER	PROJECT ACTION LIMIT[1]	NASB-TASKT-				
		SW01			SW02	SW03
		Sample	Duplicate	Average		
		Apr-10			Apr-10	Apr-10
METALS (µg/L)						
ALUMINUM	87	70.3	65.4	67.85	79.9	69.8
BARIUM	3.9	**13.2**	**14.9**	**14.05**	**14.7**	**13.8**
CALCIUM	NC	14200 J	15800 J	15000 J	15300 J	14100 J
CHROMIUM	11	0.5 UJ	0.5 UJ	0.5 UJ	0.505 J	0.5 UJ
IRON	1000	311 J	320 J	315.5 J	378 J	640 J
MAGNESIUM	NC	3430	3840	3635	3600	2710
MANGANESE	120	**196 J**	**218 J**	**207 J**	**223 J**	**305 J**
NICKEL	13.4	2.94	3.36	3.15	3.41	4.03
POTASSIUM	NC	2690	3050	2870	2980	2920
SODIUM	NC	15400	17200	16300	16900	16900
ZINC	30.6	7.77	8.63	8.2	8.57	10.1
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/L)						
1-METHYLNAPHTHALENE	72.16	0.0457 J	0.0189 U	0.027575 J	0.0335 J	0.0284 J
2-METHYLNAPHTHALENE	72.16	0.0516 J	0.0189 U	0.030525 J	0.0339 J	0.0282 J
ACENAPHTHENE	55.85	0.0192 U	0.0189 UJ	0.01905 UJ	0.0352 J	0.0258 J
ACENAPHTHYLENE	306.9	0.0192 U	0.0189 UJ	0.01905 UJ	0.0341 J	0.0234 J
ANTHRACENE	20.73	0.0341 J	0.0189 U	0.021775 J	0.0519 J	0.0277 J
BENZO(A)ANTHRACENE	0.003	**0.0747 J**	0.0189 UJ	**0.042075 J**	**0.0512 J**	0.0192 U
BENZO(A)PYRENE	0.003	**0.0317 J**	0.0189 U	**0.020575 J**	**0.0336 J**	0.0192 U
BENZO(B)FLUORANTHENE	0.003	**0.0858 J**	0.0189 U	**0.047625 J**	**0.0455 J**	0.0192 U
BENZO(G,H,I)PERYLENE	0.003	**0.0791 J**	0.0189 U	**0.044275 J**	**0.0467 J**	0.0192 U
BENZO(K)FLUORANTHENE	0.003	**0.0784 J**	0.0189 U	**0.043925 J**	**0.0396 J**	0.0192 U
CHRYSENE	0.003	**0.0908 J**	0.0189 UJ	**0.050125 J**	**0.0498 J**	0.0192 U
DIBENZO(A,H)ANTHRACENE	0.003	**0.0818 J**	0.0189 U	**0.045625 J**	**0.0466 J**	0.0192 U
FLUORENE	39.3	0.0192 U	0.0189 U	0.01905 U	0.0424 J	0.0298 J
INDENO(1,2,3-CD)PYRENE	0.003	**0.0852 J**	0.0189 U	**0.047325 J**	**0.046 J**	0.0192 U
NAPHTHALENE	193.5	0.0845 J	0.0189 U	0.046975 J	0.0378 J	0.0351 J

1 See Appendix G for supporting documentation.
U = Analyte not detected at the reported detection limit.
J = Value is estimated.
Shaded concentrations exceed Project Action Limits.

TABLE 4-10

CONCEPTUAL SITE MODEL INFORMATION PROFILE
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Profile Type	Information Needs	Findings
Range/Site Profile	Installation Name	NASB, Topsham Annex
	Installation Location	Topsham, Sagadahoc County, Maine
	Range/Site Name	Topsham Annex Skeet Range
	Range/Site Location	The Topsham Annex Skeet Range is located in the northern portion of Topsham Annex along the property line and east of the Mt. Ararat Middle School athletic field. The majority of the skeet range extends north of the property line onto private property.
	Range/Site History	The range was identified on historical maps dated from 1957 through 1980. The skeet range was reportedly used by the Air Force during their occupation of Topsham Annex (approximately 1957 to 1970).
	Range/Site Area and Layout	The skeet range is shown on the historic maps as a rectangle with three small squares inside the rectangle. It is assumed that these small squares represent the low and high skeet houses and trap house; however, the direction of fire and the firing arc were not indicated on the maps. Based on observations during the visual survey, it appears that the direction of fire was toward the north. The skeet range, including SDZ, is approximately 29 acres, and approximately 27 acres are located outside of the installation.
	Range/Site Structures	There are no range-related structures currently at the site; however, the historic maps indicate the presence of low and high skeet houses and a trap house. Upright wooden posts remain fixed in the ground at two locations within the sire boundary. The site also overlaps military housing and an off-base trailer court.
	Range/Site Boundaries	North: Undeveloped woodland, formerly open land/pasture South: Recreation fields and undeveloped grassland East: Residential property West: Undeveloped woodland and residential property
	Range/Site Security	There are no site restrictions for the Topsham Annex or the Topsham Annex Skeet Range. There are no access restrictions to the off-base portion of the range.
Munitions/ Release Profile	Munitions Types	12-guage shotguns (small arms) were used at the range for skeet and trap shooting.
	Maximum Probability Penetration Depth	The penetration depth of small arms on the range floor is one foot or less. Based on the SI results, contamination presenting a concern is limited to the top 3 inches (shallow surface soil) of the ground surface.
	MEC Density	Only small arms ammunitions were used at the site; therefore, there is no MEC density at the sire.
	Munitions Scrap/ Fragments/ MDAS	No MEC scrap/fragments were found during the visual survey.
	Associated MC	Primary MC is lead (associated with bullets), as confirmed by the SI. Other associated MC included: arsenic (present in lead) and PAHs (associated with skeet clay targets).

TABLE 4-10

CONCEPTUAL SITE MODEL INFORMATION PROFILE
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Profile Type	Information Needs	Findings
	Migration Routes/Release Mechanisms	Possible contaminant migration routes include soil surface runoff and any future construction/excavation activities. The drainage ways on the off-base portion of the site also represent possible migration routes.
Physical Profile (see Section 2)	Climate	Continental climate with four well-defined seasons. Highest temperatures occur in July (79F or higher). Coldest temperatures occur in January (21F or lower). Based on climate type, wind and water erosion is common. Frost heave is also common.
	Topography	The elevation at the Topsham Annex Skeet Range is approximately 140 feet above sea level (asl). The site is relatively flat with a small incline to the south.
	Geology	The Maine Geological Society has mapped the bedrock beneath the site as Mount Ararat, a member of the Cambrian/Ordovician Cushing Formation, a thinly bedded amphibolites and granofels.
	Soil	Soils in the vicinity of Topsham Annex belong to the Hollis-Sutton-Buxton Association. These soils are described as shallow to deep, medium textures and moderately coarse textures, well drained and moderately well drained, nearly level to steep soils.
	Hydrogeology	A shallow unconfined saturated aquifer lies beneath Topsham Annex. It is presumed that the groundwater flows west and northwest toward the Cathance River.
	Hydrology	Surface water drains toward the outfall and intermittent stream located in the western portion of TASKT.
	Vegetation	The site is covered with high grass, shrubs, and trees.
Land Use and Exposure Profile	Current Land Use	The majority of the site is currently undeveloped. Small portions of the range are residential, and another small portion is used as a recreation field by the Mt. Ararat Middle School.
	Current Human Receptors	Residents, visitors, recreational users (including school children), and trespassers.
	Current Activities	With the exception of the residences, there are no regular activities conducted at the Navy-owned portion of the site. The private property portion of the range is undeveloped with no known use.
	Potential Future Land Use	The Navy-owned portion of TASKT is slated for recreational use, as part of an educational public benefit conveyance to Maine School Administrative District 75. The remainder of TASKT [private residential property and wooded areas, primarily zoned as Upper Village and Stream Protection Area (Navy, 2010)] is subject to change in the future.
	Potential Future Human Receptors	Residents, visitors, recreational users (including school children), trespassers and contractors. These receptors would include construction workers (if intrusive work is necessary) and maintenance and operations workers (if the range use changes). The private property portion of the range is undeveloped with no known use.

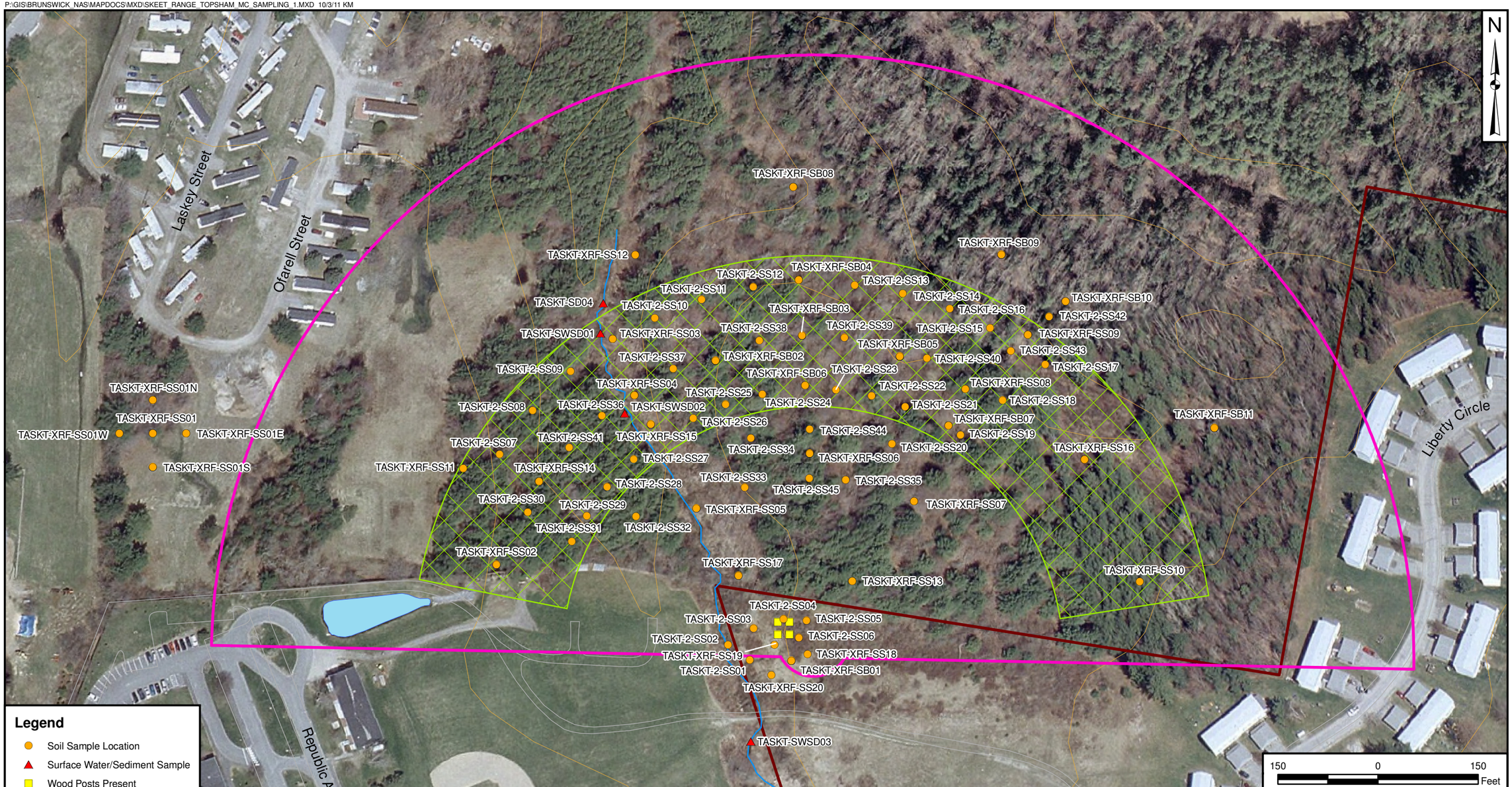
TABLE 4-10

CONCEPTUAL SITE MODEL INFORMATION PROFILE
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE

Profile Type	Information Needs	Findings
	Potential Future Land Use Related Activities	Recreational.
	Zoning/Land Use Restrictions	The zoning districts of the Topsham Annex and adjacent properties are subject to town ordinances for use regulations and dimensional requirements. Currently, TASKT is zoned as Residential 4, Upper Village, or Stream Protection Area (Navy, 2010).
	Demographics/ Zoning	The population of Sagasahoc County is just over 35,000 and the town of Topsham, including Topsham Annex, has an estimated population of approximately 9,100. There are 177 family housing units on Topsham Annex which are located east and south east of the former skeet range. A trailer park is located at the western edge of the maximum shotfall zone.
	Beneficial Resources	Evidence of wildlife activity was found on and around the Topsham Annex Skeet Range.
Ecological Profile	Habitat Type	The undeveloped site and the surrounding area contain the following habitats: Forest, Grassland, Streams and Wetlands.
	Degree of Disturbance	Minimal – With the exception of the residences there are no regular activities conducted at the Navy-owned portion of the site, and the residences occupy a small portion of the site.
	Ecological Receptors and Species of Special Concern	Biota includes indigenous species of mammals, amphibians, and birds. No known state or federal endangered or threatened species are present at the site however; species listed for the NASB are presented in Section 2.3.
General Exposure Profile	Relationship of MC Sources to Habitat and Potential Receptors	There is no potential for MEC (small arms shotgun ammunition only) at the site. MC (including leaf) could be at the site. Receptors may have direct or indirect contact with MC that exist in the environment or have been incorporated into the food chain. Note, remediation of contaminated soil is being recommended.

NASB = Naval Air Station Brunswick.
MEC = Munitions and Explosives of Concern.
MC = Munitions Constituents.
SDZ = Surface Danger Zone.
MDAS = Material Documented as Safe.

P:\GIS\BRUNSWICK_NAS\MAPDOCS\MXD\SKEET_RANGE_TOPSHAM_MC_SAMPLING_1.MXD 10/3/11 KM



Legend

- Soil Sample Location
- Surface Water/Sediment Sample
- Wood Posts Present
- Skeet Range
- Likely Shotfall Zone
- Stream
- Water
- Former Installation Boundary
- Topographic Contour

Note:
Sample at location SS01 collected off site for comparison purposes.

DRAWN BY	DATE
S. STROZ	03/04/11
CHECKED BY	DATE
M. COFFMAN	10/3/11
REVISED BY	DATE
SCALE AS NOTED	

TETRA TECH

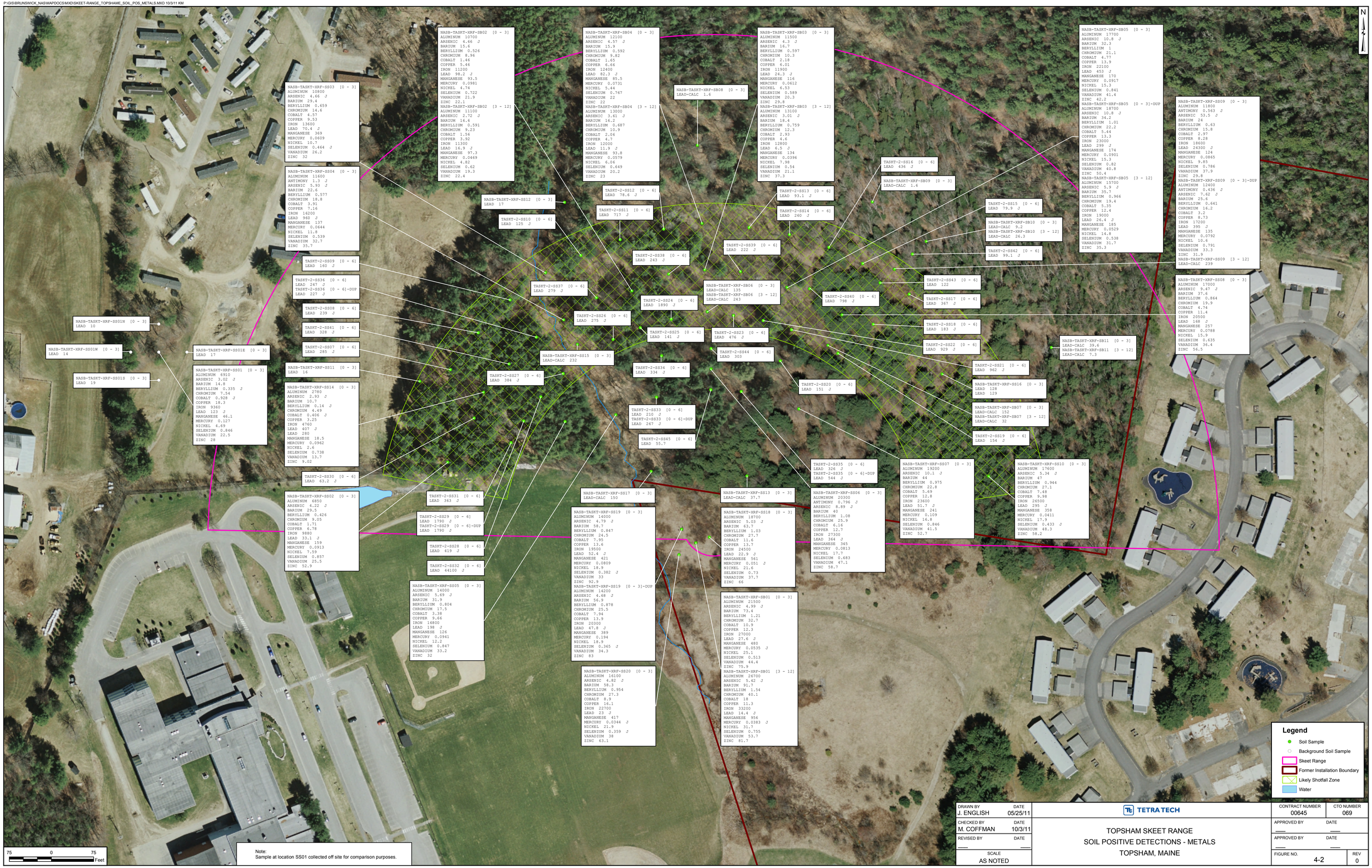
TOPSHAM SKEET RANGE
SITE PLAN AND MC SAMPLING LOCATIONS
TOPSHAM, MAINE

CONTRACT NUMBER
N62472-02-D-1300/N62472-03-D-0057

APPROVED BY	DATE
___	___
APPROVED BY	DATE
___	___

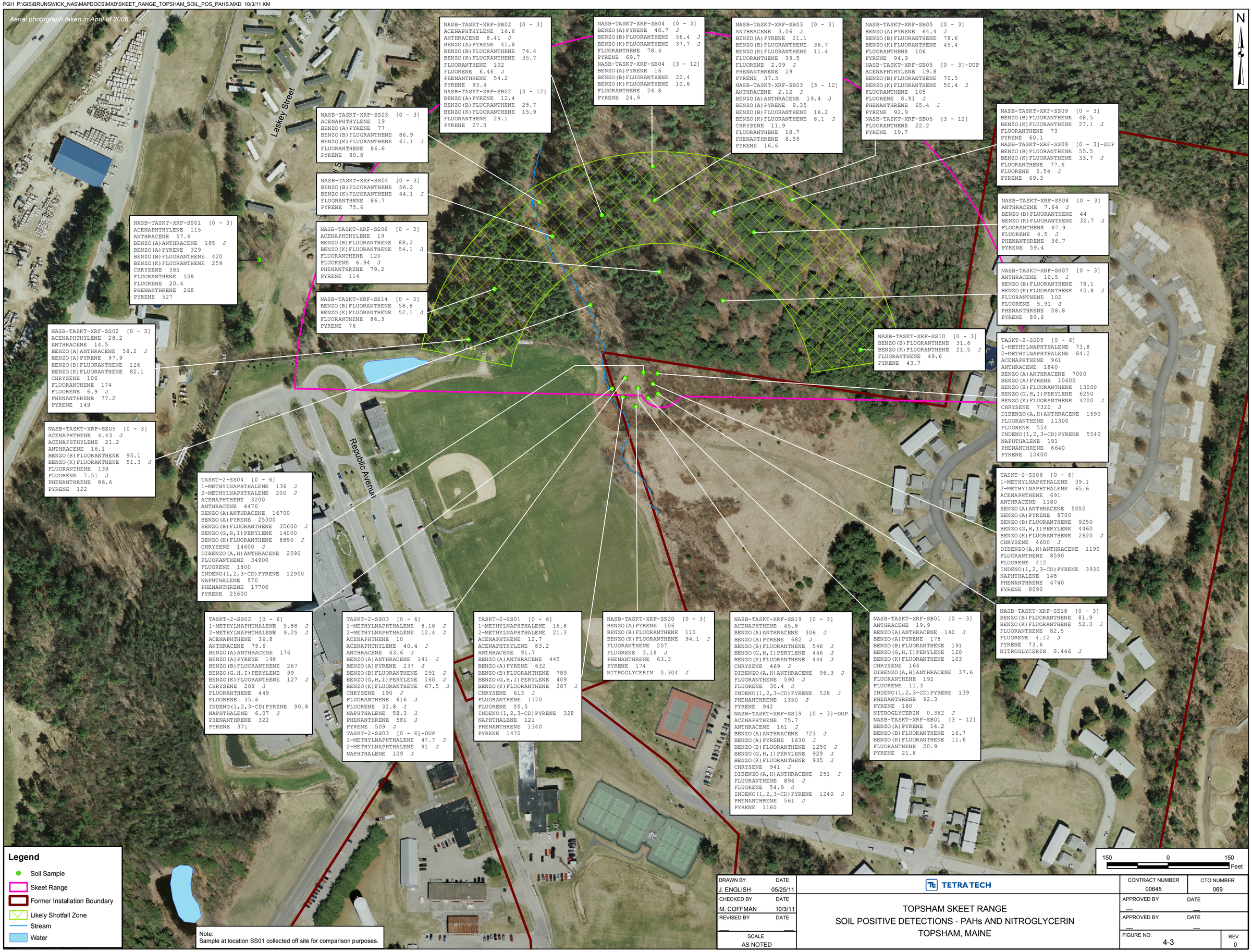
FIGURE NO.	REV
FIGURE 4-1	0

P:\GIS\BRUNSWICK_NAS\MAPDOCS\MXD\SKEET-RANGE_TOPSHAME_SOIL_POS_METALS.MXD 10/3/11 KM



DRAWN BY J. ENGLISH	DATE 05/25/11	TETRA TECH	CONTRACT NUMBER 00645 / CTO NUMBER 069
CHECKED BY M. COFFMAN	DATE 10/3/11	TOPSHAM SKEET RANGE SOIL POSITIVE DETECTIONS - METALS TOPSHAM, MAINE	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. 4-2 / REV 0

PGH P:\GIS\BRUNSWICK_NAS\MAPDOCS\MXD\SKEET_RANGE_TOPSHAM_SOIL_POS_PAHS.MXD 10/3/11 KM



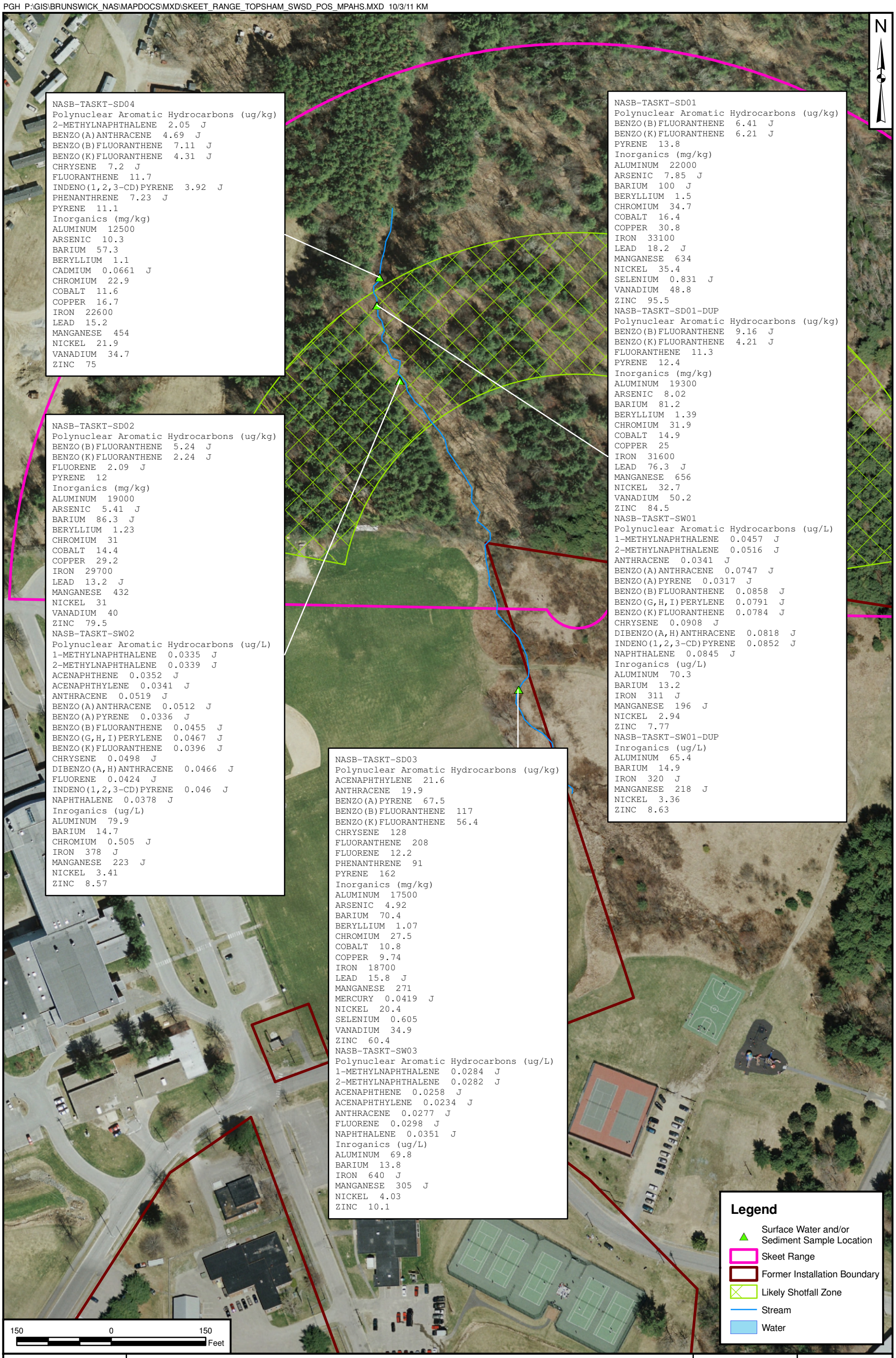
DRAWN BY	DATE
J. ENGLISH	05/25/11
CHECKED BY	DATE
M. COFFMAN	10/3/11
REVISED BY	DATE
—	—
SCALE	
AS NOTED	

TETRA TECH

TOPSHAM SKEET RANGE
SOIL POSITIVE DETECTIONS - PAHs AND NITROGLYCERIN
TOPSHAM, MAINE

CONTRACT NUMBER	CTO NUMBER
00645	069
APPROVED BY	DATE
—	—
APPROVED BY	DATE
—	—
FIGURE NO.	REV
4-3	0

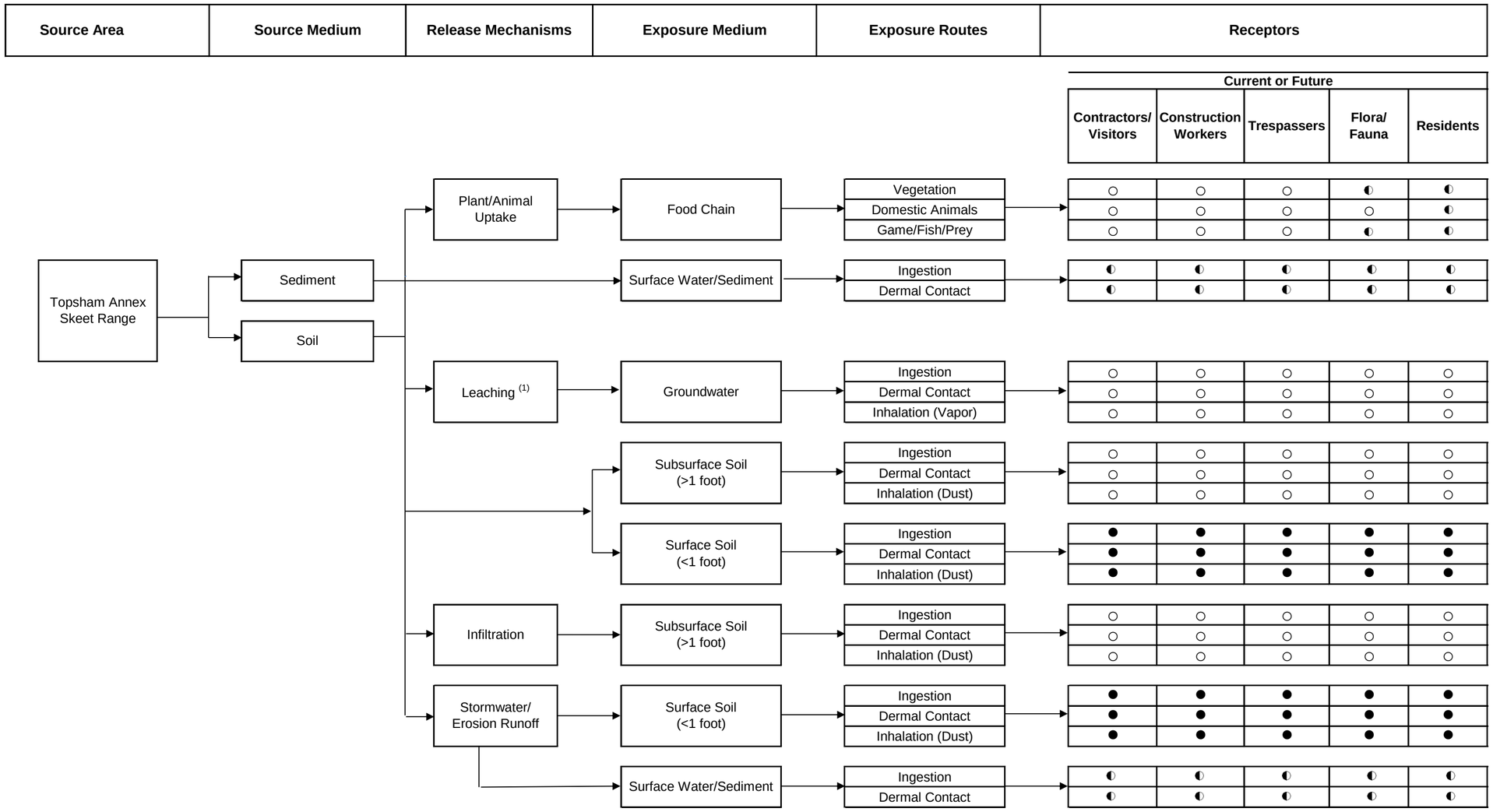
PGH P:\GIS\BRUNSWICK_NAS\MAPDOCS\MXD\SKEET_RANGE_TOPSHAM_SWSD_POS_MPAHS.MXD 10/3/11 KM



DRAWN BY	DATE	TETRA TECH	CONTRACT NUMBER	CTO NUMBER
J. ENGLISH	05/25/11		00645	069
CHECKED BY	DATE	TOPSHAM SKEET RANGE	APPROVED BY	DATE
M. COFFMAN	10/3/11	SURFACE WATER AND SEDIMENT POSITIVE DETECTIONS - PAHs AND METALS	APPROVED BY	DATE
REVISED BY	DATE	TOPSHAM, MAINE	FIGURE NO.	REV
SCALE			4-4	0
AS NOTED				

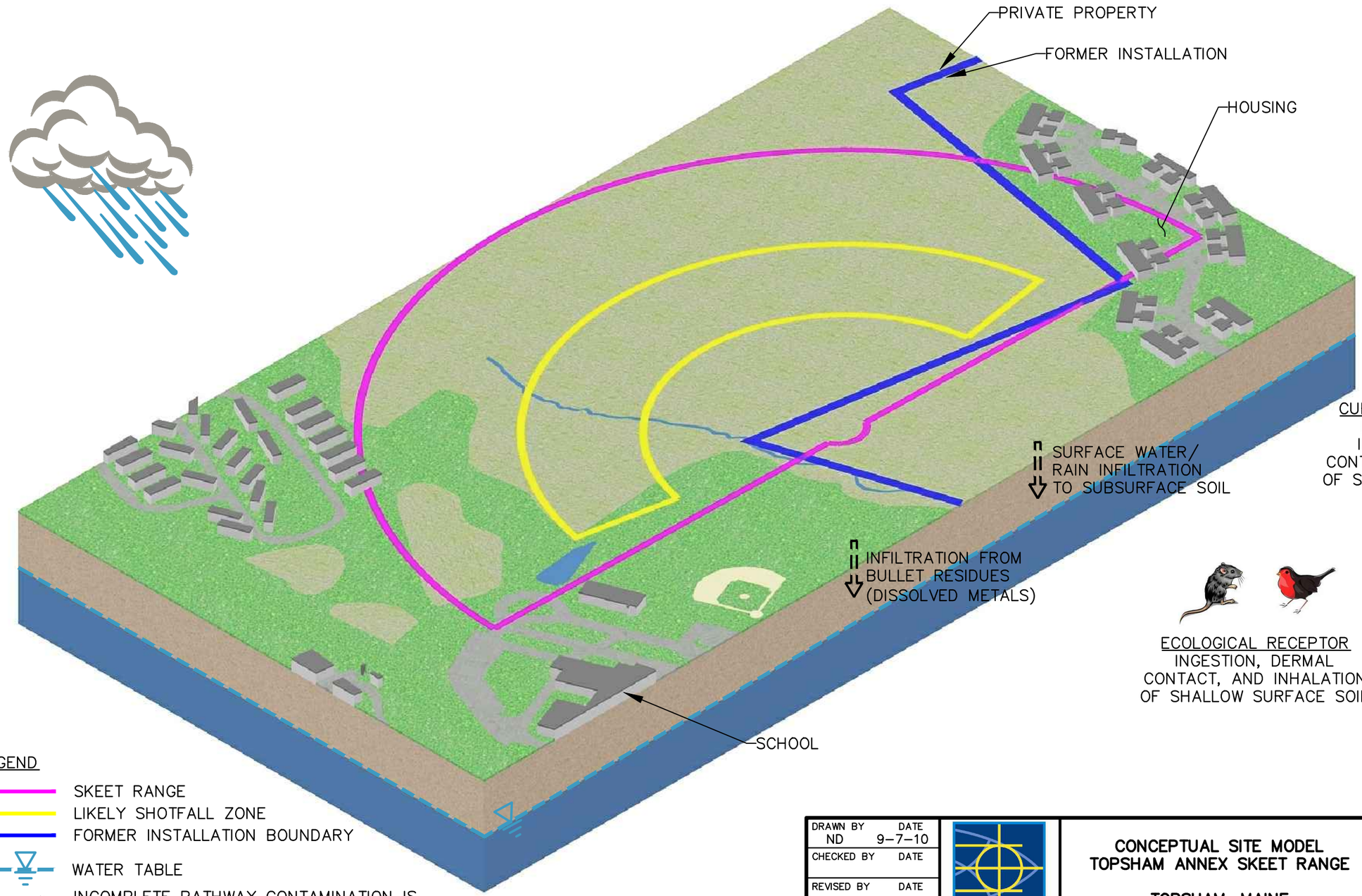
FIGURE 4-5

MC EXPOSURE PATHWAY ANALYSIS
TOPSHAM ANNEX SKEET RANGE
TOPSHAM, MAINE



(1) Incomplete pathway considering contaminaiton is present in shallow surface soil (0-3 inches bgs) only. Contamination was not detected in the deep surface soil (3-12 inches bgs) indicating that lead has not migrated to either the subsurface soil or groundwater.

●	Complete Pathway
○	Incomplete Pathway
◐	Potentially Complete Pathway
Φ	Potentially Complete Pathway but Contamination at Acceptable Risk Level



CURRENT TRESPASSER/
PRIVATE RESIDENT
INGESTION, DERMAL
CONTACT, AND INHALATION
OF SHALLOW SURFACE SOIL

ECOLOGICAL RECEPTOR
INGESTION, DERMAL
CONTACT, AND INHALATION
OF SHALLOW SURFACE SOIL

LEGEND

- SKEET RANGE
- LIKELY SHOTFALL ZONE
- FORMER INSTALLATION BOUNDARY
- WATER TABLE
- INCOMPLETE PATHWAY CONTAMINATION IS PRESENT IN SHALLOW SURFACE SOIL ONLY

DRAWN BY ND	DATE 9-7-10	CONCEPTUAL SITE MODEL TOPSHAM ANNEX SKEET RANGE TOPSHAM, MAINE	CONTRACT NO. 2407
CHECKED BY	DATE		OWNER NO.
REVISED BY	DATE		APPROVED BY / DATE
SCALE NOT TO SCALE			DRAWING NO. FIGURE 4-6 / REV. 0

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APPENDIX A

PROJECT PERSONNEL SIGN-OFF SHEET

QAPP Worksheet #4 (UFP-QAPP Manual Section 2.3.2)
Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.
☐ Worksheet Not Applicable (State Reason)

Project Personnel Sign-Off Sheet

Organization: TtNUS

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Linda Klink	PM	412-921-8650	See Signature Page	
Charles Race	Maine Certified Geologist	978-474-8437	See Certification Page	
To Be Determined (TBD) Brian Geringer	FOL, lead geologist, site safety officer	TBD 978 ~~617~~-474-8406	[signature]	07/02/09
Kelly Carper Lucy Guzman	Project Chemist	412-921-7273 978-474-8416	[signature]	01/21/10
Matt Soltis	HSM	412-921-8912	See HASP signature page (separate internal Navy document)	
Joseph Samchuck Jennifer Cardinal	DVM DV	412-921-8510 518 695 3092x313	[signature]	1/20/10
Chelsea Fellows-Swensen	Site Safety officer	978-474-8411	[signature]	7/2/09

Project Personnel Sign-Off Sheet

Organization: Empirical Laboratory

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Janice Shilling	Laboratory PM	615-345-1115		7/20/09
Randy Ward	Quality Assurance (QA) Director	615-345-1115	Randy D. Ward	7/20/09

Project Personnel Sign-Off Sheet

Organization: Columbia Analytical Services

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Deb Patton	Laboratory PM	585-288-5380	DPatton	8/3/09

APPENDIX B

PHOTOGRAPHIC LOG

TOPSHAM ANNEX SKEET RANGE

Photograph #-1: TASKT, wooden post northwest of firing point.

Photograph #-2: TASKT, four wooden posts adjacent to firing point to the northwest, surface soil sample 19 in foreground.

Photograph #-3: TASKT, near firing point.

Photograph #-4: TASKT firing point.

APPENDIX C

MC FIELD DOCUMENTATION

C-1 SOIL SAMPLE LOG SHEETS

C-2 SURFACE WATER/SEDIMENT SAMPLE LOG SHEETS

C-3 QA/QC AND IDW SAMPLE LOG SHEETS

C-4 SURVEY DATA

C-1 SOIL SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS01-0003
Sample Location: SS01
Sampled By: BG / TR
C.O.C. No.:

- [X] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1550 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Dk. Brown	Silt, some Sand (f), Roots, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

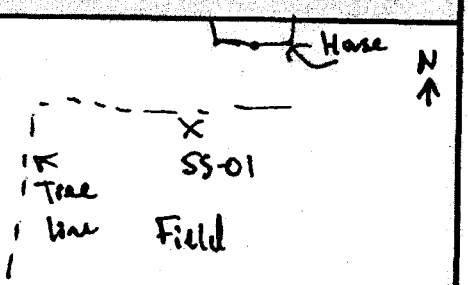
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

Background location

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS02-0003
Sample Location: SS02
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: ~~0920~~ 1520 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Dk. Brown	Silt, Some Sand(f), organic, roots, moist

COMPOSITE SAMPLE DATA:

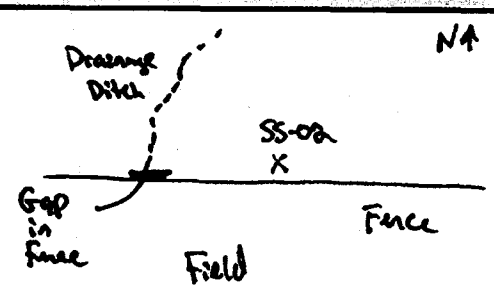
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	YES / (NO)	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK1-SS03-0003
Sample Location: SS03
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1445 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Brown	Sand (f-m), Some Silt, Some roots, damp

COMPOSITE SAMPLE DATA:

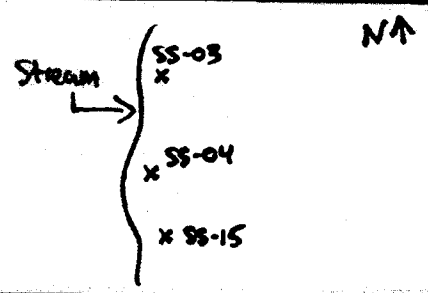
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS04-0003
Sample Location: SS04
Sampled By: BG/TR
C.O.C. No.:

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1450 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Brown/ Dk. Brown	Silt, Some Sand(F), roots, Moist

COMPOSITE SAMPLE DATA:

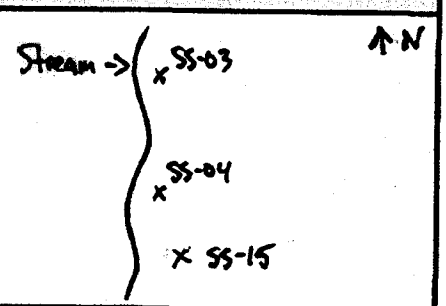
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	(YES) / NO	
CEC	1 - 4 OZ. GLASS	(YES) / NO	
TOC	1 - 4 OZ. GLASS	(YES) / NO	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS05-0003
Sample Location: SS05
Sampled By: BG/TR
C.O.C. No.:

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1505 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Dk. Brown	Silt, some Sand(F), roots, Moist

COMPOSITE SAMPLE DATA:

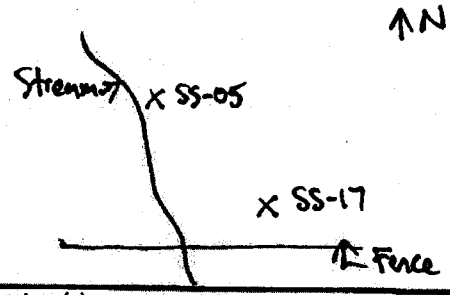
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	YES / (NO)	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK1-SS06-0003
Sample Location: SS06
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1230 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Dk. Brown	Silt, some Sand (F), roots, Moist

COMPOSITE SAMPLE DATA:

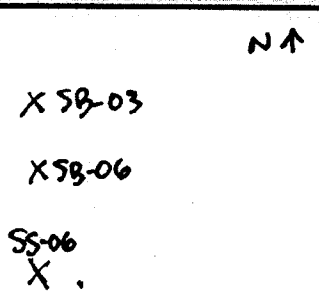
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK1-SS07-0003
Sample Location: SS07
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1435 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3	Brown	Silt & Sand (F), roots, moist

COMPOSITE SAMPLE DATA:

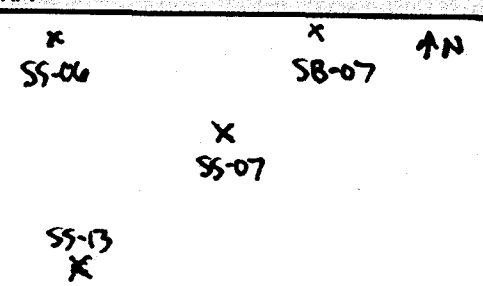
	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK7-SS08-0003
Sample Location: SS08
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1140 Method: Grab/Scoop Monitor Reading (ppm): 0.2	0-3"	Brown	Sand (F-M) & Silt, Some roots; Loamy

COMPOSITE SAMPLE DATA:

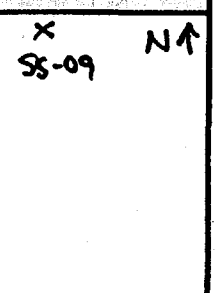
	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS X2	(YES) / NO	
PAHS	1 - 4 OZ. GLASS X2	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	YES / (NO)	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

(MS/MSD)

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS09-0003
Sample Location: SS-09
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 1130 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Dk. Brown	Sand(F) & Silt, roots, organic - Moist

COMPOSITE SAMPLE DATA:

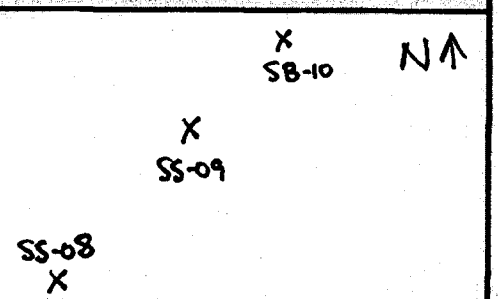
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	(YES) / NO	
CEC	1 - 4 OZ. GLASS	(YES) / NO	
TOC	1 - 4 OZ. GLASS	(YES) / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.: NASB-TASKT-SO-DUP02-042110

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASBTASKT-SS10-0003
Sample Location: SS-10
Sampled By: BG/TR
C.O.C. No.:

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 1120 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Lt. Brown	Silt, Sand (F, trace), roots, moist

COMPOSITE SAMPLE DATA:

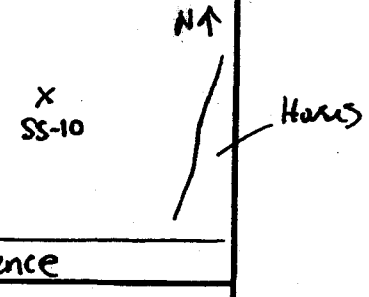
	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS14-0003
Sample Location: SS14
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 1540 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Dk. Brown/ Grayish	Silt, little Sand(F), moist, roots

COMPOSITE SAMPLE DATA:

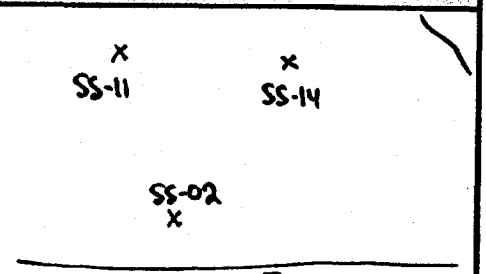
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK1-SS18-0003
Sample Location: SS18
Sampled By: BG/TR
C.O.C. No.:

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 1030 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Brown	Silt, T-Sand (F) - roots, wet

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

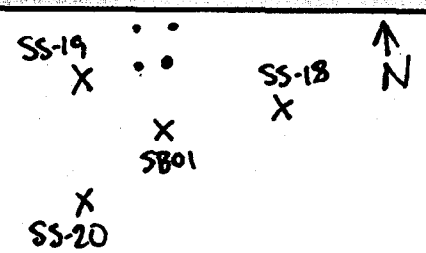
Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

Ground very soft, wet

Stream

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SS19-0003
Sample Location: SS-19
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 1040 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Brown	Silt, Some Sand(F), Moist, roots.

COMPOSITE SAMPLE DATA:

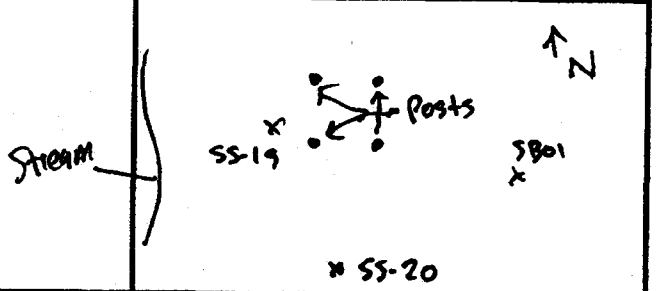
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD

Duplicate ID No.: NASB-TASKT-SS-DUP01-042110

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK1-SS20-0003
Sample Location: SS-20
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 1035 Method: Grab/Scoop Monitor Reading (ppm): 0.0	0-3"	Brown	Silt, Trace Sand (F), Some roots, Moist

COMPOSITE SAMPLE DATA:

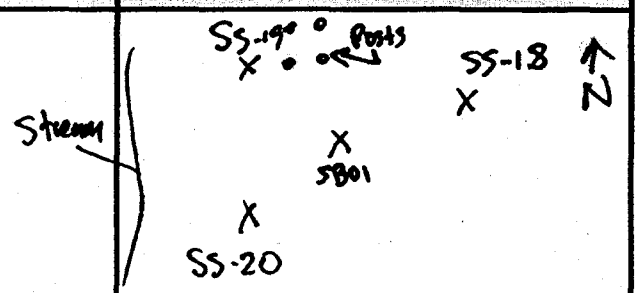
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS x2	(YES) / NO	
PAHS	1 - 4 OZ. GLASS x2	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS x2	(YES) NO	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	YES (NO)	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

(MS/MSD)

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SB01-0003, 0312
Sample Location: SB01
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10	0-3"	Brown/Lt.	Silt, Sand (F) - roots, organic, moist
Time: 1015/1020	3-12"	Gray	Silt, Little Sand (F) - moist
Method: Grab/Auger/Scoop			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

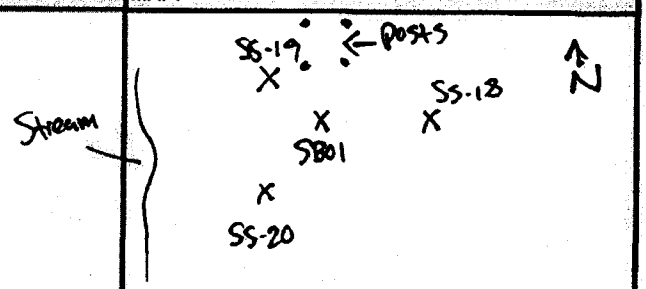
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SB02-0003-0312
Sample Location: SB-02
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10			
Time: 1425/1430			
Method: Grab/ Auger/Scoop	0 - 3"	Dk. Brown	Sand(f-m), Silt, roots, moist
Monitor Reading (ppm): 0.0	3-12"	Brown/Lt. Brown	Sand(f-m), Silt, little roots, moist

COMPOSITE SAMPLE DATA:

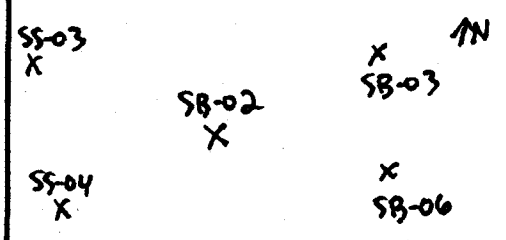
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK2-SB03-0003-0312
Sample Location: SB03
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 04/21/10
Time: 1210 / 1215
Method: Grab / Auger
Monitor Reading (ppm): 0.0

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
0 - 3"	Dk. Brown	Sand(F) & Silt, Roots, Moist
3 - 12"	Lt. Brown	Sand(F-M), Some Silt, little roots, Moist

COMPOSITE SAMPLE DATA:

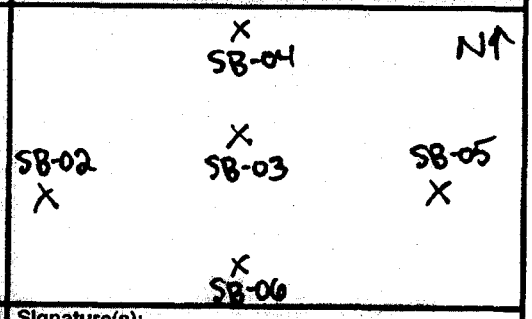
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	YES / NO	
PAHS	1 - 4 OZ. GLASS	YES / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / NO	
PH	1 - 4 OZ. GLASS	YES / NO	
CEC	1 - 4 OZ. GLASS	YES / NO	
TOC	1 - 4 OZ. GLASS	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASK1-SB04-0312-0003
Sample Location: SB04
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 4/21/10
Time: 1220/1225
Method: Grab / Auger / Scoop
Monitor Reading (ppm): 0.0

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
0-3"	Dk. Brown	Sand (F) & Silt, Some roots, Moist
3-12"	Brown / Lt. Brown	Sand (F-M), Some Silt, Moist

COMPOSITE SAMPLE DATA:

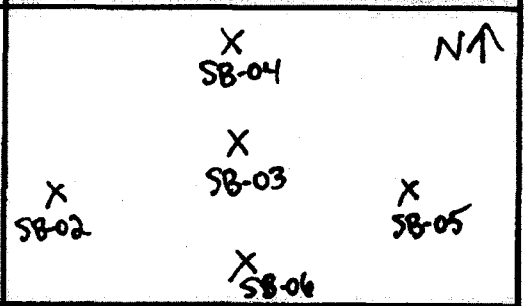
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	YES / (NO)	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SB05-0003,0912
Sample Location: SB05
Sampled By: BG/TR
C.O.C. No.:

[X] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 4/21/10
Time: 1150/1200 Soil
Method: Grab/Hand Auger
Monitor Reading (ppm): 0.0

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
0-3"	Dk. Brown	Silt, Some Sand (F), lots of roots, damp
3-12"	Lt. Brown	Sand (F), Some Silt, Few roots, moist

COMPOSITE SAMPLE DATA:

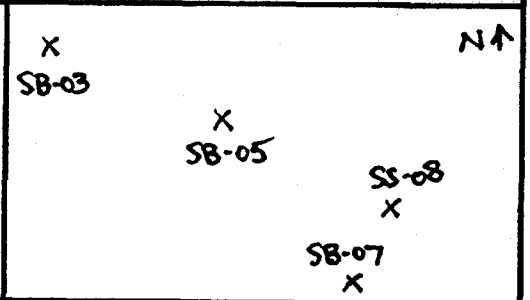
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	(YES) / NO	
CEC	1 - 4 OZ. GLASS	(YES) / NO	
TOC	1 - 4 OZ. GLASS	(YES) / NO	

OBSERVATIONS / NOTES:

MAP:



Circle If Applicable:

MS/MSD

Duplicate ID No.: NASB-TASKT-SD-DUP03-042110 (0-3")

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS01
Sample Location: SS01
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0845 Travel Method: Grab/ ~~Metal Scoop~~ Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Some Sand (F), - moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

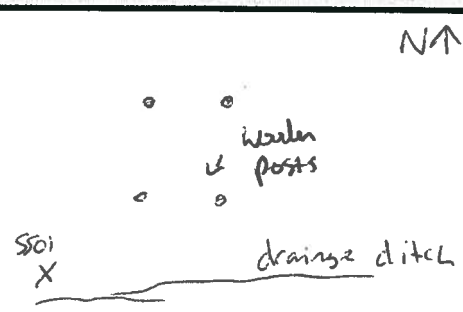
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES (NO)	
PAHs	1 - 4 oz. jar	(YES) NO	

OBSERVATIONS / NOTES:

Adjacent to Stream tributary, ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASK1-2-SS02
Sample Location: SS02
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0850 Method: Grab/Metal Trowel Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Some Sand(F), organic, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

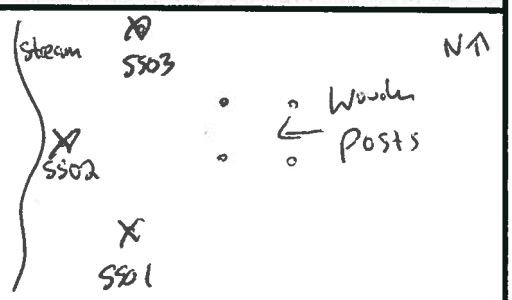
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES (NO)	
PAHs	1 - 4 oz. jar	(YES) NO	

OBSERVATIONS / NOTES:

Sample collected down embankment adj to Stream, ground partially frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS03
Sample Location: SS03
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0900 Method: Grab/Metal Trowel Monitor Reading (ppm): –	0 - 3"	Brown	Silt & Sand (F), Wood Fragments, dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

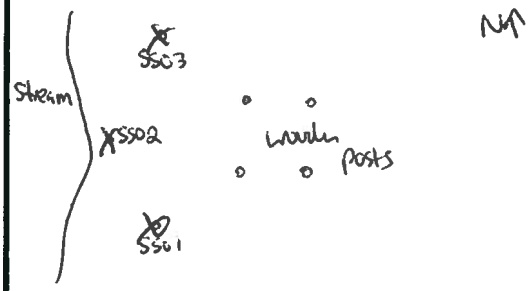
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES (NO)	
PAHs	1 - 4 oz. jar	(YES) NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen -

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
	NASB-SO-TASKT-2-DUP01-112910

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS04
Sample Location: SS04
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0910 Method: Grab/ Metal Trowel Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Some Sand (F), moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

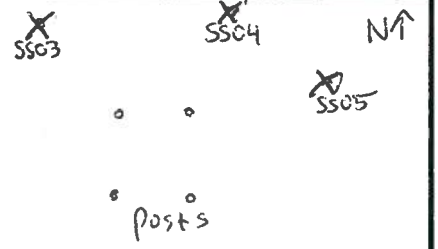
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES (NO)	
PAHs	1 - 4 oz. jar	(YES) NO	

OBSERVATIONS / NOTES:

Clay pigeon fragments observed, ground partially frozen

MAP:



Circle if Applicable:

(MS/MSD)

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS05
Sample Location: SS05
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0920 Method: Grab/Metal Trowel Monitor Reading (ppm): —	0 - 3"	Brown	Silt, Little Sand(F), T-clay, moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

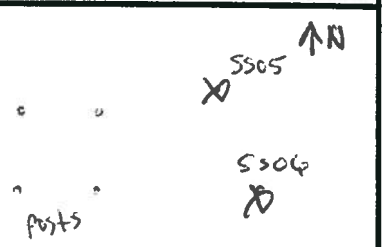
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES (NO)	
PAHs	1 - 4 oz. jar	(YES) NO	

OBSERVATIONS / NOTES:

Several pigeon fragments observed, ground partially frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS06
Sample Location: SS06
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0925 Method: Grab/ Metal Trowel Monitor Reading (ppm): —	0 - 3"	Brown	Silt, T-clay, T-Sand(F), moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

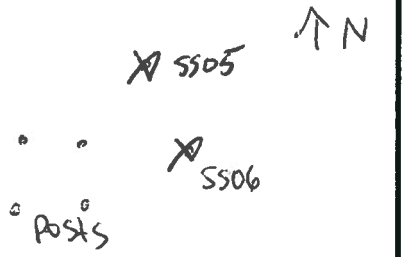
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES (NO)	
PAHs	1 - 4 oz. jar	(YES) NO	

OBSERVATIONS / NOTES:

Clay pigeon fragments observed (2), ground partially frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS07
Sample Location: SS-07
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1025 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt, Some Sand(f), Dry, roots, loamy

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

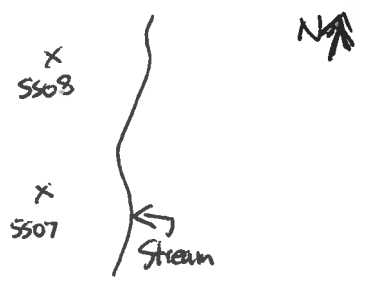
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground partially frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASK2-SS08
Sample Location: SS08
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1020 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Dk Brn/ Black	Silt, Some Sand(F), moist, roots, Loam

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

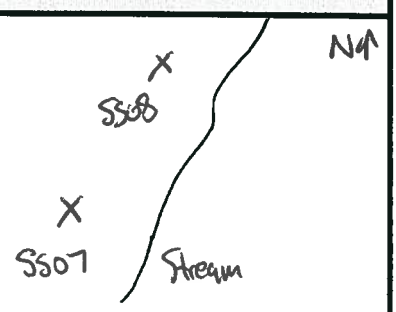
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected		Other
Lead	1 - 4 oz. jar	YES	NO	
PAHs	1 - 4 oz. jar	YES	NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS09
Sample Location: SS09
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1030 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown/DK Brown	Silt, T-Sand(F), roots, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

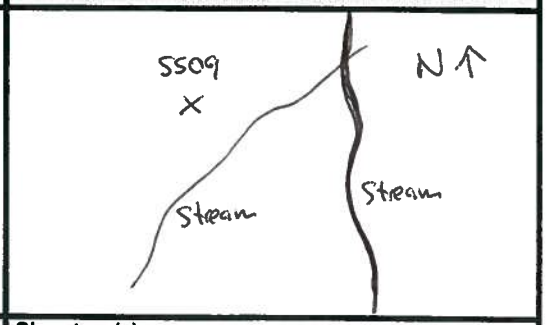
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS10
Sample Location: SS-10
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1105 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"		Sand(F) & Silt, Dry, roots, Loamy

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

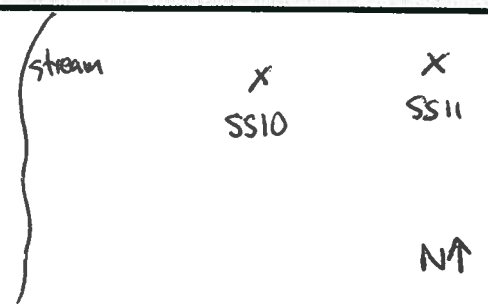
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground particles Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS11
Sample Location: SS-11
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1110 Method: Grab/Plastic Scoop Monitor Reading (ppm): –	0 - 3"	Brown/Dk. Brown	Sand(F), Some Silt, roots, Loamy, dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

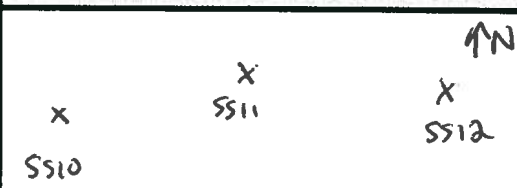
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASK-2-SS12
Sample Location: SS12
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1115 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown / Dk. Brown	Silt & Sand (F), dry, roots, loamy

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS13
Sample Location: SS13
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1205 Method: Grab/Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt, T-Sand(F), moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

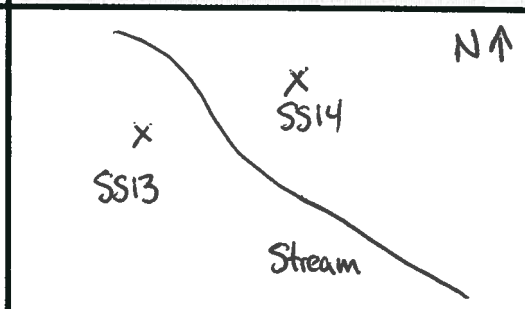
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS14
Sample Location: SS-14
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1200 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F) & Silt, roots, dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

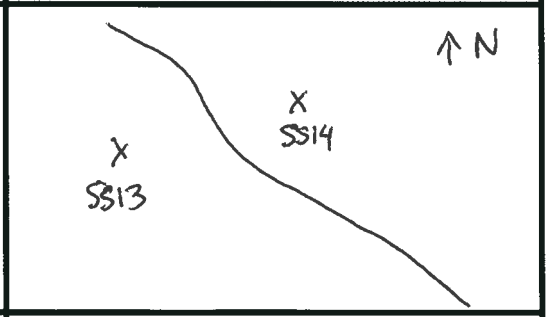
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS15
Sample Location: SS15
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1215 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt, T. Sand(F), dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

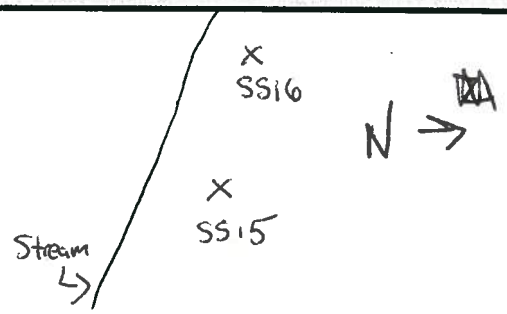
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS16
Sample Location: SS-16
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1210 Method: Grab / Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F), T-Silt, dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

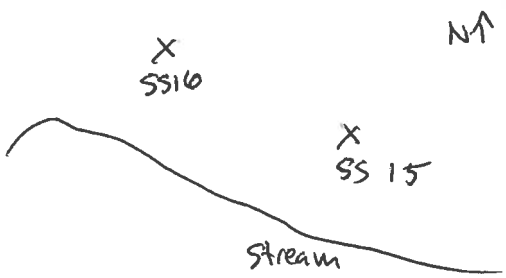
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASVT-2-SS17
Sample Location: SS17
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1340 Method: Grab/Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt, T-clay, moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

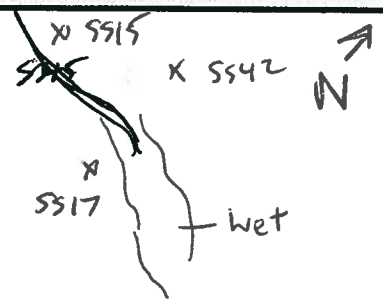
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected		Other
Lead	1 - 4 oz. jar	YES	NO	
PAHs	1 - 4 oz. jar	YES	NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASK1-2-SS18
Sample Location: SS18
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1220 Method: Grab/ Plastic Scoop Monitor Reading (ppm):	0 - 3"	Brown	Silt + Sand(f), roots, dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

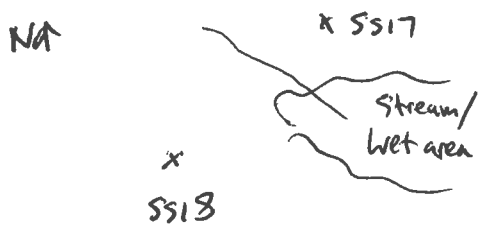
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected		Other
Lead	1 - 4 oz. jar	YES	NO	
PAHs	1 - 4 oz. jar	YES	NO	

OBSERVATIONS / NOTES:

Ground partially frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS19
Sample Location: SS-19
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1400 Method: Grab/Plastic Scoop Monitor Reading (ppm): –	0 - 3"	Brown	Silt & Sand(F), Dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

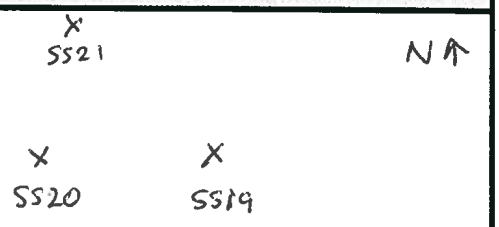
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS20
Sample Location: SS-20
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1415 Method: Grab/Plastic Scoop Monitor Reading (ppm): –	0 - 3"	Brown	Sand(F) & Silt, Dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

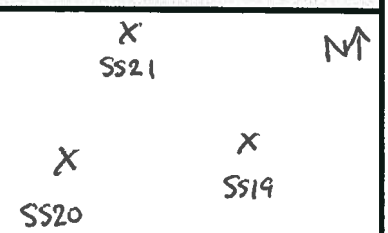
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS21
Sample Location: SS21
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/19/10 Time: 1405 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt, T-Sand(F), Moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

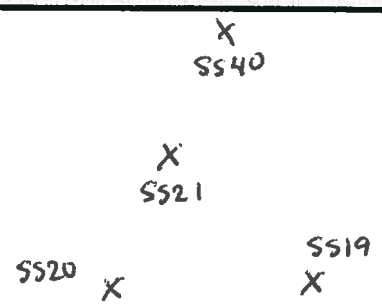
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS22
Sample Location: SS22
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1145 Method: Grab/ Plastic Scoop Monitor Reading (ppm): –	0 - 3"	Brown	Silt, little Sand(F), dry, roots- Loam

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

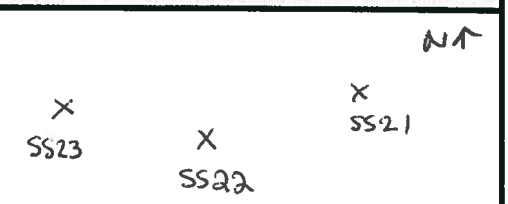
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS23
Sample Location: SS-23
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1150 Method: Grab/ Plastic Scoop Monitor Reading (ppm): –	0 - 3"	Brown	Silt, T-Sand(F), moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

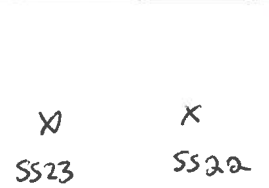
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS24
Sample Location: SS24
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1125 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F), Some Silt, dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

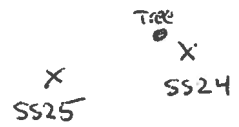
Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:

N/A



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS25
Sample Location: SS-25
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1130 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F), T-Silt, dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

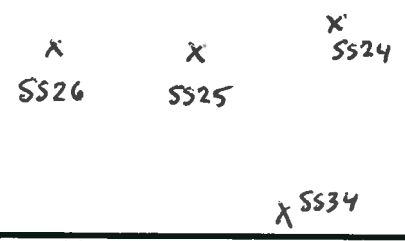
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS26
Sample Location: SS-26
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1045 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F), T-Silt, Day, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

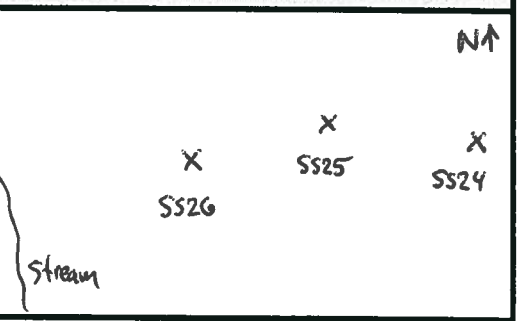
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS-27
Sample Location: SS-27
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1040 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Sand(f), dry, roots, loamy

COMPOSITE SAMPLE DATA:

	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

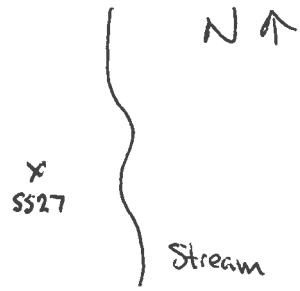
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Trace of Snow on ground, Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS28
Sample Location: SS-28
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1000 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	DK. Brown/Black	Silt, Some Sand(F), Dry, roots, Loam

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

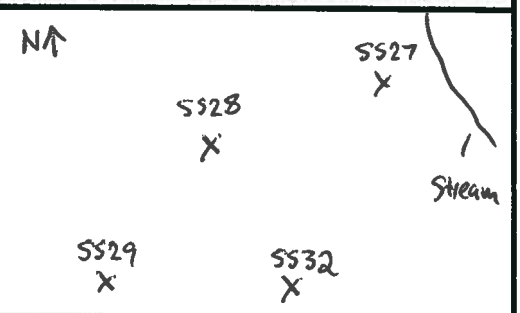
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Trace of Snow at Sampling location, ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS29
Sample Location: SS29
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0955 Method: Grab / Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Dk Brown / Black	Silt & Sand(F), organic, dry, loamy

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

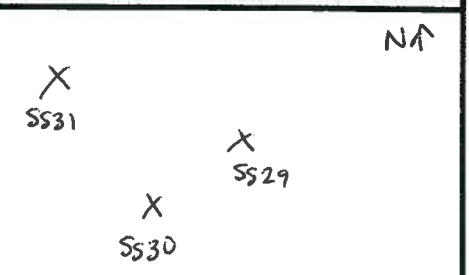
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground partially frozen

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.: NASB-TASKT-2-DUP02-112910

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASK1-2-SS30
Sample Location: SS-30
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0950 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Sand(F), roots, loam - dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

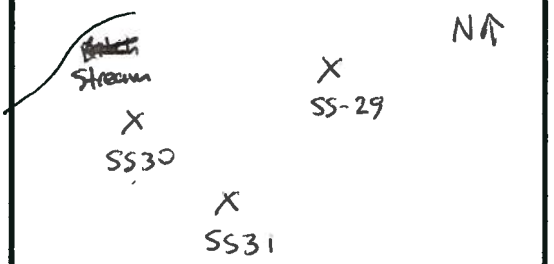
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS31
Sample Location: SS-31
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 0945 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Dk Brown	Silt & Sand(F), Dry, roots - Loam

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

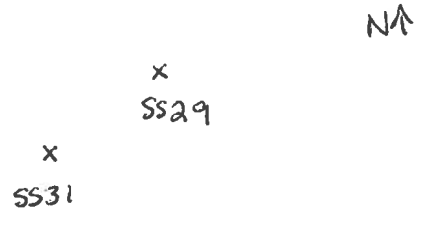
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS-32
Sample Location: SS-32
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1005 Method: Grab / Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F), & Silt, Dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

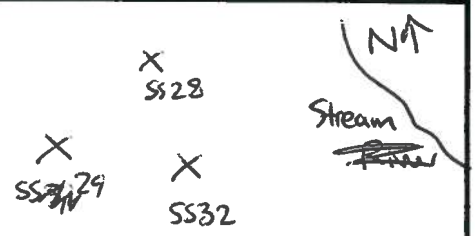
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground partially frozen

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS33
Sample Location: SS-33
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1050 Method: Grab/ Plastic Scoop Monitor Reading (ppm): –	0 - 3"	Brown	Silt, Trace Sand(F), roots, moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

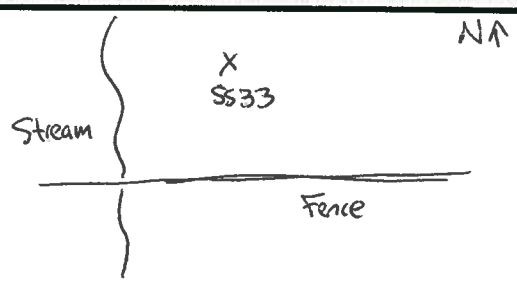
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground partially frozen.

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.: NASB-TASKT-2-SO-DUP04-112910

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS34
Sample Location: SS-34
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/24/10 Time: 1135 Method: Grab/Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Sand(F), dry/Moist, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

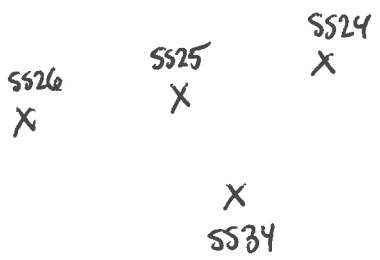
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT.2-SS35
Sample Location: SS-35
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1140 Method: Grab/Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt, Some Sand(F), dry/moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground Partially Frozen.

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	NASB-TASKT.2-SO-DUP05-112910

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS36
Sample Location: SS36
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1035 Method: Grab/Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Silt & Sand(F), roots, dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

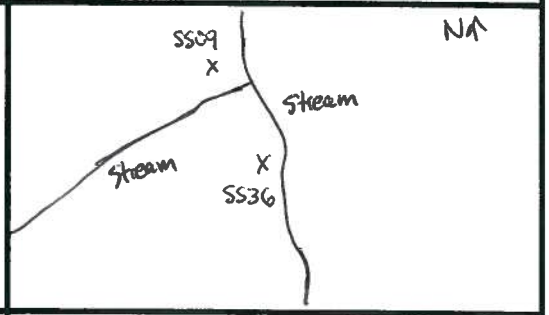
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Trace of snow on ground, ground partially frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
	NASB-SO-TASKT-2-DUP03-112910

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS37
Sample Location: SS-37
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1055 Method: Grab/Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(f) + Silt, dry, roots

COMPOSITE SAMPLE DATA:

	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

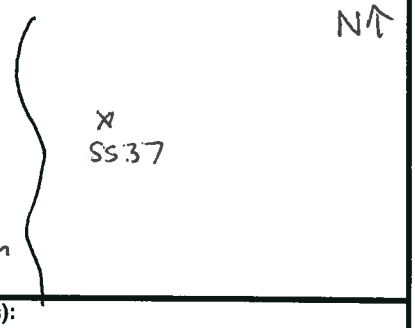
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Trace of snow on ground, ground partially frozen.

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS38
Sample Location: SS-38
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1120 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand (F), Some Silt, roots, dry

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground partially frozen.

MAP:

X SS12 NT

X SS38

X SS24

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS39
Sample Location: SS-39
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1155 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F), T-Silt, dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

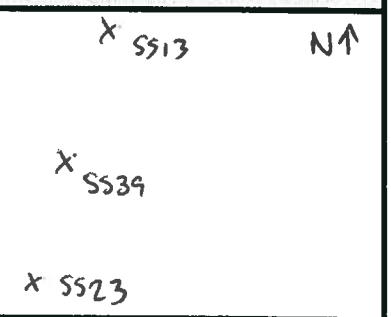
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	(YES) NO	
PAHs	1 - 4 oz. jar	YES (NO)	

OBSERVATIONS / NOTES:

Ground partially frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASK1.2-SS40
Sample Location: SS-40
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1410 Method: Grab/ Plastic Scoop Monitor Reading (ppm):	0 - 3"	Brown	Silt, Some Sand(F), dry, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

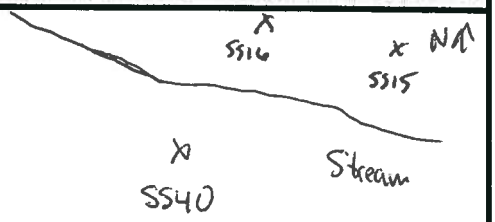
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected		Other
Lead	1 - 4 oz. jar	YES	NO	
PAHs	1 - 4 oz. jar	YES	NO	

OBSERVATIONS / NOTES:

Ground partially Frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS41
Sample Location: SS-41
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1010 Method: Grab / Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Dk. Brown/Black	Silt & Sand(F), dry, roots, Loam

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

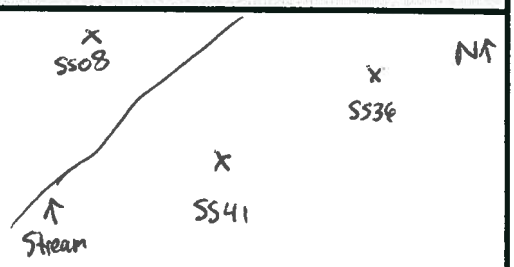
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 - 4 oz. jar	YES NO	
PAHs	1 - 4 oz. jar	YES NO	

OBSERVATIONS / NOTES:

Ground Partially Frozen

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NAS Brunswick - Topsham Annex Skeet
Project No.: 112G00645 0000.0505

[x] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS42
Sample Location: SS-42
Sampled By: B. Geringer / C. Fellows
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 11/29/10 Time: 1345 Method: Grab/ Plastic Scoop Monitor Reading (ppm): —	0 - 3"	Brown	Sand(F) & Silt, clay, roots, loamy

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

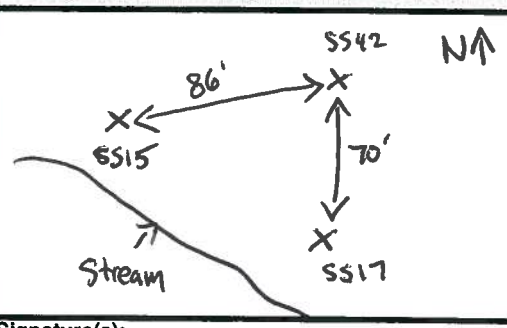
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected		Other
Lead	1 - 4 oz. jar	YES	NO	
PAHs	1 - 4 oz. jar	YES	NO	

OBSERVATIONS / NOTES:

Sample measured from SS-15 & SS-17, Ground partially frozen.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Skeet Range Topsham, ME
Project No.: 112G00645 / CTO 069

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS43
Sample Location: SS43
Sampled By: Fellows
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 12/ 9 /10 Time: 1050 Method: Scoop Monitor Reading (ppm):	0-3"	Brown	Organic silts - dry

COMPOSITE SAMPLE DATA:

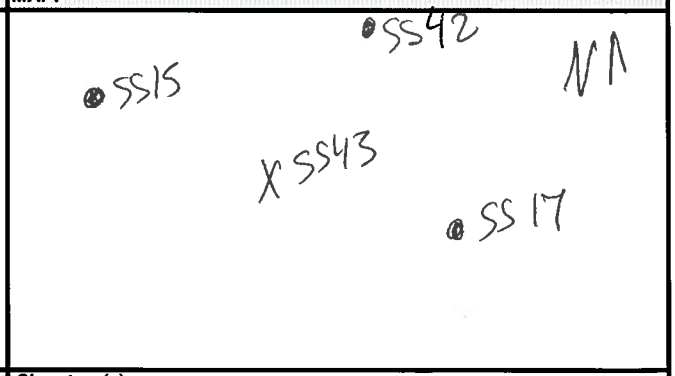
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
Lead (Pb)	Cool 4° C,	1 x 4 oz wide mouth glass jar	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Skeet Range Topsham, ME
Project No.: 112G00645 / CTO 069

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS44
Sample Location: SS44
Sampled By: Fellows
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12/ 9 /10	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0945	0-3"	Dark Brown	Organic silts, trace sand (f) - moist
Method: Scoop			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

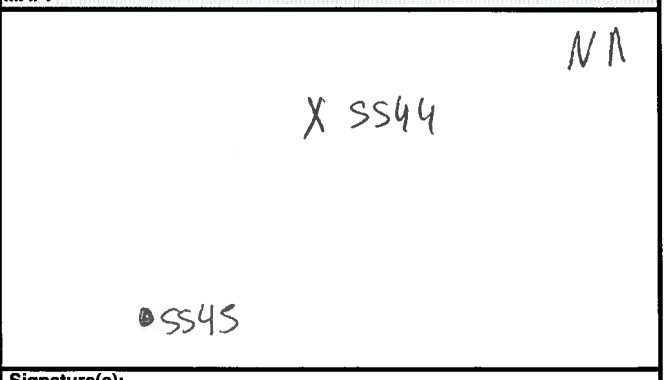
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
Lead (Pb)	Cool 4° C,	1 x 4 oz wide mouth glass jar	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Skeet Range Topsham, ME
Project No.: 112G00645 / CTO 069

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-2-SS45
Sample Location: SS45
Sampled By: Fellows
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12/ 9 /10	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1000	0-3"	Dark Brown	Organic silts, trace sand (f) - dry
Method: Scoop			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

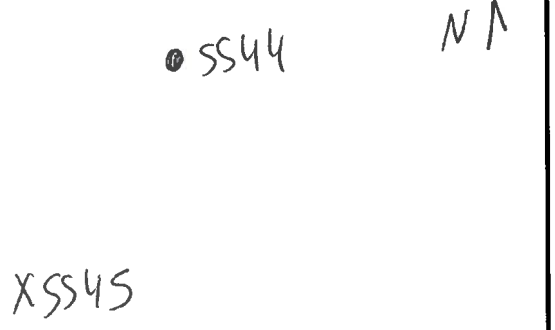
Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
Lead (Pb)	Cool 4° C,	1 x 4 oz wide mouth glass jar	YES / NO	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

C-2 SURFACE WATER/SEDIMENT SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: NASB-TASKT-SW01-042110
Sample Location: SW-01
Sampled By: BG/TR
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 04/21/10	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity ~~ppm (%)~~ PSU	ORP (mV)
Time: 0850								
Depth: 0.2'	Clear/ Colorless	5.88	223	7.35	1.14	11.50	0.11	256.6
Method: Direct Dip								

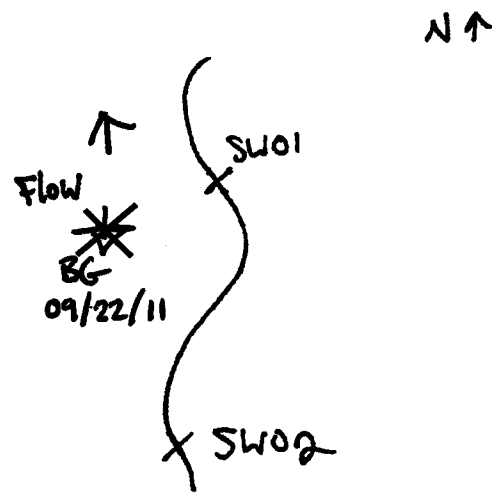
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL METALS	HNO3	2 - 500mL poly	Yes / No
PAHS	4° C	2 - 1L Ambers	Yes / No

OBSERVATIONS / NOTES:

Depth to bottom: 0.5'

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
	NASB-TASKT-SW-DUP01-042110

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: NASB-TASK1-SW02-042110
Sample Location: SW02
Sampled By: BG/TR
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity ppt	ORP (mV)
Date: 04/21/10								
Time: 0915								
Depth: 0.2'	Clear/ Colorless	6.41	231	7.90	1.26	10.99	0.11	222.9
Method: Direct Dip								

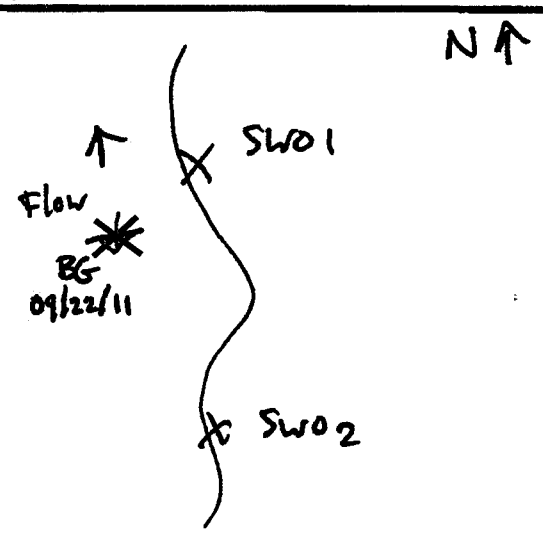
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL METALS	HNO3	2 - 500mL poly	Yes / No
PAHS	4° C	2 - 1L Ambers	Yes / No

OBSERVATIONS / NOTES:

Depth to Bottom: 0.46'

MAP:



Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

[X] Stream
[ ] Spring
[ ] Pond
[ ] Lake
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: NASB-TASKT-SW03-042110
Sample Location: SW03
Sampled By: BG/TR
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 04/21/10 Time: 0945 Depth: 0.2' Method: Direct Dip	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity ppm ~~(%)~~	ORP (mV)
	Clear/colorless	6.48	221	8.55	2.30	11.40	0.11	169.2

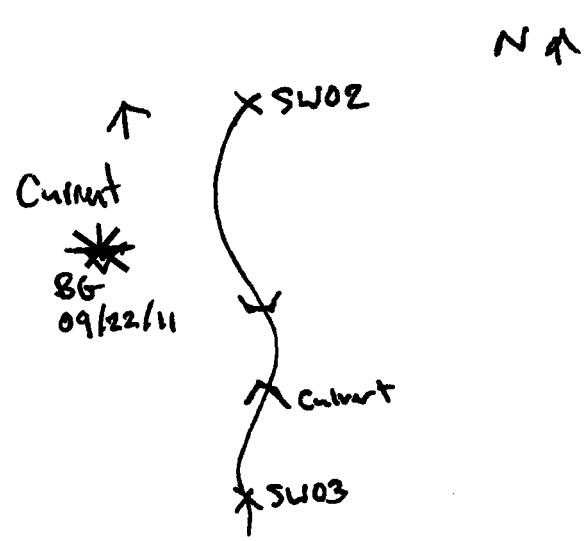
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL METALS	HNO3	2 - 500mL poly	Yes / No
PAHS	4° C	2 - 1L Ambers x 3	Yes / No

OBSERVATIONS / NOTES:

Some Fe Floc on bottom of stream; very rocky.
Depth to bottom: 0.75'

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

[signature]

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SD01-0006
Sample Location: SD01
Sampled By: BG/TR
C.O.C. No.:

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 4/21/10 Time: 0900 Method: Grab/Hand Auger Monitor Reading (ppm): 0.0	0-6"	Lt Gray	Sand (m-c) & Clay - Saturated trace organic material.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	(YES) / NO	

OBSERVATIONS / NOTES:

MAP:

Refer to SW01 log.

Circle If Applicable:

MS/MSD

Duplicate ID No.: NASB TASKT-SD-DUP01-042110

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASBTASK1-SD02-0006
Sample Location: SD02
Sampled By: BG/TR
C.O.C. No.:

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 0920 Method: Grab/Hand Auger Monitor Reading (ppm): 0.0	0-6"	Gray	Sand(Fine) & Clay, Saturated

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS	(YES) / NO	
PAHS	1 - 4 OZ. GLASS	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	(YES) / NO	

OBSERVATIONS / NOTES:

MAP:

Refer to Sketch log.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project No.: 112G00645 0000.0505

Sample ID No.: NASB-TASKT-SD03-0006
Sample Location: SD03
Sampled By: BG/TR
C.O.C. No.:

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 04/21/10 Time: 0950 Method: Grab/Auger/~~Scoop~~ Monitor Reading (ppm): 0.0	0-6"	Dk. Brown	Silt, Clay, Trace f-Sand, organic Material, roots

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TAL METALS	1 - 4 OZ. GLASS x 2	(YES) / NO	
PAHS	1 - 4 OZ. GLASS x 2	(YES) / NO	
NITROGLYCERINE/DINITROTOLUENE	1 - 4 OZ. GLASS	YES / (NO)	
PH	1 - 4 OZ. GLASS	YES / (NO)	
CEC	1 - 4 OZ. GLASS	YES / (NO)	
TOC	1 - 4 OZ. GLASS	(YES) / NO	

OBSERVATIONS / NOTES:

Some Fe floc on bottom of stream
Slight sheen

MAP:

Refer to SW03 log

Circle if Applicable:

(MS/MSD)

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Skeet Range Topsham, ME
Project No.: 112G00645 / CTO 069

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: NASB-TASKT-SD04-0006
Sample Location: SD04
Sampled By: Fellows
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 12/ 9 /10	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0920	0-6"	Brown	Sand (f), trace silt, trace clay - saturated
Method: Scoop			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

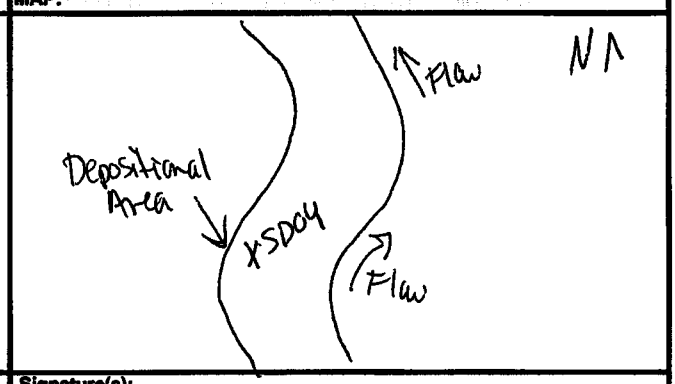
SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected	Other
TAL Metals, PAH, pH, TOC, CEC	Cool 4° C,	2 x 4 oz wide mouth glass jar	YES / NO	

OBSERVATIONS / NOTES:

Sample collected in depositional area in stream.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

C-3 QA/QC AND IDW SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Sample ID Number: NASB-TASKT-SO-PB01-042210
Project Number: 112G00645
Sampled By: BG/TR
Sample Location: NASB
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 04/22/10
Time: 0950
Method: Direct Pour

WATER SOURCE:

[X] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VMR International
Manufacturer: Thermo Scientific
Order Number:
Lot Number: 0313030
Expiration Date: 03/2011

RINSATE INFORMATION (If Applicable):

Media Type: Soil
Equipment Used: Hand Auger; Plastic Scoop; Aluminum Pan
Equipment Type:
[X] Dedicated
[X] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL Metals	Cool 4°C & HNO3	1 - 250 ml Plastic	YES / NO
Nitroglycerine/Dinitrotoluene	Cool 4°C	2 - 1 liter glass amber	YES / NO
PAHs	Cool 4°C	2 - 1 liter glass amber	YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Project Number: 112G00645
Sample Location: NASB
QA Sample Type:

Sample ID Number: NASB-TASKT-SO-RB02-042210
Sampled By: BG/TR
C.O.C. Number:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 04/22/10
Time: 1000
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR International
Manufacturer: Thermo Scientific
Order Number:
Lot Number: 0313030
Expiration Date: 03/2011

RINSATE INFORMATION (If Applicable):

Media Type: Soil
Equipment Used: Plastic Scoop/Aluminum Pan
Equipment Type:
[X] Dedicated
[X] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL Metals	Cool 4°C & HNO3	1 - 250 ml Plastic	YES / NO
Nitroglycerine/Dinitrotoluene	Cool 4°C	2 - 1 liter glass amber	YES / NO
PAHs	Cool 4°C	2 - 1 liter glass amber	YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Sample ID Number: NASBTASKT-SO-RB03-042210
Project Number: 112G00645
Sampled By: BG/TR
Sample Location: NASB
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 04/22/10
Time: 1010
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR International
Manufacturer: Thermo Scientific
Order Number:
Lot Number: 0313030
Expiration Date: 03/2011

RINSATE INFORMATION (If Applicable):

Media Type: Soil
Equipment Used: Plastic Scoop / Aluminum Pan
Equipment Type:
[X] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL Metals	Cool 4°C & HNO3	1 - 250 ml Plastic	YES / NO
Nitroglycerine/Dinitrotoluene	Cool 4°C	2 - 1 liter glass amber	YES / NO
PAHs	Cool 4°C	2 - 1 liter glass amber	YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Topsham Annex Skeet Range
Sample ID Number: NASB-TASKT-FB01-042210
Project Number: 112G00645
Sampled By: BG/TR
Sample Location: NASB
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[X] Source Water Blank
[] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 04/22/10
Time: 1020
Method: —

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR International
Manufacturer: Thermo Scientific
Order Number:
Lot Number: 0313030
Expiration Date: 03/2011

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used: N/A
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TAL Metals	Cool 4°C & HNO3	1 - 250 ml Plastic	(YES) / NO
Nitroglycerine/Dinitrotoluene	Cool 4°C	2 - 1 liter glass amber	(YES) / NO
PAHs	Cool 4°C	2 - 1 liter glass amber	(YES) / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Annex Sheet
Sample ID Number: NASB-TASKT-2-FB01-112910
Project Number: 112G00645 0000.0505
Sampled By: B. Geringer / C. Fellows
Sample Location: NASB-Trailer
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Rinsate Blank
[X] Source Water Blank
[] Other Blank

SAMPLING DATA:

Date: 11/29/10
Time: 1525
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[] Tap
[X] Purchased
[] Fire Hydrant
[] Other

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR
Manufacturer: Thermo Scientific
Order Number: N/A
Lot Number: 0614040
Expiration Date: 06/2011

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used: N/A
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Lead	Cool 4°C & HNO_3		YES / NO
PAHs	Cool 4°C		YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Annex Skeet Range
Sample ID Number: NASB-TASK-2-RB01-112910
Project Number: 112G00645 00000505
Sampled By: B. Geringer / C. Fellows
Sample Location: NASB-Trailer
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 11/29/10
Time: 1530
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR
Manufacturer: Thermo Scientific
Order Number: N/A
Lot Number: 0614040
Expiration Date: 06/2011

RINSATE INFORMATION (If Applicable):

Media Type: Soil
Equipment Used: Aluminum Pans / Metal Trowel
Equipment Type:
[X] Dedicated
[X] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Lead	Cool 4°C & HNO_3		YES / NO
PAHs	Cool 4°C		YES / NO
		Just PAHs	

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Annex Sheet
Project Number: 112G00645 0000.0505
Sample Location: NASB Trailer
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

Sample ID Number: NASB-TASKT-2-RB02-112910
Sampled By: B. Geringer / C. Fellows
C.O.C. Number:

SAMPLING DATA:

Date: 11/29/10
Time: 1535
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR
Manufacturer: Thermo Scientific
Order Number: N/A
Lot Number: 0614040
Expiration Date: 06/2011

RINSATE INFORMATION (If Applicable):

Media Type: Soil
Equipment Used: Aluminum Pans / Plastic Scoop
Equipment Type:
[X] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Lead	Cool 4°C & HNO_3		YES / NO
PAHs	Cool 4°C		YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: NASB-Topsham Annex Street
Sample ID Number: NASB-TASKT-2-RB03-112910
Project Number: 112G00645 0000.0505
Sampled By: B. Geringer / C. Fellows
Sample Location: NASB Trailer
C.O.C. Number:
QA Sample Type:

[] Trip Blank
[] Source Water Blank
[X] Rinsate Blank
[] Other Blank

SAMPLING DATA:

Date: 11/29/10
Time: 1540
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: NERL Reagent Grade Water
Supplier: VWR
Manufacturer: Thermo Scientific
Order Number: N/A
Lot Number: 0614040
Expiration Date: 06/2011

RINSATE INFORMATION (If Applicable):

Media Type: Soil
Equipment Used: Aluminum Pans / Plastic Scoop
Equipment Type:
[X] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Lead	Cool 4°C & HNO_3		YES / NO
PAHs	Cool 4°C		YES / NO

OBSERVATIONS / NOTES:

Signature(s):

C-4 SURVEY DATA

APPENDIX C

SURVEY COORDINATES
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

Location ID	Easting	Northing
NASB-TASKT-SWSD01	3006145.115	407220.7807
NASB-TASKT-SWSD02	3006181.372	407101.0251
NASB-TASKT-SWSD03	3006370.11	406610.5415
NASB-TASKT-SD04	3006149.37	407265.38
NASB-TASKT-XRF-SB01	3006431.02	406731.02
NASB-TASKT-XRF-SB02	3006317.43	407179.9
NASB-TASKT-XRF-SB03	3006446.82	407217.31
NASB-TASKT-XRF-SB04	3006442.03	407300.11
NASB-TASKT-XRF-SB05	3006593.31	407186.14
NASB-TASKT-XRF-SB06	3006451.59	407142.49
NASB-TASKT-XRF-SB07	3006666.42	407082.79
NASB-TASKT-XRF-SB08	3006433.85	407439.07
NASB-TASKT-XRF-SB09	3006745.3	407338.25
NASB-TASKT-XRF-SB10	3006841.32	407268.03
NASB-TASKT-XRF-SB11	3007064.41	407079.21
NASB-TASKT-XRF-SS01	3005474.8	407070.78
NASB-TASKT-XRF-SS01E	3005524.8	407070.78
NASB-TASKT-XRF-SS01N	3005474.8	407120.78
NASB-TASKT-XRF-SS01S	3005474.8	407020.78
NASB-TASKT-XRF-SS01W	3005424.8	407070.78
NASB-TASKT-XRF-SS02	3005989.3	406874.52
NASB-TASKT-XRF-SS03	3006163.37	407212.01
NASB-TASKT-XRF-SS04	3006195.91	407128.1
NASB-TASKT-XRF-SS05	3006288.74	406959.01
NASB-TASKT-XRF-SS06	3006458.45	407040.89
NASB-TASKT-XRF-SS07	3006614.52	406969.7
NASB-TASKT-XRF-SS08	3006691.37	407137.38
NASB-TASKT-XRF-SS09	3006784.75	407218.72
NASB-TASKT-XRF-SS10	3006952.53	406849.66
NASB-TASKT-XRF-SS11	3005939.66	407018.96
NASB-TASKT-XRF-SS12	3006197.26	407337.65
NASB-TASKT-XRF-SS13	3006522.22	406850.14
NASB-TASKT-XRF-SS14	3006053.16	406999.32
NASB-TASKT-XRF-SS15	3006220.28	407084.57
NASB-TASKT-XRF-SS16	3006869.92	407031.82
NASB-TASKT-XRF-SS17	3006351.71	406858.24
NASB-TASKT-XRF-SS18	3006455.391	406741.212
NASB-TASKT-XRF-SS19	3006405.798	406755.086
NASB-TASKT-XRF-SS20	3006401.229	406709.871
NASB-TASKT-2-SS01	3006368.60	406732.10
NASB-TASKT-2-SS02	3006342.40	406753.50
NASB-TASKT-2-SS03	3006374.30	406779.70
NASB-TASKT-2-SS04	3006419.30	406793.50
NASB-TASKT-2-SS05	3006453.90	406791.30
NASB-TASKT-2-SS06	3006442.30	406765.50
NASB-TASKT-2-SS07	3005994.10	407039.70
NASB-TASKT-2-SS08	3006043.60	407105.40
NASB-TASKT-2-SS09	3006100.30	407163.90
NASB-TASKT-2-SS10	3006226.30	407243.10

APPENDIX C

SURVEY COORDINATES
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

Location ID	Easting	Northing
NASB-TASKT-2-SS11	3006296.40	407271.00
NASB-TASKT-2-SS12	3006373.80	407289.90
NASB-TASKT-2-SS13	3006525.90	407292.60
NASB-TASKT-2-SS14	3006597.90	407280.00
NASB-TASKT-2-SS15	3006728.30	407228.70
NASB-TASKT-2-SS16	3006668.10	407257.50
NASB-TASKT-2-SS17	3006811.10	407173.80
NASB-TASKT-2-SS18	3006747.20	407120.70
NASB-TASKT-2-SS19	3006684.30	407068.50
NASB-TASKT-2-SS20	3006581.70	407055.00
NASB-TASKT-2-SS21	3006601.50	407110.80
NASB-TASKT-2-SS22	3006551.10	407127.00
NASB-TASKT-2-SS23	3006498.00	407136.00
NASB-TASKT-2-SS24	3006387.30	407129.70
NASB-TASKT-2-SS25	3006332.40	407114.40
NASB-TASKT-2-SS26	3006283.80	407093.70
NASB-TASKT-2-SS27	3006194.80	407032.50
NASB-TASKT-2-SS28	3006155.20	406991.20
NASB-TASKT-2-SS29	3006124.60	406948.00
NASB-TASKT-2-SS30	3006036.40	406953.40
NASB-TASKT-2-SS31	3006102.10	406909.30
NASB-TASKT-2-SS32	3006198.40	406947.10
NASB-TASKT-2-SS33	3006361.20	406990.30
NASB-TASKT-2-SS34	3006370.20	407064.00
NASB-TASKT-2-SS35	3006512.00	407000.40
NASB-TASKT-2-SS36	3006147.10	407097.30
NASB-TASKT-2-SS37	3006254.10	407167.50
NASB-TASKT-2-SS38	3006382.80	407209.80
NASB-TASKT-2-SS39	3006510.60	407214.30
NASB-TASKT-2-SS40	3006633.90	407183.70
NASB-TASKT-2-SS41	3006098.50	407049.60
NASB-TASKT-2-SS42	3006816.87	407245.38
NASB-TASKT-2-SS43	3006759.37	407194.13
NASB-TASKT-2-SS44	3006458.28	407077.22
NASB-TASKT-2-SS45	3006457.75	407003.91

APPENDIX D

VALIDATED ANALYTICAL RESULTS

D-1 SOIL SAMPLE RESULTS

D-2 SEDIMENT SAMPLE RESULTS

D-3 SURFACE WATER SAMPLE RESULTS

D-4 CHAIN-OF-CUSTODY FORMS

D-1 SOIL SAMPLE RESULTS

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SB01		NASB-TASKT-XRF-SB02		NASB-TASKT-XRF-SB03		NASB-TASKT-XRF-SB04	
SAMPLE ID	NASB-TASKT-XRF-SB01-0003	NASB-TASKT-XRF-SB01-0312	NASB-TASKT-XRF-SB02-0003	NASB-TASKT-XRF-SB02-0312	NASB-TASKT-XRF-SB03-0003	NASB-TASKT-XRF-SB03-0312	NASB-TASKT-XRF-SB04-0003	NASB-TASKT-XRF-SB04-0312
SAMPLE DATE	20090709	20090709	20090709	20090709	20090709	20090709	20090709	20090709
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SB	SS	SB	SS	SB	SS	SB
TOP DEPTH	0	3	0	3	0	3	0	3
BOTTOM DEPTH	3	12	3	12	3	12	3	12
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	24	18	185	36	38	23	27	41
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SB05				NASB-TASKT-XRF-SB06		NASB-TASKT-XRF-SB07	
SAMPLE ID	NASB-TASKT-XRF-SB05-0003	NASB-TASKT-XRF-SB05-0003-	NASB-TASKT-XRF-SB05-0003-	NASB-TASKT-XRF-SB05-0312	NASB-TASKT-XRF-SB06-0003	NASB-TASKT-XRF-SB06-0312	NASB-TASKT-XRF-SB07-0003	NASB-TASKT-XRF-SB07-0312
SAMPLE DATE	20090709	20090709	20090709	20090709	20090713	20090713	20090713	20090713
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SB	SS	SB	SS	SB
TOP DEPTH	0	0	0	3	0	3	0	3
BOTTOM DEPTH	3	3	3	12	3	12	3	12
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NA	NA	NA	NA	135	243	152	32
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	686	608.5	531	112	89	146	98	35
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SB08		NASB-TASKT-XRF-SB09		NASB-TASKT-XRF-SB10		NASB-TASKT-XRF-SB11	
SAMPLE ID	NASB-TASKT-XRF-SB08-0003	NASB-TASKT-XRF-SB08-0312	NASB-TASKT-XRF-SB09-0003	NASB-TASKT-XRF-SB09-0312	NASB-TASKT-XRF-SB10-0003	NASB-TASKT-XRF-SB10-0312	NASB-TASKT-XRF-SB11-0003	NASB-TASKT-XRF-SB11-0312
SAMPLE DATE	20090713	20090713	20090713	20090713	20090713	20090713	20090713	20090713
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SB	SS	SB	SS	SB	SS	SB
TOP DEPTH	0	3	0	3	0	3	0	3
BOTTOM DEPTH	3	12	3	12	3	12	3	12
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	1.6	0 U	1.6	0 U	9.2	26.3	39.6	7.3
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	19	14	19	15	23	32	39	22
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SS01	NASB-TASKT-XRF-SS01E	NASB-TASKT-XRF-SS01N	NASB-TASKT-XRF-SS01S	NASB-TASKT-XRF-SS01W	NASB-TASKT-XRF-SS02	NASB-TASKT-XRF-SS03	
SAMPLE ID	NASB-TASKT-XRF-SS01-0003	NASB-TASKT-XRF-SS01E-0003	NASB-TASKT-XRF-SS01N-	NASB-TASKT-XRF-SS01S-0003	NASB-TASKT-XRF-SS01W-	NASB-TASKT-XRF-SS02-0003	NASB-TASKT-XRF-SS03-0003	NASB-TASKT-XRF-SS04-0003
SAMPLE DATE	20090709	20090709	20090709	20090709	20090709	20090709	20090709	20090709
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	3	3	3	3	3	3	3	3
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	59	17	10	19	14	31	60	269
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SS04		NASB-TASKT-XRF-SS05	NASB-TASKT-XRF-SS06	NASB-TASKT-XRF-SS07	NASB-TASKT-XRF-SS08	NASB-TASKT-XRF-SS09	
SAMPLE ID	NASB-TASKT-XRF-SS04-0003-	NASB-TASKT-XRF-SS04-0003-	NASB-TASKT-XRF-SS05-0003	NASB-TASKT-XRF-SS06-0003	NASB-TASKT-XRF-SS07-0003	NASB-TASKT-XRF-SS08-0003	NASB-TASKT-XRF-SS09-0003	NASB-TASKT-XRF-SS09-0312
SAMPLE DATE	20090709	20090709	20090709	20090709	20090709	20090709	20090709	20090713
SAMPLE CODE	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SB
TOP DEPTH	0	0	0	0	0	0	0	3
BOTTOM DEPTH	3	3	3	3	3	3	3	12
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	239
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	272.5	276	20	222	78	89	471	144
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SS10	NASB-TASKT-XRF-SS11	NASB-TASKT-XRF-SS12	NASB-TASKT-XRF-SS13	NASB-TASKT-XRF-SS14			NASB-TASKT-XRF-SS15
SAMPLE ID	NASB-TASKT-XRF-SS10-0003	NASB-TASKT-XRF-SS11-0003	NASB-TASKT-XRF-SS12-0003	NASB-TASKT-XRF-SS13-0003	NASB-TASKT-XRF-SS14-0003	NASB-TASKT-XRF-SS14-0003-	NASB-TASKT-XRF-SS14-0003-	NASB-TASKT-XRF-SS15-0003
SAMPLE DATE	20090709	20090713	20090713	20090713	20090713	20090713	20090713	20090713
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	3	3	3	3	3	3	3	3
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
LEAD-CALC	NA	0 U	0 U	37.7	NA	NA	NA	232
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	258	16	17	38	253	266.5	280	140
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SS16			NASB-TASKT-XRF-SS17	NASB-TASKT-XRF-SB01		NASB-TASKT-XRF-SB02	
SAMPLE ID	NASB-TASKT-XRF-SS16-0003	NASB-TASKT-XRF-SS16-0003-	NASB-TASKT-XRF-SS16-0003-	NASB-TASKT-XRF-SS17-0003	NASB-TASKT-SB01-0003	NASB-TASKT-SB01-0312	NASB-TASKT-SB02-0003	NASB-TASKT-SB02-0312
SAMPLE DATE	20090713	20090713	20090713	20090713	20100421	20100421	20100421	20100421
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SB	SS	SB
TOP DEPTH	0	0	0	0	0	3	0	3
BOTTOM DEPTH	3	3	3	3	3	12	3	12
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	21500	26700	10700	11100
ANTIMONY	NA	NA	NA	NA	0.401 UJ	0.339 UJ	0.328 UJ	0.307 UJ
ARSENIC	NA	NA	NA	NA	4.99 J	5.42 J	4.66 J	2.72 J
BARIUM	NA	NA	NA	NA	73.4	91.7	15.6	16.6
BERYLLIUM	NA	NA	NA	NA	1.21	1.54	0.526	0.591
CADMIUM	NA	NA	NA	NA	0.0803 U	0.135 U	0.14 UJ	0.0762 UJ
CALCIUM	NA	NA	NA	NA	1930	1410	326 J	228 J
CHROMIUM	NA	NA	NA	NA	32.7	40.1	8.96	9.23
COBALT	NA	NA	NA	NA	10.9	18	1.46	1.56
COPPER	NA	NA	NA	NA	12.3	11.3	5.46	3.92
IRON	NA	NA	NA	NA	27000	33200	11200	11300
LEAD	NA	NA	NA	NA	27.6 J	14.4 J	98.2 J	16.9 J
LEAD-CALC	NA	NA	NA	150	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	5810	7430	880	966
MANGANESE	NA	NA	NA	NA	480	956	93.5	97.3
MERCURY	NA	NA	NA	NA	0.0535 J	0.0383 J	0.0981	0.0469
NICKEL	NA	NA	NA	NA	25.1	31.7	4.74	4.82
POTASSIUM	NA	NA	NA	NA	1970 J	2380 J	381 J	384 J
SELENIUM	NA	NA	NA	NA	0.513	0.755	0.722	0.62
SILVER	NA	NA	NA	NA	0.642 U	1.02 U	0.197 U	0.184 U
SODIUM	NA	NA	NA	NA	103 J	107 J	65.6 U	61.5 U
THALLIUM	NA	NA	NA	NA	0.321 U	0.271 U	0.197 U	0.184 U
VANADIUM	NA	NA	NA	NA	44.4	53.7	21.9	19.3
ZINC	NA	NA	NA	NA	75.9	81.7	22.1	22.4
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	0.10 U	0.10 U	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	0.362 J	0.25 U	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	5.73 UJ	3.06 UJ	4.39 UJ	1.82 UJ
2-METHYLNAPHTHALENE	NA	NA	NA	NA	6.2 UJ	3.21 UJ	4.7 UJ	1.85 UJ
ACENAPHTHENE	NA	NA	NA	NA	2.15 U	1.82 U	1.81 U	1.68 U
ACENAPHTHYLENE	NA	NA	NA	NA	2.15 U	4.57 UJ	16.6	5.75 UJ
ANTHRACENE	NA	NA	NA	NA	19.9	1.82 U	8.41 J	1.68 U
BENZO(A)ANTHRACENE	NA	NA	NA	NA	140 J	1.82 UJ	1.81 UJ	1.68 UJ
BENZO(A)PYRENE	NA	NA	NA	NA	178	14.2	41.8	12.4
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	191	16.7	74.4	25.7
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	120	1.82 U	1.81 U	1.68 U
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	103	11.6	35.7	15.9
CHRYSENE	NA	NA	NA	NA	164	1.82 U	1.81 U	1.68 U
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	37.6	1.82 U	1.81 U	1.68 U
FLUORANTHENE	NA	NA	NA	NA	192	20.9	102	29.1
FLUORENE	NA	NA	NA	NA	11.3	1.82 U	6.46 J	1.68 U
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	139	1.82 U	1.81 U	1.68 U
NAPHTHALENE	NA	NA	NA	NA	2.15 U	1.82 U	1.81 U	1.68 U
PHENANTHRENE	NA	NA	NA	NA	92.3	1.82 U	54.2	1.68 U
PYRENE	NA	NA	NA	NA	180	21.8	93.4	27.3
XRF (MG/KG)								
LEAD	128	128.5	129	97	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SB03		NASB-TASKT-XRF-SB04		NASB-TASKT-XRF-SB05			
SAMPLE ID	NASB-TASKT-SB03-0003	NASB-TASKT-SB03-0312	NASB-TASKT-SB04-0003	NASB-TASKT-SB04-0312	NASB-TASKT-SB05-0003	NASB-TASKT-SB05-0003-AVG	NASB-TASKT-SB05-0003-D	NASB-TASKT-SB05-0312
SAMPLE DATE	20100421	20100421	20100421	20100421	20100421	20100421	20100421	20100421
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SB	SS	SB	SS	SS	SS	SB
TOP DEPTH	0	3	0	3	0	0	0	3
BOTTOM DEPTH	3	12	3	12	3	3	3	12
METALS (MG/KG)								
ALUMINUM	11500	13100	12100	13000	17700	18200	18700	15700
ANTIMONY	0.314 UJ	0.301 UJ	0.355 UJ	0.323 UJ	0.45 UJ	0.45 U	0.45 UJ	0.339 UJ
ARSENIC	4.3 J	3.01 J	4.57 J	3.61 J	10.8 J	10.8	10.8 J	5.9 J
BARIUM	16.7	18.4	15.9	16.2	32.3	33.25	34.2	35.7
BERYLLIUM	0.597	0.759	0.592	0.687	1	1.005	1.01	0.966
CADMIUM	0.0823 UJ	0.0832 UJ	0.0941 UJ	0.0739 UJ	0.107 UJ	0.132 U	0.157 UJ	0.0678 U
CALCIUM	333	310	378	265 J	606	550	494	549
CHROMIUM	10.3	12.3	9.82	10.9	21.1	21.65	22.2	19.4
COBALT	2.18	2.93	1.65	2.06	4.77	5.105	5.44	5.35
COPPER	6.01	4.6	6.66	4.7	13.9	13.6	13.3	12.4
IRON	11900	12800	12400	12000	22100	22550	23000	19000
LEAD	24.3 J	6.5 J	82.3 J	11.9 J	453 J	376	299 J	26.4 J
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	1190	1530	1030	1270	2910	2950	2990	3090
MANGANESE	116	134	85.5	93.8	170	172	174	185
MERCURY	0.0612	0.0396	0.0731	0.0579	0.0917	0.0909	0.0901	0.0529
NICKEL	6.53	7.98	5.44	6.06	15.3	15.3	15.3	14.8
POTASSIUM	503 J	557 J	458 J	528 J	1230 J	1195	1160 J	1320 J
SELENIUM	0.589	0.54	0.767	0.649	0.841	0.8305	0.82	0.538
SILVER	0.188 U	0.12 U	0.142 U	0.194 U	0.36 U	0.45 U	0.54 U	0.543 U
SODIUM	62.8 U	60.1 U	71.1 U	64.7 U	90 U	89.95 U	89.9 U	67.8 U
THALLIUM	0.188 U	0.18 U	0.213 U	0.194 U	0.27 U	0.27 U	0.27 U	0.203 U
VANADIUM	20.3	21.1	22	20.2	41.4	41.1	40.8	31.7
ZINC	29.8	37.3	22	23	42.2	46.3	50.4	35.3
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	1.84 UJ	1.63 U	1.96 U	1.77 U	2.41 U	6.405 U	10.4 UJ	1.86 U
2-METHYLNAPHTHALENE	2.05 UJ	1.63 U	1.96 U	1.77 U	2.41 U	6.705 U	11 UJ	1.86 U
ACENAPHTHENE	1.7 U	1.63 U	1.96 U	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
ACENAPHTHYLENE	7.05 UJ	3.63 UJ	11.9 U	4.79 UJ	12.4 U	13	19.8	4.74 UJ
ANTHRACENE	3.06 J	2.12 J	1.96 U	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
BENZO(A)ANTHRACENE	1.7 UJ	19.4 J	1.96 UJ	1.77 UJ	2.41 UJ	2.42 U	2.43 U	1.86 UJ
BENZO(A)PYRENE	21.1	9.35	40.7 J	16	64.4 J	32.8075	2.43 UJ	1.86 U
BENZO(B)FLUORANTHENE	36.7	16.2	56.4 J	22.4	78.6	74.55	70.5	1.86 U
BENZO(G,H,I)PERYLENE	1.7 U	1.63 U	1.96 UJ	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
BENZO(K)FLUORANTHENE	11.4	8.1 J	37.7 J	10.8	45.4	47.9	50.4 J	1.86 U
CHRYSENE	1.7 U	11.9	1.96 U	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
DIBENZO(A,H)ANTHRACENE	1.7 U	1.63 U	1.96 UJ	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
FLUORANTHENE	39.5	18.7	78.4	26.8	106	105.5	105	22.2
FLUORENE	2.09 J	1.63 U	1.96 U	1.77 U	2.41 U	5.0575	8.91 J	1.86 U
INDENO(1,2,3-CD)PYRENE	1.7 U	1.63 U	1.96 UJ	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
NAPHTHALENE	1.7 U	1.63 U	1.96 U	1.77 U	2.41 U	2.42 U	2.43 U	1.86 U
PHENANTHRENE	19	8.59	1.96 U	1.77 U	2.41 UJ	33.3025	65.4 J	1.86 U
PYRENE	37.3	16.6	69.7	24.9	94.9	93.9	92.9	19.7
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	34	34	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	102000	102000	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	3.89 J	3.89 J	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SS01	NASB-TASKT-XRF-SS02	NASB-TASKT-XRF-SS03	NASB-TASKT-XRF-SS04	NASB-TASKT-XRF-SS05	NASB-TASKT-XRF-SS06	NASB-TASKT-XRF-SS07	NASB-TASKT-XRF-SS08
SAMPLE ID	NASB-TASKT-SS01-0003	NASB-TASKT-SS02-0003	NASB-TASKT-SS03-0003	NASB-TASKT-SS04-0003	NASB-TASKT-SS05-0003	NASB-TASKT-SS06-0003	NASB-TASKT-SS07-0003	NASB-TASKT-SS08-0003
SAMPLE DATE	20100421	20100421	20100421	20100421	20100421	20100421	20100421	20100421
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	3	3	3	3	3	3	3	3
METALS (MG/KG)								
ALUMINUM	6910	6850	10800	11600	14000	20300	19200	17000
ANTIMONY	0.438 UJ	0.38 UJ	0.396 UJ	1.3 J	0.467 UJ	0.796 J	0.399 UJ	0.345 UJ
ARSENIC	3.02 J	4.22 J	4.66 J	5.93 J	5.69 J	8.89 J	10.1 J	9.47 J
BARIUM	14.8	29.5	29.4	22.6	31.9	40	44	37.6
BERYLLIUM	0.335 J	0.426	0.659	0.577	0.804	1.08	0.975	0.864
CADMIUM	0.156 UJ	0.247 UJ	0.0792 U	0.0768 U	0.0934 U	0.0876 U	0.122 UJ	0.126 UJ
CALCIUM	352 J	2890	821	630	549	610	546	881
CHROMIUM	7.54	9.05	14.6	18.8	17.5	25.9	22.8	19.9
COBALT	0.928 J	1.71	4.57	3.91	3.38	6.16	5.69	4.74
COPPER	18.3	6.78	9.53	7.16	9.66	12.7	12.8	11.4
IRON	9360	9880	13600	16200	16800	27300	23600	20500
LEAD	123 J	33.1 J	70.4 J	960 J	198 J	364 J	51.7 J	168 J
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	524	1170	2430	2690	2500	3890	3290	2920
MANGANESE	46.1	159	369	137	126	345	241	257
MERCURY	0.127	0.0913	0.0609	0.0644	0.0941	0.0813	0.109	0.0788
NICKEL	4.69	7.59	10.7	11.8	12.2	17.7	16.8	15.9
POTASSIUM	469 J	561 J	1210 J	1080 J	1080 J	1450 J	1220 J	1080 J
SELENIUM	0.846	0.857	0.464 J	0.539	0.847	0.683	0.846	0.635
SILVER	0.175 U	0.152 U	0.317 U	46.1 U	0.28 U	0.701 U	0.319 U	0.552 U
SODIUM	87.5 U	76 U	79.2 U	76.8 U	93.4 U	87.6 U	79.7 U	69 U
THALLIUM	0.263 U	0.228 U	0.317 U	0.23 U	0.28 U	0.263 U	0.239 U	0.207 U
VANADIUM	22.5	25.5	26.2	32.7	33.2	47.1	41.5	36.4
ZINC	28	52.9	32	35.7	32	58.7	52.7	56.5
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	10.4 UJ	3.76 UJ	2.11 U	2.25 UJ	4.24 UJ	3.52 UJ	2.83 UJ	2.43 UJ
2-METHYLNAPHTHALENE	10.9 UJ	4.39 UJ	2.11 U	2.58 UJ	4.82 UJ	3.83 UJ	3.52 UJ	2.48 UJ
ACENAPHTHENE	2.4 U	2.01 U	2.11 U	2.13 U	4.43 J	2.32 U	2.14 U	1.92 U
ACENAPHTHYLENE	115	28.2	19	13.6 U	21.2	19	13.2 U	10.5 U
ANTHRACENE	57.6	14.5	2.11 U	2.13 U	16.1	2.32 U	10.5 J	7.64 J
BENZO(A)ANTHRACENE	185 J	58.2 J	2.11 U	2.13 U	2.48 U	2.32 U	2.14 U	1.92 U
BENZO(A)PYRENE	329	97.9	77	2.13 U	2.48 U	2.32 U	2.14 U	1.92 U
BENZO(B)FLUORANTHENE	420	126	86.9	56.2	95.1	88.2	78.1	44
BENZO(G,H,I)PERYLENE	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U	2.32 U	2.14 U	1.92 UJ
BENZO(K)FLUORANTHENE	259	82.1	61.1 J	44.1 J	51.3 J	54.1 J	45.8 J	32.7 J
CHRYSENE	385	106	2.11 U	2.13 U	2.48 U	2.32 U	2.14 U	1.92 U
DIBENZO(A,H)ANTHRACENE	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U	2.32 U	2.14 U	1.92 UJ
FLUORANTHENE	558	174	86.6	86.7	139	120	102	67.9
FLUORENE	20.4	6.9 J	2.11 U	2.13 U	7.51 J	6.94 J	5.91 J	4.5 J
INDENO(1,2,3-CD)PYRENE	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U	2.32 U	2.14 U	1.92 UJ
NAPHTHALENE	2.4 U	2.01 U	2.11 U	2.13 U	2.48 U	2.32 U	2.14 U	1.92 U
PHENANTHRENE	268	77.2	2.11 U	2.13 U	86.6	79.2	58.8	36.7
PYRENE	527	149	80.8	75.6	122	114	89.6	59.4
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	16.9	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	57400	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	3.63 J	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	NASB-TASKT-XRF-SS09			NASB-TASKT-XRF-SS10	NASB-TASKT-XRF-SS14	NASB-TASKT-XRF-SS18	NASB-TASKT-XRF-SS19	
SAMPLE ID	NASB-TASKT-SS09-0003	NASB-TASKT-SS09-0003-AVG	NASB-TASKT-SS09-0003-D	NASB-TASKT-SS10-0003	NASB-TASKT-SS14-0003	NASB-TASKT-SS18-0003	NASB-TASKT-SS19-0003	NASB-TASKT-SS19-0003-AVG
SAMPLE DATE	20100421	20100421	20100421	20100421	20100421	20100421	20100421	20100421
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	3	3	3	3	3	3	3	3
METALS (MG/KG)								
ALUMINUM	11800	12100	12400	17600	2780	18700	14000	14100
ANTIMONY	0.563 J	0.4995	0.436 J	0.361 UJ	0.388 UJ	0.438 UJ	0.369 UJ	0.372 U
ARSENIC	53.5 J	30.56	7.62 J	5.34 J	2.93 J	5.03 J	4.79 J	4.735
BARIUM	24	24.8	25.6	47	10.7	63.7	58.7	57.8
BERYLLIUM	0.63	0.6355	0.641	0.944	0.14 J	1.03	0.847	0.8625
CADMIUM	0.306 UJ	0.2315 U	0.157 UJ	0.0722 U	0.0979 UJ	0.16 UJ	0.169 UJ	0.171 U
CALCIUM	491	484	477	796	310 J	1900	2060	1990
CHROMIUM	15.8	16	16.2	27.1	4.49	27.7	24.5	25
COBALT	2.97	3.085	3.2	7.48	0.406 J	11.6	7.95	7.945
COPPER	8.28	8.505	8.73	9.98	3.25	13.7	13.6	13.75
IRON	18600	17900	17200	26500	4760	24500	19500	19900
LEAD	24300 J	12347.5	395 J	295 J	407 J	22.9 J	52.4 J	50.1
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	2120	2160	2200	4730	259 J	4850	4420	4455
MANGANESE	124	129.5	135	358	18.5	561	421	405
MERCURY	0.0865	0.08285	0.0792	0.0411	0.0962	0.051 J	0.0809	0.13745
NICKEL	9.85	10.225	10.6	17.9	2.6	21.6	18.9	18.9
POTASSIUM	748 J	754	760 J	1490 J	268 J	1820 J	1810 J	1810
SELENIUM	0.786	0.7885	0.791	0.433 J	0.738	0.73	0.382 J	0.3735
SILVER	0.0808 U	0.2099 U	0.339 U	1.08 U	0.0777 U	0.525 U	0.59 U	0.595 U
SODIUM	80.8 U	82.8 U	84.8 U	72.2 U	77.7 U	87.5 U	91.3 J	90.05
THALLIUM	0.242 U	0.248 U	0.254 U	0.361 U	0.233 U	0.35 U	0.295 U	0.2975 U
VANADIUM	37.9	35.6	33.3	48.3	13.7	37.7	33	33.65
ZINC	29.8	30.85	31.9	58.2	9.02	66	92.9	87.95
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
2-NITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
3-NITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
4-NITROTOLUENE	NA	NA	NA	NA	NA	0.10 U	0.10 U	0.1 U
NITROGLYCERIN	NA	NA	NA	NA	NA	0.446 J	0.25 U	0.25 U
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	2.25 U	3.91 U	5.57 UJ	1.92 U	2.3 UJ	2.35 U	5.76 UJ	8.03 U
2-METHYLNAPHTHALENE	2.4 UJ	4.09 U	5.78 UJ	1.92 U	2.53 UJ	2.35 U	6.65 UJ	11.375 U
ACENAPHTHENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	45.8	60.75
ACENAPHTHYLENE	11.2 UJ	13.2 U	15.2 U	8.17 UJ	2.17 U	4.46 UJ	2.06 U	5.26 U
ANTHRACENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	2.06 UJ	81.015
BENZO(A)ANTHRACENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	306 J	514.5
BENZO(A)PYRENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	682 J	1156
BENZO(B)FLUORANTHENE	48.5	52	55.5	31.6	58.8	81.9	546 J	898
BENZO(G,H,I)PERYLENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	446 J	687.5
BENZO(K)FLUORANTHENE	27.1 J	30.4	33.7 J	21.5 J	52.1 J	52.3 J	444 J	689.5
CHRYSENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	469 J	705
DIBENZO(A,H)ANTHRACENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	96.3 J	173.65
FLUORANTHENE	73	75.3	77.6	49.6	86.3	82.5	590 J	742
FLUORENE	2.25 U	3.3325	5.54 J	1.92 U	2.17 U	4.12 J	30.4 J	42.65
INDENO(1,2,3-CD)PYRENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	528 J	884
NAPHTHALENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	2.06 U	2.065 U
PHENANTHRENE	2.25 U	2.275 U	2.3 U	1.92 U	2.17 U	2.35 U	1350 J	955.5
PYRENE	60.1	64.7	69.3	43.7	76	73.6	942	1051
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	21.3	21.3	NA	NA	23.5	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	56500	56500	NA	NA	60500	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	4.05 J	4.05 J	NA	NA	3.72 J	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION		NASB-TASKT-XRF-SS20	TASKT-2-SS01	TASKT-2-SS02	TASKT-2-SS03			TASKT-2-SS04
SAMPLE ID	NASB-TASKT-SS19-0003-D	NASB-TASKT-SS20-0003	NASB-TASKT-2-SS01	NASB-TASKT-2-SS02	NASB-TASKT-2-SS03	NASB-TASKT-2-SS03-AVG	NASB-TASKT-2-SS03-D	NASB-TASKT-2-SS04
SAMPLE DATE	20100421	20100421	20101129	20101129	20101129	20101129	20101129	20101129
SAMPLE CODE	DUP	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	3	3	0.5	0.5	0.5	0.5	0.5	0.5
METALS (MG/KG)								
ALUMINUM	14200	16100	NA	NA	NA	NA	NA	NA
ANTIMONY	0.375 UJ	0.40 UJ	NA	NA	NA	NA	NA	NA
ARSENIC	4.68 J	4.82 J	NA	NA	NA	NA	NA	NA
BARIUM	56.9	58.3	NA	NA	NA	NA	NA	NA
BERYLLIUM	0.878	0.954	NA	NA	NA	NA	NA	NA
CADMIUM	0.173 UJ	0.0913 UJ	NA	NA	NA	NA	NA	NA
CALCIUM	1920	2400	NA	NA	NA	NA	NA	NA
CHROMIUM	25.5	27.3	NA	NA	NA	NA	NA	NA
COBALT	7.94	8.9	NA	NA	NA	NA	NA	NA
COPPER	13.9	16.1	NA	NA	NA	NA	NA	NA
IRON	20300	22700	NA	NA	NA	NA	NA	NA
LEAD	47.8 J	23 J	NA	NA	NA	NA	NA	NA
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	4490	5150	NA	NA	NA	NA	NA	NA
MANGANESE	389	417	NA	NA	NA	NA	NA	NA
MERCURY	0.194	0.0344 J	NA	NA	NA	NA	NA	NA
NICKEL	18.9	21.9	NA	NA	NA	NA	NA	NA
POTASSIUM	1810 J	2120 J	NA	NA	NA	NA	NA	NA
SELENIUM	0.365 J	0.359 J	NA	NA	NA	NA	NA	NA
SILVER	0.60 U	0.64 U	NA	NA	NA	NA	NA	NA
SODIUM	88.8 J	101 J	NA	NA	NA	NA	NA	NA
THALLIUM	0.30 U	0.32 U	NA	NA	NA	NA	NA	NA
VANADIUM	34.3	38	NA	NA	NA	NA	NA	NA
ZINC	83	63.1	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	0.10 U	0.10 U	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	0.25 U	0.304 J	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	10.3 UJ	2.12 U	16.8	5.88 J	8.18 J	27.94	47.7 J	136 J
2-METHYLNAPHTHALENE	16.1 U	2.25 UJ	21.3	9.25 J	12.4 J	51.7	91 J	200 J
ACENAPHTHENE	75.7	2.12 U	12.7	36.8	10	6.1875	4.75 U	3200
ACENAPHTHYLENE	8.46 UJ	12.9 U	83.2	5.14 U	40.4 J	21.3875	4.75 UJ	27.7 U
ANTHRACENE	161 J	2.12 U	91.7	79.6	63.6 J	32.9875	4.75 UJ	4470
BENZO(A)ANTHRACENE	723 J	2.12 U	445	176	141 J	71.6875	4.75 UJ	16700
BENZO(A)PYRENE	1630 J	106	632	198	237 J	119.6875	4.75 UJ	25300
BENZO(B)FLUORANTHENE	1250 J	110	789	267	291 J	146.6875	4.75 UJ	35600 J
BENZO(G,H,I)PERYLENE	929 J	2.12 U	409	99	160 J	81.1875	4.75 UJ	14000
BENZO(K)FLUORANTHENE	935 J	94.1 J	287 J	127 J	67.5 J	34.9375	4.75 UJ	8850 J
CHRYSENE	941 J	2.12 U	613 J	208 J	190 J	96.1875	4.75 UJ	14600 J
DIBENZO(A,H)ANTHRACENE	251 J	2.12 U	4.54 U	5.14 U	4.89 U	4.82 U	4.75 U	2590
FLUORANTHENE	894 J	207	1770	449	616 J	309.1875	4.75 UJ	34900
FLUORENE	54.9 J	3.18 J	55.5	35.6	32.8 J	17.5875	4.75 UJ	1800
INDENO(1,2,3-CD)PYRENE	1240 J	2.12 U	328	90.8	4.89 U	4.82 U	4.75 U	12900
NAPHTHALENE	2.07 U	2.12 U	121	6.07 J	58.3 J	83.65	109 J	570
PHENANTHRENE	561 J	63.3	1340	322	581 J	291.6875	4.75 UJ	17700
PYRENE	1160	174	1470	371	509 J	255.6875	4.75 UJ	25600
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	TASKT-2-SS05	TASKT-2-SS06	TASKT-2-SS07	TASKT-2-SS08	TASKT-2-SS09	TASKT-2-SS10	TASKT-2-SS11	TASKT-2-SS12
SAMPLE ID	NASB-TASKT-2-SS05	NASB-TASKT-2-SS06	NASB-TASKT-2-SS07	NASB-TASKT-2-SS08	NASB-TASKT-2-SS09	NASB-TASKT-2-SS10	NASB-TASKT-2-SS11	NASB-TASKT-2-SS12
SAMPLE DATE	20101129	20101129	20101129	20101129	20101129	20101129	20101129	20101129
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	285 J	239 J	160 J	125 J	717 J	78.6 J
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	73.8	39.1	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	84.2	65.6	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	961	691	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	26.3 U	6.03 U	NA	NA	NA	NA	NA	NA
ANTHRACENE	1840	1180	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	7000	5050	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	10600	8700	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	13000	9250	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	6250	4460	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	4200 J	2620 J	NA	NA	NA	NA	NA	NA
CHRYSENE	7320 J	4600 J	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	1590	1190	NA	NA	NA	NA	NA	NA
FLUORANTHENE	11300	8590	NA	NA	NA	NA	NA	NA
FLUORENE	554	412	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	5540	3930	NA	NA	NA	NA	NA	NA
NAPHTHALENE	191	148	NA	NA	NA	NA	NA	NA
PHENANTHRENE	6640	4740	NA	NA	NA	NA	NA	NA
PYRENE	10400	8090	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	TASKT-2-SS13	TASKT-2-SS14	TASKT-2-SS15	TASKT-2-SS16	TASKT-2-SS17	TASKT-2-SS18	TASKT-2-SS19	TASKT-2-SS20
SAMPLE ID	NASB-TASKT-2-SS13	NASB-TASKT-2-SS14	NASB-TASKT-2-SS15	NASB-TASKT-2-SS16	NASB-TASKT-2-SS17	NASB-TASKT-2-SS18	NASB-TASKT-2-SS19	NASB-TASKT-2-SS20
SAMPLE DATE	20101129	20101129	20101129	20101129	20101129	20101129	20101129	20101129
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	93.1 J	260 J	79.9 J	436 J	367 J	183 J	154 J	151 J
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	TASKT-2-SS21	TASKT-2-SS22	TASKT-2-SS23	TASKT-2-SS24	TASKT-2-SS25	TASKT-2-SS26	TASKT-2-SS27	TASKT-2-SS28
SAMPLE ID	NASB-TASKT-2-SS21	NASB-TASKT-2-SS22	NASB-TASKT-2-SS23	NASB-TASKT-2-SS24	NASB-TASKT-2-SS25	NASB-TASKT-2-SS26	NASB-TASKT-2-SS27	NASB-TASKT-2-SS28
SAMPLE DATE	20101129	20101129	20101129	20101129	20101129	20101129	20101129	20101129
SAMPLE CODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	962 J	929 J	476 J	1890 J	141 J	275 J	384 J	419 J
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	TASKT-2-SS29			TASKT-2-SS30	TASKT-2-SS31	TASKT-2-SS32	TASKT-2-SS33	
SAMPLE ID	NASB-TASKT-2-SS29	NASB-TASKT-2-SS29-AVG	NASB-TASKT-2-SS29-D	NASB-TASKT-2-SS30	NASB-TASKT-2-SS31	NASB-TASKT-2-SS32	NASB-TASKT-2-SS33	NASB-TASKT-2-SS33-AVG
SAMPLE DATE	20101129	20101129	20101129	20101129	20101129	20101129	20101129	20101129
SAMPLE CODE	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	1790 J	1790	1790 J	63.2 J	363 J	44100 J	210 J	238.5
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION		TASKT-2-SS34	TASKT-2-SS35			TASKT-2-SS36		
SAMPLE ID	NASB-TASKT-2-SS33-D	NASB-TASKT-2-SS34	NASB-TASKT-2-SS35	NASB-TASKT-2-SS35-AVG	NASB-TASKT-2-SS35-D	NASB-TASKT-2-SS36	NASB-TASKT-2-SS36-AVG	NASB-TASKT-2-SS36-D
SAMPLE DATE	20101129	20101129	20101129	20101129	20101129	20101129	20101129	20101129
SAMPLE CODE	DUP	NORMAL	ORIG	AVG	DUP	ORIG	AVG	DUP
MATRIX	SO	SO	SO	SO	SO	SO	SO	SO
SUBMATRIX	SS	SS	SS	SS	SS	SS	SS	SS
TOP DEPTH	0	0	0	0	0	0	0	0
BOTTOM DEPTH	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	267 J	334 J	326 J	435	544 J	247 J	237	227 J
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	TASKT-2-SS37	TASKT-2-SS38	TASKT-2-SS39	TASKT-2-SS40	TASKT-2-SS41	TASKT-2-SS42	TASKT-2-SS43	TASKT-2-SS44
SAMPLE ID	**NASB-TASKT-2-SS37**	**NASB-TASKT-2-SS38**	**NASB-TASKT-2-SS39**	**NASB-TASKT-2-SS40**	**NASB-TASKT-2-SS41**	**NASB-TASKT-2-SS42**	**NASB-TASKT-2-SS43**	**NASB-TASKT-2-SS44**
SAMPLE DATE	**20101129**	**20101129**	**20101129**	**20101129**	**20101129**	**20101129**	**20101209**	**20101209**
SAMPLE CODE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
MATRIX	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
SAMPLE TYPE	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**	**NORMAL**
SUBMATRIX	**SS**	**SS**	**SS**	**SS**	**SS**	**SS**	**SS**	**SS**
TOP DEPTH	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BOTTOM DEPTH	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
METALS (MG/KG)								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	279 J	243 J	222 J	798 J	328 J	99.1 J	122	303
LEAD-CALC	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
POTASSIUM	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA
SODIUM	NA	NA	NA	NA	NA	NA	NA	NA
THALLIUM	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
EXPLOSIVES (MG/KG)								
2,4,6-TRINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-AMINO-4,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
3-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-AMINO-2,6-DINITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROTOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
NITROGLYCERIN	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)								
1-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHENE	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA
ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA	NA	NA	NA
XRF (MG/KG)								
LEAD	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MEQ/100)								
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MG/KG)								
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (S.U.)								
pH	NA	NA	NA	NA	NA	NA	NA	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

SUMMARY OF ANALYTICAL RESULTS IN SHALLOW AND DEEP SURFACE SOIL
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	**TASKT-2-SS45**
SAMPLE ID	**NASB-TASKT-2-SS45**
SAMPLE DATE	**20101209**
SAMPLE CODE	**NORMAL**
MATRIX	**SO**
SAMPLE TYPE	**NORMAL**
SUBMATRIX	**SS**
TOP DEPTH	**0**
BOTTOM DEPTH	**0.5**
METALS (MG/KG)	
ALUMINUM	NA
ANTIMONY	NA
ARSENIC	NA
BARIUM	NA
BERYLLIUM	NA
CADMIUM	NA
CALCIUM	NA
CHROMIUM	NA
COBALT	NA
COPPER	NA
IRON	NA
LEAD	55.7
LEAD-CALC	NA
MAGNESIUM	NA
MANGANESE	NA
MERCURY	NA
NICKEL	NA
POTASSIUM	NA
SELENIUM	NA
SILVER	NA
SODIUM	NA
THALLIUM	NA
VANADIUM	NA
ZINC	NA
EXPLOSIVES (MG/KG)	
2,4,6-TRINITROTOLUENE	NA
2,4-DINITROTOLUENE	NA
2,6-DINITROTOLUENE	NA
2-AMINO-4,6-DINITROTOLUENE	NA
2-NITROTOLUENE	NA
3-NITROTOLUENE	NA
4-AMINO-2,6-DINITROTOLUENE	NA
4-NITROTOLUENE	NA
NITROGLYCERIN	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/K	
1-METHYLNAPHTHALENE	NA
2-METHYLNAPHTHALENE	NA
ACENAPHTHENE	NA
ACENAPHTHYLENE	NA
ANTHRACENE	NA
BENZO(A)ANTHRACENE	NA
BENZO(A)PYRENE	NA
BENZO(B)FLUORANTHENE	NA
BENZO(G,H,I)PERYLENE	NA
BENZO(K)FLUORANTHENE	NA
CHRYSENE	NA
DIBENZO(A,H)ANTHRACENE	NA
FLUORANTHENE	NA
FLUORENE	NA
INDENO(1,2,3-CD)PYRENE	NA
NAPHTHALENE	NA
PHENANTHRENE	NA
PYRENE	NA
XRF (MG/KG)	
LEAD	NA
MISCELLANEOUS PARAMETERS (MEQ/100)	
CATION EXCHANGE CAPACITY	NA
MISCELLANEOUS PARAMETERS (MG/KG)	
TOTAL ORGANIC CARBON	NA
MISCELLANEOUS PARAMETERS (S.U.)	
pH	NA

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

D-2 SEDIMENT SAMPLE RESULTS

APPENDIX D-2

SUMMARY OF ANALYTICAL RESULTS FOR SEDIMENT
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	**NASB-TASKT-SWSD01**			**NASB-TASKT-SWSD02**	**NASB-TASKT-SWSD03**	**TASKT-SD04**
SAMPLE ID	**NASB-TASKT-SD01-0006**	**NASB-TASKT-SD01-0006-AVG**	**NASB-TASKT-SD01-0006-D**	**NASB-TASKT-SD02-0006**	**NASB-TASKT-SD03-0006**	**NASB-TASKT-SD04-0006**
SAMPLE DATE	**20100421**	**20100421**	**20100421**	**20100421**	**20100421**	**20101209**
SAMPLE CODE	**ORIGINAL**	**AVERAGE**	**DUPLICATE**	**NORMAL**	**NORMAL**	**NORMAL**
MATRIX	**SD**	**SD**	**SD**	**SD**	**SD**	**SD**
SUBMATRIX	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
TOP DEPTH	**0**	**0**	**0**	**0**	**0**	**0**
BOTTOM DEPTH	**6**	**6**	**6**	**6**	**6**	**6**
METALS (MG/KG)						
ALUMINUM	22000	20650	19300	19000	17500	12500
ANTIMONY	0.69 U	0.51 U	0.33 U	0.6 U	0.347 U	0.516 U
ARSENIC	7.85 J	7.935 J	8.02	5.41 J	4.92	10.3
BARIUM	100 J	90.6 J	81.2	86.3 J	70.4	57.3
BERYLLIUM	1.5	1.445	1.39	1.23	1.07	1.1
CADMIUM	0.34 UJ	0.203 UJ	0.066 U	0.259 UJ	0.168 UJ	0.0661 J
CALCIUM	3220	3095	2970	3180	1600	2130
CHROMIUM	34.7	33.3	31.9	31	27.5	22.9
COBALT	16.4	15.65	14.9	14.4	10.8	11.6
COPPER	30.8	27.9	25	29.2	9.74	16.7
IRON	33100	32350	31600	29700	18700	22600
LEAD	18.2 J	47.25 J	76.3 J	13.2 J	15.8 J	15.2
MAGNESIUM	7180	7065	6950	7270	4650	4640
MANGANESE	634	645	656	432	271	454
MERCURY	0.0153 U	0.01605 U	0.0168 U	0.0133 U	0.0419 J	0.0428 U
NICKEL	35.4	34.05	32.7	31	20.4	21.9
POTASSIUM	5370	5280	5190	4500	1950	2610
SELENIUM	0.831 J	0.465 J	0.198 U	0.36 U	0.605	0.522 UJ
SILVER	1.03 U	1.01 U	0.99 U	0.9 U	0.139 U	0.194 U
SODIUM	258 J	250.5 J	243 J	217 J	115 J	142 J
THALLIUM	0.69 U	0.444 U	0.198 U	0.6 U	0.208 U	0.258 UJ
VANADIUM	48.8	49.5	50.2	40	34.9	34.7
ZINC	95.5	90	84.5	79.5	60.4	75
POLYCYCLIC AROMATIC HYDROCARBONS						
1-METHYLNAPHTHALENE	1.94 UJ	2.53 UJ	3.12 UJ	2.32 UJ	12.3 U	3.46 U
2-METHYLNAPHTHALENE	2.12 UJ	2.605 UJ	3.09 UJ	2.12 UJ	12.5 U	2.05 J
ACENAPHTHENE	1.83 U	1.8 U	1.77 U	1.68 U	1.92 U	3.46 U
ACENAPHTHYLENE	2.78 UJ	3.035 UJ	3.29 UJ	2.94 UJ	21.6	3.46 U
ANTHRACENE	1.83 U	1.8 U	1.77 U	1.68 U	19.9	3.46 U
BENZO(A)ANTHRACENE	1.83 UJ	1.8 UJ	1.77 UJ	1.68 UJ	1.92 UJ	4.69 J
BENZO(A)PYRENE	1.83 U	1.8 U	1.77 U	1.68 U	67.5	3.46 U
BENZO(B)FLUORANTHENE	6.41 J	7.785 J	9.16 J	5.24 J	117	7.11 J
BENZO(G,H,I)PERYLENE	1.83 U	1.8 U	1.77 U	1.68 U	1.92 U	3.46 U
BENZO(K)FLUORANTHENE	6.21 J	5.21 J	4.21 J	2.24 J	56.4	4.31 J
CHRYSENE	1.83 U	1.8 U	1.77 U	1.68 U	128	7.2 J
DIBENZO(A,H)ANTHRACENE	1.83 U	1.8 U	1.77 U	1.68 U	1.92 U	3.46 U
FLUORANTHENE	1.83 U	6.1075	11.3	1.68 U	208	11.7
FLUORENE	1.83 U	1.8 U	1.77 U	2.09 J	12.2	3.46 U
INDENO(1,2,3-CD)PYRENE	1.83 U	1.8 U	1.77 U	1.68 U	1.92 U	3.92 J
NAPHTHALENE	1.83 U	1.8 U	1.77 U	1.68 U	1.92 U	3.46 U
PHENANTHRENE	1.83 U	1.8 U	1.77 U	1.68 U	91	7.23 J
PYRENE	13.8	13.1	12.4	12	162	11.1
MISCELLANEOUS PARAMETERS (MEQ/100)						
CATION EXCHANGE CAPACITY	NA	NA	NA	NA	NA	9.28
MISCELLANEOUS PARAMETERS (MG/KG)						
TOTAL ORGANIC CARBON	3370	3320	3270	2430	24900	4490
MISCELLANEOUS PARAMETERS (S.U.)						
pH	NA	NA	NA	NA	NA	6.33 J

J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

MG/KG = Milligram per kilogram.
UG/KG = Microgram per kilogram.
NA = Not applicable.

D-3 SURFACE WATER SAMPLE RESULTS

APPENDIX D-3

SUMMARY OF ANALYTICAL RESULTS FOR SURFACE WATER
TOPSHAM ANNEX SKEET RANGE
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

LOCATION	**NASB-TASKT-SWSD01**			**NASB-TASKT-SWSD02**	**NASB-TASKT-SWSD03**
SAMPLE ID	**NASB-TASKT-SW01-042110**	**NASB-TASKT-SW01-042110-AVG**	**NASB-TASKT-SW01-042110-D**	**NASB-TASKT-SW02-042110**	**NASB-TASKT-SW03-042110**
SAMPLE DATE	**20100421**	**20100421**	**20100421**	**20100421**	**20100421**
SAMPLE CODE	**ORIGINAL**	**AVGERAGE**	**DUPLICATE**	**NORMAL**	**NORMAL**
MATRIX	**SW**	**SW**	**SW**	**SW**	**SW**
SUBMATRIX	**NA**	**NA**	**NA**	**NA**	**NA**
METALS (UG/L)					
ALUMINUM	70.3	67.85	65.4	79.9	69.8
ANTIMONY	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U
ARSENIC	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
BARIUM	13.2	14.05	14.9	14.7	13.8
BERYLLIUM	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
CADMIUM	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
CALCIUM	14200 J	15000 J	15800 J	15300 J	14100 J
CHROMIUM	0.5 UJ	0.5 UJ	0.5 UJ	0.505 J	0.5 UJ
COBALT	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U
COPPER	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U
IRON	311 J	315.5 J	320 J	378 J	640 J
LEAD	0.375 U	0.375 U	0.375 U	0.375 U	0.375 U
MAGNESIUM	3430	3635	3840	3600	2710
MANGANESE	196 J	207 J	218 J	223 J	305 J
MERCURY	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
NICKEL	2.94	3.15	3.36	3.41	4.03
POTASSIUM	2690	2870	3050	2980	2920
SELENIUM	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
SILVER	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
SODIUM	15400	16300	17200	16900	16900
THALLIUM	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U
VANADIUM	1.25 U	1.25 U	1.25 U	1.25 U	1.25 U
ZINC	7.77	8.2	8.63	8.57	10.1
POLYCYCLIC AROMATIC HYDROCARBONS (UG/L)					
1-METHYLNAPHTHALENE	0.0457 J	0.027575 J	0.0189 U	0.0335 J	0.0284 J
2-METHYLNAPHTHALENE	0.0516 J	0.030525 J	0.0189 U	0.0339 J	0.0282 J
ACENAPHTHENE	0.0192 U	0.01905 UJ	0.0189 UJ	0.0352 J	0.0258 J
ACENAPHTHYLENE	0.0192 U	0.01905 UJ	0.0189 UJ	0.0341 J	0.0234 J
ANTHRACENE	0.0341 J	0.021775 J	0.0189 U	0.0519 J	0.0277 J
BENZO(A)ANTHRACENE	0.0747 J	0.042075 J	0.0189 UJ	0.0512 J	0.0192 U
BENZO(A)PYRENE	0.0317 J	0.020575 J	0.0189 U	0.0336 J	0.0192 U
BENZO(B)FLUORANTHENE	0.0858 J	0.047625 J	0.0189 U	0.0455 J	0.0192 U
BENZO(G,H,I)PERYLENE	0.0791 J	0.044275 J	0.0189 U	0.0467 J	0.0192 U
BENZO(K)FLUORANTHENE	0.0784 J	0.043925 J	0.0189 U	0.0396 J	0.0192 U
CHRYSENE	0.0908 J	0.050125 J	0.0189 UJ	0.0498 J	0.0192 U
DIBENZO(A,H)ANTHRACENE	0.0818 J	0.045625 J	0.0189 U	0.0466 J	0.0192 U
FLUORANTHENE	0.085 UJ	0.05195 UJ	0.0189 U	0.0631 UJ	0.0256 UJ
FLUORENE	0.0192 U	0.01905 U	0.0189 U	0.0424 J	0.0298 J
INDENO(1,2,3-CD)PYRENE	0.0852 J	0.047325 J	0.0189 U	0.046 J	0.0192 U
NAPHTHALENE	0.0845 J	0.046975 J	0.0189 U	0.0378 J	0.0351 J
PHENANTHRENE	0.0413 UJ	0.0301 UJ	0.0189 U	0.0593 UJ	0.0348 UJ
PYRENE	0.0964 U	0.05765 UJ	0.0189 UJ	0.0732 UJ	0.0339 UJ

UG/L = Micrograms per liter.
NA = Not applicable.
J = Value is estimated.
U = Analyte not detected at the reported detection limit.
UJ = Numerical detection limit for the undetected result is estimated.

D-4 CHAIN-OF-CUSTODY FORMS

Lab Copy

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

9836

Send Results to:
Name Linda Klink
Company Tetra Tech NUS
Address 621 Anderson Dr.
City Pittsburg
State, Zip PA
Phone 412-921-7090
Fax 412-921-4040
E-mail linda.klink@tetratech.com

Send Invoice to:
Name SAME
Company
Address
City
State, Zip
Phone
Fax
E-mail

Project No./Name: 112G00645 / Topsham Annex Sheet

Sampler's (Signature): [signature]

Analysis Requirements: Total Metals, PAHs, TOC, TAL METALS, Nitroglycerine/Dinitrotoluene, PH, CEC

Lab Use Only:
VOA Headspace Y (N) NA
Field Filtered Y (N) NA
Correct Containers (Y) N NA
Discrepancies Y (N) NA
Cust. Seals Intact (Y) N NA
Containers Intact (Y) N NA
Airbill #: 0143
CAR #: —

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Total Metals	PAHs	TOC	TAL METALS	Nitroglycerine/Dinitrotoluene	PH	CEC	Comments	No. of Bottles	Lab Use Only Containers/Pres.
100426-01	04/21/10/0850	NASB-TASKT-SW01-042110	WATER	X	X							3	2H 1C+Ni
-02	" / 0915	" " -SW02-042110	" "	X	X							3	
-03	/ 0945	-SW03-042110		X	X						MS/MSD	8	6H 2C-Ni
-04	/ —	-SW-DUP01-042110		X	X							3	3M
-05	/ 0900	-SD01-0006	SEDIMENT		X	X	X					3	
-06	/ 0920	-SD02-0006	" "		X	X	X					3	
-07	/ 0950	-SD03-0006			X	X	X				MS/MSD	5	+2M
-08	/ —	-SD-DUP01-0006			X	X	X					3	
-09	/ 1015	-SB01-0003	SOIL		X		X	X				4	+1M
-10	/ 1020	-SB01-0312	" "		X		X	X				4	
-11	/ 1425	-SB02-0003			X		X					2	2M
-12	/ 1430	-SB02-0312			X		X					2	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	4/22/10 1300	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature) [signature]	Date/Time 4/23/10 08:30	Temperature 5.1°C

REMARKS:

Details:
Page 1 of 4
Cooler No. ___ of ___
Date Shipped 4/22/10
Shipped By BG
Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

CTO069B_005

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EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

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9837

Send Results to:
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Company
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City
State, Zip
Phone
Fax
E-mail

Send Invoice to:
Name Refer to Page 1
Company
Address
City
State, Zip
Phone
Fax
E-mail

Analysis Requirements:

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #: 0143

CAR #: —

Project No./Name: 112600645/ Topsham Annex Sect

Sampler's (Signature):

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Total Metals	PAHs	TOC	TAL METALS	Nitroglycerine/Dinitrotoluene	PH	CEC	Comments	No. of Bottles	Lab Use Only Containers/Pres.
1004216-13	04/21/10 1210	NASB-TASKT-SB03-0003	SOIL		X		X					2	2M
-14	" " / 1215	" " -SB03-0312	" "		X		X					2	
-15	/ 1220	-SB04-0003			X		X					2	
CEC -16	/ 1225	-SB04-0312			X		X					2	
-25 -17	/ 1150	-SB05-0003			X	X	X		X	X		5	+3M
-18	/ 1200	-SB05-0312			X		X					2	
-19	/ 1550	-SS01-0003			X		X					2	
-20	/ 1520	-SS02-0003			X		X					2	
CEC -21	/ 1445	-SS03-0003			X		X					2	
-26 -22	/ 1450	-SS04-0003			X	X	X		X	X		5	+3M
-23	/ 1505	-SS05-0003			X		X					2	
-24	/ 1230	-SS06-0003			X		X					2	

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature)	4/22/10 1300	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time 4/23/10 08:30	*Temperature* 5.1°C

REMARKS:

Details:
Page 2 of 4
Cooler No. ___ of ___
Date Shipped 4/22/10
Shipped By BG
Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

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CTO069B_005

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

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9838

Send Results to:
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State, Zip
Phone
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E-mail ✓

Send Invoice to:
Name Refer to Page 1
Company
Address
City
State, Zip
Phone
Fax
E-mail ✓

Analysis Requirements: Total Metals, PAHs, TOC, TAL METALS, Nitroglycerine/Dinitrotoluene, PH, CEC

Lab Use Only:

VOA Headspace	Y	(N)	NA
Field Filtered	Y	(N)	NA
Correct Containers	(Y)	N	NA
Discrepancies	Y	(N)	NA
Cust. Seals Intact	(Y)	N	NA
Containers Intact	(Y)	N	NA

Airbill #: 0143
CAR #: –

Project No./Name: 112G00645 / Topsham Annex Site

Sampler's (Signature): [signature]

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Total Metals	PAHs	TOC	TAL METALS	Nitroglycerine/Dinitrotoluene	PH	CEC	Comments	No. of Bottles	Lab Use Only Containers/Pres.
1004216-27	04/21/10 / 1435	NASB-TASKT-SS07-0003	SOIL		X		X					2	2M
-28	" / 1140	" " -SS08-0003	" "		X		X				MS/MSD	4	+2M
-29, -30	/ 1130	-SS09-0003			X	X	X		X	X		5	+3M
-31	/ 1120	-SS10-0003			X		X					2	4/23/10
-32, -33	/ 1540	-SS14-0003			X	X	X		X	X		5	+3M
-34	/ 1030	-SS18-0003			X		X	X				4	+2M
-35	/ 1040	-SS19-0003			X		X	X				4	↓
-36	/ 1035	-SS20-0003			X		X	X			MS/MSD	8	+6M
-37	/ —	-SD-DUP01-042110			X		X	X				4	+2M
-38	/ —	-SD-DUP02-042110			X		X					2	
-39	↓ / —	✓ -SD-DUP03-042110	✓		X		X					2	✓

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature) [signature]	4/22/10 1300	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature) [signature]	Date/Time 4/23/10 08:30	Temperature 5.1°C

REMARKS:

Details:
Page 3 of 4
Cooler No. ____ of ____
Date Shipped 4/22/10
Shipped By BG
Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

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CTO069B_005

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

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9839

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Send Invoice to:
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Company
Address
City
State, Zip
Phone
Fax
E-mail

Analysis Requirements: Total Metals; PAHs; Nitroglycerine/Dinitrotoluene

Lab Use Only:

VOA Headspace	Y	(N)	NA
Field Filtered	Y	(N)	NA
Correct Containers	(Y)	N	NA
Discrepancies	Y	(N)	NA
Cust. Seals Intact	(Y)	N	NA
Containers Intact	(Y)	N	NA

Airbill #: 0143

CAR #: —

Project No./Name: Amex Skeet 112600645 / Topsham Range

Sampler's (Signature): [signature]

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Total Metals	PAHs	Nitroglycerine/Dinitrotoluene	Comments	No. of Bottles	Lab Use Only Containers/Pres.
1004216-40	04/22/10 / 0950	NASB-TASKT-SO-RB01-042210	WATER	X	X	X		5	1L Ni, 4H
-41	" / 1000	" " -RB02-042210	" "	X	X			3	2H-1L Ni
-42	/ 1010	-RB03-042210		X	X			3	↓
-43	/ 1020	NASB-TASKT-FB01-042210	↓	X	X	X		5	4H, 1L-Ni

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	4/22/10 1300	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	Temperature
[signature]	4/23/10 08:30	5.1°C

REMARKS:

Details:
Page 4 of 4
Cooler No. ___ of ___
Date Shipped 4/22/10
Shipped By BG
Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

CTO069B_005

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EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

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12244

Send Results to:

Name Linda Klink
Company Tetra Tech NUS
Address 621 Anderson Dr.
City Pittsburg
State, Zip PA 15220
Phone 412-921-7090
Fax 412-921-4040
E-mail linda.klink@tetratech.com

Send Invoice to:

Name Same
Company
Address
City
State, Zip
Phone
Fax
E-mail

Analysis Requirements:

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Project No./Name: Topsham Annex 112600645 / Skeet Range

Sampler's (Signature):

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	PAHs (8720C SIM)	LEAD (6010)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	11/29/10 0845	NASB-TASKT-2-SS01	Soil	X			1	
	" " 0850	" " -SS02	" "	X			1	
	0900	-SS03		X			1	
	0910	-SS04		X		LAB QC	3	
	0920	-SS05		X			1	
	0925	-SS06		X			1	
	1025	-SS07			X		1	
	1020	-SS08			X		1	
	1030	-SS09			X		1	
	1105	-SS10			X		1	
	1110	-SS11			X		1	
	1115	-SS12			X		1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
	11/30/10 1500	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:

Details:

Page 1 of 5

Cooler No. ____ of ____

Date Shipped 11/30/10

Shipped By BG

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

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12245

Send Results to:	Send Invoice to:	Analysis Requirements:	Lab Use Only:
Name Refer to Page 1	Name Refer to Page 1		VOA Headspace Y N NA
Company	Company		Field Filtered Y N NA
Address	Address		Correct Containers Y N NA
City	City		Discrepancies Y N NA
State, Zip	State, Zip		Cust. Seals Intact Y N NA
Phone	Phone		Containers Intact Y N NA
Fax	Fax		
E-mail	E-mail		Airbill #:
Project No./Name: 112G00645 / Topsham Annex Skeet Range	Sampler's (Signature): [illegible]		CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	PAHs (8270C SIM)	LEAD (6010)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	11/29/10 / 1205	NASB-TASKT-2-SS13	SOIL		X		1	
	" " / 1200	" " -SS14	" "		X		1	
	/ 1215	-SS15			X		1	
	/ 1210	-SS16			X	LAB QC	3	
	/ 1340	-SS17			X		1	
	/ 1220	-SS18			X		1	
	/ 1400	-SS19			X		1	
	/ 1415	-SS20			X		1	
	/ 1405	-SS21			X		1	
	/ 1145	-SS22			X		1	
	/ 1150	-SS23			X		1	
	/ 1125	-SS24			X		1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[illegible]	11/30/10 1500	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:

Details:

Page 2 of 5

Cooler No. ____ of ____

Date Shipped 11/30/10

Shipped By BG

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

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12246

Send Results to:	Send Invoice to:	Analysis Requirements:	Lab Use Only:
Name Refer to Page 1	Name Refer to Page 1	PAHs (8720 SIM) / LEAD (6010)	VOA Headspace Y N NA
Company	Company		Field Filtered Y N NA
Address	Address		Correct Containers Y N NA
City	City		Discrepancies Y N NA
State, Zip	State, Zip		Cust. Seals Intact Y N NA
Phone	Phone		Containers Intact Y N NA
Fax	Fax		Airbill #:
E-mail	E-mail		CAR #:
Project No./Name: Topsham Annex 112G00645 / Skeet Range	**Sampler's (Signature):** [signature] / [signature]		

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	PAHs (8720 SIM)	LEAD (6010)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	11/29/10 / 1130	NASB-TASKT-2-SS25	SOIL		X		1	
	" " / 1045	" " -SS26	" "		X		1	
	/ 1040	-SS27			X		1	
	/ 1000	-SS28			X		1	
	/ 0955	-SS29			X		1	
	/ 0950	-SS30			X		1	
	/ 0945	-SS31			X		1	
	/ 1005	-SS32			X	LAB QC	3	
	/ 1050	-SS33			X		1	
	/ 1135	-SS34			X		1	
	/ 1140	-SS35			X		1	
	/ 1035	-SS36			X		1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	11/30/10 1500	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:

Details:

Page 3 of 5

Cooler No. ____ of ____

Date Shipped 11/30/10

Shipped By BG

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

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12247

Send Results to:
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Company
Address
City
State, Zip
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Send Invoice to:
Name Refer to Page 1
Company
Address
City
State, Zip
Phone
Fax
E-mail

Project No./Name: Topsham Annex 112G0D645/ Skeet Range

Sampler's (Signature): [illegible]

Analysis Requirements:

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	PAHs (8720 SIM)	LEAD (6010)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	11/29/10/1055	NASB-TASKT-2-SS37	SOIL		X		1	
	" " /1120	" " -SS38	" "		X		1	
	/1155	-SS39			X		1	
	/1410	-SS40			X		1	
	/1010	-SS41			X		1	
	/1345	-SS42			X		1	
	/ —	NASB-TASKT-2-SO-DUP01-112910		X		SS03	1	
	/ —	" " -DUP02-112910			X	SS29	1	
	/ —	-DUP03-112910			X	SS36	1	
	/ —	-DUP04-112910			X	SS33	1	
	/ —	-DUP05-112910			X	SS35	1	
	/1525	NASB-TASKT-2-FB01-112910	Water	X	X		3	

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature) [illegible]	11/30/10 1500	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:

Details:
Page 4 of 5
Cooler No. ____ of ____
Date Shipped 11/30/10
Shipped By BG
Turnaround Standard

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12248

Send Results to:	Send Invoice to:
Name Refer to Page 1	Name Refer to Page 1
Company	Company
Address	Address
City	City
State, Zip	State, Zip
Phone	Phone
Fax	Fax
E-mail	E-mail
Project No./Name: Topsham Annex 112G00645/ Skeet Range	Sampler's (Signature): [illegible]

Analysis Requirements: PAHs (8720 SIM), LEAD (6010)

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	PAHs (8720 SIM)	LEAD (6010)	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	11/29/10 1530	NASB-TASKT-2-RB01-112910	WATER	X			2	
	1535	-RB02-112910			X		1	
	1540	-RB03-112910			X		1	

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[illegible]	11/30/10 1500	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:

Details:

Page 5 of 5

Cooler No. ____ of ____

Date Shipped 11/30/10

Shipped By BG

Turnaround Standard

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

EMPIRICAL LABORATORIES, LLC CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

12323

Send Results to:	Send Invoice to:	Analysis Requirements:	Lab Use Only:
Name Linda Klink	Name same	TAL Metals, PAH, pH, TOC, and CEC - 4 oz jar	VOA Headspace Y N NA
Company tetra tech NUS	Company		Field Filtered Y N NA
Address 621 Anderson Dr.	Address		Correct Containers Y N NA
City Pittsburgh	City		Discrepancies Y N NA
State, Zip PA 15220	State, Zip		Cust. Seals Intact Y N NA
Phone 412-921-7040	Phone		Containers Intact Y N NA
Fax 412-921-7040	Fax		Airbill #:
E-mail linda.klink@tetratech.com	E-mail		CAR #:
Project No./Name: CTO 69 NASB-Topsham Skeet Range	**Sampler's (Signature):** [signature]		

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
	12/09/10 / 0920	NASB-TASKT-SD04-0000G	Sediment	Additional sediment sample	2	

LMS 12/9/10

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	12/9/10/1600	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS:
FedEx Tracking# 794201813680

Details:
Page _____ of _____
Cooler No. ____ of _____
Date Shipped _____
Shipped By _____
Turnaround _____

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

EMPIRICAL LABORATORIES, LLC CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

123[illegible]

Send Results to:	Send Invoice to:	Analysis Requirements:	Lab Use Only:
Name Linda Klink	Name Same	Metals (Pb) - 6010B 6oz jar	VOA Headspace Y N NA
Company TetraTech NUS	Company		Field Filtered Y N NA
Address 621 Anderson Dr.	Address		Correct Containers Y N NA
City Pittsburgh	City		Discrepancies Y N NA
State, Zip PA 15220	State, Zip		Cust. Seals Intact Y N NA
Phone 412-921-7090	Phone		Containers Intact Y N NA
Fax 412-921-4040	Fax		Airbill #:
E-mail linda.klink@tetratech.com	E-mail		CAR #:
Project No./Name: CTO 69 NASB-Topsham Skeet Range	**Sampler's (Signature):** [signature]		

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Metals (Pb) - 6010B 6oz jar	Comments	No. of Bottles	*Lab Use Only* Containers/Pres.
	12/9/10/0945	NASB-TASKT-2-SS44	Soil	X		1	
	12/9/10/1000	NASB-TASKT-2-SS45	↓	X		1	
	12/9/10/1050	NASB-TASKT-2-SS43	↓	X		1	

CKS 12/9/10

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
[signature]	12/9/10/1600	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	*Temperature*

REMARKS: FedEx Tracking #: 794201813680

Details:

Page _____ of _____

Cooler No. ____ of _____

Date Shipped _____

Shipped By _____

Turnaround _____

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APPENDIX E

MC DATA USABILITY ASSESSMENT

APPENDIX E

ANALYTICAL DATA QUALITY REVIEW
SITE INSPECTION
TOPSHAM ANNEX SKEET RANGE
BRUNSWICK, MAINE

A description of the data review processes used to determine whether analytical laboratory data were of acceptable technical quality for use in decision making is presented in this data quality review (DQR). The review began with data verification and validation. Verification is a process used to ensure that contractual requirements were satisfied. Validation is a comparison of data quality indicators (DQIs) against prescribed acceptance criteria to assess analytical method performance. The DQIs used are measures to assess the bias and precision of the analytical calibrations and sample analyses. Together, verification and validation are the first steps in evaluating data completeness, accuracy, sensitivity, comparability, and representativeness. The data review process culminates with a data usability assessment during which the final usability of the data is established relative to the intended data use.

1.0 DATA VALIDATION PROCESS

All of the results from analytical laboratory samples were validated according to several specifications. Assignment of data qualification flags conformed to rules established in USEPA Region 1 Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses – Part II (December 1996), USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (November 2008), and Department of Defense (DoD) document entitled Quality Systems Manual (QSM) for Environmental Laboratories (April 2009) to the greatest extent practicable for non-contract laboratory program data. Numerical criteria used in conjunction with these rules were specified in the Quality Assurance Project Plan for Site Inspection of Munitions Constituents, Three Munitions Response Site, NAS Brunswick, Brunswick, Maine which is Attachment 1 of Appendix 1 within the document titled Site Inspection Work Plan, Munitions Constituents at Three Munitions Response Sites, NAS Brunswick, Brunswick, Maine (Tetra Tech, June 2009).

If no qualifier is assigned to a result that has been validated, the data user is assured that no analytical performance deficiencies were identified during validation. The qualification flags used are defined below:

U – Indicates that the chemical was not detected at the numerical detection limit noted. Non-detected results are reported with a “U” qualifier when received from the laboratory. Additionally, a “U” qualifier is added to a result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ – Indicates that the chemical was not detected. However, the detection limit (sample-specific quantitation limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate.

J – Indicates that the chemical was detected. However, the associated numerical result is not an accurate representation of the amount that is actually present in the sample. The laboratory reported concentration is considered to be an estimate of the true concentration.

UR – Indicates that the chemical may or may not be present. The non-detected analytical result reported by the laboratory is considered to be unreliable and unusable. The “UR” qualifier is applied in cases of gross technical deficiencies (i.e., holding times missed by a factor of two times the specified time limit, severe calibration noncompliances, and extremely low quality control [QC] recoveries).

R – Indicates that the chemical may or may not be present. The analytical result reported by the laboratory is considered to be unreliable and unusable. The “R” qualifier is applied in cases of gross technical deficiencies (i.e., holding times missed by a factor of two times the specified time limit, severe calibration noncompliances, and extremely low QC recoveries).

The preceding data qualifiers may be categorized as indicative of major or minor problems. Major problems are defined as issues that result in the rejection of data and qualification with “UR” or “R” data validation qualifiers. Rejected data are considered invalid and are not used for decision making purposes unless used in a qualitative way and the use is justified and documented. Less severe deficiencies, associated with “U”, “J”, and “UJ” data validation qualifiers, are defined as issues resulting in the estimation of data. Estimated analytical results are considered to be suitable for decision-making purposes unless the data use requirements are very stringent and the qualifier indicates a deficiency that is incompatible with the intended data use. Also, a “U” qualifier does not necessarily indicate that a data deficiency exists because all non-detect values are flagged with the “U” qualifier regardless of whether a quality deficiency has been detected.

No data collected for the site inspection (SI) of munitions constituents at the Topsham Annex Skeet Range (TASKT) and evaluated during this DQR was qualified as rejected. Qualified data and the reason for qualification are presented in Tables E.1 to E.5. Any data impacts based on the results of the data evaluation are discussed in the remainder of this review.

2.0 DATA VALIDATION OUTPUTS

After laboratory data were validated, a list was developed of non-conformities requiring data qualifier flags that were used to alert the data user to inaccurate or imprecise data. For situations in which several QC criteria were out of specification, the data validator made professional judgments and or comments on the validity of the overall data package. The reviewer then prepared a technical memorandum presenting qualification of the data, if necessary, and the rationale for making such qualifications. The net result was a data package that had been carefully reviewed for its adherence to prescribed technical requirements. Data validators incorporated data qualifiers into the electronic database and submitted the information to the Tetra Tech NUS, Inc. (Tetra Tech) data management group. A complete printout of the data results with validation flags is presented in Appendix D of the SI Report. Pertinent quality estimates are summarized in a more quantitative format in the following sections.

3.0 GENERAL DATA QUALITY REVIEW

The DQR provided herein is designed to provide an overall quantitative measure of analytical performance not provided by data validation. The analytical performance quantitative evaluations are frequently analyte-specific and reflect deficiencies such as biases associated with the quantification of particular analytes in a particular sample matrix. The data user must be aware that different chemicals in the same analytical fraction (e.g. lead and copper in the metals fraction) may exhibit different degrees of quality.

3.1 Completeness

Completeness is a measure of the number of valid samples or measurements that are available relative to the number of samples or measurements that were intended to be generated. For this project, completeness was measured on two different bases: samples collected and laboratory measurements.

- Sample completeness was a measure of the usable samples collected as compared to those intended to be collected.

- Laboratory measurement completeness was a measure of the amount of usable, valid laboratory measurements per matrix obtained for each target analyte.

Usable, valid samples (or results) were those judged, after data assessment, to represent the sampling populations and to have not been disqualified for use through data validation or additional data review. Completeness was determined using the following equation:

$$\%C = \frac{V}{T} \times 100$$

where	%C	=	percent completeness
	V	=	number of samples (or results) determined to be valid
	T	=	total number of planned samples (or results)

Completeness evaluations are tabulated in Table E.6. All completeness evaluations meet the completeness goal of 95 percent listed in the Quality Assurance Project Plan for Site Inspection of Munitions Constituents, Three Munitions Response Site, NAS Brunswick, Brunswick, Maine (Appendix A, Attachment 1, QAPP Worksheet #12).

3.2 Sensitivity

The method detection limits (MDLs) reported by the laboratory were generally less than the project action limits (PALs) listed in Appendix G. Tables E.7 through E.9 list parameters per matrix for which the detection limit exceeded the corresponding minimum PAL for one or more sample results. Those tables also display two different percentages which are the percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of non-detected results and the percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of results analyzed (positive and non-detected results). The percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of non-detected results is used to evaluate the overall success of the laboratory achieving detection limits equal to or less than PALs and the percentage of non-detected results that exceeded PALs when comparing the non-detected exceedances to the total number of results analyzed (positive and non-detected results) is used to evaluate the effect of sensitivity exceedances on the complete corresponding data set. Lists of parameters per matrix for which sensitivity issues were identified and corresponding effects on data usability are described below. For additional information on those sensitivity issues please refer to Table E.7 through E.9.

Topsham Annex Skeet Range

Sediment – antimony, selenium, silver

Soil – silver

Surface water – cadmium, silver, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene

Positive benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene detection in surface

water and selenium in sediment were compared to PALs and exceedances were of criteria were noted in the SI Report; therefore, even though sensitivity issues were identified for those compounds data usability is still sufficient for the purposes of this investigation. One of twenty seven non-detected silver soil results exceeded the corresponding PAL due to sample dilution which only accounted for 4% of the entire silver soil data set for the Topsham Annex Skeet Range. All of the non-detected cadmium and silver surface water results and antimony and silver sediment results were greater than corresponding PALs.

3.3 Laboratory Accuracy

Accuracy in the laboratory was measured through the comparison of a spiked sample or Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) result to a known or calculated value and is expressed as a percent recovery (%R). Accuracy was also assessed by monitoring the analytical recovery of select surrogate compounds and internal standard compounds added to samples that are analyzed by organic chromatographic methods, and the analytical recovery of calibration standards for all analyses. LCSs were used to assess the accuracy of laboratory operations with minimal sample matrix effects. Matrix spike/matrix spike duplicate (MS/MSD) and surrogate compound analyses measure the combined accuracy effects of the sample matrix, sample preparation, and sample measurement. LCS and MS analyses were performed at a frequency of one per 20 associated samples of like matrix. Laboratory accuracy was assessed by comparing calculated percent recovery (%R) values to accuracy control limits specified by the laboratory using the appropriate SW-846 Method.

Percent recovery is calculated using the following equation:

$$\%R = \frac{Ss - So}{S} \times 100$$

where %R = percent recovery
Ss = result of spiked sample
So = result of non-spiked sample
S = concentration of spiked amount.

The inductively coupled plasma (ICP) Interference Check Sample (ICS) is evaluated to verify the laboratory's interelement and background correction factors, and to account for potential spectral overlaps and stray light interferences caused by the interfering analytes aluminum, calcium, iron, and magnesium. ICP ICS interference can affect the accuracy of analyte results and is therefore also evaluated in this section.

Following is an evaluation of qualified data (per site and per matrix) associated to accuracy data quality.

3.3.1 Topsham Annex Skeet Range

Sediment: Arsenic, barium, and selenium results were qualified due to calibration noncompliances that indicated those qualified results were biased high. Benzo(a)anthracene results were qualified due to calibration noncompliance and no directional bias was associated with those qualified results. The pH result for sample NASB-TASKT-SD04-0006 was qualified due to holding time exceedance. The sediment data non-compliances associated with accuracy were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, sediment data accuracy is considered acceptable. For more detailed information concerning qualified sediment data for the Topsham Annex Skeet Range refer to Table E.1.

Soil: Benzo(k)fluoranthene and chrysene results were qualified due to LCS noncompliances that indicated that the associated qualified results were biased high. Antimony, lead, and potassium results were qualified due to MS noncompliance that indicated that the associated qualified results were biased low (Sb and Pb) and high (K), respectively. 1-methylnaphthalene, 2-methylnaphthalene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene results were qualified due to MS noncompliance with no associated bias.. Benzo(a)anthracene, benzo(k)fluoranthene, and lead results were qualified due to calibration noncompliance which indicated that the associated qualified lead results were biased low and that the bias of benzo(a)anthracene and benzo(k)fluoranthene was indeterminate. Results for pH were qualified due to holding time exceedance and PAH results for sample NASB-TASKT-SB04-0003 were qualified due to internal standard noncompliance. The benzo(b)fluoranthene result for sample NASB-TASKT-2-SS04 was qualified due to internal standard noncompliance.The soil data non-compliances associated with accuracy were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, soil data accuracy is considered acceptable. For more detailed information concerning qualified soil data for the Topsham Annex Skeet Range refer to Table E.2.

Surface Water: Chromium, acenaphthene, acenaphthylene, benzo(a)anthracene, and pyrene results were qualified due to calibration noncompliance. Associated QC data indicated the chromium results qualified due to calibration noncompliance were biased low and directional bias of the organic compounds was indeterminate. Calcium, iron, and manganese results were qualified due to ICP serial dilution and direction bias for those qualified data was indeterminate. The surface water data non-compliances associated with accuracy were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, surface water data accuracy is considered acceptable. For more detailed information concerning qualified surface water data for the Topsham Annex Skeet Range refer to Table E.3.

3.3.2 Background Samples

Soil: Antimony and potassium were qualified due to MS noncompliance and QC data indicated that the qualified antimony results were biased low and the qualified potassium results were biased high. Benzo(a)anthracene results were qualified due to calibration noncompliance. The background soil data non-compliances associated with accuracy were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, background soil data accuracy is considered acceptable. For more detailed information concerning qualified background soil data refer to Table E.4

3.3.3 QC Samples

Rinsate blanks and Field Blanks: Several organic compounds including 4-amino-2,6-dintrotoluene, benzo(a)anthracene, benzo(g,h,i)perlyene, and dibenzo(a,h)anthracene were qualified due to calibration noncompliance for which direction bias was indeterminate. Chromium results were also qualified due to calibration noncompliance that indicated those qualified results were biased low. The QC data non-compliances associated with accuracy were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, QC data accuracy is considered acceptable. For more detailed information concerning qualified QC data refer to Table E.5.

3.4 Laboratory Precision

Precision is a measure of the degree to which two or more measurements are in agreement and describes the reproducibility of measurements of the same parameter for samples analyzed under similar conditions.

Precision for chemical parameters is expressed as a Relative Percent Difference (RPD), which is defined as the ratio of the difference to the mean for the two values being evaluated. RPDs, typically expressed as percentages, are used to evaluate both field and laboratory duplicate precision and are calculated as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where RPD = relative percent difference

V1, V2 = two results obtained by analyzing duplicate samples

The precision estimates obtained from duplicate field samples encompass the combined uncertainty associated with sample collection, homogenization, splitting, handling, laboratory and field storage (as applicable), preparation for analysis, and analysis. In contrast, precision estimates obtained from analyzing duplicate laboratory samples incorporate only homogenization, sub sampling, preparation for analysis, laboratory storage (if applicable), and analysis uncertainties.

3.4.1 Topsham Annex Skeet Range

Sediment: The selenium result for sample NASB-TASKT-SD04-0006 was qualified due to laboratory blank contamination resulting in the non-detected result being reported at an elevated reporting limit. Lead results were qualified due to field duplicate imprecision, and several organic and inorganic results (see table E.1) were qualified due to uncertainty near the detection limit. The thallium result for sample NASB-TASKT-SD04-0006 was qualified for poor instrument performance. The sediment data non-compliances associated with precision were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, sediment data accuracy is considered acceptable. For more detailed information concerning qualified sediment data for the Topsham Annex Skeet Range refer to Table E.1.

Soil: Many organic and inorganic analytes were qualified due to field duplicate and laboratory duplicate imprecision and uncertainty near the detection limits (see Table E.2). The soil data non-compliances associated with precision were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, soil data accuracy is considered acceptable. For more detailed information concerning qualified soil data for the Topsham Annex Skeet Range refer to Table E.2.

Surface Water: PAH compound results were qualified due to uncertainty near the detection limit. Such non-compliances are not egregious enough to quality the affected data as rejected according to data validation guidelines used for this project; therefore, data precision is not considered unacceptable due to those data points qualified because of uncertainty near the detection limit. For more detailed information concerning qualified surface water data for the Topsham Annex Skeet Range refer to Table E.3.

3.4.2 Background Samples

Soil: Arsenic and lead were qualified due to field duplicate imprecision. Beryllium, calcium, and cobalt were qualified due to uncertainty near the detection limit. 1-Methylnaphthalene, 2-methylnaphthalene, and cadmium were qualified due to laboratory blank contamination/uncertainty near the detection limit. The soil data non-compliances associated with precision were not egregious enough to qualify the

affected data as rejected according to the data validation guidelines used for this project; therefore, soil data accuracy is considered acceptable. For more detailed information concerning qualified background soil data refer Table E.4.

3.4.3 QC Samples

Rinsate blanks and Field Blanks: 1-Methylnaphthalene, 2-naphthalene, benzo(b)fluoranthene, chrysene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, acenaphthene, acenaphthylene, and fluorine were qualified for uncertainty near the detection limit. Fluoranthene, phenanthrene, pyrene, fluoranthene, and phenanthrene were qualified for laboratory blank contamination. The QC data non-compliances associated with precision were not egregious enough to qualify the affected data as rejected according to the data validation guidelines used for this project; therefore, QC data accuracy is considered acceptable. For more detailed information concerning qualified QC data refer to Table E.5.

3.5 Comparability

Comparability is defined as the confidence with which one data set can be compared with another (e.g., among sampling points and among sampling events). Comparability was achieved by using standardized sampling and analysis methods, as well as standardized data reporting formats. Comparability of laboratory measurements was achieved primarily through the use and documentation of standard sampling and analytical methods. Results were reported in units that ensured comparability with previous data and with current state and federal standards and guidelines. Comparability of laboratory measurements was assessed primarily through the use of QC samples and through adherence to the quality assurance (QA) plan.

3.6 Representativeness

Representativeness is an expression of the degree to which data accurately and precisely depict the actual characteristics of a population or environmental condition existing at the site. By compiling with the Quality Assurance Project Plan for Site Inspection of Munitions Constituents, Three Munitions Response Site, NAS Brunswick, Brunswick, Maine which is Attachment 1 of Appendix 1 within the document titled Site Inspection Work Plan, Munitions Constituents at Three Munitions Response Sites, NAS Brunswick, Brunswick, Maine (Tetra Tech, June 2009), and the use of standardized sampling, sample handling, sample analysis, and data reporting procedures were designed so that the final data would be accurate representations of actual site conditions. The DQR found the data collected to be representative of targeted populations.

4.0 DATA USEABLITY

All data collected for this project is considered useable for the purposes of this project.

Table E.1

Sediment Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SD01-0006	SD	1-METHYLNAPHTHALENE	1.94	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006	SD	2-METHYLNAPHTHALENE	2.12	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006	SD	ACENAPHTHYLENE	2.78	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006	SD	ARSENIC	7.85	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD01-0006	SD	BARIUM	100	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD01-0006	SD	BENZO(A)ANTHRACENE	1.83	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD01-0006	SD	BENZO(B)FLUORANTHENE	6.41	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006	SD	BENZO(K)FLUORANTHENE	6.21	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006	SD	CADMIUM	0.34	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006	SD	LEAD	18.2	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SD01-0006	SD	SELENIUM	0.831	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD01-0006	SD	SODIUM	258	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006-D	SD	1-METHYLNAPHTHALENE	3.12	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006-D	SD	2-METHYLNAPHTHALENE	3.09	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006-D	SD	ACENAPHTHYLENE	3.29	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006-D	SD	BENZO(A)ANTHRACENE	1.77	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD01-0006-D	SD	BENZO(B)FLUORANTHENE	9.16	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006-D	SD	BENZO(K)FLUORANTHENE	4.21	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD01-0006-D	SD	LEAD	76.3	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SD01-0006-D	SD	SODIUM	243	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	1-METHYLNAPHTHALENE	2.32	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	2-METHYLNAPHTHALENE	2.12	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	ACENAPHTHYLENE	2.94	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	ARSENIC	5.41	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD02-0006	SD	BARIUM	86.3	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD02-0006	SD	BENZO(A)ANTHRACENE	1.68	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD02-0006	SD	BENZO(B)FLUORANTHENE	5.24	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	BENZO(K)FLUORANTHENE	2.24	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	CADMIUM	0.259	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	FLUORENE	2.09	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD02-0006	SD	LEAD	13.2	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SD02-0006	SD	SODIUM	217	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD03-0006	SD	1-METHYLNAPHTHALENE	12.3	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SD03-0006	SD	2-METHYLNAPHTHALENE	12.5	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SD03-0006	SD	BENZO(A)ANTHRACENE	1.92	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SD03-0006	SD	CADMIUM	0.168	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD03-0006	SD	LEAD	15.8	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SD03-0006	SD	MERCURY	0.0419	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD03-0006	SD	SODIUM	115	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	PAH	2-METHYLNAPHTHALENE	2.05	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	PAH	BENZO(A)ANTHRACENE	4.69	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	PAH	BENZO(B)FLUORANTHENE	7.11	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	PAH	BENZO(K)FLUORANTHENE	4.31	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	M	CADMIUM	0.0661	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	PAH	CHRYSENE	7.2	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	PAH	INDENO(1,2,3-CD)PYRENE	3.92	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	MISC	PH	6.33	S.U.	J	Holding Time Exceedance
NASB-TASKT-SD04-0006	PAH	PHENANTHRENE	7.23	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	M	SELENIUM	0.522	MG/KG	UJ	Lab Blank Contamination, Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	M	SODIUM	142	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SD04-0006	M	THALLIUM	0.258	MG/KG	UJ	Poor Instrument Performance (e.g. base-line drifting)

Table E.2

Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SB01-0003	PAH	1-METHYLNAPHTHALENE	5.73	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0003	PAH	2-METHYLNAPHTHALENE	6.2	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0003	M	ANTIMONY	0.401	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB01-0003	M	ARSENIC	4.99	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB01-0003	PAH	BENZO(A)ANTHRACENE	140	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB01-0003	M	LEAD	27.6	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB01-0003	M	MERCURY	0.0535	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0003	EXP	NITROGLYCERIN	0.362	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0003	M	POTASSIUM	1970	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB01-0003	M	SODIUM	103	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0312	PAH	1-METHYLNAPHTHALENE	3.06	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0312	PAH	2-METHYLNAPHTHALENE	3.21	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0312	PAH	ACENAPHTHYLENE	4.57	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0312	M	ANTIMONY	0.339	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB01-0312	M	ARSENIC	5.42	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB01-0312	PAH	BENZO(A)ANTHRACENE	1.82	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB01-0312	M	LEAD	14.4	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB01-0312	M	MERCURY	0.0383	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB01-0312	M	POTASSIUM	2380	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB01-0312	M	SODIUM	107	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	PAH	1-METHYLNAPHTHALENE	4.39	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	PAH	2-METHYLNAPHTHALENE	4.7	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	PAH	ANTHRACENE	8.41	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	M	ANTIMONY	0.328	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB02-0003	M	ARSENIC	4.66	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB02-0003	PAH	BENZO(A)ANTHRACENE	1.81	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB02-0003	M	CADMIUM	0.14	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	M	CALCIUM	326	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	PAH	FLUORENE	6.46	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0003	M	LEAD	98.2	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB02-0003	M	POTASSIUM	381	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB02-0312	PAH	1-METHYLNAPHTHALENE	1.82	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0312	PAH	2-METHYLNAPHTHALENE	1.85	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0312	PAH	ACENAPHTHYLENE	5.75	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0312	M	ANTIMONY	0.307	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB02-0312	M	ARSENIC	2.72	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB02-0312	PAH	BENZO(A)ANTHRACENE	1.68	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB02-0312	M	CADMIUM	0.0762	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0312	M	CALCIUM	228	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB02-0312	M	LEAD	16.9	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB02-0312	M	POTASSIUM	384	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB03-0003	PAH	1-METHYLNAPHTHALENE	1.84	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0003	PAH	2-METHYLNAPHTHALENE	2.05	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0003	PAH	ACENAPHTHYLENE	7.05	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0003	PAH	ANTHRACENE	3.06	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0003	M	ANTIMONY	0.314	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB03-0003	M	ARSENIC	4.3	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB03-0003	PAH	BENZO(A)ANTHRACENE	1.7	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB03-0003	M	CADMIUM	0.0823	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0003	PAH	FLUORENE	2.09	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0003	M	LEAD	24.3	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB03-0003	M	POTASSIUM	503	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB03-0312	PAH	ACENAPHTHYLENE	3.63	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0312	PAH	ANTHRACENE	2.12	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0312	M	ANTIMONY	0.301	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB03-0312	M	ARSENIC	3.01	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB03-0312	PAH	BENZO(A)ANTHRACENE	19.4	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB03-0312	PAH	BENZO(K)FLUORANTHENE	8.1	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB03-0312	M	CADMIUM	0.0832	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Table E.2

Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SB03-0312	M	LEAD	6.5	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB03-0312	M	POTASSIUM	557	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB04-0003	PAH	ACENAPHTHYLENE	11.9	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SB04-0003	M	ANTIMONY	0.355	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB04-0003	M	ARSENIC	4.57	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB04-0003	PAH	BENZO(A)ANTHRACENE	1.96	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB04-0003	PAH	BENZO(A)PYRENE	40.7	UG/KG	J	Internal Standard Noncompliance
NASB-TASKT-SB04-0003	PAH	BENZO(B)FLUORANTHENE	56.4	UG/KG	J	Internal Standard Noncompliance
NASB-TASKT-SB04-0003	PAH	BENZO(G,H,I)PERYLENE	1.96	UG/KG	UJ	Internal Standard Noncompliance
NASB-TASKT-SB04-0003	PAH	BENZO(K)FLUORANTHENE	37.7	UG/KG	J	Internal Standard Noncompliance
NASB-TASKT-SB04-0003	M	CADMIUM	0.0941	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB04-0003	PAH	DIBENZO(A,H)ANTHRACENE	1.96	UG/KG	UJ	Internal Standard Noncompliance
NASB-TASKT-SB04-0003	PAH	INDENO(1,2,3-CD)PYRENE	1.96	UG/KG	UJ	Internal Standard Noncompliance
NASB-TASKT-SB04-0003	M	LEAD	82.3	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB04-0003	M	POTASSIUM	458	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB04-0312	PAH	ACENAPHTHYLENE	4.79	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB04-0312	M	ANTIMONY	0.323	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB04-0312	M	ARSENIC	3.61	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB04-0312	PAH	BENZO(A)ANTHRACENE	1.77	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB04-0312	M	CADMIUM	0.0739	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB04-0312	M	CALCIUM	265	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB04-0312	M	LEAD	11.9	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB04-0312	M	POTASSIUM	528	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB05-0003	PAH	ACENAPHTHYLENE	12.4	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SB05-0003	M	ANTIMONY	0.45	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB05-0003	M	ARSENIC	10.8	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0003	PAH	BENZO(A)ANTHRACENE	2.41	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB05-0003	PAH	BENZO(A)PYRENE	64.4	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0003	M	CADMIUM	0.107	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB05-0003	M	LEAD	453	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0003	MISC	PH	3.89	S.U.	J	Holding Time Exceedance
NASB-TASKT-SB05-0003	PAH	PHENANTHRENE	2.41	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-SB05-0003	M	POTASSIUM	1230	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB05-0003-D	PAH	1-METHYLNAPHTHALENE	10.4	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB05-0003-D	PAH	2-METHYLNAPHTHALENE	11	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB05-0003-D	M	ANTIMONY	0.45	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB05-0003-D	M	ARSENIC	10.8	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0003-D	PAH	BENZO(A)PYRENE	2.43	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-SB05-0003-D	PAH	BENZO(K)FLUORANTHENE	50.4	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB05-0003-D	M	CADMIUM	0.157	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB05-0003-D	PAH	FLUORENE	8.91	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB05-0003-D	M	LEAD	299	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.) /Field Duplicate Imprecision
NASB-TASKT-SB05-0003-D	PAH	PHENANTHRENE	65.4	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0003-D	M	POTASSIUM	1160	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SB05-0312	PAH	ACENAPHTHYLENE	4.74	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SB05-0312	M	ANTIMONY	0.339	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SB05-0312	M	ARSENIC	5.9	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0312	PAH	BENZO(A)ANTHRACENE	1.86	UG/KG	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SB05-0312	M	LEAD	26.4	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SB05-0312	M	POTASSIUM	1320	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS02-0003	PAH	1-METHYLNAPHTHALENE	3.76	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS02-0003	PAH	2-METHYLNAPHTHALENE	4.39	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS02-0003	M	ANTIMONY	0.38	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS02-0003	M	ARSENIC	4.22	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS02-0003	PAH	BENZO(A)ANTHRACENE	58.2	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS02-0003	M	CADMIUM	0.247	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS02-0003	PAH	FLUORENE	6.9	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS02-0003	M	LEAD	33.1	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS02-0003	M	POTASSIUM	561	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS03-0003	M	ANTIMONY	0.396	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS03-0003	M	ARSENIC	4.66	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS03-0003	PAH	BENZO(K)FLUORANTHENE	61.1	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

Table E.2

Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SS03-0003	M	LEAD	70.4	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS03-0003	M	POTASSIUM	1210	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS03-0003	M	SELENIUM	0.464	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS04-0003	PAH	1-METHYLNAPHTHALENE	2.25	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS04-0003	PAH	2-METHYLNAPHTHALENE	2.58	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS04-0003	PAH	ACENAPHTHYLENE	13.6	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SS04-0003	M	ANTIMONY	1.3	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS04-0003	M	ARSENIC	5.93	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS04-0003	PAH	BENZO(K)FLUORANTHENE	44.1	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS04-0003	M	LEAD	960	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS04-0003	MISC	PH	3.63	S.U.	J	Holding Time Exceedance
NASB-TASKT-SS04-0003	M	POTASSIUM	1080	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS05-0003	PAH	1-METHYLNAPHTHALENE	4.24	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS05-0003	PAH	2-METHYLNAPHTHALENE	4.82	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS05-0003	PAH	ACENAPHTHENE	4.43	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS05-0003	M	ANTIMONY	0.467	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS05-0003	M	ARSENIC	5.69	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS05-0003	PAH	BENZO(K)FLUORANTHENE	51.3	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS05-0003	PAH	FLUORENE	7.51	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS05-0003	M	LEAD	198	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS05-0003	M	POTASSIUM	1080	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS06-0003	PAH	1-METHYLNAPHTHALENE	3.52	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS06-0003	PAH	2-METHYLNAPHTHALENE	3.83	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS06-0003	M	ANTIMONY	0.796	MG/KG	J	MS/MSD Recovery Noncompliance/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS06-0003	M	ARSENIC	8.89	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS06-0003	PAH	BENZO(K)FLUORANTHENE	54.1	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS06-0003	PAH	FLUORENE	6.94	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS06-0003	M	LEAD	364	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS06-0003	M	POTASSIUM	1450	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS07-0003	PAH	1-METHYLNAPHTHALENE	2.83	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS07-0003	PAH	2-METHYLNAPHTHALENE	3.52	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS07-0003	PAH	ACENAPHTHYLENE	13.2	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SS07-0003	PAH	ANTHRACENE	10.5	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS07-0003	M	ANTIMONY	0.399	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS07-0003	M	ARSENIC	10.1	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS07-0003	PAH	BENZO(K)FLUORANTHENE	45.8	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS07-0003	M	CADMIUM	0.122	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS07-0003	PAH	FLUORENE	5.91	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS07-0003	M	LEAD	51.7	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS07-0003	M	POTASSIUM	1220	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS08-0003	PAH	1-METHYLNAPHTHALENE	2.43	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS08-0003	PAH	2-METHYLNAPHTHALENE	2.48	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS08-0003	PAH	ACENAPHTHYLENE	10.5	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SS08-0003	PAH	ANTHRACENE	7.64	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS08-0003	M	ANTIMONY	0.345	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS08-0003	M	ARSENIC	9.47	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS08-0003	PAH	BENZO(G,H,I)PERYLENE	1.92	UG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS08-0003	PAH	BENZO(K)FLUORANTHENE	32.7	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS08-0003	M	CADMIUM	0.126	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS08-0003	PAH	DIBENZO(A,H)ANTHRACENE	1.92	UG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS08-0003	PAH	FLUORENE	4.5	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS08-0003	PAH	INDENO(1,2,3-CD)PYRENE	1.92	UG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS08-0003	M	LEAD	168	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS08-0003	M	POTASSIUM	1080	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS09-0003	PAH	2-METHYLNAPHTHALENE	2.4	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003	PAH	ACENAPHTHYLENE	11.2	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003	M	ANTIMONY	0.563	MG/KG	J	MS/MSD Recovery Noncompliance/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003	M	ARSENIC	53.5	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS09-0003	PAH	BENZO(K)FLUORANTHENE	27.1	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS09-0003	M	CADMIUM	0.306	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003	M	LEAD	24300	MG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.) /Field Duplicate Imprecision
NASB-TASKT-SS09-0003	MISC	PH	4.05	S.U.	J	Holding Time Exceedance
NASB-TASKT-SS09-0003	M	POTASSIUM	748	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS09-0003-D	PAH	1-METHYLNAPHTHALENE	5.57	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Table E.2

Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SS09-0003-D	PAH	2-METHYLNAPHTHALENE	5.78	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003-D	PAH	ACENAPHTHYLENE	15.2	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SS09-0003-D	M	ANTIMONY	0.436	MG/KG	J	MS/MSD Recovery Noncompliance/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003-D	M	ARSENIC	7.62	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS09-0003-D	PAH	BENZO(K)FLUORANTHENE	33.7	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS09-0003-D	M	CADMIUM	0.157	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003-D	PAH	FLUORENE	5.54	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS09-0003-D	M	LEAD	395	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS09-0003-D	M	POTASSIUM	760	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS10-0003	PAH	ACENAPHTHYLENE	8.17	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS10-0003	M	ANTIMONY	0.361	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS10-0003	M	ARSENIC	5.34	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS10-0003	PAH	BENZO(K)FLUORANTHENE	21.5	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS10-0003	M	LEAD	295	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS10-0003	M	POTASSIUM	1490	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS10-0003	M	SELENIUM	0.433	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	PAH	1-METHYLNAPHTHALENE	2.3	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	PAH	2-METHYLNAPHTHALENE	2.53	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	M	ANTIMONY	0.388	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS14-0003	M	ARSENIC	2.93	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS14-0003	PAH	BENZO(K)FLUORANTHENE	52.1	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS14-0003	M	BERYLLIUM	0.14	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	M	CADMIUM	0.0979	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	M	CALCIUM	310	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	M	COBALT	0.406	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	M	LEAD	407	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS14-0003	M	MAGNESIUM	259	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS14-0003	MISC	PH	3.72	S.U.	J	Holding Time Exceedance
NASB-TASKT-SS14-0003	M	POTASSIUM	268	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS18-0003	PAH	ACENAPHTHYLENE	4.46	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS18-0003	M	ANTIMONY	0.438	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS18-0003	M	ARSENIC	5.03	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS18-0003	PAH	BENZO(K)FLUORANTHENE	52.3	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS18-0003	M	CADMIUM	0.16	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS18-0003	PAH	FLUORENE	4.12	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS18-0003	M	LEAD	22.9	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS18-0003	M	MERCURY	0.051	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS18-0003	EXP	NITROGLYCERIN	0.446	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS18-0003	M	POTASSIUM	1820	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS19-0003	PAH	1-METHYLNAPHTHALENE	5.76	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003	PAH	2-METHYLNAPHTHALENE	6.65	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003	PAH	ANTHRACENE	2.06	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	M	ANTIMONY	0.369	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS19-0003	M	ARSENIC	4.79	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	BENZO(A)ANTHRACENE	306	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	BENZO(A)PYRENE	682	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	BENZO(B)FLUORANTHENE	546	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	BENZO(G,H,I)PERYLENE	446	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	BENZO(K)FLUORANTHENE	444	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.) /Field Duplicate Imprecision
NASB-TASKT-SS19-0003	M	CADMIUM	0.169	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003	PAH	CHRYSENE	469	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	DIBENZO(A,H)ANTHRACENE	96.3	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	FLUORANTHENE	590	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	FLUORENE	30.4	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	INDENO(1,2,3-CD)PYRENE	528	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	M	LEAD	52.4	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	PAH	PHENANTHRENE	1350	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003	M	POTASSIUM	1810	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS19-0003	M	SELENIUM	0.382	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003	M	SODIUM	91.3	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003-D	PAH	1-METHYLNAPHTHALENE	10.3	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003-D	PAH	2-METHYLNAPHTHALENE	16.1	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SS19-0003-D	PAH	ACENAPHTHYLENE	8.46	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003-D	PAH	ANTHRACENE	161	UG/KG	J	Field Duplicate Imprecision

Table E.2

Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SS19-0003-D	M	ANTIMONY	0.375	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS19-0003-D	M	ARSENIC	4.68	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	BENZO(A)ANTHRACENE	723	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	BENZO(A)PYRENE	1630	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	BENZO(B)FLUORANTHENE	1250	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	BENZO(G,H,I)PERYLENE	929	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	BENZO(K)FLUORANTHENE	935	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.) /Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	M	CADMIUM	0.173	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003-D	PAH	CHRYSENE	941	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	DIBENZO(A,H)ANTHRACENE	251	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	FLUORANTHENE	894	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	FLUORENE	54.9	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	INDENO(1,2,3-CD)PYRENE	1240	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	M	LEAD	47.8	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	PAH	PHENANTHRENE	561	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS19-0003-D	M	POTASSIUM	1810	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS19-0003-D	M	SELENIUM	0.365	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS19-0003-D	M	SODIUM	88.8	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	PAH	2-METHYLNAPHTHALENE	2.25	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	PAH	ACENAPHTHYLENE	12.9	UG/KG	U	Lab Blank Contamination
NASB-TASKT-SS20-0003	M	ANTIMONY	0.4	MG/KG	UJ	MS/MSD Recovery Noncompliance
NASB-TASKT-SS20-0003	M	ARSENIC	4.82	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS20-0003	PAH	BENZO(K)FLUORANTHENE	94.1	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS20-0003	M	CADMIUM	0.0913	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	PAH	FLUORENE	3.18	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	M	LEAD	23	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS20-0003	M	MERCURY	0.0344	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	EXP	NITROGLYCERIN	0.304	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	M	POTASSIUM	2120	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS20-0003	M	SELENIUM	0.359	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS20-0003	M	SODIUM	101	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-2-SS02	PAH	1-METHYLNAPHTHALENE	5.88	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-2-SS03	PAH	1-METHYLNAPHTHALENE	8.18	UG/KG	J	Field Duplicate Imprecision, Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-2-SS03-D	PAH	1-METHYLNAPHTHALENE	47.7	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS04	PAH	1-METHYLNAPHTHALENE	136	UG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS02	PAH	2-METHYLNAPHTHALENE	9.25	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-2-SS03	PAH	2-METHYLNAPHTHALENE	12.4	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	2-METHYLNAPHTHALENE	91	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS04	PAH	2-METHYLNAPHTHALENE	200	UG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS03	PAH	ACENAPHTHYLENE	40.4	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	ACENAPHTHYLENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	ANTHRACENE	63.6	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	ANTHRACENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	BENZO(A)ANTHRACENE	141	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	BENZO(A)ANTHRACENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	BENZO(A)PYRENE	237	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	BENZO(A)PYRENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	BENZO(B)FLUORANTHENE	291	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	BENZO(B)FLUORANTHENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS04	PAH	BENZO(B)FLUORANTHENE	35600	UG/KG	J	Internal Standard Noncompliance
NASB-TASKT-2-SS03	PAH	BENZO(G,H,I)PERYLENE	160	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	BENZO(G,H,I)PERYLENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS01	PAH	BENZO(K)FLUORANTHENE	287	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS02	PAH	BENZO(K)FLUORANTHENE	127	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS03	PAH	BENZO(K)FLUORANTHENE	67.5	UG/KG	J	LCS/LCSD Recovery Noncompliance, Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	BENZO(K)FLUORANTHENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS04	PAH	BENZO(K)FLUORANTHENE	8850	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS05	PAH	BENZO(K)FLUORANTHENE	4200	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS06	PAH	BENZO(K)FLUORANTHENE	2620	UG/KG	J	LCS/LCSD Recovery Noncompliance

Table E.2

Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-2-SS01	PAH	CHRYSENE	613	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS02	PAH	CHRYSENE	208	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS03	PAH	CHRYSENE	190	UG/KG	J	LCS/LCSD Recovery Noncompliance, Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	CHRYSENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS04	PAH	CHRYSENE	14600	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS05	PAH	CHRYSENE	7320	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS06	PAH	CHRYSENE	4600	UG/KG	J	LCS/LCSD Recovery Noncompliance
NASB-TASKT-2-SS03	PAH	FLUORANTHENE	616	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	FLUORANTHENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	FLUORENE	32.8	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	FLUORENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS07	M	LEAD	285	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS08	M	LEAD	239	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS09	M	LEAD	160	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS10	M	LEAD	125	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS11	M	LEAD	717	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS12	M	LEAD	78.6	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS13	M	LEAD	93.1	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS14	M	LEAD	260	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS15	M	LEAD	79.9	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS16	M	LEAD	436	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS17	M	LEAD	367	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS18	M	LEAD	183	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS19	M	LEAD	154	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS20	M	LEAD	151	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS21	M	LEAD	962	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS22	M	LEAD	929	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS23	M	LEAD	476	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS24	M	LEAD	1890	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS25	M	LEAD	141	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS26	M	LEAD	275	MG/KG	J	Lab Duplicate Imprecision
NASB-TASKT-2-SS27	M	LEAD	384	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS28	M	LEAD	419	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS29	M	LEAD	1790	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS29-D	M	LEAD	1790	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS30	M	LEAD	63.2	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS31	M	LEAD	363	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS32	M	LEAD	44100	MG/KG	J	MS/MSD Recovery Noncompliance, Lab Duplicate Imprecision
NASB-TASKT-2-SS33	M	LEAD	210	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS33-D	M	LEAD	267	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS34	M	LEAD	334	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS35	M	LEAD	326	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS35-D	M	LEAD	544	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS36	M	LEAD	247	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS36-D	M	LEAD	227	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS37	M	LEAD	279	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS38	M	LEAD	243	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS39	M	LEAD	222	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS40	M	LEAD	798	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS41	M	LEAD	328	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS42	M	LEAD	99.1	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-2-SS02	PAH	NAPHTHALENE	6.07	UG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-2-SS03	PAH	NAPHTHALENE	58.3	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	NAPHTHALENE	109	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	PHENANTHRENE	581	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	PHENANTHRENE	4.75	UG/KG	UJ	Field Duplicate Imprecision
NASB-TASKT-2-SS03	PAH	PYRENE	509	UG/KG	J	Field Duplicate Imprecision
NASB-TASKT-2-SS03-D	PAH	PYRENE	4.75	UG/KG	UJ	Field Duplicate Imprecision

Table E.3
Surface Water Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SW02-042110	M	CHROMIUM	0.505	UG/L	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.) /Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	M	CALCIUM	14200	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW01-042110-D	M	CALCIUM	15800	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW02-042110	M	CALCIUM	15300	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW03-042110	M	CALCIUM	14100	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW01-042110	M	IRON	311	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW01-042110-D	M	IRON	320	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW02-042110	M	IRON	378	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW03-042110	M	IRON	640	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW01-042110	M	MANGANESE	196	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW01-042110-D	M	MANGANESE	218	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW02-042110	M	MANGANESE	223	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW03-042110	M	MANGANESE	305	UG/L	J	ICP Serial Dilution Noncompliance
NASB-TASKT-SW01-042110	PAH	1-METHYLNAPHTHALENE	0.0457	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	1-METHYLNAPHTHALENE	0.0335	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	1-METHYLNAPHTHALENE	0.0284	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	2-METHYLNAPHTHALENE	0.0516	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	2-METHYLNAPHTHALENE	0.0339	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	2-METHYLNAPHTHALENE	0.0282	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	ACENAPHTHENE	0.0352	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	ACENAPHTHENE	0.0258	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	ACENAPHTHYLENE	0.0341	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	ACENAPHTHYLENE	0.0234	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	ANTHRACENE	0.0341	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	ANTHRACENE	0.0519	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	ANTHRACENE	0.0277	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	BENZO(A)ANTHRACENE	0.0747	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	BENZO(A)ANTHRACENE	0.0512	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	BENZO(A)PYRENE	0.0317	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	BENZO(A)PYRENE	0.0336	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	BENZO(B)FLUORANTHENE	0.0858	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	BENZO(B)FLUORANTHENE	0.0455	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	BENZO(G,H,I)PERYLENE	0.0791	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	BENZO(G,H,I)PERYLENE	0.0467	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	BENZO(K)FLUORANTHENE	0.0784	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	BENZO(K)FLUORANTHENE	0.0396	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	CHRYSENE	0.0908	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	CHRYSENE	0.0498	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	DIBENZO(A,H)ANTHRACENE	0.0818	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	DIBENZO(A,H)ANTHRACENE	0.0466	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	FLUORENE	0.0424	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	INDENO(1,2,3-CD)PYRENE	0.0852	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	INDENO(1,2,3-CD)PYRENE	0.046	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	NAPHTHALENE	0.0845	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	NAPHTHALENE	0.0378	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	PYRENE	0.0964	UG/L	U	Lab Blank Contamination
NASB-TASKT-SW01-042110-D	PAH	ACENAPHTHENE	0.0189	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110-D	PAH	ACENAPHTHYLENE	0.0189	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110-D	PAH	BENZO(A)ANTHRACENE	0.0189	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110	M	CHROMIUM	0.5	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110-D	M	CHROMIUM	0.5	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

Table E.3
Surface Water Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SW03-042110	M	CHROMIUM	0.5	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110-D	PAH	CHRYSENE	0.0189	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110-D	PAH	PYRENE	0.0189	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SW01-042110	PAH	FLUORANTHENE	0.085	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	FLUORANTHENE	0.0256	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW01-042110	PAH	PHENANTHRENE	0.0413	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	PHENANTHRENE	0.0593	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	PHENANTHRENE	0.0348	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	PYRENE	0.0732	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW03-042110	PAH	PYRENE	0.0339	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SW02-042110	PAH	FLUORANTHENE	0.0631	UG/L	UJ	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Table E.4

Background Soil Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-SS01-0003	PAH	BENZO(A)ANTHRACENE	185	UG/KG	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SS01-0003	M	ARSENIC	3.02	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS01-0003	M	LEAD	123	MG/KG	J	Field Duplicate Imprecision
NASB-TASKT-SS01-0003	M	POTASSIUM	469	MG/KG	J	MS/MSD Recovery Noncompliance
NASB-TASKT-SS01-0003	M	BERYLLIUM	0.335	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS01-0003	M	CALCIUM	352	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS01-0003	M	COBALT	0.928	MG/KG	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS01-0003	PAH	1-METHYLNAPHTHALENE	10.4	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS01-0003	PAH	2-METHYLNAPHTHALENE	10.9	UG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS01-0003	M	CADMIUM	0.156	MG/KG	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SS01-0003	M	ANTIMONY	0.438	MG/KG	UJ	MS/MSD Recovery Noncompliance

Table E.5

Quality Control Samples Qualified Data
Topsham Annex Skeet Range
Brunswick, Maine

Sample	Fraction	Parameter	Result	Units	Qualifier	Reason for Qualification
NASB-TASKT-FB01-042210	PAH	1-METHYLNAPHTHALENE	0.0214	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-FB01-042210	PAH	2-METHYLNAPHTHALENE	0.0309	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-FB01-042210	EXP	4-AMINO-2,6-DINITROTOLUENE	0.0755	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-FB01-042210	PAH	BENZO(B)FLUORANTHENE	0.0218	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-FB01-042210	M	CHROMIUM	0.5	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-FB01-042210	PAH	CHRYSENE	0.0217	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-FB01-042210	PAH	FLUORANTHENE	0.0315	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-FB01-042210	PAH	PHENANTHRENE	0.0284	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-FB01-042210	PAH	PYRENE	0.0385	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	2-METHYLNAPHTHALENE	0.0199	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	EXP	4-AMINO-2,6-DINITROTOLUENE	0.0784	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SO-RB01-042210	PAH	ANTHRACENE	0.0267	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	BENZO(A)ANTHRACENE	0.0779	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	BENZO(A)PYRENE	0.0354	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	BENZO(G,H,I)PERYLENE	0.0895	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	BENZO(K)FLUORANTHENE	0.0869	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	M	CHROMIUM	0.5	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SO-RB01-042210	PAH	DIBENZO(A,H)ANTHRACENE	0.0841	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	FLUORANTHENE	0.0863	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	INDENO(1,2,3-CD)PYRENE	0.091	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	NAPHTHALENE	0.0941	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	PHENANTHRENE	0.0372	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB01-042210	PAH	PYRENE	0.0916	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	1-METHYLNAPHTHALENE	0.0289	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	2-METHYLNAPHTHALENE	0.0311	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	ACENAPHTHENE	0.0268	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	ACENAPHTHYLENE	0.0243	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	ANTHRACENE	0.0294	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	BENZO(A)ANTHRACENE	0.0235	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	BENZO(A)PYRENE	0.0223	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	BENZO(B)FLUORANTHENE	0.0267	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	BENZO(G,H,I)PERYLENE	0.0225	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	BENZO(K)FLUORANTHENE	0.0244	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	M	CHROMIUM	0.5	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-TASKT-SO-RB02-042210	PAH	CHRYSENE	0.0254	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	FLUORANTHENE	0.0381	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	FLUORENE	0.0318	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	PHENANTHRENE	0.0432	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB02-042210	PAH	PYRENE	0.0406	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	1-METHYLNAPHTHALENE	0.0301	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	2-METHYLNAPHTHALENE	0.0408	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	ACENAPHTHENE	0.0195	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	ANTHRACENE	0.0272	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	BENZO(A)ANTHRACENE	0.0248	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	BENZO(A)PYRENE	0.0194	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	BENZO(B)FLUORANTHENE	0.02	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	BENZO(G,H,I)PERYLENE	0.0215	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	BENZO(K)FLUORANTHENE	0.0189	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	M	CHROMIUM	0.522	UG/L	J	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.) /Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	CHRYSENE	0.0251	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	FLUORANTHENE	0.0295	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	INDENO(1,2,3-CD)PYRENE	0.0216	UG/L	J	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	PHENANTHRENE	0.0348	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-TASKT-SO-RB03-042210	PAH	PYRENE	0.0361	UG/L	UJ	Lab Blank Contamination/Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
NASB-MGBR-SO-RB01-121609	PAH	BENZO(A)ANTHRACENE	0.056	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
NASB-MGBR-SO-RB01-121609	PAH	BENZO(G,H,I)PERYLENE	0.92	UG/L	UJ	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

Table E.6

Completeness Evaluation
Topsham Annex Skeet Range
Brunswick, Maine

Topsham Annex Skeet Range Sample Collection and Laboratory Analysis Completeness

Soil

Parameter	Field Duplicates Expected (1)	Field Duplicates Collected and Analyzed	Field Duplicate Percent Completeness	WP Equipment Blanks	Equipment Blanks Collected and Analyzed	Equipment Blank Percent Completeness
TAL Metals	3	3	100	2	3	150
Explosives (Dinitrotoluenes)	1	1	100	1	1	100
Propellants (Nitroglycerin)	1	1	100	1	1	100
Lead	4	4	100	2	2	100
PAHs	1	1	100	2	2	100

Surface Soil

Parameter	WP Field Samples	Field Samples Collected and Analyzed	Field Sample Percent Completeness
TAL Metals	15	19	127
Explosives (Dinitrotoluenes)	4	4	100
Propellants (Nitroglycerin)	4	4	100
PAHs	21	25	119
pH, TOC, CEC	4	4	100
Lead	39	39	100

Subsurface Soil

Parameter	WP Field Samples	Field Samples Collected and Analyzed	Field Sample Percent Completeness
TAL Metals	5	5	100
Explosives (Dinitrotoluenes)	1	1	100
Propellants (Nitroglycerin)	1	1	100
PAHs	5	5	100

Surface Water

Parameter	Field Duplicates Expected (1)	Field Duplicates Collected	Field Duplicate Percent Completeness
TAL Metals	1	1	100
PAHs	1	1	100

Surface water

Parameter	WP Field Samples	Field Samples Collected	Field Sample Percent Completeness
TAL Metals	3	3	100
PAHs	3	3	100

Sediment

Parameter	Field Duplicates Expected (1)	Field Duplicates Collected	Field Duplicate Percent Completeness
TAL Metals	1	1	100
PAHs	1	1	100
TOC	1	1	100

Sediment

Table E.6

Completeness Evaluation
Topsham Annex Skeet Range
Brunswick, Maine

Parameter	WP Field Samples	Field Samples Collected	Field Sample Percent Completeness
TAL Metals	4	4	100
PAHs	4	4	100
TOC	4	4	100
CEC, pH	1	1	100

Table E.7
Sediment Sensitivity Evaluation
Topsham Annex Skeet Range
Brunswick, Maine

Parameter	PAL	Number of Non-Detected Results	Number of Non-Detected Results Exceeding PAL	Pecentage of Non-Detected Results Exceeding PAL	Number of Analyses	Percentage of Non-Detected Results Exceeding PAL for Entire Data Set
Inorganics (mg/kg)						
ANTIMONY	0.16	5	5	100%	5	100%
SELENIUM	0.29	3	2	67%	5	40%
SILVER	0.5	5	3	60%	5	60%

Table E.8
Soil Sensitivity Evaluation
Topsham Annex Skeet Range
Brunswick, Maine

Parameter	USEPA RSL	Number of Non-Detected Results	Number of Non-Detected Results Exceeding RSL	Pecentage of Non-Detected Results Exceeding RSL	Number of Analyses	Percentage of Non-Detected Results Exceeding RSL for Entire Data Set
Inorganics (mg/kg)						
SILVER	39	27	1	4%	27	4%

Table E.9
Surface Water Sensitivity Evaluation
Topsham Annex Skeet Range
Brunswick, Maine

Parameter	PAL	Number of Non-Detected Results	Number of Non-Detected Results Exceeding PAL	Pecentage of Non-Detected Results Exceeding PAL	Number of Analyses	Percentage of Non-Detected Results Exceeding PAL for Entire Data Set
Inorganics (ug/l)						
CADMIUM	0.08	4	4	100%	4	100%
SILVER	0.23	4	4	100%	4	100%
PAHs (ug/l)						
BENZO(A)ANTHRACENE	0.003	2	2	100%	4	50%
BENZO(A)PYRENE	0.003	2	2	100%	4	50%
BENZO(B)FLUORANTHENE	0.003	2	2	100%	4	50%
BENZO(G,H,I)PERYLENE	0.003	2	2	100%	4	50%
BENZO(K)FLUORANTHENE	0.003	2	2	100%	4	50%
CHRYSENE	0.003	2	2	100%	4	50%
DIBENZO(A,H)ANTHRACENE	0.003	2	2	100%	4	50%
INDENO(1,2,3-CD)PYRENE	0.003	2	2	100%	4	50%

APPENDIX F

XRF/FBL CORRELATION STATISTICAL EVALUATION

TOPSHAM ANNEX SKEET RANGE

TOPSHAM SKEET RANGE
CORRELATION OF FIXED BASED LABORATORY AND XRF LEAD CONCENTRATIONS
NAVAL AIR STATION BRUNSWICK, MAINE

To determine if XRF concentrations can be used to predict fixed based laboratory concentrations a statistical correlation analysis was conducted. Co-located XRF and fixed based laboratory concentrations were collected at Topsham Brunswick for lead.

If the correlation between the XRF and fixed based laboratory concentrations is greater than or equal to 0.65, as stipulated in the SAP, then the XRF concentrations can be used to predict fixed based laboratory concentrations. The correlation always falls between -1 and 1. Values of r near 0 indicate a very weak linear relationship. The strength of the linear relationship increases as r moves away from 0 toward either -1 or 1. Values of r close to -1 and 1 indicate that the points lie close to a straight line. The extreme values -1 and 1 occur only in the case of a perfect linear relationship. So the correlation indicates a strong linear trend. The R-squared value represents the percent of variation in laboratory concentrations that can be explained by the XRF concentration. An R-squared value greater than approximately 80 percent is considered to indicate a very strong relationship between the two measurement methods. The maximum possible value is 100 percent. Recall that the XRF samples and fixed based data were not collected from the same sample as typical. The primary purpose of the XRF for this project was to confirm the location and boundaries of the skeet range; first XRF samples were collected and, at a later date, fixed based data were collected. Therefore, correlations for lead were expected to be somewhat lower than typical.

Figure 1 is a scatterplot of the XRF lead concentrations and the corresponding fixed based laboratory lead concentrations for each sample where both XRF and fixed based data are available. For the statistical analyses ½ the detection limit was used for non-detected concentrations, and for duplicate samples the average of the original and duplicate sample was used. From the scatterplot, a linear trend is evident. Note that there are two outliers with XRF concentrations greater than 400mg/kg. The correlation is 0.51 indicating that there is only a moderate linear relationship between the XRF and fixed based laboratory concentrations. However, there is a wide range of concentrations with the XRF concentrations ranging from 18 to 607 mg/kg and the laboratory concentrations ranging from 6.5 to 12347.5 mg/kg.

Figure 2 is a scatterplot of the XRF lead concentrations and the corresponding fixed based laboratory lead concentrations for each samples with XRF concentrations less than 400 mg/kg (i.e., two outliers removed). From the scatterplot a linear trend is evident. The correlation is 0.78 indicating a good correlation. The correlation is greater than 0.65, as stipulated in the SAP; therefore, the XRF concentrations can be used to predict laboratory concentrations where XRF concentrations are less than 400 mg/kg. Table 1 presents the predicted laboratory concentrations for the XRF concentrations that are less than 400 mg/kg where no laboratory concentrations are available. There are only two samples where the XRF concentrations are greater than 400mg/kg fixed

based laboratory concentrations are available. (For concentrations where the predicted laboratory concentration was negative, zero was used as the concentration).

At XRF concentrations greater than 400 mg/kg, laboratory concentrations cannot be predicted. However, for every sample where the XRF concentration was greater than 400 mg/kg, the corresponding laboratory concentration was greater than the project action limit (PAL) of 40 mg/kg. Therefore, although XRF data with concentrations greater than 400 mg/kg were unable to be statistically correlated, the XRF data is all usable, although with qualification. All XRF concentrations greater than 400 mg/kg have a corresponding fixed based laboratory concentration.

TABLE 1 TOPSHAM Skeet Range Predicted Lead Laboratory Concentrations for XRF Concentrations <400 mg/kg At Locations where Laboratory Concentrations Not Available		
Sample	XRF Concentration (mg/kg)	Predicted Laboratory Concentration (mg/kg)
NASB-TASKT-XRF-SB06-0003	89	135
NASB-TASKT-XRF-SB06-0312	146	243
NASB-TASKT-XRF-SB07-0003	98	152
NASB-TASKT-XRF-SB07-0312	35	32
NASB-TASKT-XRF-SB08-0003	19	1.6
NASB-TASKT-XRF-SB08-0312	14	0
NASB-TASKT-XRF-SB09-0003	19	1.6
NASB-TASKT-XRF-SB09-0312	15	0
NASB-TASKT-XRF-SB10-0003	23	9.2
NASB-TASKT-XRF-SB10-0312	32	26.3
NASB-TASKT-XRF-SB11-0003	39	39.6
NASB-TASKT-XRF-SB11-0312	22	7.3
NASB-TASKT-XRF-SS09-0312	144	239
NASB-TASKT-XRF-SS11-0003	16	0
NASB-TASKT-XRF-SS12-0003	17	0
NASB-TASKT-XRF-SS13-0003	38	37.7
NASB-TASKT-XRF-SS15-0003	140	232
NASB-TASKT-XRF-SS16-0003-AVG	128.5	210
NASB-TASKT-XRF-SS17-0003	97	150

Figure 1
Topsham Skeet Range
Correlation Analysis

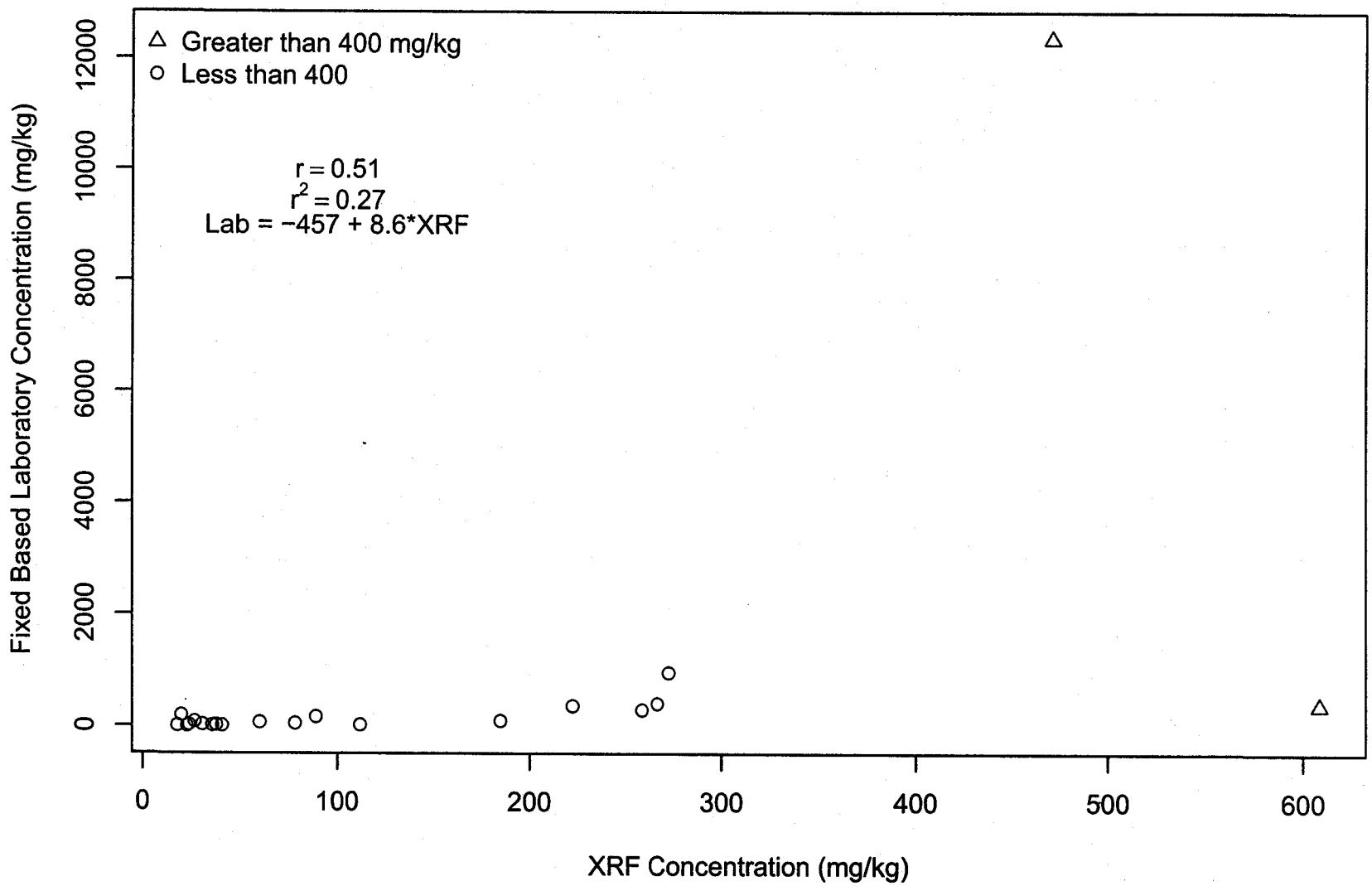
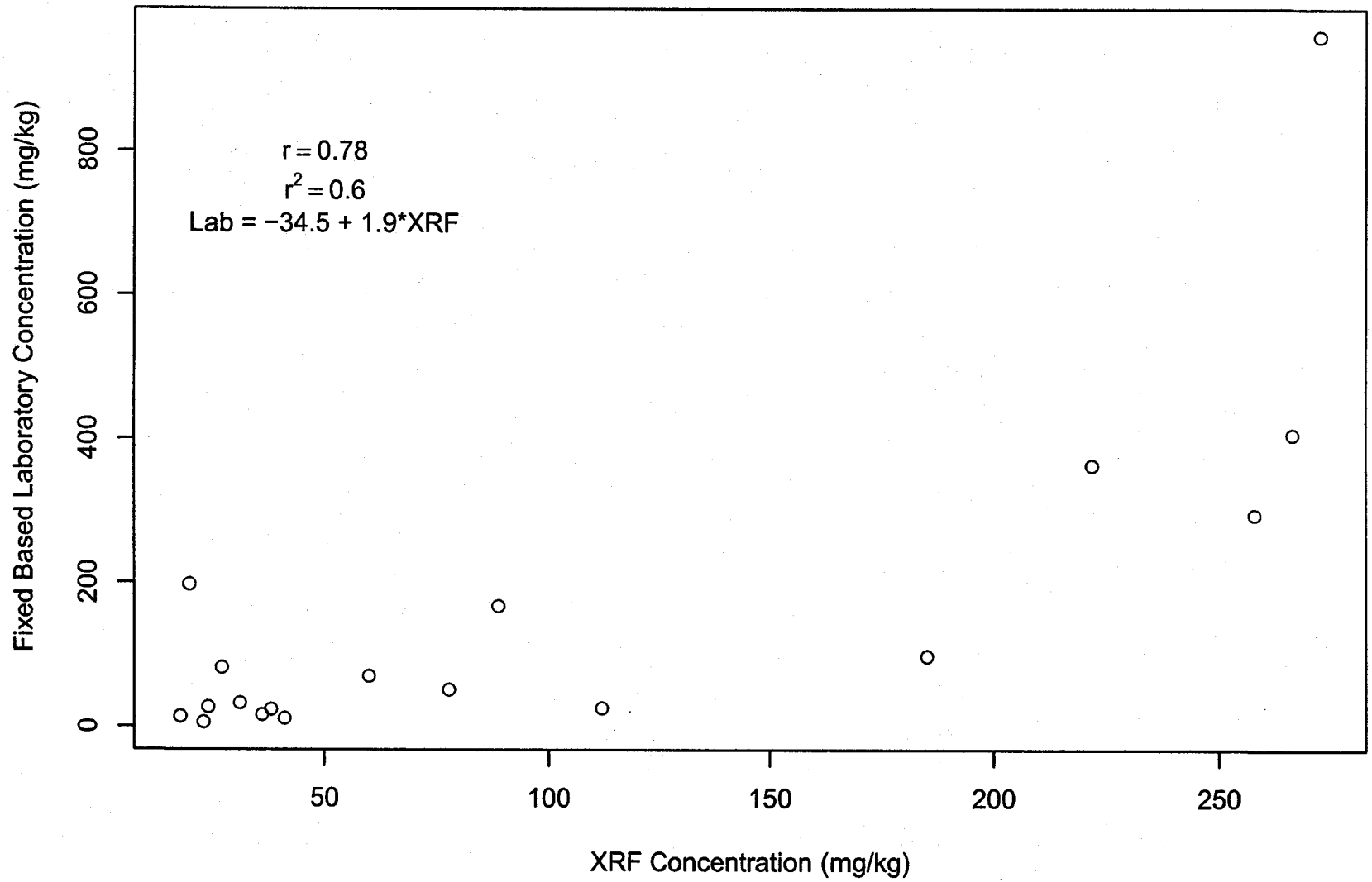


Figure 2
Topsham Skeet Range
Correlation Analysis with XRF Concentrations less 400 mg/kg



XRF MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL
[X] SUBSURFACE SOIL
[ ] OTHER _____

SAMPLERS: B. Geringer / C. Fellows

PROJECT NAME: NASB - Skeet Range / Topsham Annex
PROJECT NUMBER: CTO 69 - 112G00645/0505
YEAR: 2009

LOCATION: Topsham Skeet Range

	SAMPLE NO.	DEPTH (INCHES)	DATE	TIME	CONCENTRATION (L)LOW (H)HIGH	RESULTS: XRF READING 1 (PPM)	XRF READING 2 (PPM)	XRF READING 3 (PPM)	AVERAGE OF XRF READINGS (PPM)	% Moisture	Comments
	Standardized	N/A	7/09/09	1100		PASS →			N/A	N/A	N/A
	NIST - 2709 Low	↓		1102	Low	19±4	17±4	11±3	15.67 ~~N/A~~	N/A	Low Standard
	NIST - 2710 High	↓		1105	High	5419±74	5536±76	5532±77	5495.67	N/A	High Standard
XRF	NASB-TASKT-SS03-0003	0-3		1111		62±4	61±4	57±3	60	Sl. Damp	Brown F-Sand and Silt
XRF	NASB-TASKT-SS04-0003	0-3		1116	Dup4	286±7	207±6	313±8	268.67	damp ~~Moist~~	Brown Silt and F-Sand
XRF	NASB-TASKT-SS05-0003	0-3		1122		15±3	20±3	25±3	20 22.67	Damp	Brown F-Sand, little Silt
XRF	NASB-TASKT-SS06-0003	0-3		1127		~~125±5~~	216±7	231±6	4th 218±6 ~~186.33~~	Damp	Brown F-Sand and Silt
	NASB-TASKT-XRF-SB02-0003	0-3		1133		200±6	~~314±8~~	156±6	4th 199±7 185	Sl. Damp	Dk. Brown F-Sand - little Silt
	NASB-TASKT-XRF-SB02-0312	3-12		1140		28±3	47±4	32±3	35.67	Sl. Damp	Brown - " "
	NASB-TASKT-XRF-SB03-0003	0-3		1145		25±3	31±3	57±4	37.67	Sl. Damp	Dk Brown, F-Sand Some Silt
	NASB-TASKT-XRF-SB03-0312	3-12		1155		25±3	25±3	19±3	23	Sl. Damp	Brown " "
	NASB-TASKT-XRF-SB04-0003	0-3		1200		26±3	28±3	28±3	27.33	Sl. Damp	Dk Brown - F-Sand little Silt
	NASB-TASKT-XRF-SB04-0312	3-12		1205		39±3	39±3	45±4	41	Sl. Damp	Brown F-Sand some Silt
	Standardized	N/A		1210		PASS →				N/A	N/A
	NIST - 2709 Low	↓		1212	Low	18±3	19±4	15±3	17.33	N/A	Low Conc. Std
	NIST 2710 High	↓		1216	High	5525±76	5469±75	5635±78	5543	N/A	High Conc. Std
(Dup 04)	NASB-TASKT-XRF-SS04-0003	0-3		1221		266±7	276±7	285±7	275.67	damp	Brown, Silt and F-Sand
	NASB-TASKT-XRF-SS07-0003	0-3		1227		113±5	56±4	65±4	78	Sl. Damp	Dk Brown F-Sand and Silt
	NASB-TASKT-XRF-SS08-0003	0-3	↓	1232		95±5	94±5	78±4	89	Sl. Damp	Dk Brown F-Sand some Silt

XRF MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL
[X] SUBSURFACE SOIL
[ ] OTHER _____

SAMPLERS: B. Geringer / C. Fellows

PROJECT NAME: NASB - Skeet Range / Topsham Annex
PROJECT NUMBER: CTO 69 - 112G00645/0505
YEAR: 2009

LOCATION: Topsham Skeet Range

SAMPLE NO.	DEPTH (INCHES)	DATE	TIME	CONCENTRATION (L)LOW (H)HIGH	RESULTS: XRF READING 1 (PPM)	XRF READING 2 (PPM)	XRF READING 3 (PPM)	AVERAGE OF XRF READINGS (PPM)	% Moisture	Comments
NASB-TASKT-XRF-SS09-0003	0-3	7/9/09	1238		571±11	495±10	346±8	470.67	Damp	Dk. Brown F-Sand and Silt
NASB-TASKT-XRF-SS10-0003	0-3		1243		200±6	264±7	310±7	258	Sl. Damp	Dk Brown F-Sand and Silt
NASB-TASKT-XRF-SB05-0003	0-3		1248		530±10	771±13	756±13	685.67	Sl. Damp	Dk. Brown F-Sand, little Silt
NASB-TASKT-XRF-SB05-0312	3-12		1253		144±5	91±5	102±5	112.33	Damp	Brown, Silt & F-Sand
Standardized	N/A		1500		PASSED			N/A	N/A	N/A
~~NIST-2709 - Low~~	~~↓~~	~~↓~~	~~1507~~	~~↓~~	~~80±3~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~Low Conc. Std~~
~~NIST-2710 - High~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~↓~~	~~High Conc. Std~~
NASB-TASKT-XRF-SB01-0003	0-3		1505		20±3	28±3	23±3	23.67	Damp	Brown Silt, Some clay
NASB-TASKT-XRF-SB01-0312	3-12		1512		20±3	19±3	14±3	17.67	Damp	Brown Silt, Some clay, T-Sand
~~NASB-TASKT-XRF-SS02-0003~~	~~0-3~~									~~Dk Brown F-Sand, Some Silt~~
Standardized	N/A		1520		PASSED			N/A	N/A	N/A
NIST-2709 - Low	↓		1521		22±4	19±4	15±3	18.67	↓	Low Conc. Std
NIST-2710 - High	↓		1524		5382±74	5411±75	5482±76	5425	↓	High Conc. Std
NASB-TASKT-XRF-SS02-0003	0-3		1528		29±3	34±3	29±3	30.67	Sl. Damp	Dk Brown F-Sand, Some Silt
NASB-TASKT-XRF-SS01-0003	0-3		1533		70±4	60±4	46±3	58.67	Sl. Damp	Brown F-Sand, Some silt
NASB-TASKT-XRF-SS01N-0003	0-3		1538		13±2	10±2	7±2	10	Sl. Damp	Dk Brown F-Sand (Loam) Some Silt
NASB-TASKT-XRF-SS01S-0003	0-3		1544		19±3	19±3	20±3	19.33	Sl. Damp	Brown F-Sand, little Silt
NASB-TASKT-XRF-SS01E-0003	0-3		1549		19±3	16±3	15±3	16.67	Damp	Brown F-Sand Some Silt
NASB-TASKT-XRF-SS01W-0003	0-3		1554		15±2	16±2	10±2	13.67	Sl. Damp	Dk Brown F-Sand, Some Silt (Loam)
NASB-TASKT-XRF-SB05-0003 (Dup)	0-3	↓	1558		680±12	419±9	493±10	530.67	Sl. Damp	Dk Brown, F-Sand, little Silt

XRF MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL
[X] SUBSURFACE SOIL
[ ] OTHER _____

SAMPLERS: B. Geringer / C. Fellows

PROJECT NAME: NASB - Skeet Range (Topsham Annex)
PROJECT NUMBER: CTO 69 - 112G00645/0505
YEAR: 2009

LOCATION: Topsham Skeet Range

SAMPLE NO.	DEPTH (INCHES)	DATE	TIME	CONCENTRATION (L)LOW (H)HIGH	RESULTS: XRF READING 1 (PPM)	XRF READING 2 (PPM)	XRF READING 3 (PPM)	AVERAGE OF XRF READINGS (PPM)	% Moisture	Comments
Standardize	N/A	7/13/09	0930	N/A	PASS				N/A	
NIST 2709 - Low	↓	↓	0931	Low	15±3	17±3	19±4	17	↓	Low Conc. Std
NIST 2710 - High	↓	↓	0935	High	5356±73	5454±75	5541±76	5454.33	↓	High Conc. Std
* NASB-TASKT-XRF-SS17-0003	0-3	↓	0940		105±5	98±5	87±5	~~87~~ 96.67	Sl. Damp	Brown F-Sand, Some Silt
NASB-TASKT-XRF-SS13-0003	0-3	↓	0946		36±3	38±3	40±4	~~40~~ 38	Sl. Damp	DK. Brown F-Sand, little Silt
NASB-TASKT-XRF-SB07-0003	0-3	↓	0951		99±5	100±5	94±5	~~94~~ 97.67	Sl. Damp	Brown F-Sand and Silt
NASB-TASKT-XRF-SB07-0312	3-12	↓	0957		39±4	35±4	31±4	~~31~~ 35	Sl. Damp	Brown F-Sand and Silt
NASB-TASKT-XRF-SB11-0003	0-3	↓	1002		41±3	41±3	35±3	~~35~~ 39	Damp	Brown Silt, little F-Sand
NASB-TASKT-XRF-SB11-0312	3-12	↓	1008		25±3	25±3	16±3	~~16~~ 22	Damp	Brown Silt & Clay, T-Fine Sand
DUP06 NASB-TASKT-XRF-SS16-0003	0-3	↓	1012		117±5	137±5	130±5	127	Damp	Brown Silt, Some F-Sand
NASB-TASKT-XRF-SS09-0312	3-12	↓	1017		~~70±4~~	196±7	107±5	4th 128±5 / 143.67	Sl. Damp	Brown F-Sand & Silt
NASB-TASKT-XRF-SS16-0003 (DUP06)	0-3	↓	1024		134±5	131±5	123±5	129.33	Damp	Brown Silt, Some F-Sand
Standardize	N/A	↓	1031		PASS				N/A	
NIST 2709 - Low	↓	↓	1032	LOW	16±3	17±3	19±4	17	↓	Low Conc. Std.
NIST 2710 - High	↓	↓	1036	High	5697±79	5642±78	5512±75	5617	↓	High Conc. Std
NASB-TASKT-XRF-SS11-0003	0-3	↓	1041		19±3	12±3	18±3	16.3	Sl. Damp	DK Brown, F-Sand some Silt, ~~Fibers~~ organics
NASB-TASKT-XRF-SS12-0003	0-3	↓	1047		18±3	18±3	15±3	17	Sl. Damp	DK Brown, F-Sand some Silt
D7 NASB-TASKT-XRF-SS14-0003	0-3	↓	1056		231±6	232±6	297±6	253.3	Dry	DK Brown F-Sand some Silt
NASB-TASKT-XRF-SS15-0003	0-3	↓	1102		151±6	148±6	121±5	140	Dry	DK Brown F-Sand some Silt

* Clam Bivalve Fragments in Sample - [illegible]

XRF MULTIPLE SAMPLE LOG SHEET

Tetra Tech NUS, Inc.

[X] SURFACE SOIL
[X] SUBSURFACE SOIL
[ ] OTHER _____

SAMPLERS: B. Geringer / C. Fellows

PROJECT NAME: NASB - Skeet Range / Topsham Annex
PROJECT NUMBER: CTO 69 - 112G00645/0505
YEAR: 2009

LOCATION: TASKT

SAMPLE NO.	DEPTH (INCHES)	DATE	TIME	CONCENTRATION (L)LOW (H)HIGH	RESULTS: XRF READING 1 (PPM)	XRF READING 2 (PPM)	XRF READING 3 (PPM)	AVERAGE OF XRF READINGS (PPM)	% Moisture	Comments
NASB-TASKT-XRF-SB06-0003	0-3	7/13/09	1120		77±4	76±4	114±5	89	Sl. Damp	Brown-F Sand some Silt
NASB-TASKT-XRF-SB06-0312	3-12		1127		116±5	161±6	160±6	145.6	Sl. Damp	Brown-F Sand some Silt
NASB-TASKT-XRF-SB08-0003	0-3		1135		23±3	19±3	16±3	0-3 19.3	Sl. Damp	DK Brown, F Sand and Silt
NASB-TASKT-XRF-SB08-0312	3-12		1143		13±3	17±3	12±3	14	Sl. Damp	DK Brown, F Sand some Silt
NASB-TASKT-XRF-SB09-0003	0-3		1148		19±3	23±3	16±3	19.3	Dry	DK Brown, F Sand some Silt, fibra
NASB-TASKT-XRF-SB09-0312	3-12		1154		14±3	17±3	14±3	15	Sl. Damp	Brown F Sand some Silt
Standardize	NA		1158		PASSED	→	→	PASSED	NA	NA
MST 2709	NA		1159	Low	16±3	<9	18±4	17	NA	Low Standard Concentration
MST 2710	NA		1204	High	5503±76	5605±78	5636±77	5601.3	NA	High Concentration Standard
NASB-TASKT-XRF-SB10-0003	0-3		1208		20±3	24±3	19±3	22.6	Dry	DK Brown-F Sand some Silt (Lo
NASB-TASKT-XRF-SB10-0312	3-12	↓	1213		33±4	31±4	33±4	32.3	Dry	Brown-F Sand some Silt
D7 NASB-TASKT-XRF-SS14-0003 (Dup of 07)	0-3	↓	1218		288±7	276±7	276±7	280	Dry	DK Brown, F Sand some Silt

APPENDIX G

PROJECT ACTION LIMITS SCREENING SUPPORTING DOCUMENTATION AND ENVIRONMENTAL ASSESSMENT INFORMATION

Reference Limits and Evaluation Table

Matrix: Soil
Analytical Group: TAL Metals

Analyte	CAS Number	Maine RAGS Appendix 3 (mg/kg) (1)	USEPA Residential RSL (mg/kg) (2)
Aluminum	7429-90-5	69,000	7,700N
Antimony	7440-36-0	14	3.1N
Arsenic	7440-38-2	9	0.39C
Barium	7440-39-3	6,800	1,500N
Beryllium	7440-41-7	68	16N
Cadmium	7440-43-9	2.1	7.0N
Calcium	7440-70-2	NC	NC
Chromium	7440-47-3	100	0.29C
Cobalt	7440-48-4	15	2.3N
Copper	7440-50-8	480	310N
Iron	7439-89-6	31,000	5,500N
Lead	7439-92-1	170	400N
Mercury	7439-97-6	10	2.3N
Magnesium	7439-95-4	NC	NC
Manganese	7439-96-5	1,100	180N
Nickel	7440-02-0	100	150N
Potassium	7440-09-7	NC	NC
Selenium	7782-49-2	68	39N
Silver	7440-22-4	170	39N
Sodium	7440-23-5	NC	NC
Thallium	7440-28-0	2.7	0.078N
Vanadium	7440-62-2	240	39N
Zinc	7440-66-6	10,000	2,300N

Matrix: Soil
Analytical Group: PAHs

Analyte	CAS Number	Maine RAGS Appendix 3 (mg/kg) (1)	USEPA Residential RSL (mg/kg) (2)
1-Methylnaphthalene	90-12-0	NC	22C
2-Methylnaphthalene	91-57-6	3.6	31N
Acenaphthene	83-32-9	110	340N
Acenaphthylene	208-96-8	68	340N
Anthracene	120-12-7	430	1700N
Benzo(a)anthracene	56-55-3	0.26	0.15C
Benzo(a)pyrene	50-32-8	0.026	0.015C
Benzo(b)fluoranthene	205-99-2	0.26	0.15C
Benzo(g,h,i)perylene	191-24-2	750	170N
Benzo(k)fluoranthene	207-08-9	2.6	1.5C
Chrysene	218-01-9	26	15C
Dibenzo(a,h)anthracene	53-70-3	0.026	0.015C
Fluoranthene	206-44-0	1,000	230N
Fluorene	86-73-7	120	230N
Indeno(1,2,3-cd)pyrene	193-39-5	0.26	0.15C
Naphthalene	91-20-3	1.7	3.6C
Phenanthrene	85-01-8	97	170N
Pyrene	129-00-0	750	170N

Matrix: Soil
Analytical Group: Explosives

Analyte	CAS Number	Maine RAGS Appendix 3 (mg/kg) (1)	USEPA Residential RSL (mg/kg) (2)
2,4-Dinitrotoluene	121-14-2	NC	1.6C
2,6-Dinitrotoluene	606-20-2	NC	6.1N
2,4,6-Trinitrotoluene	118-96-7	NC	3.6N
2-Amino-4,6-Dinitrotoluene	35572-78-2	NC	15N
2-Nitrotoluene	88-72-2	NC	2.9C
3-Nitrotoluene	99-08-1	NC	0.61N
4-Amino-2,6-Dinitrotoluene	19406-51-0	NC	15N
4-Nitrotoluene	99-99-0	NC	24N
Nitroglycerin	55-63-0	NC	0.61N

References

1. Maine Remedial Action Guidelines for Soil (RAGS) for Multiple Contaminants, all Scenarios and all Pathways (January, 2010),
2. Residential Soil Regional Screening Level (RSL) (June 2011). The reference value provided for noncarcinogenic RSLs is the RSL value divided by ten.

NC – No Criteria.
ND – Not Detected.

Matrix: Sediment
Analytical Group: TAL Metals

Analyte	CAS Number	PAL [1,2] (mg/kg)	PAL Reference
Aluminum	7429-90-5	2600	Facility EA Background
Antimony	7440-36-0	0.16	Facility EA Background
Arsenic	7440-38-2	9.8	Facility EA Background
Barium	7440-39-3	0.7	Facility EA Background
Beryllium	7440-41-7	0.55	Facility EA Background
Cadmium	7440-43-9	0.99	Facility EA Background
Calcium	7440-70-2	NC	NC
Chromium	7440-47-3	43.4	Facility EA Background
Cobalt	7440-48-4	10	Facility EA Background
Copper	7440-50-8	31.6	Facility EA Background
Iron	7439-89-6	10000	Facility EA Background
Lead	7439-92-1	35.8	Facility EA Background
Mercury	7439-97-6	0.18	Facility EA Background
Magnesium	7439-95-4	NC	NC
Manganese	7439-96-5	630	Facility EA Background
Nickel	7440-02-0	22.7	Facility EA Background
Potassium	7440-09-7	NC	NC
Selenium	7782-49-2	0.29	Facility EA Background
Silver	7440-22-4	0.5	Facility EA Background
Sodium	7440-23-5	NC	NC
Thallium	7440-28-0	NC	NC
Vanadium	7440-62-2	43	Facility EA Background
Zinc	7440-66-6	121	Facility EA Background

Matrix: Sediment
Analytical Group: PAHs

Analyte	CAS Number	PAL [1,2] (µg/kg)	Project Action Limit Reference
1-Methylnaphthalene	90-12-0	20.2	NOAA
2-Methylnaphthalene	91-57-6	20.2	NOAA
Acenaphthene	83-32-9	290	NOAA
Acenaphthylene	208-96-8	160	NOAA
Anthracene	120-12-7	57.2	TEC
Benzo(a)anthracene	56-55-3	108	TEC
Benzo(a)pyrene	50-32-8	150	TEC
Benzo(b)fluoranthene	205-99-2	1800	NOAA
Benzo(g,h,i)perylene	191-24-2	170	OMOE
Benzo(k)fluoranthene	207-08-9	240	OMOE
Chrysene	218-01-9	166	TEC
Dibenzo(a,h)anthracene	53-70-3	33	TEC
Fluoranthene	206-44-0	423	TEC
Fluorene	86-73-7	77.4	TEC
Indeno(1,2,3-cd)pyrene	193-39-5	200	OMOE
Naphthalene	91-20-3	176	TEC
Phenanthrene	85-01-8	204	TEC
Pyrene	129-00-0	195	TEC

PAL References

1. Where available, sediment project action limits reflect facility-specific background values, EA Engineering calculated values (EA Engineering, 2006. Correspondence from Gina Calderone, CPG, P.G. to Mr. Orlando Monaco, P.E., Naval Facilities Engineering Command Engineering Field Activity Northeast (EPA and MEDEP copied on the correspondence distribution list). January 31, 2006.)

2. Where facility-specific project action limits are not available for sediment, a variety of other sources were used and is noted as such.
   - NOAA – National Oceanographic and Atmospheric Administration sediment benchmarks lowest observed effects level (Buchman, 1999) (ecological risk based value).
   - OMOE Ontario Ministry of Environmental Lowest Effects Level (Persaud, et.al., 1993) (ecological risk based values).
   - TEC – Threshold Effects Concentrations (MacDonald, et al., 2000) (ecological risk based values).

NC – No Criteria.

Matrix: Surface Water
Analytical Group: TAL Metals

Analyte	CAS Number	PAL [1,2] (µg/L)	PAL Reference
Aluminum	7429-90-5	87	Facility EA Background
Antimony	7440-36-0	5.5	SWQC
Arsenic	7440-38-2	150	Facility EA Background
Barium	7440-39-3	3.9	Facility EA Background
Beryllium	7440-41-7	0.66	Facility EA Background
Cadmium	7440-43-9	0.08	Facility EA Background
Calcium	7440-70-2	NC	NC
Chromium	7440-47-3	11	Facility EA Background
Cobalt	7440-48-4	23	Facility EA Background
Copper	7440-50-8	2.36	Facility EA Background
Iron	7439-89-6	1000	Facility EA Background
Lead	7439-92-1	0.41	Facility EA Background
Mercury	7439-97-6	0.91	Facility EA Background
Magnesium	7439-95-4	NC	NC
Manganese	7439-96-5	120	Facility EA Background
Nickel	7440-02-0	13.4	Facility EA Background
Potassium	7440-09-7	NC	NC
Selenium	7782-49-2	5	Facility EA Background
Silver	7440-22-4	0.23	Facility EA Background
Sodium	7440-23-5	NC	NC
Thallium	7440-28-0	12	Facility Background/Facility EA
Vanadium	7440-62-2	20	Facility EA Background
Zinc	7440-66-6	30.6	Facility EA Background

Matrix: Surface Water
Analytical Group: PAHs

Analyte	CAS Number	PAL [1,2] (µg/L)	PAL Reference
1-methylnaphthalene	90-12-0	72.16	FCV
2-Methylnaphthalene	91-57-6	72.16	FCV
Acenaphthene	83-32-9	55.85	FCV
Acenaphthylene	208-96-8	306.9	FCV
Anthracene	120-12-7	20.73	FCV
Benzo(a)anthracene	56-55-3	0.003	SWQC
Benzo(a)pyrene	50-32-8	0.003	SWQC
Benzo(b)fluoranthene	205-99-2	0.003	SWQC
Benzo(g,h,i)perylene	191-24-2	0.003	SWQC
Benzo(k)fluoranthene	207-08-9	0.003	SWQC
Chrysene	218-01-9	0.003	SWQC
Dibenzo(a,h)anthracene	53-70-3	0.003	SWQC
Fluoranthene	206-44-0	7.109	FCV
Fluorene	86-73-7	39.3	FCV
Indeno(1,2,3-cd)pyrene	193-39-5	0.003	SWQC
Naphthalene	91-20-3	193.5	FCV
Phenanthrene	85-01-8	19.13	FCV
Pyrene	129-00-0	10.11	FCV

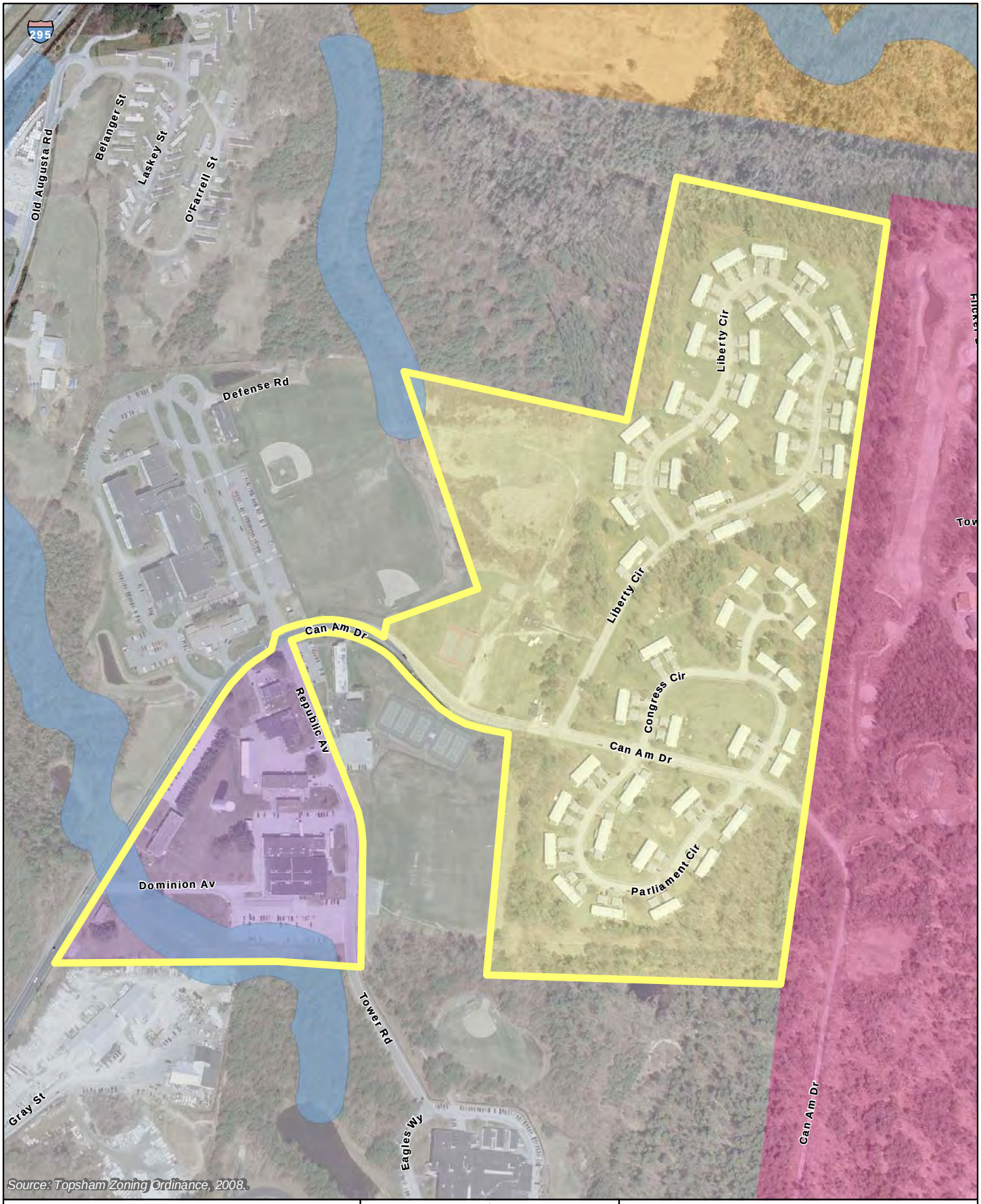
PAL References

1. Where available, surface water project action limits reflect facility-specific background values, EA Engineering calculated values (EA Engineering, 2006. Correspondence from Gina Calderone, CPG, P.G. to Mr. Orlando Monaco, P.E., Naval Facilities Engineering Command Engineering Field Activity Northeast (EPA and MEDEP copied on the correspondence distribution list). January 31, 2006.)

2. Where facility-specific project action limits are not available for surface water a variety of other sources were used and is noted as such. FCV – Final chronic values (USEPA, 2003) (ecological risk based value), SWQC – State water quality criteria based on consumption for protection of human health.

NC – No Criteria.

© Ecology & Environment, Inc. GIS Department Project #
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-1 Topsham Annex Zoning.mxd



Legend

- Topsham Annex Surplus Property

Zone Type

- Business Park 2
- Mixed Use Limited
- Residential 4
- Rural Residential
- Upper Village
- Stream Protection Area

N

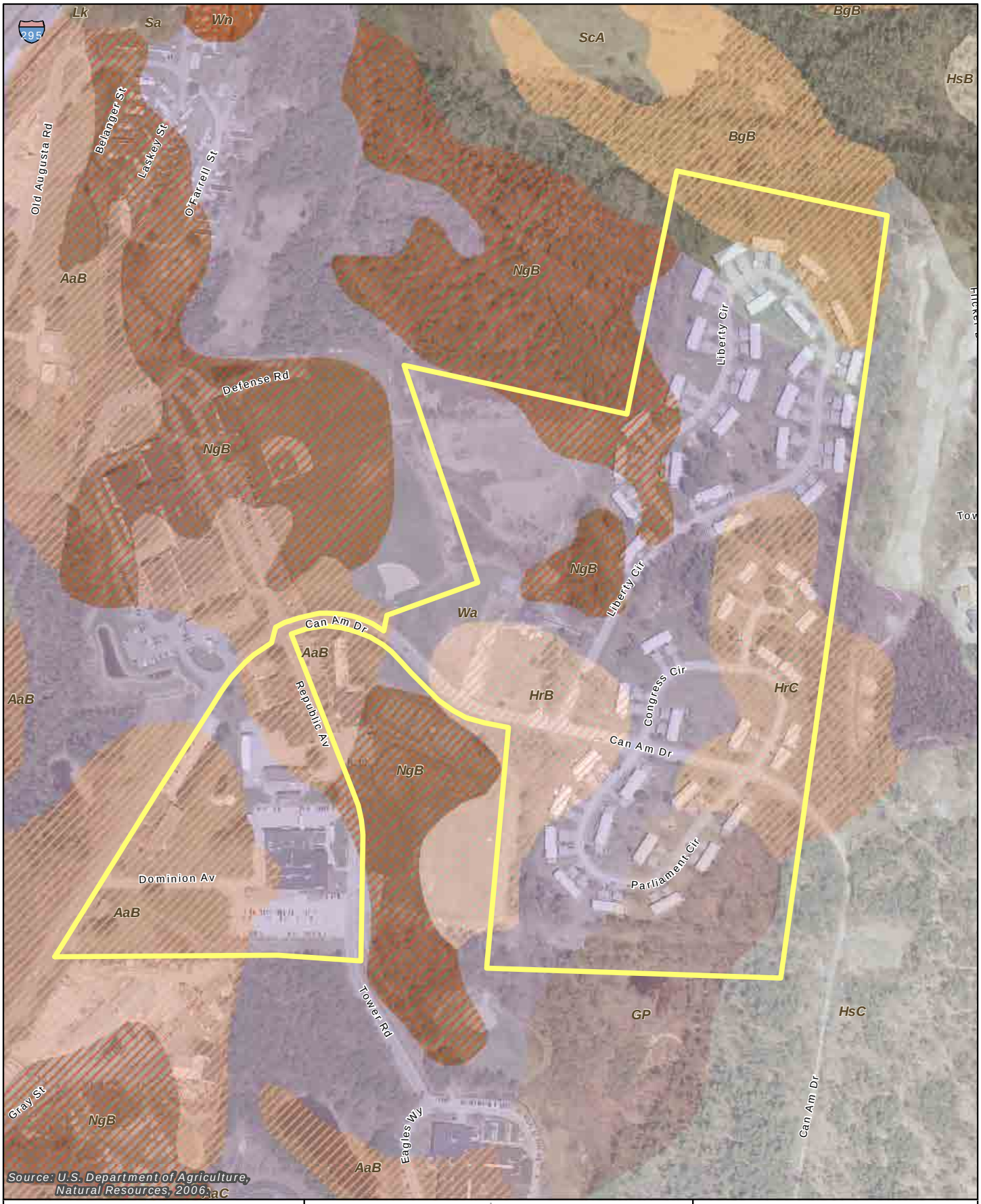
0 125 250 500

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-1
Local Zoning
Topsham Annex, Maine

© Ecology & Environment, Inc. GIS Department Project #
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-5 Topsham Annex Soils.mxd



Source: U.S. Department of Agriculture, Natural Resources, 2006

Legend

Topsham Annex Surplus Property

Prime Farmland Soils

All areas are Prime Farmland

Farmland of Statewide Importance

N

0 100 200 400 600 800

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-6
Prime Farmland Soils
Topsham Annex, Maine

© Ecology & Environment, Inc. GIS Department Project #
L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-6 Topsham Annex Wetlands.mxd 04/08/2009

Legend

- Field-Identified Wetland Line*
- Field-Identified Wetland*
- NWI Wetland
- Topsham Annex Surplus Property

N

0 100 200 400 600 800

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-7
Wetlands
Topsham Annex, Maine

APPENDIX H

RESPONSES TO STAKEHOLDER COMMENTS OF DRAFT VERSION OF SI REPORT

RESPONSE TO MEDEP COMMENTS DATED SEPTEMBER 16, 2011
TOPSHAM ANNEX SKEET RANGE SITE INSPECTION REPORT DATED JUNE 2011
FORMER NAVAL AIR STATION, BRUNSWICK
TOPSHAM, MAINE

Note that where the comment response provides revised text, text additions are shown in bold italics and deleted text is shown as strikethrough.

General Comments:

1. **Comment:** The report title needs to indicate that the skeet range in question is in Topsham, Maine rather than Brunswick.

   Response: Agree. The location of the skeet range as shown on the cover and title page has been changed to Topsham, Maine. Headings on figures and tables have also been revised.

2. **Comment:** The rationale for the conceptual site model decisions regarding migration routes and exposure pathways deserves additional explanation in the text, see specific comments below. The proposed remedial approach should address potential migration and exposure routes.

   Response: Refer to responses to specific comments below.

3. **Comment:** MEDEP does not have copies of the Department of Navy 2010 Environmental Assessment which is the basis of much of the background of the report or the 2006 EA Background Assessment which referenced in the Appendix G.

   Response: The requested reference documents will be properly referenced in the document and reference list. The first document can be accessed electronically and the second document is attached to this comment response letter:

   Navy, 2010. Final Environmental Assessment for the Disposal and Reuse of Topsham Annex, United States Department of the Navy Base Realignment and Closure Program Management Office Northeast, December. Available electronically at: http://www.bracpmo.navy.mil/base_docs/brunswick/documents/enviro_docs/201012FinalEATopshamAnnex.pdf

   EA Engineering, 2006. Correspondence from Gina Calderone, CPG, P.G. to Mr. Orlando Monaco, P.E., Naval Facilities Engineering Command Engineering Field Activity Northeast (EPA and MEDEP copied on the correspondence distribution list). January 31, 2006.

Specific Comments:

4. **Comment:** Section 1.1, Purpose of the Report, Para. 1: Please note that Topsham Annex is in Sagadahoc County rather than Cumberland County.

   Response: The revision, "~~Cumberland~~ ***Sagadahoc*** County, Maine" has been made, including the first sentence of the Executive Summary and the first sentence of Section 1.1.

5. **Comment:** Section 1.2, Scope of Work: Please add the actual title and date of the workplan and any addendums used for this investigation.

Response: The second sentence of Section 1.2 has been revised, "Following MC sample collection and analysis, data management, including data validation and database management, was conducted ***in accordance with the Site Inspection (SI) Work Plan Munitions Constituents at Three Munitions Response Sites (Tetra Tech, 2009) and the Topsham Annex Skeet Range Supplemental Soil Sampling Work Plan (Tetra Tech, 2010)***."

6. **Comment:** Section 1.3, Objectives: Please state the objectives verbatim from the SI workplan as written (Section 1.1, 2nd paragraph).

   Response: Agree. The first sentence of Section 1.3 has been revised (largely verbatim from the SI workplan although the workplan was referring to all three small arms ranges so objectives were tweaked a bit from the original): "***The objective of the SI described was to conduct an on-site investigation and gather sufficient data to determine the presence or absence of MC that may remain from activities conducted by the DoD during site operation and that may subsequently pose a threat to human health and/or the environment (Tetra Tech, 2009). Under the MRP, the primary goal of the SI is to collect the appropriate amount of information necessary to make one of the following decisions: 1) whether a Remedial Investigation (RI) is required at a site; 2) whether an immediate response is needed; or 3) whether the site qualifies for no further action (NFA).*** ~~The main objective of the SI was to build on the PA information by gathering initial field data to determine whether MC (e.g., metals, propellants, and PAHs) that may have originated from previous site operations are present and potentially contributing to environmental impacts in surface soil, surface water, and sediment~~."

7. **Comment:** Section 2.1.4, Current Land Use and Anticipated Future Land Use: "Currently, the remainder of the TASKT is used as private residential property although the use may be subject to change in the future."

   This statement would give the impression that the property is developed while the majority of the non-Navy owned property is former pasture that is growing up to volunteer species of trees. Please revise accordingly.

   Response: The second sentence of Section 2.1.4 has been revised, "Currently, the remainder of TASKT is ~~used as~~ private residential property ***and former open land/pasture area, which is now wooded***, although the use may be subject to change in the future."

8. **Comment:** Section 2.2.5, Hydrology: "Surface water features on the Annex property are limited …" Please revise this to describe the small stream that flows to the north and originates in the vicinity south of the firing point of the former skeet range. The stream lies mainly off the Navy property but is a significant feature in the conceptual model for the site.

   Response: The last sentence of Section 2.2.5 has been revised, "The nearest perennial surface water is to the west of the Annex, ***within the western portion of the TASKT shotfall zone,*** where there is a small stream that flows northward to the Cathance River (Navy, 2010)."

9. **Comment:** Section 2.3, Ecological Summary: While the information on Topsham Annex is helpful, the majority of the former skeet range is not and never has been within Topsham Annex. This section should be revised to provide more emphasis on the off site portion of the skeet range.

   Response: Because the off site portion of the skeet range is adjacent to the Topsham Annex boundary, it is assumed that the information presented in Section 2.3 is applicable to the off base portion of the skeet range. Revisions have been made in this section, as applicable, to emphasize the off site portion of the skeet range.

10. Comment: Section 2.3.3 Wetlands, and Figure 3-7 in Appendix G: Please revise this figure to include the areas on private property that overlap the shotfall zone.

Response: A Local Zoning Figure (Navy, 2010), has been added to Appendix G. This figure shows the stream which runs through the western portion of the shotfall zone for the former skeet range as a Stream Protection Area. The first sentence of Section 2.3.3 has been revised, "Wetlands ***and Stream Protection Areas*** located in and around Topsham Annex are shown in Figure***s 3-1 and*** 3-7 of Appendix G.

11. Comment: Section 2.3.5, Water Resources:

a.) According to MEDEP information there are one or more public water sources just to the northwest of the skeet range. The range is nearly all within the 1000 foot buffer for those sources, likely associated with the trailer park housing. Please check this information and revise the report as needed.

b.) "The closest public well field is the 138 Jordan Avenue well field operated by the Brunswick/Topsham Water District, less than 0.5 mile from the northern boundary of the air station."

This information pertains to the Naval Air Station not Topsham Annex. Please correct.

Response a) and b): Information on the water supply for this area, from the Environmental Assessment, Disposal and Reuse of Topsham Annex, Naval Air Station Brunswick, Brunswick, Maine Report (DoN, 2010), has been added to Section 2.3.5, as follows. ***"Residents and employees at the Topsham Annex and the Brunswick-Topsham area obtain drinking water from four groundwater sources, three wells in Brunswick and one well in Topsham (Navy, 2010). The water is delivered to the Annex via a system constructed by the Navy in the 1940s. The primary delivery conduit is a 12-inch water main owned by the Brunswick and Topsham Water District. The system includes a 586,000-gallon water storage tank and 8,700 linear feet of 8-, 10-, and 12-inch water mains. The Brunswick and Topsham Water District has enough excess capacity to serve the Brunswick-Topsham area (Navy, 2010). The Brunswick and Topsham Water District allocates reserve-system capacity on a first-come, first-served basis.*** ~~TASKT municipal drinking water is obtained from the Brunswick/Topsham Water District municipal water supply (NEESA, 1983). Groundwater used for the municipal water supply is drawn from the shallow or overburden aquifer. The closest public well field is the 138 Jordan Avenue well field operated by the Brunswick/Topsham Water District, less than 0.5 mile from the northern boundary of the air station (USEPA, 1987).~~"

12. Comment: Section 3.1.2.2, XRF, final paragraph: Please note here if any shot was observed in the field samples (a review of the field logs indicates there were no lead shot identified).

Response: The following has been added as the last sentence of the third paragraph in Section 3.1.2.2, and to the first page of the Executive Summary, Shallow and Deep Suface Soil, first sentence: "***No lead shot or lead shot fragments were observed.***"

13. Comment: Section 4.5.1, Shallow and Deep Surface Soil & Figure 4-3: If the offsite sample data are used for comparison it would help to note that the offsite soils had higher PAH concentrations than much of the shotfall zone, but orders of magnitude below those in the firing point soils.

Response: The following has been added to the Executive Summary and as the last sentence of

Section 4.5.1, "***Furthermore, PAH concentrations in this off site soil sample were greater than those detected in the majority of the samples collected from the shotfall zone, but off site soil PAH concentrations were much less than in samples collected at the firing line.***"

Also, the following has been added as the last two sentences of Section 4.4.2.1, "***Note that the PAHs benzo(a)pyrene and benzo(b)fluoranthene exceed MEDEP criteria at the off site sampling location (SS01) collected for comparison purposes. Furthermore, PAH concentrations in this off site soil sample were greater than those detected in the majority of the samples collected from the shotfall zone, but off site soil PAH concentrations were much less than in samples collected at the firing line.***"

14. Comment: Table 4-10, Page 2 Migration Routes & Figure 4-5: Why was leaching to groundwater ruled out as a possible migration route? Skeet ranges are potential sources for groundwater contamination even with only the upper few inches of soil exhibiting elevated lead concentrations. Additional rationale needs to be added, given the nearby public water sources and the objectives of the investigation. The soil pHs measured were very low, however there were not many samples with concentrations in excess of 500 mg/kg, suggesting any dissolution of lead will not impact the local groundwater.

The sediment lead concentrations were relatively high compared to background at Mere Brook in Brunswick, suggesting it is possible there is some runoff to the little stream channel. How was it determined that the metal concentrations exceeding PALs were acceptable? There is little explanation provided for this decision, and the relative importance of the downstream ecosystem warrants additional rationale.

Response: Only the shallow surface soil (0-3 inches bgs) was found to exhibit elevated lead concentrations. Similar concentrations were not found in the deeper surface soil (3-12 inches bgs) indicating that lead has not migrated into the subsurface soil and, therefore, would not have migrated into the groundwater. Furthermore, when lead contamination in the shallow surface soil at TASKT is addressed, no source area will remain. The footnote on Figure 4-5 has been revised, "(1) Incomplete pathway considering contamination is present in shallow surface soil ***(0-3 inches bgs)*** only. ***Contamination was not detected in the deep surface soil (3-12 inches bgs) indicating that lead has not migrated to either the subsurface soil or groundwater***.

The surface water/sediment migration pathways have been revised to "Potentially Complete" pathways on Figure 4-5.

15. Comment: Figure 4-6: For the incomplete pathway indicated from bullet residues, what does "EACH" mean? Please clarify the note.

Response: "Each" was inadvertently included in the note and has been deleted.

16. Comment: Section 4.7, Recommendations: While MEDEP agrees that the shallow surface soil warrants remediation, the objective for this workplan was for absence/presence of munitions constituents (MC) and more investigation is necessary to determine the extent of the contamination.

Response: The first sentence of Section 4.7 and the first sentence of the Recommendations section in the Executive Summary have been revised, "Shallow surface soil (0 to 3 inches bgs) warrants remediation, ***further investigation is also necessary to refine the extent of the contamination***."

17. Comment: Table 4-10, Conceptual Site Model Information Profile:

a.) **Comment:** Range/Site Profile, Range/Site Boundaries, North: The shot fall zone today looks like woodland but it was open land/pasture in the past. It might be best to identify the northern area as overgrown pasture or something similar.

Response: The North Range/Site Boundaries has been revised, "North: Undeveloped woodland, ***formerly open land/pasture***".

b.) **Comment:** Physical Profile, Hydrology: As shown on the site figure there is a stream that runs through the skeet range. Please revise.

Response: The Findings of the Hydrology row has been revised, "Surface water drains toward the outfall and ***intermittent*** stream located ***in*** ~~at~~ the western ~~edge~~ ***portion*** of ***TASKT*** ~~the site~~."

c.) **Comment:** Land Use and Exposure Profile, Potential Future Land Use Related Activities: Please include the off site land.

Response: The second sentence of the Findings for the Potential Future Land Use row has been revised, "The remainder of TASKT [private residential property ***and wooded areas***, ***primarily zoned as Upper Village and Stream Protection Area (Navy, 2010)***] is subject to change in the future."

d.) **Comment:** Land Use and Exposure Profile, Zoning/Land Use Restriction: Please include the zoning for the on site and off site portion of the skeet range.

Response: The following has been added as the last sentence of the Findings for the Zoning/Land Use Restrictions row, "***Currently, TASKT is zoned as Residential 4, Upper Village, or Stream Protection Area (Navy, 2010)***."

e.) **Comment:** Land Use and Exposure Profile, Demographics/Zoning: Please address the trailer park located within and adjacent to the maximum shot fall zone off Navy property.

Response: The following has been added as the last sentence of the Findings for the Demographics/Zoning row, "***A trailer park is located at the western edge of the maximum shotfall zone***."

18. Comment: Appendix C-2, Surface Water Log Sheets: The field sketches on the log sheets indicate that flow is to the south in the un-named stream, while the larger scale topography is that flow is to the north toward the Cathance River. Please review and revise if needed, or explain why flow is away from the larger river and toward the headwater wetland.

Response: Flow is to the north in the un-named stream. The arrows on the surface water log sheets are pointing in the wrong direction, the surface water log sheets have been revised by the Field Operations Leader (and initialed and dated) to indicate that flow is to the north.

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31 January 2006

Mr. Orlando J. Monaco, P.E.
Remedial Project Manager
Naval Facilities Engineering Command
Engineering Field Activity Northeast
Code 182/LJM
North Loop & American Way, Building G
Lester, Pennsylvania 19113-2090

RE: Revised Screening Values for Surface Water, Seep Water, and Sediment,
Naval Air Station, Brunswick, Maine
EA Project No. 61771.04

Dear Mr. Monaco:

EA Science and Technology is pleased to provide this revised letter report summarizing the proposed benchmark concentrations to be used as screening values for surface water, seep water, and sediment samples. This revision is based on two rounds of comments received from site regulators (provided in Attachment A).

Since 1995, samples of these media have been collected from Site 2 and Sites 1 and 3 as part of the long-term monitoring at Naval Air Station Brunswick. There have been no prior benchmark values established for these media. The benchmark concentrations included in this letter report are proposed to be included in long-term monitoring report summary tables in future reports, and will be used to assess whether site conditions are protective of human health and the environment. Sample locations are shown on Figure 1. Table 1 provides a summary of the benchmark values.

METHODS

Benchmarks were determined for those analytes currently sampled for at Naval Air Station Brunswick in sediment, leachate sediment, and seep samples, including Target Analyte List metals and Target Compound List volatile organics in both water and sediment, and the Target Compound List pesticides/ polychlorinated biphenyls in sediment. There are four essential nutrients included in the Target Analyte List (calcium, magnesium, potassium, and sodium) for which no water or sediment screening values exist, but have been included in Table 1 for completeness. Because the streams adjacent to the Naval Air Station Brunswick site are freshwater systems, the benchmarks proposed are for a freshwater environment; marine standards were not used. Numerous sources were utilized to create Table 1, and the selection approach for screening values differed for surface (seep) water and sediment as discussed below:

- **Surface Water and Seep Water Samples**—It is important to recognize that no screening values specific to "seep" water exist; rather, standard continuous chronic criteria, applicable to surface water samples for the protection of aquatic organisms, have been utilized. These criteria are based on long-term (>48 continuous hours) exposure, and utilize chronic endpoints that may affect reproduction or other non-lethal effects. While it may be highly unlikely that aquatic organisms exposed to seep water would remain for this long a period of time, this approach is conservative and consistent with risk guidance.

For surface water, the State of Maine water quality criteria took precedence over other sources of water screening values. In the event that no surface water criteria were available for a given contaminant, Suter and Tsao (1996[1]), the U.S. Environmental Protection Agency (1996[2]), and Wong et al. (2001[3]) were utilized for screening value sources.

It should be noted that the surface water quality criteria for many metals are dependent upon the hardness of the surface water (the higher the hardness, the higher the criteria). These metals have been designated with Note (c) in Table 1. The default hardness for the State of Maine is 20 mg/L as $CaCO_3$, which is on the low end of most surface water; consequently, the screening criteria included in this summary tend to be conservative. EA recommends measuring the hardness of the water at the same time that metals are being measured in surface water for 2-3 rounds in order to correct for the site-specific conditions. In addition, it is important to note that the State of Maine water quality criteria are written in terms of total metals rather than dissolved metals.

Water screening values were missing for many of the volatile organic chemicals once all of the above references were consulted due to the absence of direct toxicity test results for these chemicals. In order to approximate screening values for these chemicals, a U.S. Environmental Protection Agency supported structure activity model was used (ECOSAR). This model, available at http://www.epa.gov/oppt/newchems/ 21ecosar.htm, requires the input of either the CAS number or SMILES chemical formula along with the log K_{ow} of the given chemical. The model will estimate aquatic toxicity values based on the structure activity relations of known compounds compared to the chemical entered and estimate a toxicity value. For all but one of the chemicals in Table 1, generic fish chronic values were generated. This represents a concentration that is expected to cause a chronic, long-term adverse effect such as reproductive failure. The nature of screening values is to use those values that are not expected to cause any effect, or a No Observed Adverse Effect Level (NOAEL). Because the output of ECOSAR is an estimate and not based on toxicity texts, the actual NOAEL is not known. Division of the modeled chronic value by 5 was used to approximate the NOAEL, a procedure that is common, conservative, and consistent with standard practices. For vinyl chloride, the ECOSAR model output was limited to an acute LC50 (the concentration expected to be lethal to 50 percent of the organisms). In this case, a further factor needs to be applied to approximate the chronic value discussed above (Acute to Chronic Ratio). The use of the factor of 10 as an Acute to Chronic Ratio is common and conservative (most measured Acute to Chronic Ratios are in the 6-8 range). These correction factors have been utilized in the scientific literature and within the agencies as conservative values since the 1970s and, given the absence of chemical-specific values based on toxicity tests, are the standard accepted practice to approximate NOAELs.

1. Suter, G.W., II, and C.L. Tsao. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. Prepared by Risk Assessment Program Health Sciences Research Division Oak Ridge, Tennessee.
2. U.S. Environmental Protection Agency (EPA). 1996. ECO Update-Ecotox Threshold. EPA 540/F-95/038. January.
3. Wong, D.C.L, W.R. Arnold, G.A. Rausina, E.R. Mancini, and A.E. Steen. 2001. Development of a freshwater aquatic toxicity database for ambient water quality criteria for methyl tertiary-butyl ether. *Environ. Tox. Chem.* 20:1125-1132.

Attachment B shows the model output and calculations for all chemicals for which ECOSAR was used to generate a water screening value.

- **Sediment and Leachate Sediment**—There are no sediment quality criteria that carry the same significance as water quality criteria. Many water quality criteria are Applicable or Relevant and Appropriate Requirements under Superfund; however, any of the water screening values not associated with the State of Maine water quality criteria, and all of the sediment screening values, represent To Be Considereds for the purposes of Superfund compliance. As discussed above, only freshwater sediment screening values were included in this review. The selection process involved utilizing consensus sediment screening values (MacDonald et al. 2000a[4], 2000b[5]) followed by other literature values (Ingersoll et al. 1996[6]; DiToro and McGrath 2000[7]) and sediment compendium values (Buchman 1999[8]; Jones and Suter 1997[9]; U.S. EPA 1996; Jaagumagi 1995[10]). For the most part, sediment screening values were established at "threshold" freshwater levels, i.e., concentrations associated with "chronic" rather than "acute" or probable effects. Risk-based sediment screening values were not identified for 9 metals (antimony, barium, beryllium, cobalt, iron, selenium, silver, thallium, and vanadium). Generic background or reference concentrations have been applied as screening values for these metals with the exception of thallium, for which no background concentrations were located in the literature.

  Sediment screening values were not located for 16 volatile organic chemicals. For those chemicals, sediment screening values were calculated based on equilibrium partitioning (DiToro et al. 1991)[11]. The literature was searched for organic carbon partitioning values and, when located, have been shown in Table 1. When chemical-specific partitioning values were unavailable, it was assumed that the organic carbon partition constant (K_{oc}) is approximately the same as the octanol-water partition coefficient (K_{ow}):

$$K_{oc} \approx K_{ow}$$

4. MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000a. Development and evaluation of consensus-based sediment quality criteria. *Arch. Environ. Contam. Toxicol.* 39:20-31.
5. MacDonald, D.D., L.M. DiPinto, J. Field, C.G. Ingersoll, E.R. Long, and R.C. Swartz. 2000b. Development and Evaluation of Consensus-Based Sediment Effect Concentrations for Polychlorinated Biphenyls. *Environ. Tox. Chem.* 19:1403-1413.
6. Ingersoll, C.G., P.S. Haverland, E.L. Brunson, T.J. Canfield, F.J. Dwyer, C.E. Henke, N.E. Kemble, D.R. Mount, and R.G. Fox. 1996. Calculation and evaluation of sediment effect concentrations for the amphipod *Hyalella azteca* and *Chrionomus riparius*. *J. Great Lakes Res.* 22:602-623.
7. DiToro, D.M. and J.A. McGrath. 2000. Technical Basis for Narcotic Chemicals and Polycyclic Aromatic Hydrocarbon Criteria. II. Mixtures and Sediments. *Environ. Tox. Chem.* 19(7):1971-1982.
8. Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle, Washington, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration. 12 pp.
9. Jones, D.S. and G.W. Suter. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision. U.S. Department of Energy, Oak Ridge Laboratory. ES/ER/Tm-95/R4.
10. Jaagumagi, R. 1995. Development of the Ontario Provincial Sediment Quality Guidelines for PCBs and Organochlorine Pesticides. Queens Printer for Ontario. ISBN 0-7778-9250-9.
11. DiToro, D.M., C.S. Zarba, D.J. Hansen, W.J. Berry, R.C. Swartz, C.E. Cowan, S.P. Pavlou, H.E. Allen, N.A. Thomas, and P.R. Paquin. 1991. Technical Basis for Establishing Sediment Quality Criteria for Nonionic Organic Chemicals Using Equilibrium Partitioning. Environ. Tox`. Chem. 10:1541-1583.

The octanol water partition coefficients (K_{ow}) were the same as those shown in and from the same source as those shown in Attachment B. The sediment screening value is related to the surface water screening value by the following equation:

$$SSV = foc \times Koc \times SWSV$$

where foc is the fraction of organic carbon (assumed to be 1 percent for the purposes of Table 1), and the surface water screening values are those concentrations shown in Table 1 for surface/seep water. Calculations for these chemicals are found in Attachment C.

RECOMMENDATIONS

The following recommendations are provided for the Navy's consideration:

- Collect field measurement of hardness at the same time that samples for metals are being collected from surface water and seeps for three sampling events. The proposed benchmarks for several inorganics are based on hardness, therefore, site-specific data are necessary to correct for the site-specific conditions.

- Analyze total organic carbon in sediment samples to allow for the derivation of site-specific sediment screening values.

EA looks forward to discussing these issues with the Navy and the Naval Air Station Brunswick Restoration Advisory Board. It has been our pleasure providing the Navy with this assessment. If there are any questions, please do not hesitate to contact me at 845-565-8100, Extension 1026.

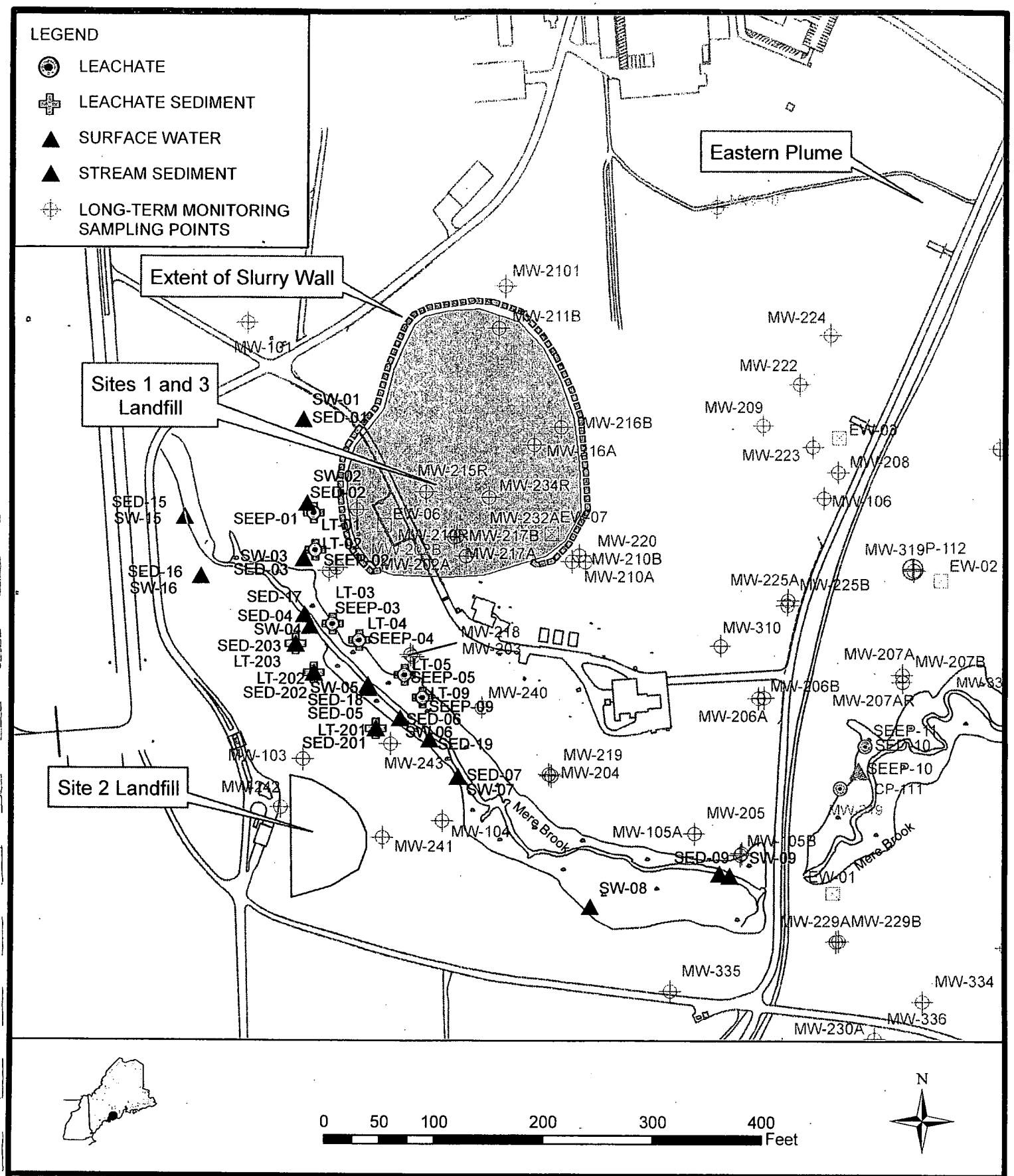
Sincerely,

Gina M. Calderone

Gina M. Calderone, CPG, P.G.
Project Geologist

GMC/mkp
Attachments

cc: L. Joy, NAS (2 copies)
C. Sait, MEDEP (2 copies)
C. Williams, EPA (3 copies)
C. Lepage, Lepage Environmental Services (1 copy)
D. Gainer, ECC (1 copy)
P. Golonka, Gannett Fleming (1 copy)
D. Hinckley, EA (1 copy)



EA®	NAVAL AIR STATION BRUNSWICK, MAINE	FIGURE 1 SURFACE WATER, SEEP WATER, AND SEDIMENT SAMPLING LOCATIONS AT SITE 2 AND SITES 1 AND 3

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TABLE 1 RISK-BASED ECOLOGICAL SCREENING VALUES FOR SURFACE WATER, SEEP WATER, AND SEDIMENT

Analyte	Screening Value			
	Surface Water (µg/L)		Sediment (mg/kg)	
	Value	Reference	Value	Reference
INORGANICS[a]				
Aluminum	87[b]	(1)	26,000	(5)
Antimony	30	(2)	0.16[c]	(6)
Arsenic	150	(3)	9.8	(7)
Barium	3.9	(2)	0.7[c]	(6)
Beryllium	0.66	(2)	0.55[c]	Eastern United States Mean (14)
Cadmium	0.08[d]	(3)	0.99	(7)
Calcium	Not applicable	Essential nutrient	Not applicable	Essential nutrient
Chromium	11[e]	(3)	43.4	(7)
Cobalt	23	(2)	10[c]	(6)
Copper	2.36[d]	(3)	31.6	(7)
Iron	1,000	(1)	10,000[c]	(6)
Lead	0.41[d]	(3)	35.8	(7)
Magnesium	Not applicable	Essential nutrient	Not applicable	Essential nutrient
Manganese	120	(2)	630	(6)
Mercury	0.91	(3)	0.18	(7)
Nickel	13.4[d]	(3)	22.7	(7)
Potassium	Not applicable	Essential nutrient	Not applicable	Essential nutrient
Selenium	5	(3)	0.29[c]	(6)
Silver	0.23[d]	(3)	0.5[c]	(6)
Sodium	Not applicable	Essential nutrient	Not applicable	Essential nutrient
Thallium	12	(2)	No benchmark available	No benchmark available
Vanadium	20	(2)	43[c]	Eastern United States Mean (14)
Zinc	30.6[d]	(3)	121	(7)
VOLATILES[f]				
1,1,1-Trichloroethane	11	(2)	0.17	(4)
1,1,2,2-Tetrachloroethane	610	(2)	0.94	(4)
1,1,2-Trichloro-1,2,2-trifluoroethane	350	ECOSAR (13) (Appendix A)	5.1	Equilibrium Partitioning (15) (Appendix B)
1,1,2-Trichloroethane	1,200	(2)	0.17	(4)
1,1-Dichloroethane	47	(2)	4.6	(9)
1,1-Dichloroethene	25	(2)	4.8	(9)
1,2,4-Trichlorobenzene	110	(2)	9.2	(4)
1,2-Dibromo-3-chloropropane	2,680	ECOSAR (13) (Appendix A)	3.5	Equilibrium Partitioning (15,16) (Appendix B)
1,2-Dibromoethane	3,890	ECOSAR (13) (Appendix A)	2.6	Equilibrium Partitioning (15,17) (Appendix B)
1,2-Dichlorobenzene	14	(2)	0.34	(4)
1,2-Dichloroethane	910	(2)	4.4	(9)

(a) All inorganic surface water quality criteria based on total metals.
(b) pH 6.5–9.
(c) Based on a generic background (reference) concentrations, not risk-based.
(d) Hardness dependent criteria, value shown based on a hardness of 20 mg/L as $CaCO_3$.
(e) Based on hexavalent chromium.
(f) Sediment screening values for volatile organics are based on 1 percent organic carbon. To correct for site-specific organic carbon, multiply screening value by the percent organic carbon. For example, the listed screening value for 1,1,1-trichloroethane is 0.17 mg/kg. If the site-specific total organic carbon is 2 percent, the site-specific screening value would be $2 \times 0.17 = 0.34$ mg/kg.

NOTE: No benchmark available indicates ecological data are not available to generate standard for this analyte. Essential nutrient is required by living organisms to ensure normal growth, development, and maintenance.

Analyte	Screening Value			
	Surface Water (µg/L)		Sediment (mg/kg)	
	Value	Reference	Value	Reference
VOLATILES[f] (continued)				
1,2-Dichloropropane	2,160	ECOSAR (13) (Appendix A)	5.8	Equilibrium Partitioning (15,16) (Appendix B)
1,3-Dichlorobenzene	71	(2)	1.7	(4)
1,4-Dichlorobenzene	15	(2)	0.35	(4)
2-Butanone	14,000	(2)	2.9	(9)
2-Hexanone	99	(2)	4.4	(9)
4-Methyl-2-Pentanone	170	(2)	0.026	Equilibrium Partitioning (15) (Appendix B)
Acetone	1,500	(2)	2.3	(9)
Acetonitrile	85,100	ECOSAR (13) (Appendix A)	0.39	Equilibrium Partitioning (15) (Appendix B)
Benzene	130	(2)	0.057	(4)
Bromodichloromethane	2,610	ECOSAR (13) (Appendix A)	7.7	(9)
Bromoform	2,300	ECOSAR (13) (Appendix A)	12.2	(9)
Bromomethane	9,450	ECOSAR (13) (Appendix A)	1.4	Equilibrium Partitioning (15) (Appendix B)
Carbon Disulfide	0.92	(2)	0.0016	Equilibrium Partitioning (15) (Appendix B)
Carbon Tetrachloride	9.8	(2)	7.7	(9)
Chlorobenzene	64	(2)	0.82	(4)
Chloroethane	6,500	ECOSAR (13) (Appendix A)	2.9	(9)
Chloroform	28	(2)	5.6	(9)
Chloromethane	6,000	ECOSAR (13) (Appendix A)	2.1	(9)
cis-1,2-Dichloroethene	590[g]	(2)	4.6[h]	(9)
cis-1,3-Dichloropropene	0.085[i]	ECOSAR (13) (Appendix A)	2.3×10^{-5}[i]	Equilibrium Partitioning (15,18) (Appendix B)
Cyclohexane	90	ECOSAR (13) (Appendix A)	2.5	Equilibrium Partitioning (15) (Appendix B)
Dibromochloromethane	2,510	ECOSAR (13) (Appendix A)	9.9	(9)
Dichlorodifluoromethane	1,680	ECOSAR (13) (Appendix A)	5.9	(9)
Ethylbenzene	7.3	(2)	3.6	(4)
Isopropylbenzene	83	ECOSAR (13) (Appendix A)	3.8	Equilibrium Partitioning (15) (Appendix B)
Methyl acetate	27,700	ECOSAR (13) (Appendix A)	0.42	Equilibrium Partitioning (15) (Appendix B)
Methyl tertiary-butyl ether	51,000	(8)	6.0	Equilibrium Partitioning (15,19) (Appendix B)
Methylcyclohexane	360	ECOSAR (13) (Appendix A)	2.4	Equilibrium Partitioning (15) (Appendix B)
Methylene chloride	2,200	(2)	3.7	(9)
Styrene	300	ECOSAR (13) (Appendix A)	9.2	(9)
Tetrachloroethene	98	(2)	0.53	(4)
Toluene	9.8	(2)	0.67	(4)
trans-1,2-Dichloroethene	590[g]	(2)	4.6	(9)

(g) Based on 1,2-dichloroethene.
(h) Based on m-xylene.
(i) Based on 1,3-dichloropropene.

Analyte	Screening Value			
	Surface Water (µg/L)		Sediment (mg/kg)	
	Value	Reference	Value	Reference
VOLATILES[f] (continued)				
trans-1,3-Dichloropropene	0.085[i]	ECOSAR (13) (Appendix A)	2.3×10^{-5}[i]	Equilibrium Partitioning (15,18) (Appendix B)
Trichloroethene	47	(2)	1.4	(4)
Trichlorofluoromethane	110	ECOSAR (13) (Appendix A)	6.8	(9)
Vinyl Chloride	0.069	ECOSAR (13) (Appendix A)	1.6×10^{-5}	Equilibrium Partitioning (15) (Appendix B)
Xylenes (total)	1.8[h]	(2)	9.7	(9)
PESTICIDES/PCBs				
4,4'-DDD	Not sampled	Not sampled	0.00488	(7)
4,4'-DDE	Not sampled	Not sampled	0.00316	(7)
4,4'-DDT	Not sampled	Not sampled	0.00416	(7)
Sum DDT[j]	Not sampled	Not sampled	0.0053	(7)
Aldrin	Not sampled	Not sampled	0.002	(12)
Alpha BHC	Not sampled	Not sampled	0.006	(12)
Alpha-Chlordane	Not sampled	Not sampled	0.0032[k]	(7)
Beta BHC	Not sampled	Not sampled	0.005	(12)
Delta BHC	Not sampled	Not sampled	0.0024[l]	(7)
Dieldrin	Not sampled	Not sampled	0.0019	(7)
Endosulfan I	Not sampled	Not sampled	0.0055	(10)
Endosulfan II	Not sampled	Not sampled	0.0055	(10)
Endosulfan Sulfate	Not sampled	Not sampled	0.0055	(10)
Endrin	Not sampled	Not sampled	0.0022	(7)
Endrin Aldehyde	Not sampled	Not sampled	0.0022[m]	(7)
Endrin-Ketone	Not sampled	Not sampled	0.0022[m]	(7)
Gamma BHC	Not sampled	Not sampled	0.0024	(7)
Gamma-Chlordane	Not sampled	Not sampled	0.0032[k]	(7)
Heptachlor	Not sampled	Not sampled	0.0025[n]	(7)
Heptachlor Epoxide	Not sampled	Not sampled	0.0025	(7)
Methoxychlor	Not sampled	Not sampled	0.019	(10)
PCB-1016	Not sampled	Not sampled	Use Total PCB	(11)
PCB-1221	Not sampled	Not sampled	Use Total PCB	(11)
PCB-1232	Not sampled	Not sampled	Use Total PCB	(11)
PCB-1242	Not sampled	Not sampled	Use Total PCB	(11)
PCB-1248	Not sampled	Not sampled	Use Total PCB	(11)
PCB-1254	Not sampled	Not sampled	Use Total PCB	(11)
PCB-1260	Not sampled	Not sampled	Use Total PCB	(11)
Total PCB	Not sampled	Not sampled	0.035	(11)

(j) Sum DDT = DDT + DDD + DDE.
(k) Based on chlordane.
(l) Based on gamma-BHC.
(m) Based on endrin.
(n) Based on heptachlor epoxide.

NOTE: PCB = Polychlorinated biphenyl.
Not sampled indicates media sampled for this analyte.

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Attachment A

Responses to Comments from Site Regulators

RESPONSE TO COMMENTS FROM THE U.S. ENVIRONMENTAL PROTECTION AGENCY ON THE SCREENING VALUES FOR SURFACE WATER, SEEP WATER, AND SEDIMENT, NAVAL AIR STATION, BRUNSWICK, MAINE

Commentor: Christine Williams	
Comment Issue Date: 29 September 2005	Response Date: 12 December 2005

Pursuant to ' 6 of the Naval Air Station Brunswick, Maine Federal Facility Agreement dated October 19, 1990, as amended (FFA), the Environmental Protection Agency has reviewed the subject document and comments are below.

GENERAL COMMENTS

1. Comparison of the proposed screening values to those commonly used in the Region identified that U.S. EPA (1996) should be assigned highest priority over other non consensus-based values. Most of the proposed references support screening values commonly used in the Region, except from sources of National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRTs) in Buchman (1999) and Equilibrium partitioning (EqP) sediment quality guidelines in Di Toro and McGrath (2000).

   Response—There is inconsistency between this comment and some of the following specific comments. For example, in Specific Comment No. 9, issues with surface/seep water screening values for inorganics and volatile organics, the recommendation is to assign Suter and Tsao (1996) as the first priority for values, yet this general comment would imply that U.S. Environmental Protection Agency (EPA) 1996 has first priority. The recommendations found in Specific Comment No. 9 will be used for modifications to screening values because, as pointed out in these comments, Suter and Mabrey (1994) is cited in EPA (1996) as the source for volatiles and some metals screening values. Suter and Mabrey (1994) was updated in Suter and Tsao (1996).

2. It was proposed that iron *not* be monitored because it is an essential nutrient. In Region 1 however, the risk of iron to aquatic life is commonly assessed on the basis of physical impacts from dissolved metal precipitation to solid floc that can foul respiratory function in the gills or smother epi-benthic or in-faunal organisms. Therefore, a value should be proposed for iron and monitored if concentrations in surface/seep waters are expected to exceed its solubility limits.

   Response—Consistent with EPA (2002) and Maine Department of Environmental Protection water quality criteria, a value of 1,000 µg/L will be used for iron screening surface water. This value, while listed in EPA (2002), has its source in the original Red Book with limited toxicological documentation. Limited sediment toxicity data are available for iron in sediment. Buchman (1999) provided a freshwater upper effects threshold value of 4 percent iron, and a lowest *H. azteca* Threshold Effect Level of 19 percent. In lieu of these values,

1 percent will be used as a screening value for iron in sediment, consistent with background ranges shown in Buchman (1999).

3. Quality assurance checks of the reported normalized values turned up no errors in conversions of the EqP sediment screening values by Di Toro and McGrath (2000) from µmol/gOC to mg/kg (normalized to 1%OC). However, quality assurance checks did uncover other important findings that include:

   - Use of values that *do not* represent "no effect" thresholds
   - Selection of values for incorrect chemicals
   - Selection of out of date values that need updating

   Details are provided in specific comments below.

   Response—These issues will be addressed in the response to specific comments.

4. Screening values were missing for some chemicals, including 21 volatile chemicals in surface/seep waters, three inorganic chemicals in sediment, 16 volatile chemicals in sediment, and one pesticide in sediment.

   For missing volatile chemicals in surface water, values should be used from U.S. EPA's ECOSAR program that predict aquatic toxicity by comparing the chemical's molecular structure to related chemicals with known toxicities (values derived on the basis of chemical structure-activity relationships).

   For missing inorganic chemicals in sediment, adopt values of local background concentrations in previous studies, or propose use of generic background concentrations such as from the scientific literature.

   For missing volatile chemicals in sediment, use the EqP approach to derive screening values based on methods of Di Toro (1991) or Di Toro and McGrath (2000).

   Response—To the extent possible, the recommendations in this general comment will be applied.

SPECIFIC COMMENTS

5. Methods, 1st ¶, 2nd sentence, p. 1

   Region 1 recognizes calcium, magnesium, potassium, and sodium in surface water and sediment as essential nutrients. These chemicals are typically dropped from further consideration and do not require screening values. The subject proposal included iron as a fifth essential nutrient that was said to not require a screening value. Region 1 has not endorsed this technical approach, however, and so it is recommended that a value be developed for iron.

Response—See the response to General Comment No. 2; 1,000 µg/L and 1 percent iron will be recommended for iron in surface/seep water and sediment, respectively.

6. Methods, 1st ¶, 3rd sentence, p. 1

It is not entirely correct to state as in the proposal, that "the benchmarks proposed are for a freshwater environment; marine standards were not used". As indicated below, the value for selenium from Buchanan (1999) is a value derived from marine sediment.

Response—This value was listed only due to the absence of any freshwater screening values. Based on the response to Specific Comment No. 10, the selenium value will be changed to the generic background concentration and, therefore, the statement noted will be correct.

7. Methods, 1st bullet, 1st ¶, p. 1

As described in this section, use of surface water screening values for seep water is highly conservative, but technically defensible based on a logic that seep water drains eventually into surface water. This however, may not be realistic in certain field situations where the volume of contaminated seep water is far less than uncontaminated surface water in the receiving waterbody.

Response—Comment noted.

8. Methods, 1st bullet, 3rd ¶, p. 2

It is technically correct to measure site-specific water hardness in surface/seep water samples over several rounds. The site-specific data will improve the accuracy of screening values for those metals which have toxicity that is hardness-dependant.

Many surface waters of the state of Maine have low water hardness and alkalinity. The State uses a water hardness default of 20 mg/L as $CaCO_3$ to calculate water quality standards for metals with toxicity that is hardness-dependent. Using site-specific water hardness instead of the State's default (or EPA's 100 mg/L as $CaCO_3$ default; U.S. EPA, 2002) could potentially make a big difference when interpreting the results later.

Response—Comment noted. This is precisely the rationale for recommending collection of site-specific hardness values.

9. Table 1: Risk-Based Ecological Screening Values for Surface/Seep Water

Comparisons of the proposed <u>surface/seep water screening values</u> to screening values commonly used in the Region (**Table A attached**) identified the following:

- Maine Department of Environmental Protection (MEDEP, 2004) water quality standards for toxic pollutants are the same as U.S. EPA chronic water quality criteria (U.S. EPA,

2002), except that Maine adjusts their criteria for a hardness of 20 mg/L $CaCO_3$, whereas U.S. EPA adjusts to 100 mg/L $CaCO_3$.

Response—Comment noted.

- Ecotox Thresholds (ETs) in U.S. EPA (1996) should be given preference over the toxicological benchmarks developed by Suter and Tsao (1996).

  Response—As noted in the response to General Comment No. 1, this comment is contradicted by recommendations found directly below for water screening values for inorganics and volatile organics. To respond to this and the following comments, when specifically recommended (for water inorganics and volatile organic chemicals) to use Suter and Tsao (1996) over EPA (1996), Suter and Tsao (1996) will take precedence, otherwise EPA (1996) will take precedence.

- Wong et al. (2001) developed a surface water screening value for methyl tertiary- butyl ether (MTBE) that is consistent with U.S. EPA protocol for developing ambient water quality criteria.

  Response—Comment noted. This is why this source was used as the reference for the methyl tertiary-butyl ether surface water screening value.

Issues with Surface/Seep Water Screening Values for Inorganics in Table 1

One important issue was identified with the U.S. EPA (1996) surface/seep water values reported: the "Tier II" values for inorganic chemicals (in U.S. EPA 1996 cited as Suter and Mabrey 1994) have been superseded by Suter and Tsao (1996) which had modified some of the 1994 values. For example, the Tier II screening value for beryllium decreased from 5.1 µg/L (in 1994) to 0.66 µg/L (in 1996), whereas the value for cobalt increased from 3.0 µg/L (in 1994) to 23 µg/L (in 1996). Revise Table 1 accordingly.

Since the Oak Ridge National Laboratory (ORNL) surface/seep water screening values for inorganic chemicals presented in Table 1 were obtained in U.S. EPA (1996) from both Suter and Mabrey (1994) and Suter and Tsao (1996), it is recommended that Table 1 be revised to include all ORNL values developed by Suter and Tsao (1996).

Response—Suter and Tsao (1996) will be used as the primary source for inorganic surface/seep water inorganic screening values.

No inorganic chemicals were missing among surface/seep water screening values reported in Table 1.

Response—Comment noted. Iron will be added consistent with EPA (2002).

Issues with Surface/Seep Water Screening Values for Volatile Organics in Table 1

Three references were proposed for obtaining surface/seep water screening values for the volatile chemicals in Table 1 (Suter and Tsao, 1996; U.S. EPA, 1996; and Wong et al., 2001). Table 1 substituted an incorrect value for 1,2,4-trichlorobenzene that was 14 µg/L 1,2-dichlorobenzene. However, the correct value 110 µg/L 1,2,4-trichlorobenzene (from U.S. EPA, 1996) should instead have been used. Revise Table 1 accordingly.

Response—The value of 14 µg/L for 1,2,4-trichlorobenzene will be changed to 110 µg/L consistent with (U.S. EPA 1996).

The same issue identified for inorganic chemicals happened here pertaining to volatile chemicals. Values in U.S. EPA (1996) cited as Suter and Mabrey (1994) should be replaced with the more current, Suter and Tsao (1996). If this recommendation were followed, then the Tier II screening value for ethylbenzene would decrease from 290 :g/L (in 1994) to 7.3 µg/L (in 1996), whereas the value for 1,2-dichloroethane would increase from 47 µg/L (based on 1,1-dichloroethane in 1994 substituted for the 1,2-dimer) to 910 µg/L (based on data for 1,2-dichloroethane in 1996).

Since the ORNL surface/seep water screening values for volatile chemicals presented in Table 1 were obtained through U.S. EPA (1996) from both Suter and Mabrey (1994) and Suter and Tsao (1996), its suggested that Table 1 be revised to include all ORNL values from the more current Suter and Tsao (1996) citation.

Response—Consistent with the above response regarding inorganics, Suter and Tsao (1996) will be used as the primary source for volatile organic chemicals in surface/seep water.

Twenty-one of the 49 target volatile organic chemicals were missing surface/seep water screening values. It is recommended to use EPA's ECOSAR (Ecological Structure Activity Relationships) computer program for predicting the acute and chronic toxicity of chemicals to aquatic receptors such as fish, invertebrates, and algae by using Quantitative Structure Activity Relationships (QSARs). QSARs express the correlations between a compound's physico-chemical properties and its aquatic toxicity. The U.S. EPA uses QSARs to estimate the aquatic toxicity of chemicals under review in response to Pre-Manufacture Notices under the Toxic Substances Control Act (TSCA). ECOSAR is available on-line at http://www.epa.gov/oppt/newchems/21ecosar.htm.

ECOSAR has access to over 100 QSARs developed for 42 chemical classes. It uses them to predict the aquatic toxicity of untested chemicals based on their structural similarity to chemicals for which aquatic toxicity data are available. QSARs measured for one compound can be used to predict the toxicity of similar compounds belonging to the same chemical class.

Response—To the extent possible, ECOSAR will be used to fill the missing values for volatile organic chemicals in surface/seep water.

Issues with Surface/Seep Water Screening Values for Pesticides/PCBs in Table 1

Samples have not been collected at the site for pesticides/PCB analysis. Therefore, no screening values have been proposed for the class of compounds.

Response—Comment noted.

10. **Table 1: Risk-Based Ecological Screening Values for Sediment**

Comparisons of the proposed sediment screening values to values commonly used in the Region (**Table B attached**) identified the following.

- The PCB sediment screening value from MacDonald et al. (2000a) is a threshold effect concentration (TEN) for total PCBs, not Aroclors. Since no TEN for individual Aroclors is available from that source, Table 1 should label the proposed sediment value of 0.035 mg/kg as representative of total PBS although it is being for individual Aroclors.

  Response—Table 1 will be modified by the addition of total PCBs, with the MacDonald et al. (2000a) screening value of 0.035 mg/kg. For the individual Aroclors, the reader will be referred to total PCBs for the proper screening value.

- The proposed value for total PBS should instead have been the TEN from MacDonald et al. (2000b) that is 0.0598 mg/kg. The proposed screening value of 0.035 mg/kg may have an affect since its nearly two times lower than the value of 0.0598 mg/kg total PBS from MacDonald et al. (2000b).

  Response—The total PCB screening value of 0.035 mg/kg from MacDonald et al. (2000a) is also shown in the freshwater consensus based value shown in MacDonald et al. (2000b) as the Threshold Effect Level (Table 2, MacDonald et al. [2000b]). It is not clear how the proposed screening value of 0.035 mg/kg may have an effect relative to the screening value of 0.06 mg/kg discussed in MacDonald et al. (2000b) precisely because it is lower, and thus more conservative. It is appropriate to utilize the PCB paper (MacDonald et al 2000a) as the appropriate value because it is more conservative, and represents a threshold screening value for total PCB.

- The sediment screening values proposed by Ingersoll et al. (1996) are new to the Region and have not been previously used, however, only a single value (that for sediment aluminum) was obtained from the reference.

  Response—In the absence of any other values, Ingersoll et al. (1996) was used as the source for aluminum.

- The sediment screening values proposed by Di Toro and McGrath (2000) have also not been used in Region 1 in the past. Those authors developed values for 23 PAHs and 41 select chlorinated compounds (that have narcosis mode of toxic action) using an approach endorsed by EPA (U.S. EPA, 1993). One reason the values developed by Di Toro and McGrath (2000) have not been widely used in the Region may be that several other references provide acceptable PAH screening values in ecological risk assessments.

  Response—Comment noted. As discussed in this comment, there are many alternative screening values for PAHs found in the literature; however, there is a dearth of sediment (or surface water) values for volatile organic chemicals. PAHs are not a part of this monitoring program, and DiToro and McGrath (2000) has been used as a source for volatile organic sediment screening values.

- The NOAA SQuiRTs in Buchman (1999) have not been used as a principle source of values in the past. SQuiRTs represent a compendium of original published screening values, similar in concept to MacDonald et al. (2000 a and b) and U.S. EPA (1996).

  Response—Comment noted. Buchman (1999) has been used as a last source of values for inclusion in Table 1. These circumstances were when there were no primary sources available.

- Ecotox Thresholds (ETs) for sediment (U.S. EPA, 1996) was developed for use in Superfund and have preference over other, non consensus-based sources (see comment later on the outdated nature of the values for surface water).

  Response—With the exception of those circumstances discussed above (inorganics and volatile organic chemicals in surface water), EPA will have preference over other non-consensus-based values.

- Sediment Lowest Effect Level (LEL) values by Persaud et al. (1993) are identical to those summarized by Jaagumagi (1995).

  Response—Comment noted.

Issues with Sediment Screening Values for Inorganics in Sediment in Table 1

Six sediment screening values for inorganic chemicals were obtained from the NOAA SQuiRTs (Buchman, 1999). A spot check of values in Table 1 from this source revealed the following discrepancies.

- Five of six proposed screening values (specifically for antimony, barium, cobalt, selenium, and silver) represent generic (non site-specific) background concentrations. The revised report should correctly label these as generic background literature values instead of their current mislabel: "risk-based ecological screening values."

Response—As discussed further in the following bullets, several of these elements (antimony and silver) represented upper effects thresholds. Any screening value based on generic background will be noted in the revised table.

- The proposed screening value for antimony (3.0 mg/kg) represented the upper effects threshold for freshwater sediment, which is not a protective screening value. The only other freshwater sediment benchmark available for this chemical in the SQuiRTs was a generic background value of 0.16 mg/kg antimony. If there is no source of an acceptable no effect screening value, than this background value could be used instead, but label it accurately.

  Response—The screening value for antimony will be changed to 0.16 mg/kg, and noted that this represents a generic background value, not a risk-based screening value.

- The proposed screening value for selenium (1.0 mg/kg) represented the apparent effects threshold for marine sediment, which is not a protective screening value. The only other freshwater value for the chemical in the SQuiRTs was generic background (0.29 mg/kg selenium). Background could be used as a screening value if no effect threshold value is available for selenium, but label it accurately.

  Response—The screening value for selenium will be changed to 0.29 mg/kg, and noted that this represents a generic background value, not a risk-based screening value.

- The proposed screening value for silver (4.5 mg/kg) represented the upper effects threshold for freshwater sediment, which is not a protective value. The only other freshwater sediment benchmark available for this compound in the SQuiRTs was generic background of <0.5 mg/kg silver. The latter could be used if a no effect threshold value is unavailable, however, it should be labeled accurately.

  Response—The screening value for silver will be changed to 0.5 mg/kg, and noted that this represents a generic background value, not a risk-based screening value.

- Sediment screening values were unavailable for 3 of 18 target inorganic chemicals: beryllium, thallium, and vanadium. It is recommended that generic background concentrations be used if there are no appropriate sources of other values. However, it may be necessary to somehow identify local background concentrations for the three in the vicinity but outside the influence of the site.

  Response—In the absence of site-specific background or sediment-specific background, Eastern United States soil values from Shacklette and Boerngen (1984) will be used as non-risk-based screening values for beryllium and vanadium. No sources for background thallium concentrations have been identified.

Issues with Sediment Screening Values for Volatile Organic Chemicals in Sediment in Table 1

Two references were proposed as a source of sediment screening values for volatile chemicals in Table 1 (Di Toro and McGrath, 2000; U.S. EPA, 1996). The first citation used calculated EqP-based sediment quality guidelines, but values are report in µmol/gOC, and units had to be converted to mg/kg (normalized to 1%OC) in Table 1. A spot check of these values indicated conversions from µmol/gOC to mg/kg (1%OC normalized) were correctly calculated.

However, errors were identified for two values reported in Table 1 (cited as from U.S. EPA, 1996). It is recommended that the table be revised because the discrepancy between correct and incorrect values was significant.

- Table 1 indicated incorrectly that a sediment screening value of 0.34 mg/kg (from the 1,2-dimer) would be used for 1,2,4-trichlorobenzene since none was available. However, a screening value of 9.2 mg/kg 1,2,4-trichlorobenzene is available in U.S. EPA (1996).

  Response—As noted above for surface water, the EPA (1996) screening value of 9.2 mg/kg will be used for 1,2,4-trichlorobenzene in sediment.

- Table 1 incorrectly reports a value of 1.4 mg/kg tetrachloroethene that should have been 0.53 mg/kg tetrachloroethylene as is reported in U.S. EPA (1996).

  Response—The screening value of 1.4 mg/kg will be changed to 0.53 mg/kg, consistent with EPA (1996).

- Sediment screening values were unavailable for 16 of 49 target volatile chemicals. It is recommended that the EqP method (Di Toro et al., 1991; Di Toro and McGrath, 2000) be used to calculate defensible screening values to fill data gaps (EqP method used for PAHs and pesticide screening values in U.S. EPA, 1993).

  Response—Equilibrium partitioning (assuming 1 percent organic carbon) will be used to establish screening values for the missing target volatile chemicals consistent with DiToro et al. (1991).

Issues with Sediment Screening Values for Pesticides/PCBs in Table 1

Five sources were proposed to obtain sediment screening values for pesticides/PCBs in Table 1 (Buchman, 1999; Jaagumagi,1995; Jones and Suter, 1997; MacDonald et al., 2000a, b). A spot check of the values in Table 1 identified the following issues:

- The value for aldrin (0.04 mg/kg) represented an upper effect threshold for freshwater sediments (Buchman, 1999) which is not protective as a sediment screening value. Instead, the lowest effect level of 0.002 mg/kg aldrin in Jaagumagi (1995) could be used.

Response—The lowest effect level of 0.002 mg/kg from Jaagumagi (1995) will replace 0.04 mg/kg from Buchman (1999) for aldrin in sediment.

- The value for beta-BHC (21.0 mg/kg) represents a severe effect level which is not protective and is normalized to OC (Jaagumagi, 1995) instead of converted to 1%OC as it should have been (0.21 mg/kg at 1% OC). The lowest effect level of 0.005 mg/kg in Jaagumagi (1995) should be used instead.

  Response—0.005 mg/kg from Jaagumagi (1995) will be used as the screening value for beta-BHC.

- It is unclear how the sediment screening value for "sum DDT" (0.0022 mg/kg) was derived from MacDonald et al. (2000b). The reference reports a threshold effect concentration for "sum DDT" as 0.00416 mg/kg, which is however reported for 4,4'-DDT in Table 1. The apparent discrepancy should be corrected.

  Response—The sum DDT value, defined as the sum of DDD, DDE, and DDT, shown in Table 1 (0.0022 mg/kg), was picked up in error (it applies to endrin in MacDonald et al. (2000b). The correct value is 0.00528 mg/kg and will be changed in the table. The value shown in the comment (0.00416 mg/kg) is for another definition of sum DDT, specifically the sum of 2,2'-DDT and 4,4'-DDT, and was utilized for the DDT screening value.

- The screening values for alpha- and gamma-chlordane were based on the value for "chlordane" presented in MacDonald et al. (2000b). The derivation should be clarified in a footnote to the revised Table 1.

  Response—A footnote will be added noting that the alpha- and gamma-chlordane values were obtained from chlordane in MacDonald et al. (2000b).

- Sediment screening values were available for all Aroclors and pesticides except for delta BHC. One approach to filling this data gap would be to choose the lowest available value for the other BHCs in Table 1 as a value for delta BHC (e.g., 0.0024 mg/kg for gamma BHC).

  Response—The value for gamma-BHC (0.0024 mg/kg) will be used as a surrogate for delta-BHC.

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RESPONSE TO EA'S RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE SCREENING VALUES FOR SURFACE WATER, SEEP WATER, AND SEDIMENT NAVAL AIR STATION, BRUNSWICK, MAINE DATED DECEMBER 2005

Commentor: Christine Williams	
Comment Issue Date: 20 January 2006	Response Date: 24 January 2006

Pursuant to ' 6 of the Naval Air Station Brunswick, Maine Federal Facility Agreement dated October 19, 1990, as amended (FFA), the Environmental Protection Agency has reviewed the subject document and comments are below.

GENERAL COMMENTS

1. EPA comments have been adequately incorporated into this version of the Screening Value Letter Report. One issue brought-up in the responses needs clarification. Regarding the hierarchy of surface water benchmarks, Region I's preference is to use Tier I values, such as those in EPA (1996), because they are derived using a rigorous EPA protocol. As a recommendation, the most updated NAWQC (2002) should be used preferentially for surface water screening; these can be found at **www.epa.gov/waterscience/pc/revcom.pdf.** In the absence of NAWQC values, the preferred Tier II values are the Suter and Tsao (1996) values. It is noted that this is the procedure adopted in the Letter Report, as the Maine DEP values proposed are based on the NAWQC. This issue has been appropriately addressed in the report.

   Response—Comment noted.

2. The sediment benchmarks in Attachment B were calculated correctly using the equation from Page 3 (SSV=foc x Koc x SWSV). The conversion from logKow to logKoc, however, may not be correct for all chemicals. For example, EPA (1994)* lists the log Kow for MTBE as 1.24 but the Koc as 11 or 12.3. Using this Koc would result in a significantly lower sediment screening value than that derived in Attachment B. Rather than assuming that Koc approximates Kow, please look-up the chemical-specific Koc as available.

   * EPA. 1994. Chemical summary for methyl-tert-butyl ether. Prepared by Office of Pollution Prevention and Toxics. U.S. Environmental Protection Agency. August 1994.

   Response—The literature has been examined and measured log Koc values have been located for six of the chemicals that had been estimated using log Kow (1,2-dibromo-3-chloropane, 1,2-dibromoethane, 1,2-dichloropropane, cis and trans-1,3-dichloropropene, and, of course methyl tertiary-butyl ether). The soil adsorption coefficients have been used directly to estimate the soil screening value for these chemicals.

3. The recommendation at the end of the letter on Page 3 to analyze surface water for site-specific hardness is a useful recommendation. In addition to this recommendation, please include total organic carbon (TOC) characterization for sediment samples, as some of the benchmarks are modified based on site-specific TOC.

   Response—The analysis of total organic carbon in sediment has been added as a recommendation.

4. Attachment A. The derivation of surface water for VOCs calculated using ECOSAR and the methods described on Page 2 appears correct. The reviewer came-up with the same values from ECOSAR that were used to derived the fish-toxicity-based benchmarks used in Table 1.

   Response—Comment noted.

Attachment B

ECOSAR Model Output and Calculations

SMILES : FC(F)(C(F)(CL)CL)CL
CHEM : Ethane, 1,1,2-trichloro-1,2,2-trifluoro-
CAS Num: 000076-13-1
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C2 CL3 F3
MOL WT : 187.38
Log Kow: 3.16 (User entered)
Melt Pt:
Wat Sol: 54.64 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	24.567
Neutral Organics	: Fish	96-hr	LC50	11.280
Neutral Organics	: Fish	14-day	LC50	24.567
Neutral Organics	: Daphnid	48-hr	LC50	13.095
Neutral Organics	: Green Algae	96-hr	EC50	8.752
Neutral Organics	: Fish	30-day	ChV	1.752
Neutral Organics	: Daphnid	16-day	EC50	1.116
Neutral Organics	: Green Algae	96-hr	ChV	1.711
Neutral Organics	: Fish (SW)	96-hr	LC50	4.528
Neutral Organics	: Mysid Shrimp	96-hr	LC50	1.421
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	506.331 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Aquatic chronic screening value = Fish ChV by 5: 1.752/5 = 0.35 mg/L

SMILES : BrCC(Br)CCL
CHEM : Propane, 1,2-dibromo-3-chloro-
CAS Num: 000096-12-8
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C3 H5 Br2 CL1
MOL WT : 236.33
Log Kow: 2.26 (User entered)
Melt Pt:
Wat Sol: 570.6 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	188.394
Neutral Organics	: Fish	96-hr	LC50	99.799
Neutral Organics	: Fish	14-day	LC50	188.394
Neutral Organics	: Daphnid	48-hr	LC50	108.875
Neutral Organics	: Green Algae	96-hr	EC50	69.092
Neutral Organics	: Fish	30-day	ChV	13.407
Neutral Organics	: Daphnid	16-day	EC50	6.256
Neutral Organics	: Green Algae	96-hr	ChV	8.029
Neutral Organics	: Fish (SW)	96-hr	LC50	25.925
Neutral Organics	: Mysid Shrimp	96-hr	LC50	23.907
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	1209.057 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Aquatic chronic screening value = Fish ChV/5: 13.407/5 = 2.68 mg/L

SMILES : BrCCBr
CHEM : Ethane, 1,2-dibromo-
CAS Num: 000106-93-4
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C2 H4 Br2
MOL WT : 187.86
Log Kow: 1.96 (User entered)
Melt Pt:
Wat Sol: 917.6 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	Fish	14-day	LC50	273.325
Neutral Organics	Fish	96-hr	LC50	151.859
Neutral Organics	Fish	14-day	LC50	273.325
Neutral Organics	Daphnid	48-hr	LC50	162.270
Neutral Organics	Green Algae	96-hr	EC50	101.214
Neutral Organics	Fish	30-day	ChV	19.437
Neutral Organics	Daphnid	16-day	EC50	8.178
Neutral Organics	Green Algae	96-hr	ChV	9.890
Neutral Organics	Fish (SW)	96-hr	LC50	34.122
Neutral Organics	Mysid Shrimp	96-hr	LC50	45.065
				mg/kg (ppm) dry wt soil
Neutral Organics	Earthworm	14-day	LC50	1188.938 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Aquatic chronic screening value = Fish ChV/5: 19.437/5 = 3.89 mg/L

SMILES : CLCC(CL)C
CHEM : Propane, 1,2-dichloro-
CAS Num: 000078-87-5
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C3 H6 CL2
MOL WT : 112.99
Log Kow: 2.00 (User entered)
Melt Pt:
Wat Sol: 502.4 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	151.715
Neutral Organics	: Fish	96-hr	LC50	83.759
Neutral Organics	: Fish	14-day	LC50	151.715
Neutral Organics	: Daphnid	48-hr	LC50	89.749
Neutral Organics	: Green Algae	96-hr	EC50	56.109
Neutral Organics	: Fish	30-day	ChV	10.790
Neutral Organics	: Daphnid	16-day	EC50	4.603
Neutral Organics	: Green Algae	96-hr	ChV	5.611
Neutral Organics	: Fish (SW)	96-hr	LC50	19.188
Neutral Organics	: Mysid Shrimp	96-hr	LC50	24.156
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	695.072 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Aquatic chronic screening value = Fish ChV/5: 10.79/5 = 2.16 mg/L

SMILES : C(=CCL)CCL
CHEM : 1-Propene, 1,3-dichloro-
CAS Num: 000542-75-6
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C3 H4 CL2
MOL WT : 110.97
Log Kow: 1.60 (User entered)
Melt Pt:
Wat Sol: 1262 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Vinyl/Allyl Halides

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	332.361
Vinyl/Allyl Halides	: Fish [CLOGP]	96-hr	LC50	4.237
Vinyl/Allyl Halides	: Daphnid [CLOGP]	48-hr	LC50	265.712
Vinyl/Allyl Halides	: Green Algae [CLOGP]	96-hr	EC50	46.261

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Value = Fish LC50/10 = Chronic value: 4.237/10 = 0.424 mg/L
Chronic Water Screening Value = chronic value/5 = 0.424/5 = 0.085 mg/L

SMILES : C(#N)C
CHEM : Acetonitrile
CAS Num: 000075-05-8
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C2 H3 N1
MOL WT : 41.05
Log Kow: -0.34 (User entered)
Melt Pt:
Wat Sol: 4.448E+004 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	6018.438
Neutral Organics	: Fish	96-hr	LC50	4818.854
Neutral Organics	: Fish	14-day	LC50	6018.438
Neutral Organics	: Daphnid	48-hr	LC50	4392.825
Neutral Organics	: Green Algae	96-hr	EC50	2400.180
Neutral Organics	: Fish	30-day	ChV	425.739
Neutral Organics	: Daphnid	16-day	EC50	80.936
Neutral Organics	: Green Algae	96-hr	ChV	62.073
Neutral Organics	: Fish (SW)	96-hr	LC50	356.077
Neutral Organics	: Mysid Shrimp	96-hr	LC50	7384.887
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	1327.589

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Aquatic chronic water screening value = Fish ChV/5: 425.739/5 = 85.1 mg/L

SMILES : BrC(CL)CL
CHEM : Methane, bromodichloro-
CAS Num: 000075-27-4
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 H1 Br1 CL2
MOL WT : 163.83
Log Kow: 2.09 (User entered)
Melt Pt:
Wat Sol: 589.6 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	183.654
Neutral Organics	: Fish	96-hr	LC50	99.952
Neutral Organics	: Fish	14-day	LC50	183.654
Neutral Organics	: Daphnid	48-hr	LC50	107.768
Neutral Organics	: Green Algae	96-hr	EC50	67.724
Neutral Organics	: Fish	30-day	ChV	13.064
Neutral Organics	: Daphnid	16-day	EC50	5.749
Neutral Organics	: Green Algae	96-hr	ChV	7.134
Neutral Organics	: Fish (SW)	96-hr	LC50	23.916
Neutral Organics	: Mysid Shrimp	96-hr	LC50	27.033
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	945.521 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Aquatic chronic screening value = Fish ChV/5: 13.064/5 = 2.61 mg/L

SMILES : BrC(Br)Br
CHEM : Methane, tribromo-
CAS Num: 000075-25-2
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 H1 Br3
MOL WT : 252.73
Log Kow: 2.37 (User entered)
Melt Pt:
Wat Sol: 471.3 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	161.580
Neutral Organics	: Fish	96-hr	LC50	84.112
Neutral Organics	: Fish	14-day	LC50	161.580
Neutral Organics	: Daphnid	48-hr	LC50	92.461
Neutral Organics	: Green Algae	96-hr	EC50	59.048
Neutral Organics	: Fish	30-day	ChV	11.502
Neutral Organics	: Daphnid	16-day	EC50	5.575
Neutral Organics	: Green Algae	96-hr	ChV	7.313
Neutral Organics	: Fish (SW)	96-hr	LC50	23.044
Neutral Organics	: Mysid Shrimp	96-hr	LC50	18.628
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	1195.911 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 11.502/5 = 2.3 mg/L

SMILES : BrC
CHEM :
CAS Num:
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 H3 Br1
MOL WT : 94.94
Log Kow: 1.18 (User entered)
Melt Pt:
Wat Sol: 2924 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	665.502
Neutral Organics	: Fish	96-hr	LC50	418.798
Neutral Organics	: Fish	14-day	LC50	665.502
Neutral Organics	: Daphnid	48-hr	LC50	423.921
Neutral Organics	: Green Algae	96-hr	EC50	252.746
Neutral Organics	: Fish	30-day	ChV	47.242
Neutral Organics	: Daphnid	16-day	EC50	15.161
Neutral Organics	: Green Algae	96-hr	ChV	15.699
Neutral Organics	: Fish (SW)	96-hr	LC50	64.412
Neutral Organics	: Mysid Shrimp	96-hr	LC50	217.493
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	1047.700

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 47.242/5 = 9.45 mg/L

SMILES : CLCC
CHEM :
CAS Num:
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C2 H5 CL1
MOL WT : 64.52
Log Kow: 1.43 (User entered)
Melt Pt:
Wat Sol: 1094 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	271.727
Neutral Organics	: Fish	96-hr	LC50	164.234
Neutral Organics	: Fish	14-day	LC50	271.727
Neutral Organics	: Daphnid	48-hr	LC50	169.185
Neutral Organics	: Green Algae	96-hr	EC50	102.356
Neutral Organics	: Fish	30-day	ChV	19.300
Neutral Organics	: Daphnid	16-day	EC50	6.762
Neutral Organics	: Green Algae	96-hr	ChV	7.363
Neutral Organics	: Fish (SW)	96-hr	LC50	28.560
Neutral Organics	: Mysid Shrimp	96-hr	LC50	71.148
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	594.596

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Aquatic Screening Value = Fish ChV/5: 19.3/5 = 6.5 mg/L

SMILES : CLC
CHEM :
CAS Num:
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 H3 CL1
MOL WT : 50.49
Log Kow: 1.09 (User entered)
Melt Pt:
Wat Sol: 1916 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	423.070
Neutral Organics	: Fish	96-hr	LC50	270.028
Neutral Organics	: Fish	14-day	LC50	423.070
Neutral Organics	: Daphnid	48-hr	LC50	271.656
Neutral Organics	: Green Algae	96-hr	EC50	161.137
Neutral Organics	: Fish	30-day	ChV	30.026
Neutral Organics	: Daphnid	16-day	EC50	9.344
Neutral Organics	: Green Algae	96-hr	ChV	9.507
Neutral Organics	: Fish (SW)	96-hr	LC50	39.781
Neutral Organics	: Mysid Shrimp	96-hr	LC50	149.430
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	593.462

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Aquatic Screening Value = Fish ChV/5: 30.026/5 = 6.0 mg/L

SMILES : C(CCCC1)C1
CHEM : Cyclohexane
CAS Num: 000110-82-7
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C6 H12
MOL WT : 84.16
Log Kow: 3.44 (User entered)
Melt Pt:
Wat Sol: 12.72 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class		Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	:	Fish	14-day	LC50	6.293
Neutral Organics	:	Fish	96-hr	LC50	2.764
Neutral Organics	:	Fish	14-day	LC50	6.293
Neutral Organics	:	Daphnid	48-hr	LC50	3.271
Neutral Organics	:	Green Algae	96-hr	EC50	2.222
Neutral Organics	:	Fish	30-day	ChV	0.449
Neutral Organics	:	Daphnid	16-day	EC50	0.315
Neutral Organics	:	Green Algae	96-hr	ChV	0.511
Neutral Organics	:	Fish (SW)	96-hr	LC50	1.270
Neutral Organics	:	Mysid Shrimp	96-hr	LC50	0.285
					mg/kg (ppm) dry wt soil
Neutral Organics	:	Earthworm	14-day	LC50	186.466 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 0.449/5 = 0.09 mg/L

SMILES : BrC(Br)CL
CHEM : Methane, dibromochloro-
CAS Num: 000124-48-1
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 H1 Br2 CL1
MOL WT : 208.28
Log Kow: 2.23 (User entered)
Melt Pt:
Wat Sol: 539.6 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	176.327
Neutral Organics	: Fish	96-hr	LC50	93.853
Neutral Organics	: Fish	14-day	LC50	176.327
Neutral Organics	: Daphnid	48-hr	LC50	102.176
Neutral Organics	: Green Algae	96-hr	EC50	64.729
Neutral Organics	: Fish	30-day	ChV	12.547
Neutral Organics	: Daphnid	16-day	EC50	5.795
Neutral Organics	: Green Algae	96-hr	ChV	7.393
Neutral Organics	: Fish (SW)	96-hr	LC50	24.030
Neutral Organics	: Mysid Shrimp	96-hr	LC50	22.969
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	1088.448 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 12.547/5 = 2.51 mg/L

SMILES : FC(F)(CL)CL
CHEM : Methane, dichlorodifluoro-
CAS Num: 000075-71-8
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 CL2 F2
MOL WT : 120.91
Log Kow: 2.16 (User entered)
Melt Pt:
Wat Sol: 369.2 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	117.792
Neutral Organics	: Fish	96-hr	LC50	63.398
Neutral Organics	: Fish	14-day	LC50	117.792
Neutral Organics	: Daphnid	48-hr	LC50	68.687
Neutral Organics	: Green Algae	96-hr	EC50	43.339
Neutral Organics	: Fish	30-day	ChV	8.381
Neutral Organics	: Daphnid	16-day	EC50	3.778
Neutral Organics	: Green Algae	96-hr	ChV	4.754
Neutral Organics	: Fish (SW)	96-hr	LC50	15.692
Neutral Organics	: Mysid Shrimp	96-hr	LC50	16.311
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	664.043 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 8.381/5 = 1.68 mg/L

SMILES : c(cccc1)(c1)C(C)C
CHEM : Benzene, (1-methylethyl)-
CAS Num: 000098-82-8
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C9 H12
MOL WT : 120.20
Log Kow: 3.66 (User entered)
Melt Pt:
Wat Sol: 10.83 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	5.781
Neutral Organics	: Fish	96-hr	LC50	2.452
Neutral Organics	: Fish	14-day	LC50	5.781
Neutral Organics	: Daphnid	48-hr	LC50	2.946
Neutral Organics	: Green Algae	96-hr	EC50	2.027
Neutral Organics	: Fish	30-day	ChV	0.413
Neutral Organics	: Daphnid	16-day	EC50	0.312
Neutral Organics	: Green Algae	96-hr	ChV	0.529
Neutral Organics	: Fish (SW)	96-hr	LC50	1.253
Neutral Organics	: Mysid Shrimp	96-hr	LC50	0.216
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	227.829 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 0.413/5 = 0.083 mg/L

SMILES : O=C(OC)C
CHEM : Acetic acid, methyl ester
CAS Num: 000079-20-9
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C3 H6 O2
MOL WT : 74.08
Log Kow: 0.18 (User entered)
Melt Pt:
Wat Sol: 2.366E+004 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Esters

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	Fish	14-day	LC50	3827.556
Esters	Fish	96-hr	LC50	105.536
Esters	Daphnid	48-hr	LC50	2666.254
Esters	Green Algae	96-hr	EC50	7.857
Esters	Green Algae		ChV	5.860
Esters	Fish		ChV	138.568

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 138.568/5 = 27.7 mg/L

SMILES : C(CCCC1)(C1)C
CHEM : Cyclohexane, methyl-
CAS Num: 000108-87-2
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C7 H14
MOL WT : 98.19
Log Kow: 2.82 (User entered)
Melt Pt:
Wat Sol: 63.63 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	25.459
Neutral Organics	: Fish	96-hr	LC50	12.339
Neutral Organics	: Fish	14-day	LC50	25.459
Neutral Organics	: Daphnid	48-hr	LC50	13.992
Neutral Organics	: Green Algae	96-hr	EC50	9.170
Neutral Organics	: Fish	30-day	ChV	1.814
Neutral Organics	: Daphnid	16-day	EC50	1.027
Neutral Organics	: Green Algae	96-hr	ChV	1.473
Neutral Organics	: Fish (SW)	96-hr	LC50	4.202
Neutral Organics	: Mysid Shrimp	96-hr	LC50	1.982
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	337.680 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 1.814/5 = 0.36 mg/L

SMILES : c(cccc1)(c1)C=C
CHEM : Benzene, ethenyl-
CAS Num: 000100-42-5
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C8 H8
MOL WT : 104.15
Log Kow: 2.95 (User entered)
Melt Pt:
Wat Sol: 49.74 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	20.808
Neutral Organics	: Fish	96-hr	LC50	9.878
Neutral Organics	: Fish	14-day	LC50	20.808
Neutral Organics	: Daphnid	48-hr	LC50	11.302
Neutral Organics	: Green Algae	96-hr	EC50	7.463
Neutral Organics	: Fish	30-day	ChV	1.483
Neutral Organics	: Daphnid	16-day	EC50	0.878
Neutral Organics	: Green Algae	96-hr	ChV	1.292
Neutral Organics	: Fish (SW)	96-hr	LC50	3.582
Neutral Organics	: Mysid Shrimp	96-hr	LC50	1.446
				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	326.641 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Aquatic Screening Value = Fish ChV/5: 1.483/5 = 0.30 mg/L

SMILES : FC(CL)(CL)CL
CHEM : Methane, trichlorofluoro-
CAS Num: 000075-69-4
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C1 CL3 F1
MOL WT : 137.37
Log Kow: 2.53 (User entered)
Melt Pt:
Wat Sol: 175.9 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Neutral Organics

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	63.717
Neutral Organics	: Fish	96-hr	LC50	32.336
Neutral Organics	: Fish	14-day	LC50	63.717
Neutral Organics	: Daphnid	48-hr	LC50	35.941
Neutral Organics	: Green Algae	96-hr	EC50	23.165
Neutral Organics	: Fish	30-day	ChV	4.537
Neutral Organics	: Daphnid	16-day	EC50	2.324
Neutral Organics	: Green Algae	96-hr	ChV	3.147
Neutral Organics	: Fish (SW)	96-hr	LC50	9.572
Neutral Organics	: Mysid Shrimp	96-hr	LC50	6.388

				mg/kg (ppm) dry wt soil
Neutral Organics	: Earthworm	14-day	LC50	580.293 *

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Screening Value = Fish ChV/5: 4.537/5 = 0.11 mg/L

SMILES : C(=C)CL
CHEM : Ethene, chloro-
CAS Num: 000075-01-4
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C2 H3 CL1
MOL WT : 62.50
Log Kow: 1.36 (User entered)
Melt Pt:
Wat Sol: 1249 mg/L (calculated)

ECOSAR v0.99g Class(es) Found

Vinyl/Allyl Halides

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	302.911
Vinyl/Allyl Halides	: Fish [CLOGP]	96-hr	LC50	3.430
Vinyl/Allyl Halides	: Daphnid [CLOGP]	48-hr	LC50	293.356
Vinyl/Allyl Halides	: Green Algae [CLOGP]	96-hr	EC50	39.983

Note: * = asterick designates: Chemical may not be soluble enough to measure this predicted effect.
Fish and daphnid acute toxicity log Kow cutoff: 5.0
Green algal EC50 toxicity log Kow cutoff: 6.4
Chronic toxicity log Kow cutoff: 8.0
MW cutoff: 1000

Chronic Water Value = Fish LC50/10 = Chronic value: 3.43/10 = 0.343 mg/L
Chronic Water Screening Value = chronic value/5 = 0.343/5 = 0.069 mg/L

Attachment C

Estimation of Sediment Screening Values Using Equilibrium Partitioning

TABLE C-1 ESTIMATION OF SEDIMENT SCREENING VALUES USING EQUILIBRIUM PARTITIONING

Chemical	Surface Water Screening Value (µg/L)	Surface Water Screening Value (mg/L)	log Kow	Koc (=Kow)	foc	Sediment Screening Value (mg/kg)
1,1,2-Trichloro-1,2,2-trifluoroethane	350	0.35	3.16	1,445	0.01	5.06
1,2-Dibromo-3-chloropropane	2,680	2.68	NA	129	0.01	3.46
1,2-Dibromoethane	3,890	3.89	NA	66.6	0.01	2.59
1,2-Dichloropropane	2,160	2.16	NA	270	0.01	5.83
4-Methyl-2-Pentanone	170	0.17	1.19	15.5	0.01	0.026
Acetonitrile	85,100	85.1	-0.34	0.46	0.01	0.39
Bromomethane	9,450	9.45	1.176	15	0.01	1.42
Carbon Disulfide	0.92	0.00092	2.24	27	0.01	0.0002
cis-1,3-Dichloropropene	0.085	0.000085	NA	27	0.01	2.30E-05
Cyclohexane	90	0.09	3.44	2,754	0.01	2.48
Isopropylbenzene	83	0.083	3.66	4,571	0.01	3.79
Methyl acetate	27,700	27.7	0.18	1.51	0.01	0.42
Methyl tertiary-butyl ether	51,000	51	NA	11.7	0.01	5.97
Methylcyclohexane	360	0.36	2.82	661	0.01	2.38
trans-1,3-Dichloropropene	0.085	0.000085	NA	27	0.01	2.30E-05
Vinyl Chloride	0.069	0.000069	1.36	22.9	0.01	1.58E-05

NOTE: NA = Not applicable. Sediment screening value calculated based on reported Koc values. See Table 1 for sources.